ISPEC INTERNATIONAL CONGRESS ON MULTIDISCIPLINARY STUDIES

November 12-13, 2021

Adana, TURKEY

THE PROCEEDINGS BOOK



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EDITED BY

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Assoc. Prof. Dr. Mehmet ILKIM

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EDITOR
Prof. Adil GEYBULLA
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CONGRESS TITLE
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zoom

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Date: 12.11.2021
Session-1 Hall-1
MODERATOR: Semra NAVRUZ VARLI

ANKARA TIME

10:00-12:30

AUTHORS	UNIVERSITY INSTITUTION	TOPIC TITLE
Semra NAVRUZ VARLI & Saniye BİLİCİ	Gazi University	EVALUATION OF BODY IMAGE, PHYSICAL ACTIVITY STATUS AND BODY FAT OF UNIVERSITY STUDENTS
Hande MORTAŞ & Saniye BİLİCİ	Gazi University	EVALUATION OF THE RELATIONSHIP BETWEEN DIET QUALITY AND SOME ANTHROPOMETRIC MEASUREMENTS AMONG LATE ADOLESCENT INDIVIDUALS
Lect. İpek KÖSE TOSUNÖZ & Lect. Sevgi Deniz DOĞAN & Lect. Seda YIKAR KARAÇAY & Prof. Dr. Evşen NAZİK	Mustafa Kemal University & Isparta University & Cukurova University & Cukurova University	TRADITIONAL AND COMPLEMENTARY MEDICINE PRACTICES IN THE COVID-19 PANDEMIC PROCESS
Lect. Sevgi Deniz DOĞAN & Lect. Seda YIKAR KARAÇAY & Lect. İpek KÖSE TOSUNÖZ & Prof. Dr. Sevban ARSLAN	Isparta University & Cukurova University & Mustafa Kemal University & Cukurova University	CHRONIC POSTSURGICAL PAIN
E. Özlem KÖROĞLU & Emel BAHAR	Toros University & Tarsus University	THE EFFECT OF BURNOUT SYNDROME ON NURSES' INTENTION TO LEAVE
Yildirim KOCAPINAR & Assoc. Prof. Sezen AKKAYA & Saban KILIC & Faruk BALICA	Siirt Training and Research Hospital & University of Health Sciences Istanbul Fatih Sultan Mehmet Training and Research Hospital & Siirt Training and Research Hospital & Siirt Training and Research Hospital	A CASE OF HIGH ALTITUDE RETINOPATHY WITH BILATERALLY ACUTE VITREOUS HEMORRHAGE SECONDARY TO RETINAL NEOVASCULARIZATION IN AN UNCONTROLLED DIABETIC PATIENT

Assist. Prof. Dr. Kenan SEVER	New Century University	OPEN HEART SURGERY IN PATIENTS WITH CHRONIC RENAL FAILURE
Assist. Prof. Dr. Kezban KORAŞ SÖZEN & Assist. Prof. Dr. Hacı BOLAT & Assist. Prof. Dr. İnayet GÜNTÜRK	Nigde Omer Halisdemir University	THE EFFECTS OF SEX HORMONES ON POSTOPERATIVE PAIN IN PATIENTS WITH LAPAROSCOPIC CHOLECYSTECTOMY
Gizem AKCAN & Ayfer BAYINDIR ÇEVİK	Bartin University	SYMPTOM MANAGEMENT AND QUALITY OF LIFE IN WOMEN WITH BREAST CANCER: A REVIEW ON THE EFFECTIVENESS OF AWARENESS-BASED PROGRAMS
Mehmet ILKIM & Cemile Nihal YURTSEVEN	Inonu University & Istanbul University-Cerrahpasa	GENERAL HEALTH ISSUES AND RISK FACTORS ASSESSMENT OF DOWN SYNDROMES THAT CANNOT BE INTERRED WITH PHYSICAL ACTIVITIES IN THE COVID 19 PROCESS
Lect. Dr. Emral GÜLÇEK	Siirt University	PLACE OF PHYSICAL EXERCISE IN DIALYSIS CARE

Date: 12.11.2021
Session-1 Hall-2
MODERATOR: Assist. Prof. Dr. Emine Kübra PULLU

ANKARA TIME

10:00-12:30

AUTHORS	UNIVERSITY INSTITUTION	TOPIC TITLE
Assist. Prof. Dr. Emine Kübra PULLU	Munzur University	INVESTIGATION OF THE RELATIONSHIP BETWEEN PROGRAM LITERACY AND ATTITUDES TO THE TEACHING PROFESSION OF TEACHER CANDIDATES
Assist. Prof. Dr. Osman Tayyar ÇELİK & Lect. Semra AKTO	Inonu University & Mardin Artuklu University	CHILDHOOD EDUCATION AND IDENTITY
Miray ÖZÖZEN DANACI & Gözde ALTINTAŞ	Izmir Democracy University	EVALUATION OF THE BENEFITS OF OUTDOOR LEARNING ENVIRONMENTS IN EARLY CHILDHOOD
Miray ÖZÖZEN DANACI & Gözde ALTINTAŞ	Izmir Democracy University	EVALUATION OF LEARNING DISABILITY SYMPTOMS SEEN IN PRESCHOOL PERIOD
Assist. Prof. Dr. Mustafa AYDIN	Mersin University	ANALYSIS AND EVALUATION ON THE HADITH USED WITHIN THE SCOPE OF THE GAINS IN RELIGIOUS CULTURE AND MORAL KNOWLEDGE COURSE (4TH-8TH GRADES) CURRICULUM (5TH GRADE TEXTBOOK EXAMPLE)
Emine Elif AYHAN	Kocaeli University	THE ROLE OF AGING IN CARE SYSTEMS: THINKING OF ISSUES FROM THE PERSPECTIVE OF CARE ETHICS

Assist. Prof. Dr. Ahmet MUMCU	Tokat Gaziosmanpasa University	THE EFFECT OF ENTREPRENEURSHIP EDUCATION AND SKILLS DEVELOPLMENT COURSES ON WOMEN'S ENTREPRENEURSHIP INTENTION: A CASE STUDY OF FAMILY SUPPORT CENTER
Assoc. Prof. Dr. Utku ALTUNÖZ	Sinop University	TURKEY'S FINANCIAL KUZNETS CURVE IN CONTEXT OF FINANCIAL DEVELOPMENT AND INCOME DISTRIBUTION

Date: 12.11.2021
Session-1 Hall-3
MODERATOR: Hayat TOPÇU

ANKARA TIME

10:00-12:30

AUTHORS	UNIVERSITY INSTITUTION	TOPIC TITLE
Hüseyin EROĞLU	Yuzuncu Yil University	A STUDY ON HYACINTHELLA SCHUR (ASPARAGACEAE) GENUS DISTRIBUTED IN TURKEY
Muhammet Ali GÜNDEŞLİ & Murat GÜNEY	Gaziantep University & Yozgat Bozok University	ROLE OF PLANT GROWTH REGULATORS IN THE ALTERNATE BEARING OF THE OLIVE TREE (Olea Europaea L.)
Muhammet Ali GÜNDEŞLİ & Murat GÜNEY	Gaziantep University & Yozgat Bozok University	THE THEORIES LAID BEHIND THE AFFECT OF CARBONHYRATES ON ALTERNATE BEARING OF THE OLIVE TREE (Olea europaea L.)
Kenan ERCAN & Ömer Faruk GECESEFA & Kamil MENCIK	Gaziantep University	A STUDY ON MORINGA OLEIFERA LEAF PRODUCTION; NURDAGI CASE
Kenan ERCAN & Kamil MENCIK & Ömer Faruk GECESEFA	Gaziantep University	MORINGA OLEIFERA ANTIOXIDANT CAPACITY; A REVIEW
Hayat TOPÇU & Salih KAFKAS & Murat GÜNEY	Tekirdag Namik Kemal University & Cukurova University & Yozgat Bozok University	TRANSCRIPTOME AN GENOMIC ANALYSIS OF WALNUT (JUGLANS regia L.)
Hayat TOPÇU & Salih KAFKAS	Tekirdag Namik Kemal University & Cukurova University	IDENTIFICATION OF HOUSEKEEPING GENES IN PLANTS
Sevil ABBASQULIYEVA & Remzi EKİNCİ	Azerbaijan Scientific Research Agricultural Institute & Dicle University	INVESTIGATION OF FIBER QUALITY TRAITS OF SOME COTTON VARIETIES ORIGINATING FROM AZERBAIJAN
Selvinaz YAKAN & Cafer Tayer İŞLER	Agri Ibrahim Cecen University & Mustafa Kemal University	DEHORNING METHODS IN CALVES

Date: 12.11.2021
Session-1 Hall-4
MODERATOR: Dr. Mustafa Latif EMEK

ANKARA TIME

10:00-12:30

AUTHORS	UNIVERSITY INSTITUTION	TOPIC TITLE
J. Martin Sam Gnanaraj & K. Varuna & G. Satheesh Kumar & M. Senthil Pandian & P. Karuppasamy & A. Robert Xavier & S. Senthil Kumar	SSN College of Engineering & National College	FURNACE DUST: A FACILE RAW MATERIAL FOR THE GENERATION OF THIRD HARMONIC GENERATION AND OPTICAL LIMITING APPLICATIONS
Shobhit Mishra & Dr. Hemlata Nimesh & Dr. Neerupma Dhiman	Amity University	DEVELOPMENT OF POTENT ANTICANCER AGENTS CONTAINING INDOLE NUCLEUS USING MOLECULAR HYBRIDISATION
CHAVAN J. R. & KADAM V. B. & NALAWADE P.M.	B. H. Commerce, A.M. Science College	PHYTOREMEDIATION OF ARSENIC BY NUTRIENT FILM TECHNIQUE
Ali Ikram & Farhan Saeed & Haroon Munir	Government College University	EXPLORING THE BIOCHEMICAL PROFILE AND MICROBIOLOGICAL ASPECTS OF SWEET PRESERVED HAREER (TERMINALEA CHEBULA)
Mehmet Hakan ERK & Cumhur Haldun YARDIMCI	Istanbul University	A CASE STUDY OF APPLICATION OF MICROCONTROLLERS IN AQUATIC SCIENCES AND MONITORING SYSTEMS: FUNCTIONAL THERMOMETER

Aderemi Timothy Adeleye & Chuks K. Odoh & Lanre Anthony Gbadegesin & Omoniyi Ahmed Olalekan & Oludare O. Osiboye & Kehinde.H. Moberuagba	Chinese Academy of Sciences & Veritas University & Tai Solarin College of Education	NANOREMEDIATION TECHNOLOGIES: SUSTAINABLE & EFFICIENT REMEDIATION PATHWAYS TOWARDS SDG #6
Muhammad Nasir & Dr. Nurnadiah Zamri & Dr. Muhammad Waqas	University Sultan Zainal Abidin & National University of Technology	DARCY-FORCHHEIMER MHD MIXED CONVECTION FLOW DUE TO A STRETCHABLE SURFACE EMBEDDED IN A POROUS MEDIUM WITH CATTANEO-CHRISTOV DOUBLE DIFFUSION
Ambar Farooq & Matloob Ahmad & Farhat Ibrahim & Sana Aslam	Government College University & Government College for Women University	BENZIMIDAZOLE-PYRAZOLINE HYBRIDS AS ANTI-DIABETIC AGENTS
Anam Nawaz & Kamran Walayat & Matloob Ahmad	Faisalabad University	SYNTHESIS, CHARACTERIZATION AND BIOLOGICAL ACTIVITY OF FLUOROQUINOLONE DERIVATIVES
Isaiah. B & Rajendra Awasthi & Giriraj.T. Kulkarni	Aurobindo Pharma Ltd & Amity University & Gokaraju Rangaraju College	DEVELOPMENT AND EVALUATION OF MULTI PARTICULATE SYSTEMS (MUPS) OF TOPIRAMATE FOR TASTE MASKING

Date: 12.11.2021
Session-2 Hall-1
MODERATOR: Assoc. Prof. Dr. A.U. Arun

ANKARA TIME

13:00-15:30

AUTHORS	UNIVERSITY INSTITUTION	TOPIC TITLE
Rimene Dhahri & Younes Moussaoui	University of Gafsa & University of Sfax	KINETIC STUDY FOR THE ADSORPTION OF METHYL GREEN ON ACTIVATED CARBON FROM OLIVE WASTE WOOD
H. Mekki & H. Baaziz & Z. Charifi	University of M'sila	THE ELECTRONIC STRUCTURE, MAGNETISM AND THERMODYNAMIC IN HALF-HEUSLER ALLOYS KCrZ (Z=S, Se, Te)
Nur ÇINAR & Dr. Uğur KARAASLAN	Marine and Grease Lubricants Belgin Madeni Yaglar San. ve Tic. Inc.	LOW TEMPERATURE FLUIDITY PROPERTIES OF LUBRICATING GREASES AND THE EFFECT OF POUR POINT ADDITIVE ON GREASE FLUIDITY
Bakhtiar Ul Haq & S. AlFaify & R. Ahmed	King Khalid University & University of the Punjab & Universiti Teknologi Malaysia	CONSTRUCTION OF NOVEL VAN DER WAALS HETEROSTRUCTURES FROM TWO-DIMENSIONAL TIN-CHALCOGENIDES: A FIRST-PRINCIPLES STUDY
Dr. Binyam Zigta	Wachemo University	EFFECT OF THERMAL RADIATION AND CHEMICAL REACTION ON MHD FLOW OF BLOOD IN STRETCHING PERMEABLE VESSEL
Özer ZEYBEK & Mutlu SEÇER	Mugla Sitki Kocman University & Izmir Katip Celebi University	INVESTIGATION OF HORIZONTALLY CURVED MEMBERS USED IN STEEL STRUCTURES

Kishlay Kumar	Jagran School of law	ELECTRIC MOBILITY IN INDIA: PROSPECTS AND CHALLENGES
Debbaghi Slimane Dahmane Mouloud & Zahaf Samir	University of Djilali Bounaama-Khamis Meliana	A COUPLED THERMO-HYDRAULIC MODEL FOR FLUID FLOW IN CLAMPED-PINNED PIPES
Farah BOUTOUATOU & Azeddine MEBARKI & Benoit LAIGNEL & Mehdi DIB	University of Constantine Brothers & University of Rouen	DAMS AND INTER-BASIN TRANSFERS. TOWARDS AN INTERCONNECTED PLANNING SYSTEM: THE CASE OF EASTERN ALGERIA

Date: 12.11.2021
Session-2 Hall-2
MODERATOR: Assoc. Prof. Dr. Ömer Gökhan ULUM

ANKARA TIME

13:00-15:30

AUTHORS	UNIVERSITY INSTITUTION	TOPIC TITLE
Assoc. Prof. Dr. Ömer Gökhan ULUM	Mersin University	CHARACTERISTICS OF GOOD EFL TEACHERS FROM TURKISH EFL TEACHERS' PERSPECTIVES
Lukáš Stárek	Jan Amos Comenius University Prague s.r.o.	THE CONCEPT OF MULTIDISCIPLINARITY IN THE SYSTEM OF HELPING PROFESSIONS IN THE CONTEXT OF UNDERGRADUATE EDUCATION OF A SOCIAL WORKER AND A SPECIAL PEDAGOGUE
Cristina Dias & Carla Santos	New University of Lisbon	INTERGENERATIONAL DIGITAL LITERACY: A REAL OPPORTUNITY FOR LIFELONG EDUCATION
K.C.Victor & R.R. Saravana Kumar & G.A Robert Gixson	Affiliated to Manonmaniam Sundaranar University	UTILIZATON OF DIGITAL MODE OF EDUCATION DURING COVID 19 PANDEMIC
Prof. Dr. Jelena Đermanov & Dr. Nataša Tančić	University of Novi Sad	INTERCULTURAL COMPETENCIES AS A SEGMENT OF TEACHER PROFESSIONAL DEVELOPMENT
Okoro Lawrence & B. N. Ezegbe	University of Nigeria	EFFECT OF MOTIVATION STRATEGIES ON STUDENTS' ACHIEVEMENT AND INTEREST IN SENIOR SECONDARY SCHOOL GOVERNMENT IN NSUKKA EDUCATION ZONE, ENUGU STATE

Dr. Ahmad Fauzi, M.S.I & Lintang Dwi Sekarlangit & Rodotul Jannah	Islamic Religious High School	COMPARISON OF THE EDUCATION SYSTEMS INDONESIA AND SAUDI ARABIA
Adeboye Israel Elumaro	Adekunle Ajasin University	INSIGHTS ON THE PROCESS OF ATHLETES' DEVELOPMENT IN NIGERIA
K. D. Ahire & Shweta More & P. M. Nalawade & A. M. Datir	B.H. Commerce & A.M. Science (KTHM) College & Yashwantrao Chavan Maharashtra Open University & Commerce and Dadasaheb Rupwate Science College	COMPULSORY ENVIRONMENTAL EDUCATION IN INDIA: IS IT APPROACH TO SUSTAINABLE DEVELOPMENT?
Dr. Naeema Arzeen & Dr. Saima Arzeen	University of Modern Languages & University of Peshawar	EXAMINING THE COPING STRATEGIES OF FATHERS AND MOTHERS OF CHILDREN WITH INTELLECTUAL DISABILITY AND WITHOUT DISABILITY

Date: 12.11.2021
Session-2 Hall-3
MODERATOR: K. Thamizhmaran

ANKARA TIME

13:00-15:30

AUTHORS	UNIVERSITY INSTITUTION	TOPIC TITLE
Aminu Adamu Ahmed	Abubakar Tafawa Balewa University	UNDERSTANDING DETERMINANTS OF CLOUD COMPUTING ADOPTION: A SYSTEMATIC REVIEW OF TECHNOLOGY ADOPTION MODELS
Aminu Adamu Ahmed	Abubakar Tafawa Balewa University	THE ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGY FOR SCHOOL SYSTEM RE-ENGINEERING DURING THE PANDEMONIUM PERIOD OF COVID-19 OUTBREAK
Assma Azeroual & Karim Afdel	University of Ibn Zohr	GPU IMPLEMENTATION OF FABER SCHAUDER DISCRETE WAVELET TRANSFORM USING CUDA
Ibrahim inusa	Marwadi University	DEEP LEARNING AS A SECOND LAYER TO SMART CONTRACT
Samarjit Roy & Debashis De	Maulana Abul Kalam Azad University of Technology	INTERNET OF CREATIVE-MUSIC THINGS: MULTIDISCIPLINARY ASPECTS IN COMPUTATIONAL MUSICOLOGY
K. Thamizhmaran	Government College of Engineering	PERFORMANCE OF INTER SATELLITE COMMUNICATION LINK THROUGH DIFFERENT MODULATION METHODS

Umar Muhammad ABUBAKAR & Naresh DUDI	Kano University of Science and Technology & Jai Narain Vyas University	SOME NEW EXTENSION OF BETA, GAUSS, CONFLUENT HYPERGEOMETRIC FUNCTIONS AND BETA DISTRIBUTION
Umar Muhammad ABUBAKAR & Naresh DUDI	Kano University of Science and Technology & Jai Narain Vyas University	THE NEW GENERALIZED BETA AND ASSOCIATED FUNCTIONS DEFINED BY CONSIDERING BIVARIATE MITTAG-LEFFLER FUNCTION AS THE REGULARIZER WITH THEIR APPLICATION TO DISTRIBUTION THEORY AND FRACTIONAL CALCULUS
Thomas Rosy & Asha Thomas & Sunil Varma	Madras Christian College	RADIUS PROBLEM FOR A SUBCLASS OF ANALYTIC FUNCTIONS INVOLVING SECOND DERIVATIVE
Dr. Mansour Hashemi & Mina Pirzadeh	University of Guilan	A GENERALIZATION OF THE COMMUTATIVITY DEGREE ON THE GROUP K_m

Date: 12.10.2021
Session-2 Hall-4
MODERATOR: Neslihan BALCI

ANKARA TIME

13:00-15:30

AUTHORS	UNIVERSITY INSTITUTION	TOPIC TITLE
Gwaison Panan Danladi	Nigerian Police Academy	EXCHANGE RATE REGIMES AND ECONOMIC PERFORMANCE IN NIGERIA: A COMPARATIVE ANALYSIS (1960-2014)
Ly Dai Hung	Vietnam Institute of Economics	MOBILE MONEY AT OPEN ECONOMY: A LITERATURE REVIEW AND ECONOMIC IMPLICATIONS
Anamiga, S. & Kumaradeepan,V	University Of Jaffna	USAGE OF SOCIAL MEDIA IN SRI LANKA BANKING INDUSTRY: A STUDY OF AWARENESS AND USER KNOWLEDGE PERSPECTIVES
Zimányi Róbert G.	University of Physical Education	TICKET PRICES FOR SPORT EVENTS, FOCUS ON JUSTICE-ANALYSIS OF THE IIHF ICE HOCKEY WORLD CHAMPIONSHIPS TICKET PRICES
Prof. Dr. Nnabuife, E. K. N. & Chukwuemeka G. Eme	Nnamdi Azikiwe University & National Open University of Nigeria	DYNAMIC CAPABILITIES AND FIRM PERFORMANCE OF QUOTED FOOD AND BEVERAGE MANUFACTURING COMPANIES IN SOUTH WEST NIGERIA
Amna Yousaf & Muzzamal Hussain	University of Agriculture & Government College University	FACTORS INFLUENCING THE CONSUMER'S PERCEPTIONS TOWARDS FRESH MILK AND TETRA PACK MILK
Assist. Prof. Dr. Mehmet Güney CELBİŞ	Yeditepe University	REGIONAL EDUCATION LEVELS AND THE EXPORTS OF INFORMATION AND COMMUNICATION SERVICES
Ananda Majumdar	The University of Alberta	AN IDEOLOGY OF HUMAN NOBILITY AND DR. B.R. AMBEDKAR OF INDIA

Date: 12.10.2021

Session-3 Hall-1

MODERATOR: Prof. Dr. Adil Geybulla

ANKARA TIME

16:00-18:30

AUTHORS	UNIVERSITY INSTITUTION	TOPIC TITLE
Hilda. A. Emmanuel-Akerele	Anchor University Lagos	MICROBIOLOGICAL ASSESSMENT OF BOREHOLE, SACHET AND BOTTLE WATER IN ANCHOR UNIVERSITY AND AYOBO COMMUNITY
Muzzamal Hussain & Farhan Saeed & Muhammad Waleed	Government College University	FUNCTIONAL AND RHEOLOGICAL CHARACTERISTICS OF ARABINOXYLANS EXTRACTED FROM DIFFERENT CULTIVATORS OF PSYLLIUM HUSK
Dr. Ghanshyam Barman	Uka Tarsadia University	PLANT DERIVED PROTEINS: A COMPLETE NUTRITION
Dr. Olubunmi T. OLORUNPOMI & Dr. Rabi S. DUWA	Nigeria Police Academy	VARIATION OF MOSQUITOES' GENERA AROUND POLAC ENVIRONMENT
Atman ADIBA & Jamal CHARAFI & Abdelamajid HADDIOUI & Anas HAMDANI & Imane SAGHOURI EL IDRISSI & Rachid RAZOUK	National Agricultural Research Institute & University of Sultan Moulay Slimane	INVESTIGATION OF PHYSICO-CHEMICAL PROPERTIES AND ANTIOXIDANT ACTIVITY OF ELEVEN MEDITERRANEAN POMEGRANATE (PUNICA GRANATUM L.) CULTIVARS
Şule POLAT & Ebru KAFKAS	Çukurova University	PROPAGATION OF RASPBERRIES VIA TISSUE CULTURE TECHNIQUES

Ayşegül Esra GÖLCÜ & Ebru KAFKAS	Cukurova University	HEALTH BENEFITS OF BLACK MULBERY (Morus nigra L.) FRUITS
Murat GÜNEY & Salih KAFKAS & Hayat TOPÇU	Yozgat Bozok University & Cukurova University & Tekirdag Namik Kemal University	CRISPR/CAS9 APPLICATIONS IN HORTICULTURAL CROPS
Murat GÜNEY & Salih KAFKAS & Muhammet Ali GÜNDEŞLİ	Yozgat Bozok University & Cukurova University & Gaziantep University	SECONDARY METABOLITES IN TEREBINTH (Pistacia terebinthus L.) AND THEIR APPLICATIONS
Prof. Dr. Adil Geybulla	Azerbaijan Medical University	ELECTROENTEROGRAPHY IN EVALUATION MOTOR ACTIVITY OF THE GASTROINTESTINAL TRACT IN PATIENTS WITH INTESTINAL OBSTRUCTION AND PERITONITIS
Nida Khan & Assist. Prof. Zahid Khan & Prof. Rubina Nazli & Saima Arzeen & Naeema Arzeen & Tasleem Akhtar	Khyber Medical University & University of Peshawar & University of Modern Languages	EFFECT OF IRON DEFICIENCY ANEMIA ON INTELLIGENCE QUOTIENT IN SCHOOL GOING CHILDREN OF PESHAWAR CITY

Date: 12.11.2021
Session-3 Hall-2
MODERATOR: Assoc. Prof. Ahmad Deylami

ANKARA TIME

16:00-18:30

AUTHORS	UNIVERSITY INSTITUTION	TOPIC TITLE
Dr. Amina ZGARNI	University of Tunis El Manar	THE FINANCIAL PERFORMANCE OF BANKS AND EXTERNAL GOVERNANCE MECHANISMS
Sulaiha Beevi Athambawa	South Eastern University of Sri Lanka	DOES HRIS INCREASES THE ORGANIZATIONAL EFFICIENCY THROUGH EMPLOYEES' PERFORMANCE: THEORETICAL PERSPECTIVE
Sulaiha Beevi Athambawa	South Eastern University of Sri Lanka	COMPENSATION MANAGEMENT PRACTICES AND FIRM PERFORMNACE: SMALL AND MEDIUM SCALE RICE MILLERS PERSPECTIVES
Mabel Duhaylungsod & Sol Ylycyl Morandarte	Zamboanga Del Norte National High School	TRAILBLAZERS: THE ALTERATION OF FREELANCING IN THE NEW NORMAL
Ghina Jazila	IAIN Pekalongan	REVOLUTION 4.0 WITH BEHAVIOR ECONOMY
Nikita Dobhal & Ishu Dobhal	Jagran School of Law	ONE INVENTION, ONE PATENT, ONE SAFEGUARD
Nikita Dobhal	Jagran School of Law	TEHRI DAM: ENVIRONMENTAL AND SOCIAL LEGAL ISSUES
Vinish Gautam	Jagran School of Law	PRO-CHILD PROVISIONS UNDER LABOUR LAWS IN INDIA
Assoc. Prof. Ahmad Deylami	The University of Qom	A COMPARATIVE STUDY OF WOMEN'S INHERITANCE

Date: 12.11.2021
Session-3 Hall-3
MODERATOR: Prof. Dr. Morakeng Edward Kenneth Lebaka

ANKARA TIME

16:00-18:30

AUTHORS	UNIVERSITY INSTITUTION	TOPIC TITLE
Dr. Abdellatif El Aidi & Laila El Youssfi	Sidi Mohamed Ben Abdellah University	RECONFIGURING ORIENTALISM: MOROCCO AS DEPICTED BY FOUR FRENCH WRITERS
Prof. Dr. Ulvi KESER	Girne Amerikan University	JEWISH PEOPLE AND HOW ISRAEL WAS FOUNDED THERE 1944-1948
Assoc. Prof. Dr. Sadagat Nematova	Nakhchivan State University	SPECIFIC FEATURES OF TEXTILE ART IN NAKHCHIVAN
Jimmy, AKOH	University of Abuja	INVESTIGATING FOLLOW-UP IN THEATRE FOR DEVELOPMENT: AN EXAMMINATION OF THE UNIVERSITY OF ABUJA 2019 AND 2021 GWAGWALADA PROJECT
Assist. Prof. Dr. Nazli AĞGÜN & Assist. Prof. Dr. Seda SIVACI	Osmaniye Korkut Ata University & Hasan Kalyoncu University	REFLECTION OF LEARNERS RELATED TO ONLINE INSTRUCTION
Assist. Prof. Dr. Seda SIVACI & Assist. Prof. Dr. Nazli AĞGÜN	Hasan Kalyoncu University & Osmaniye Korkut Ata University	DRAMA INTEGRATED LANGUAGE CLASROOMS
Prof. Dr. Morakeng Edward Kenneth Lebaka	Zululand University	TRADITIONAL HEALING IN GREATER SEKHUKHUNE DISTRICT MUNICIPALITY, LIMPOPO PROVINCE IN SOUTH AFRICA: CULTURAL BELIEFS AND PRACTICES OF BAPEDI PEOPLE
Musa Alhassan	Ahmadu Bello University	COMMUNICATION STRATEGY TO CONTAIN COVID-19 PANDEMIC IN NIGERIA

Date: 12.11.2021
Session-3 Hall-4
MODERATOR: Assist. Prof. Dr. Raju Saikia

ANKARA TIME

16:00-18:30

AUTHORS	UNIVERSITY INSTITUTION	TOPIC TITLE
Assist. Prof. Dr. Raju Saikia & Assist. Prof. Dr. Raihana Azmeera Sultana	Symbiosis International	SOCIO ECONOMIC BENEFITS AND RURAL HEALTH CARE SERVICES: A CASE STUDY OF ASSAM
Khoirunnazilah & Hendri Hermawan ADİNUGRAHA	IAIN Pekalongan	IS-LM ANALYSIS: IS-LM MODEL AND IS_LM ISLAMIC PERSPECTIVE
Adinda AFRİYAKIRANİ & Hendri Hermawan ADİNUGRAHA	IAIN Pekalongan	MONEY IN ISLAMIC ECONOMIC PERSPECTIVE
Fitri Mukarromah & Hendri Hermawan ADİNUGRAHA	IAIN Pekalongan	REVITALIZATION of RELIGIOUS CULTURAL TOURISM DESTINATION DEVELOPMENT
Alzana Rahma & Hendri Hermawan ADİNUGRAHA	IAIN Pekalongan	ISLAMIC MARKET MECHANISM: PRICE SETTING THEORY AND THE ROLE OF GOVERNMENT
Rachma Shafira Salsabila & Hendri Hermawan ADİNUGRAHA	IAIN Pekalongan	THE INFLUENCE OF AN UNSTABLE ECONOMY ON THE UNEMPLOYMENT RATE IN PEKALONGAN
Tria Alfa Salima & Hendri Hermawan ADİNUGRAHA	IAIN Pekalongan	INTEREST RATE AND BEHAVIOR
Rizky ANDREAN & Hendri Hermawan ADİNUGRAHA	IAIN Pekalongan	GOVERNMENT'S ROLE IN OVERCOMING THE IMPACT OF THE COVID-19 PANDEMIC FOR MSMES IN INDONESIA
Silviana Dewi & Hendri Hermawan ADİNUGRAHA	IAIN Pekalongan	INFLATION IN ISLAMIC AND CONVENTIONAL PERSPECTIVE
Hidayatul SIBYANI & Hendri Hermawan ADİNUGRAHA	IAIN Pekalongan	BUYING DAN SELLING CONTRACTS IN THE SHOPEE MARKETPLACE IN TERMS OF MURABAHAH, SALAM, AND ISTISNA' CONTRACTS

Date: 13.11.2021
Session-1 Hall-1
MODERATOR: Lect. Dr. Can MAVRUK

ANKARA TIME

09:00-11:30

AUTHORS	UNIVERSITY INSTITUTION	TOPIC TITLE
Lect. Dr. Can MAVRUK	Nigde Omer Halisdemir University	ECONOMIC VALUE OF LNG TRANSPORT FROM THE EASTERN MEDITERRANEAN TO EUROPE
Kubilay Çağrı YILMAZ	Manisa Celal Bayar University	TESTING THE EFFECT OF THE CHANGING SAVINGS DYNAMICS ON THE GROWTH TREND IN TURKEY OVER THE YEARS: USING THE ARDL APPROACH
Eyup ATİOĞLU	Cappadocia University	EXAMINING THE FACTORS AFFECTING THE REVENUES OF HOT AIR BALLOON OPERATORS
Dr. Erkin ARTANTAŞ & Dr. Hakan GÜRSOY	Osmaniye Korkut Ata University & HG Education, Consulting and E-Commerce	THE STATUS OF ENTERPRISES AFFECTED BY GLOBAL CRISES: THE SAMPLE OF SMEs IN TURKEY
Güneş Gizem ACER	Nestlé Turkey Food Industry Inc. Design Center	DEVELOPMENT OF KIT KAT SPREADABLE CHOCOLATE FOR OUT-OF-HOME CONSUMPTION
E. Başak TAVMAN & Prof. Dr. Mehmet TIĞLI	Marmara University	A QUALITATIVE STUDY OF THE FACTORS AFFECTING THE INTENTION TO PAY FOR PREMIUM SERVICES
E. Başak TAVMAN	Marmara University	FREEMIUM BUSINESS MODELS AS A COMPETITIVE STRATEGY IN THE ONLINE APP MARKET
Assist. Prof. Dr. Sinem EYİCE BAŞEV	Istanbul Gelisim University	CHILD AS ADVERTISING AUDIENCE: "MOM, WILL YOU BUY ME THE THING IN THE ADVERTISEMENT?" EXAMPLE
Aliye BULUT & Elif BAYRAKÇI	Gaziantep Islam, Science and Technology University	THE KNOWLEDGE, ATTITUDES AND BEHAVIORS OF MIDWIFERY STUDENTS ABOUT BREAST MILK

Date: 13.11.2021
Session-1 Hall-2
MODERATOR: Assoc. Prof. Dr. Esat AYYILDIZ

ANKARA TIME

09:00-11:30

AUTHORS	UNIVERSITY INSTITUTION	TOPIC TITLE
Yalçın KANBAY & Aysun AKÇAM & Sevil ÇINAR & Özkan ÖZBAY & Meryem FIRAT	Artvin Coruh University & Necmettin Erbakan University & Erzincan Binali Yıldırım University	DEVELOPMENT OF FIRAT NOMOPHOBIA SCALE AND INVESTIGATION OF ITS PSYCHOMETRIC PROPERTIES
Mustafa Serkan SOYAK & Prof. Dr. Mehmet TIĞLI	Marmara University	THE IMPACT OF THE COVID-19 PANDEMIC ON THE GLOBAL MUSIC INDUSTRY
Lect. Zeynep YILMAZ	Sirnak University	AN EVALUATION OF THE SEHR-I NUH'S LITTLE MENTORS PROJECT
Assist. Prof. Dr. Durmuş GÜR & Res. Assist. Cahit KARAKÖK & Assist. Prof. Dr. A.Nazlı SOYKAN	Karabuk University & Necmettin Erbakan University & Karabuk University	EVALUATION OF TRIBELONS IN BYZANTINE PERIOD RELIGIOUS BUILDINGS IN BITHYNIA AND PAPHLAGONIA
Assoc. Prof. Dr. Esat AYYILDIZ	Kafkas University	EGYPTIAN POET ISMĀ‘ĪL SABRĪ PASHA (SHAYKH AL-SHU‘ARĀ’) AND HIS NEO-CLASSIC POETRY
Assist. Prof. Dr. Gulzoda MAKHMUDJONOVA	Karabük University	MAWLANA MA’RUF BAGHDADI, THE CRUCIAL CALLIGRAPHIST OF HERAT PALACE
Dr. Eda TANYILDIZI	Ministry of Education	THE QUANTUM EXPANSION OF THE APPROACH OF THE UNITY OF BEING IN THE EXAMPLE OF MAWLANA

Date: 13.11.2021
Session-1 Hall-3
MODERATOR: Assist. Prof. Dr. Selçuk TOPAL

ANKARA TIME

09:00-11:30

AUTHORS	UNIVERSITY INSTITUTION	TOPIC TITLE
Murat KOCAOĞLU	Ale Technology Systems Industry and Foreign Trade Inc. Design Center	LIGHTING FIXTURE DESIGN FOR OUTDOOR FOOTBALL FIELD
Betül ÖZER & Merve ERAY KAĞITCIOĞLU	Kirklareli University	ENERGY EFFICIENCY APPLICATION IN VEGETABLE OIL INDUSTRY
Gamze YANIK & Assist. Prof. Dr. Selçuk TOPAL	Yuzuncu Yil University	PROBING THE PHYSICS OF GAS, DUST AND STELLAR POPULATIONS ACROSS THE DISC OF THE NEARBY SPIRAL GALAXY NGC 3938
Doğan Engin ALNAK & Koray KARABULUT	Sivas Cumhuriyet University	THE EFFECT OF FIN ANGLE ON INCREASING THE HEAT TRANSFER FROM ELECTRONIC COMPONENTS BY APPLYING AN IMPINGING JET-CROSS FLOW
Barış YILDIZ	Koc University	A NOVEL SECOND-ORDER CONE PROGRAMMING APPROACH TO SOLVE CAPACITATED RECHARGING STATION LOCATION PROBLEM WITH STOCHASTIC DEMAND
Eda Nur USTA & Sevda KAYA & Betül BİLGEHAN DULKADİROĞLU & Assoc. Prof. Alper BİDECİ	Duzce University	BUILDING PHYSICS PROBLEMS IN EDUCATIONAL BUILDINGS: THE EXAMPLE OF DUZCE

Sevda KAYA & Eda Nur USTA & Betül BİLGEHAN DULKADİROĞLU & Assoc. Prof. Alper BİDECİ	Duzce University	FACADE DAMAGES IN PUBLIC STRUCTURE: A CASE OF DUZCE
Yusuf YILMAZ	Gaziantep University	PHOTOCATALYTIC DEGRADATIONOF ORANGE G
Assist. Prof. Dr. Ali DOĞAN & Mohammad Bilal Jalali	Iskenderun Technical University	INVESTIGATION OF MECHANICAL PROPERTIES OF CONCRETE WITH MACRO SYNTHETIC FIBER
Zehra YÜCEDAĞ	Dicle University	NONLOCAL PROBLEM WITH VARIABLE EXPONENT UNDER STEKLOV BOUNDARY CONDITION
Zehra YÜCEDAĞ	Dicle University	SOLUTION FOR STEKLOV BOUNDARY VALUE PROBLEM INVOLVING THE $p(x)-$ LAPLACIAN OPERATORS

Date: 13.11.2021
Session-1 Hall-4
MODERATOR: Dr. Hasan DEMİR

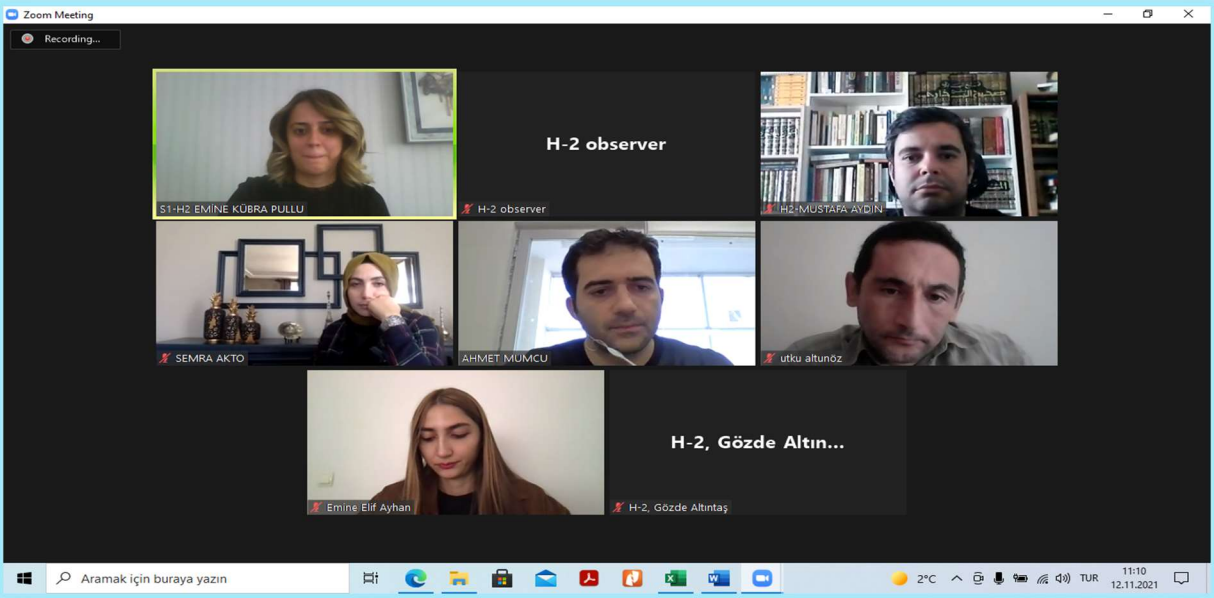
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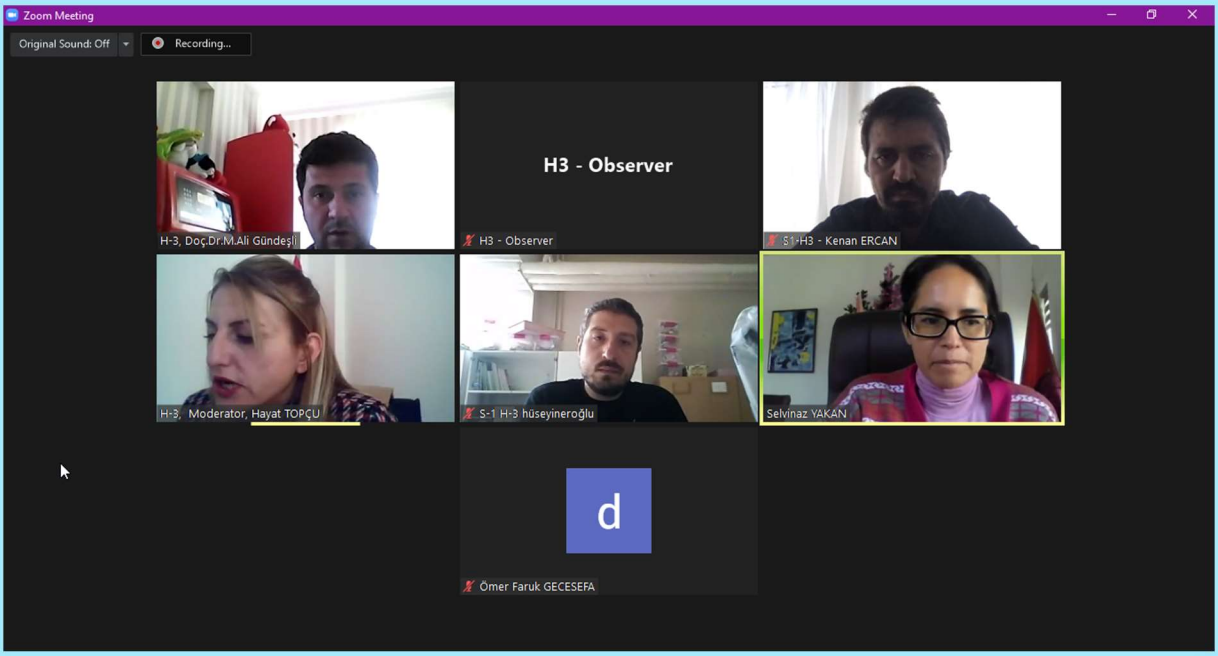
09:00-11:30

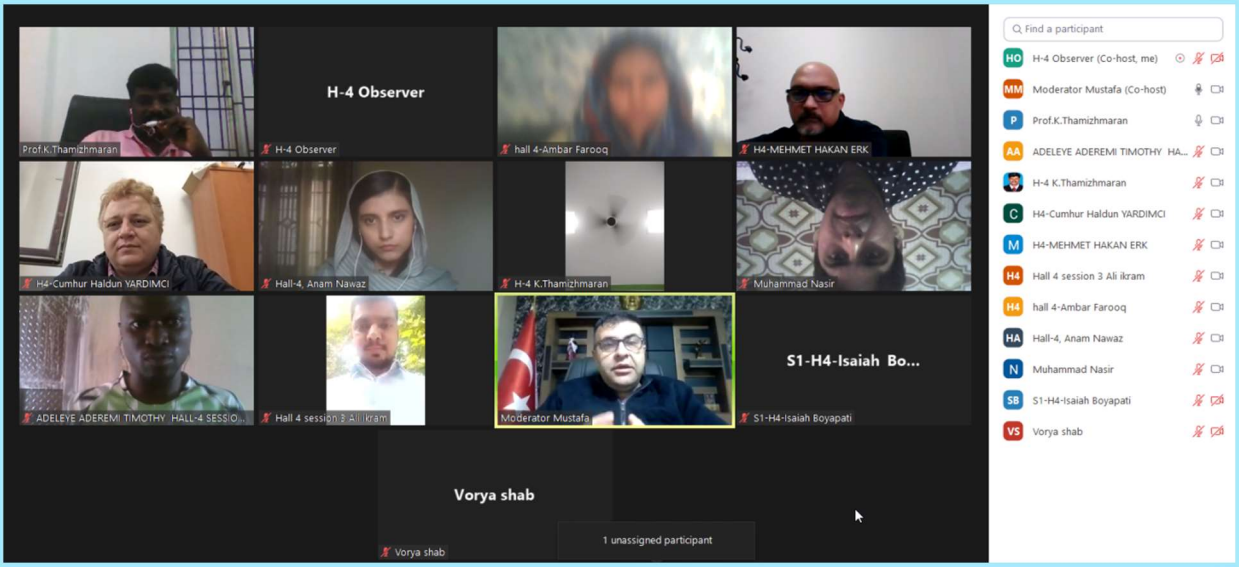
AUTHORS	UNIVERSITY INSTITUTION	TOPIC TITLE
Assist. Prof. Dr. Mutlu SESLİ & Assist. Prof. Dr. M. Nazan ARSLANEL	Tokat Gaziosmanpasa University	EXAMINATION OF THE POLITICAL CONSENT OF UNIVERSITY YOUTH IN TERMS OF SOCIO-CULTURAL VARIABLES
Dr. Hasan DEMİR	-	UNCONDITIONALLY ADVOCATING LIBERAL DEMOCRACY: GIOVANNI SARTORI
Abubakar Shehu & Ahmed Abubakar & Mohammed Shehu Nadamau	Ahmadu Bello University & Ahmadu Bello University & Abubakar Tafawa Balewa University	ELECTIONS THEN AND NOW: EXAMINING SOCIO-ECONOMIC IMPLICATIONS OF ADOPTING TECHNOLOGY ON THE 2021 LOCAL GOVERNMENT ELECTIONS OF KADUNA STATE
Vorya Shabrandi	Guilan University	IRAN'S POSITION AS AN EMERGING POWER IN THE REGIONAL COALITION OF IRAN AND CHINA IN THE MULTIPOLAR SYSTEM OF INTERNATIONAL RELATIONS
Vorya Shabrandi	Guilan University	IRAN'S FUNDAMENTAL CONSTRAINTS ROOTS IN ATTRACTING FOREIGN CAPITAL IN THE FUTURE LEADING IBRAHIM RAISI GOVERNMENT

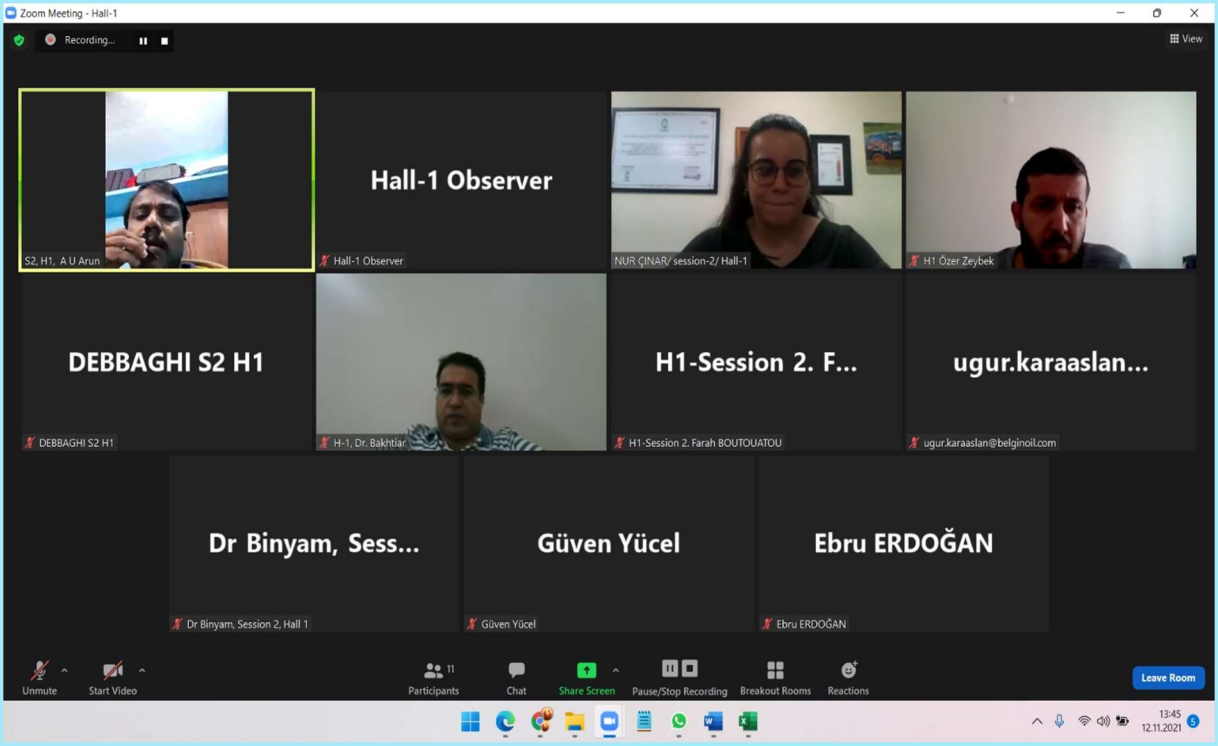
PHOTO GALLERY

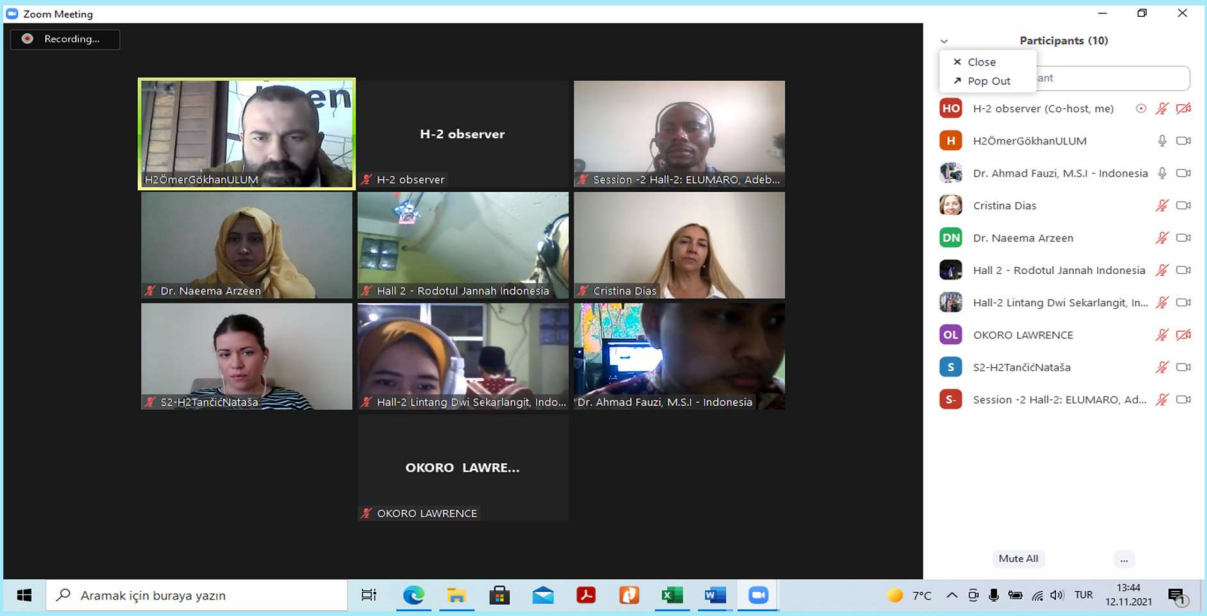


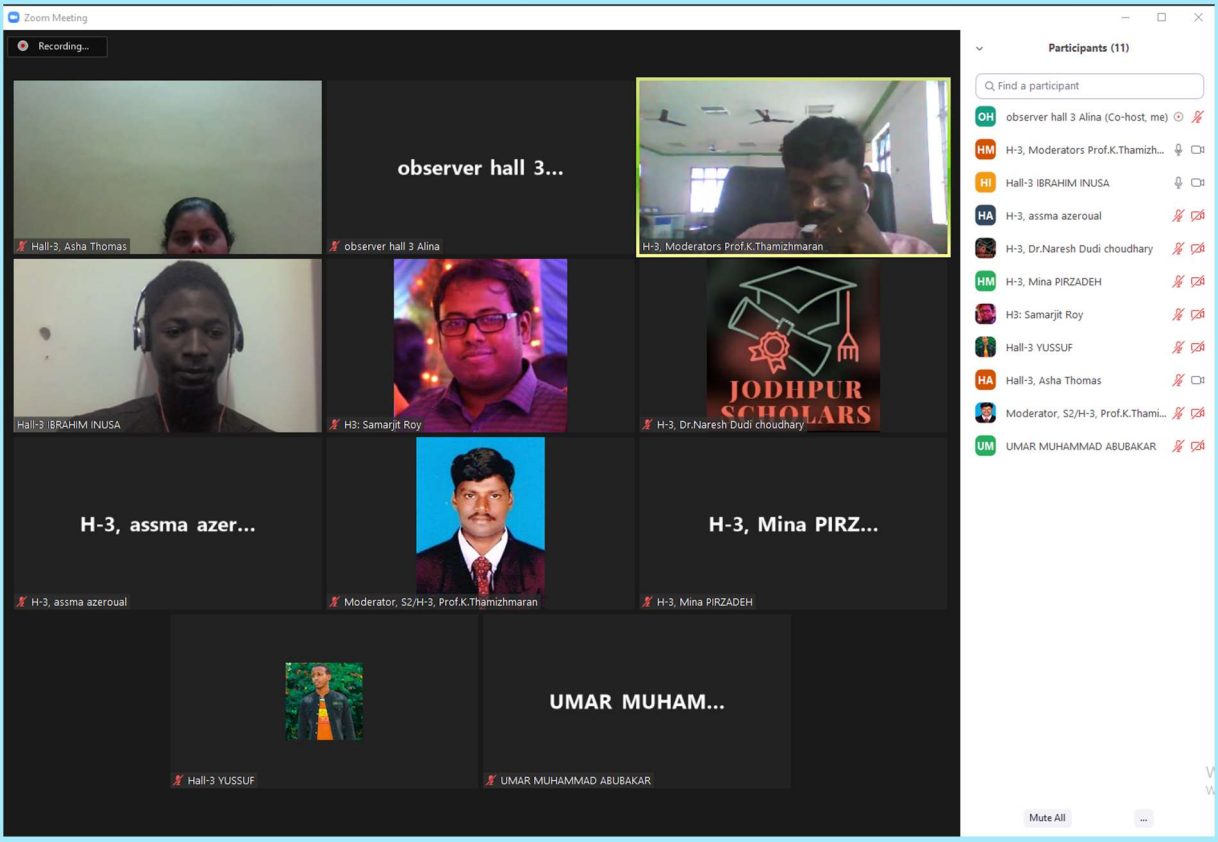


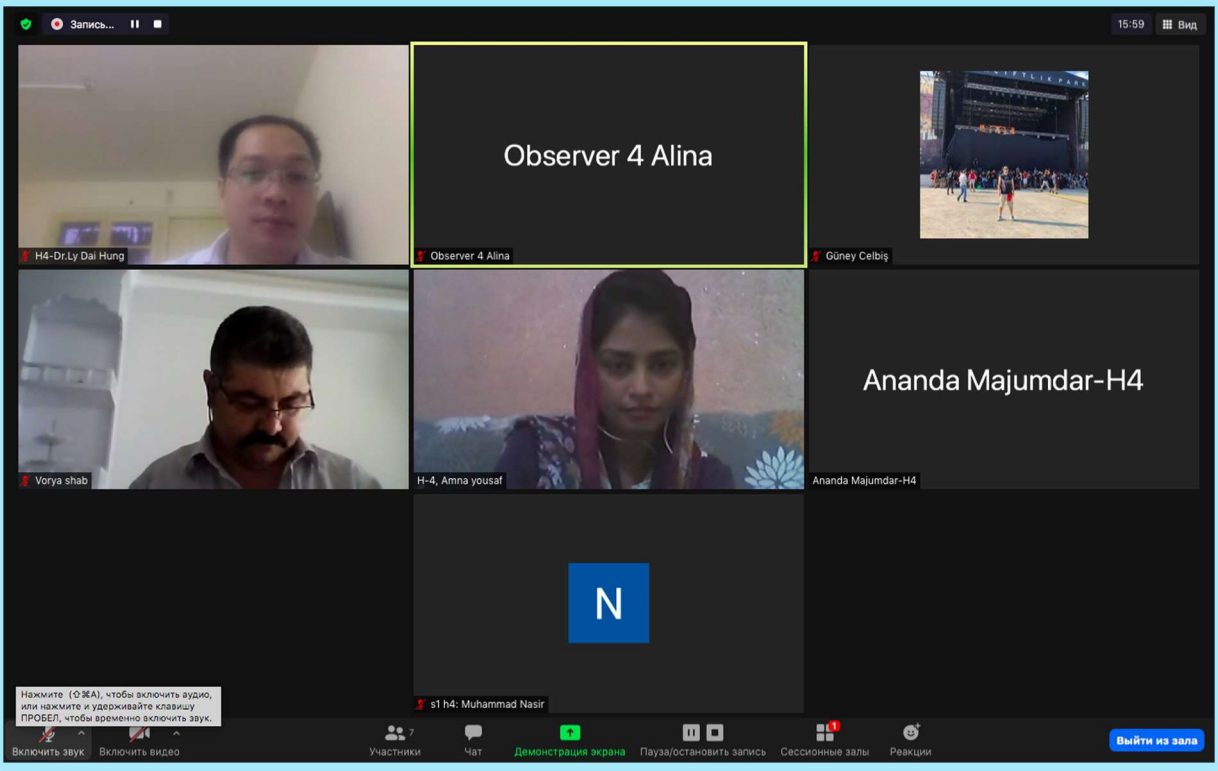

Zoom Meeting
Original Sound: Off
Recording...
H-3, Doç.Dr.M.Ali Gündeşli
H3 - Observer
H3 - Observer
S1-H3 - Kenan ERCAN
H-3, Moderator, Hayat TOPÇU
S-1 H-3 hüseyineroğlu
Selvinaz YAKAN
d
Ömer Faruk GECESEFA

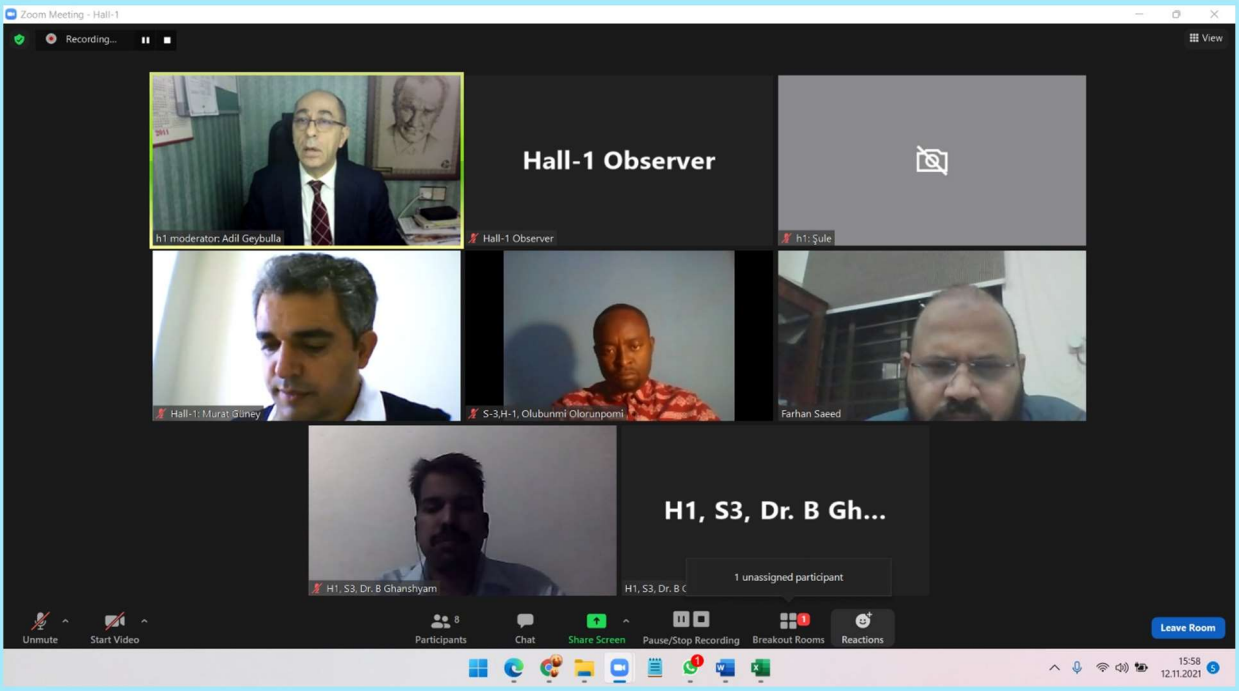

H-4 Observer
Prof.K.Thamizhmaran
H-4 Observer
hall 4-Ambar Farooq
H4-MEHMET HAKAN ERK
H4-Cumhur Haldun YARDIMCI
Hall-4, Anam Nawaz
H-4 K.Thamizhmaran
Muhammad Nasir
ADELEYE AEREMI TIMOTHY HALL-4 SESSIO...
Hall 4 session 3 Ali ikram
Moderator Mustafa
S1-H4-Isaiah Bo...
S1-H4-Isaiah Boyapati
Vorya shab
1 unassigned participant
Find a participant
H-4 Observer (Co-host, me)
Moderator Mustafa (Co-host)
Prof.K.Thamizhmaran
ADELEYE AEREMI TIMOTHY HA...
H-4 K.Thamizhmaran
H4-Cumhur Haldun YARDIMCI
H4-MEHMET HAKAN ERK
Hall 4 session 3 Ali ikram
hall 4-Ambar Farooq
Hall-4, Anam Nawaz
Muhammad Nasir
S1-H4-Isaiah Boyapati
Vorya shab

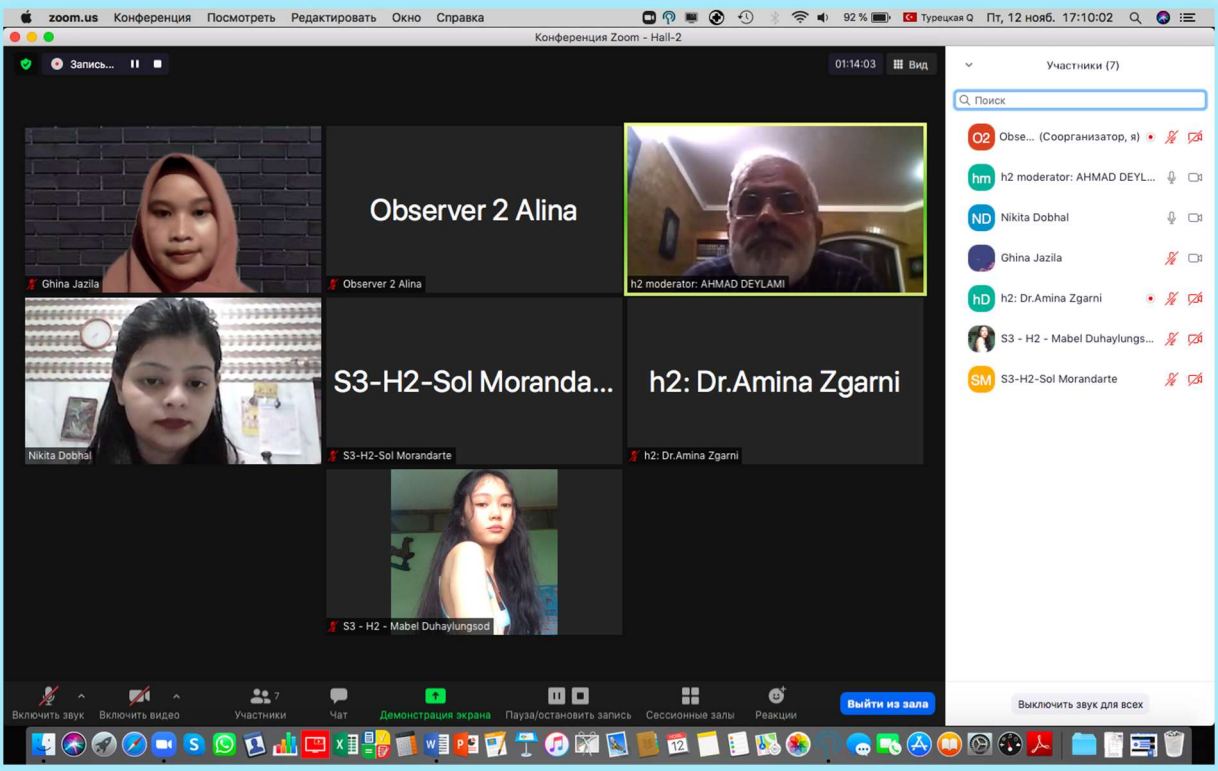

Zoom Meeting - Hall-1
Recording...
View
S2, H1, A U Arun
Hall-1 Observer
Hall-1 Observer
NUR ÇINAR/ session-2/ Hall-1
H1 Özer Zeybek
DEBBAGHI S2 H1
DEBBAGHI S2 H1
H-1, Dr. Bakhtiar
H1-Session 2. F...
H1-Session 2. Farah BOUTOUATOU
ugur.karaaslan...
ugur.karaaslan@belginoil.com
Dr Binyam, Sess...
Dr Binyam, Session 2, Hall 1
Güven Yücel
Güven Yücel
Ebru ERDOĞAN
Ebru ERDOĞAN
Unmute
Start Video
Participants
Chat
Share Screen
Pause/Stop Recording
Breakout Rooms
Reactions
Leave Room
13:45
12.11.2021


Zoom Meeting
Recording...
H2ÖmerGökhanULUM
H-2 observer
H-2 observer
Session -2 Hall-2: ELUMARO, Adeb...
Dr. Naeema Arzeen
Hall 2 - Rodotul Jannah Indonesia
Cristina Dias
S2-H2TančićNataša
Hall-2 Lintang Dwi Sekarlangit, Indo...
Dr. Ahmad Fauzi, M.S.I - Indonesia
OKORO LAWRE...
OKORO LAWRENCE
Participants (10)
Close
Pop Out
H-2 observer (Co-host, me)
H2ÖmerGökhanULUM
Dr. Ahmad Fauzi, M.S.I - Indonesia
Cristina Dias
Dr. Naeema Arzeen
Hall 2 - Rodotul Jannah Indonesia
Hall-2 Lintang Dwi Sekarlangit, In...
OKORO LAWRENCE
S2-H2TančićNataša
Session -2 Hall-2: ELUMARO, Ad...
Mute All
Aramak için buraya yazın
7°C
TUR
13:44
12.11.2021

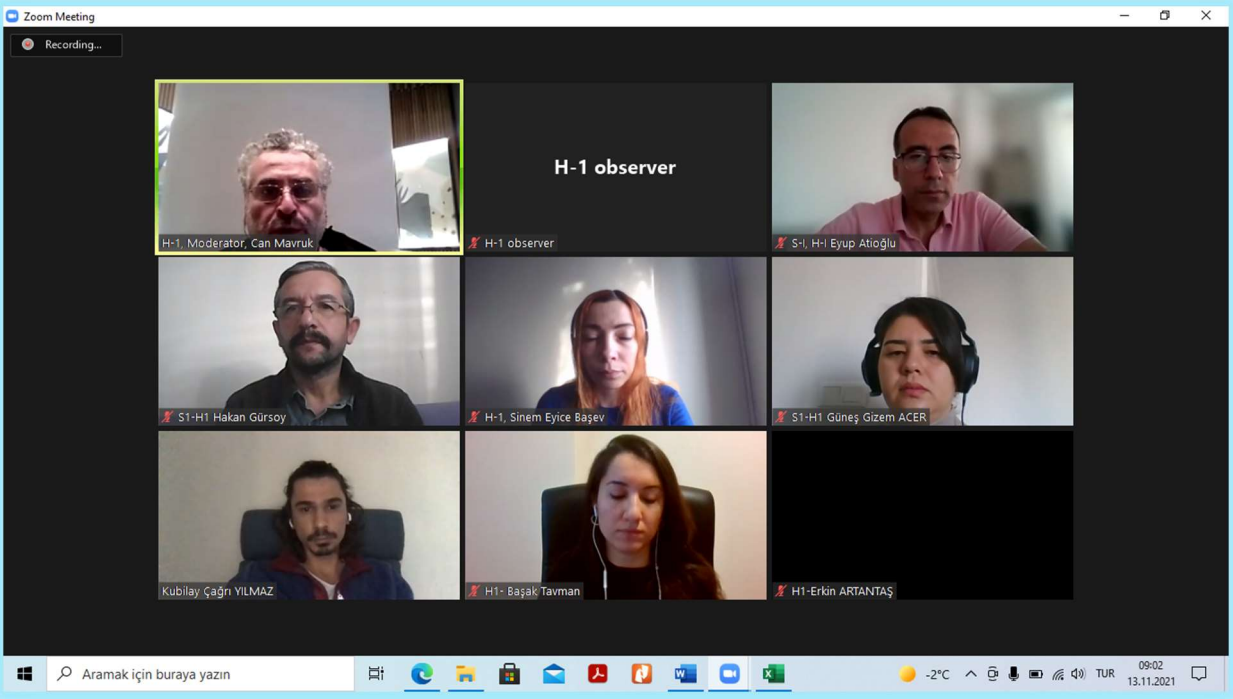

Zoom Meeting
Recording...
observer hall 3...
H-3, assma azer...
H-3, Mina PIRZ...
UMAR MUHAM...
Hall-3, Asha Thomas
observer hall 3 Alina
H-3, Moderators Prof.K.Thamizhmaran
Hall-3 IBRAHIM INUSA
H3: Samarjit Roy
H-3, Dr.Naresh Dudi choudhary
H-3, assma azeroual
Moderator, S2/H-3, Prof.K.Thamizhmaran
H-3, Mina PIRZADEH
Hall-3 YUSSUF
UMAR MUHAMMAD ABUBAKAR
Participants (11)
Find a participant
observer hall 3 Alina (Co-host, me)
H-3, Moderators Prof.K.Thamizh...
Hall-3 IBRAHIM INUSA
H-3, assma azeroual
H-3, Dr.Naresh Dudi choudhary
H-3, Mina PIRZADEH
H3: Samarjit Roy
Hall-3 YUSSUF
Hall-3, Asha Thomas
Moderator, S2/H-3, Prof.K.Thami...
UMAR MUHAMMAD ABUBAKAR
Mute All

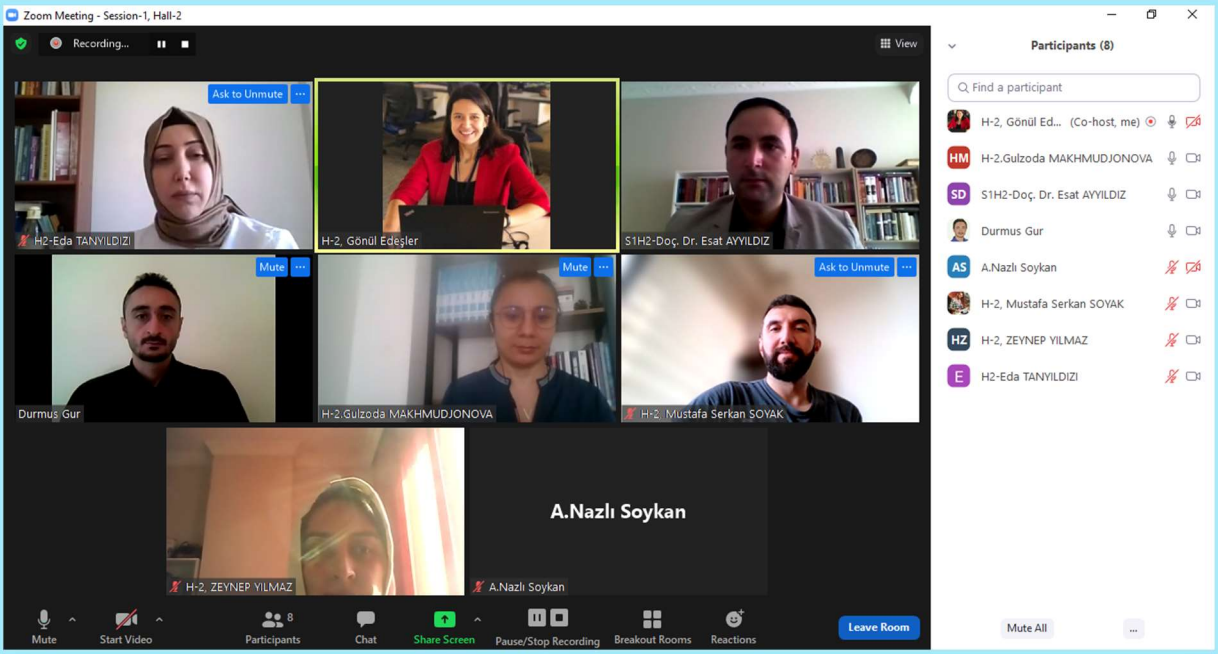

Запись...
15:59
Вид
Observer 4 Alina
H4-Dr.Ly Dai Hung
Observer 4 Alina
Güney Celbiş
Vorya shab
H-4, Amna yousaf
Ananda Majumdar-H4
Ananda Majumdar-H4
N
s1 h4: Muhammad Nasir
Нажмите (⇧⌘A), чтобы включить аудио, или нажмите и удерживайте клавишу ПРОБЕЛ, чтобы временно включить звук.
Включить звук
Включить видео
Участники
Чат
Демонстрация экрана
Пауза/остановить запись
Сессионные залы
Реакции
Выйти из зала

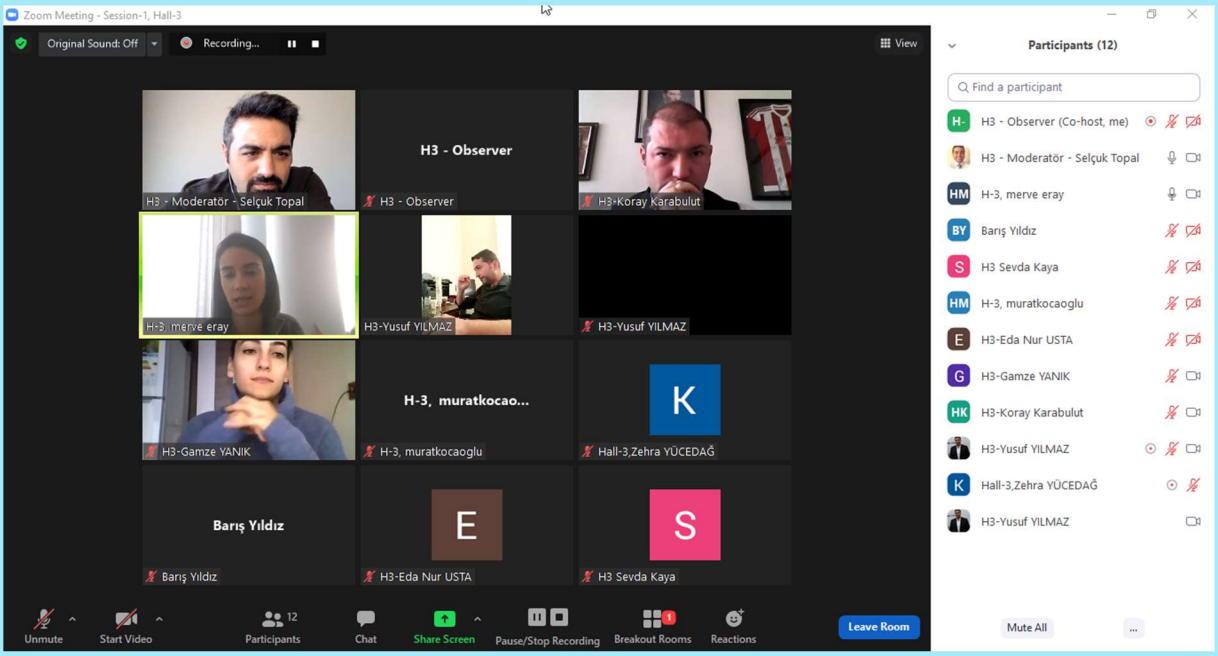

Zoom Meeting - Hall-1
Recording...
View
Hall-1 Observer
h1 moderator: Adil Geybulla
Hall-1 Observer
h1: Şule
Hall-1: Murat Güney
S-3,H-1, Olubunmi Olorunpomi
Farhan Saeed
H1, S3, Dr. B Gh...
H1, S3, Dr. B Ghanshyam
1 unassigned participant
Unmute
Start Video
Participants
Chat
Share Screen
Pause/Stop Recording
Breakout Rooms
Reactions
Leave Room
15:58
12.11.2021


zoom.us Конференция Посмотреть Редактировать Окно Справка
Пт, 12 нояб. 17:10:02
Конференция Zoom - Hall-2
Запись...
01:14:03
Вид
Участники (7)
Поиск
Observer 2 Alina
Ghina Jazila
Observer 2 Alina
h2 moderator: AHMAD DEYLAMI
Nikita Dobhal
S3-H2-Sol Moranda...
S3-H2-Sol Morandarte
h2: Dr.Amina Zgarni
h2: Dr.Amina Zgarni
S3 - H2 - Mabel Duhaylungsod
Obse... (Соорганизатор, я)
h2 moderator: AHMAD DEYL...
Nikita Dobhal
Ghina Jazila
h2: Dr.Amina Zgarni
S3 - H2 - Mabel Duhaylungs...
S3-H2-Sol Morandarte
Включить звук
Включить видео
Участники
Чат
Демонстрация экрана
Пауза/остановить запись
Сессионные залы
Реакции
Выйти из зала
Выключить звук для всех


Zoom Meeting
Recording...
Hall- 3 moderator, Prof Dr Morakeng Lebaka
H-3 observer
H-3 observer
Nazlı Ağgün
h3: Jimmy Akoh
h3: Jimmy Akoh
H-3 ABDELLATI...
H-3 ABDELLATIF EL AIDI
Aramak için buraya yazın
9°C
TUR
16:45
12.11.2021


Zoom Meeting
Recording...
H-1, Moderator, Can Mavruk
H-1 observer
H-1 observer
S-I, H-I Eyup Atioğlu
S1-H1 Hakan Gürsoy
H-1, Sinem Eyice Başev
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H3-Yusuf YILMAZ
Hall-3,Zehra YÜCEDAĞ
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ÜNİVERSİTE ÖĞRENCİLERİNİN BEDEN ALGISI, FİZİKSEL AKTİVİTE DURUMU VE VÜCUT YAĞININ DEĞERLENDİRİLMESİ

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Özet

Giriş-Amaç

Bu çalışma, üniversite öğrencilerinin beden algısı, fiziksel aktivite durumu ve vücut yağının değerlendirilmesi amacıyla planlanmıştır.

Gereç-Yöntem

Araştırma, Ankara'da bulunan çeşitli üniversitelerde eğitim alan 18-24 yaş grubundaki gönüllü 283 erkek ve 383 kadın olmak üzere toplam 666 öğrenciyle yürütülmüştür. Araştırmacılar tarafından hazırlanan bir anket formu ile bireylerle yüz yüze görüşülerek toplanan veriler, uygun istatistik yöntemlerle analiz edilerek değerlendirilmiştir.

Bulgular

Dünya Sağlık Örgütü BKİ sınıflamasına göre; öğrencilerin %8,4'ü zayıf, %78,4'ü normal, %13,2'si hafif şişman/şişman grubunda yer almaktadır. Öğrencilerin kendi değerlendirmelerine göre ise; %16,4'ü zayıf, %65'i normal, %18,6'sı hafif şişman/şişmandır. Zayıf bireylerin %26,8'i normal kiloda olduğunu, %1,8'i ise hafif şişman/şişman olduğunu; normal kilodaki bireylerin %13,0'ı zayıf, %11,9'u hafif şişman/şişman olduğunu; hafif şişman/şişman grubunda yer alan bireylerin %29,5'i normal kiloda, %1,1'i ise zayıf olduğunu düşünmektedir (χ^2=3.121, p<0.001). Öğrencilerin %30,2'si vücut ağırlığından memnun değildir. Öğrencilerin ortalama yağ yüzdeleri 22.20±6.75'dir (Kadın:26.44±3.39, Erkek:16.46±5,86, p<0.001). Düzenli fiziksel aktivite yaptığını belirten bireylerin ortalama yağ yüzdeleri, düzenli olarak fiziksel aktive yapmayan bireylere kıyasla, istatistiksel olarak anlamlı düzeyde daha düşüktür (18.97±7.08 karşın 23.17±6.34, p<0.001). Kadınlarda düzenli fiziksel aktivite yapan ve yapmayanların yağ yüzdelerindeki değişim anlamlı bulunmazken (25.92±3.56 karşın 26.51±3.36, p>0.05), bu değişimin erkeklerde istatistiksel olarak anlamlı olduğu saptanmıştır (15.84±3.25 karşın 16.84±3.89, p=0.033). Vücut yağ yüzdesi değerlendirme yöntemlerinden; bel çevresi sınıflamasına göre öğrencilerin %9.6'sı yüksek risk, %3.8'i çok yüksek risk kategorisinde iken bel/boy oranına göre bireylerin %12.5'i riskli, %1.2'si tedavi edilmesi zorunlu gruptadır. Deurenberg, Garrow, Black ve arkadaşlarının geliştirdiği formüller ile hesaplanan yağ yüzdeleri yüksek düzeyde ilişkili bulunmuştur (Her bir ikili ilişkide r>0.90, p<0.001).

Sonuç
Bel çevresi, bel/boy oranı ve BKİ sınıflamalarına göre risk grubundaki bireylerin sıklığı benzer bulunmuştur. Bu yaş grubundaki öğrencilerin vücut yağlanma düzeyleri ile ilgili sağlık risklerinin belirlenmesine yönelik yapılacak çalışmalarda bahsedilen üç sınıflamanın da güvenle kullanılabileceği düşünülmektedir.
Anahtar Kelimeler: beden algısı, yağ yüzdesi, üniversite öğrencisi

EVALUATION OF BODY IMAGE, PHYSICAL ACTIVITY STATUS AND BODY FAT OF UNIVERSITY STUDENTS

Abstract

Introduction-Purpose
This study was planned to evaluate body image, physical activity status and body fat of university students.

Material-Method
The research was carried out with a total of 666 students, 283 male and 383 female volunteers in 18-24 age group studying at various universities in Ankara. Data collected by face-to-face interviews with individuals with a questionnaire form prepared by researchers were analyzed and evaluated with appropriate statistical methods.

Results
According to WHO BMI classification; 8.4% of students were underweight, 78.4% were normal, 13.2% were in overweight/obese group. According to students' own evaluations; 16.4% were underweight, 65% were normal, 18.6% were overweight/obese. 26.8% of underweight individuals were in normal, 1.8% were overweight/obese; 13.0% of normal individuals were underweight and 11.9% were overweight/obese; 29.5% of individuals in overweight/obese group think they were normal weight and 1.1% think they were underweight ($\chi 2=3.121$, $p<0.001$). Mean fat percentage of students was 22.20±6.75 (female:26.44±3.39, male:16.46±5.86, $p<0.001$). Mean fat percentage of individuals did regular physical activity was significantly lower compared to individuals who did not (18.97±7.08 versus 23.17±6.34, $p<0.001$). While change in fat percentages of those who did and did not do regular physical activity was not significant in women (25.92±3.56 versus 26.51±3.36, $p>0.05$), this change was found to be significant in men (15.84±3.25 versus 16.84±3.89, $p=0.033$). According to waist circumference classification, 9.6% of students were in high risk category and 3.8% in very high risk category. According to waist/height ratio, 12.5% of individuals were at risk and 1.2% were in mandatory group to be treated.
Conclusion: Frequency of individuals in risk group was found to be similar according to waist circumference, waist/height ratio and BMI classifications. All three classifications can be used safely in studies to be conducted to determine the health risks related to body adiposity levels of students in this age group.
Keywords: body image, fat percentage, university student

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GEÇ ADÖLESAN DÖNEMDEKİ BİREYLERİN DİYET KALİTELERİ İLE BAZI ANTROPOMETRİK ÖLÇÜMLERİ ARASINDAKİ İLİŞKİNİN DEĞERLENDİRİLMESİ

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Özet

Giriş-Amaç

Geç adölesan dönemde beslenme davranışlarında görülen değişimlerin antropometrik ölçümler üzerine etkilerini değerlendirmek sağlıklı yetişkinlik döneminin temellerini oluşturmada önemlidir. Bu araştırmada, geç adölesan dönemdeki bireylerin diyet kalitesi ile bazı antropometrik ölçümleri arasındaki ilişkinin değerlendirilmesi amaçlanmıştır.

Gereç-Yöntem

Kesitsel olarak planlanan ve 170 geç adölesan dönemdeki bireyin yer aldığı bu çalışmada bireylerin sosyo demografik özellikleri ve sağlık durumlarını sorgulayan soruları ve bireylerin diyet kalitelerini değerlendirebilmek için 24 saatlik besin tüketim kaydını içeren bir anket formu uygulanmıştır. Bireylerin diyet kalitesi değerlendirmeleri besin öğesi yeterlilik oranı (Nutrient Adequacy Ration-NAR) kullanılarak ortalama yeterlilik oranı (Mean Adequacy Ratio-MAR) skorları hesaplanarak yapılmıştır. Ayrıca bireylerin vücut ağırlığı (kg), boy uzunluğu (cm) ve bel çevresi (cm) ölçümleri tekniğine uygun yöntemlerle araştırmacılar tarafından alınmıştır.

Bulgular

Bireylerin MAR skorlarına göre, %11,8'inin diyet besin öğesi içeriğinin yetersiz, %64,1'inin geliştirilmeye ihtiyaç olduğu, %24,1'inin ise iyi olduğu tespit edilmiştir. Bireylerin diyet besin öğesi içeriği açısından kalitesi ile beden kütle indeksi (BKİ), bel çevresi, bel/boy oranı ve vücut yağ yüzdesi arasındaki ikili ilişkiler değerlendirildiğinden bu antropometrik ölçümlerden yalnızca bel/boy oranı ile diyet kalitesinin istatistiksel olarak anlamlı derecede negatif korelasyon gösterdiği bulunmuştur (r_p =-0.127; $p < 0.05$). Bireylerin diyet kalitesi sınıflandırmasına göre BKİ, bel çevresi, bel/boy oranı ve vücut yağ yüzdesi ortalamalarına bakıldığında diyet kalitesi yetersiz olan bireylerin belirtilen antropometrik ölçümlerden hepsinde normal sınırlar içinde olmakla birlikte en düşük ortalama değerlere sahip olduğu belirlenmiş ancak ortalama farklılıkları istatistiksel olarak anlamlı bulunmamıştır ($p > 0.05$).

Sonuç

Çalışma sonuçları, geç adölesan dönemdeki yetişkinlerin büyük bölümünde diyet kalitesinin geliştirilmeye ihtiyaç olduğunu ve diyet kalitesi iyi olan bireylerin antropometrik ölçümlerinin normal sınırlar içinde kalmakla birlikte daha yüksek olduğunu göstermiştir.

Yetişkinlik dönemindeki beslenme alışkanlıklarının temelini oluşturmayı sağlayan bu dönemde bireylere diyet kalitesinin ve sağlık üzerine yansımasının temel göstergelerinden birisi olan antropometrik ölçümlerdeki sonuçların öneminin belirlenmesinde daha yüksek örneklemli çalışmaların yapılmasına ihtiyaç olduğu düşünülmektedir.

Anahtar Kelimeler: geç adölesanlık, diyet kalitesi, ortalama yeterlilik oranı-MAR

EVALUATION OF THE RELATIONSHIP BETWEEN DIET QUALITY AND SOME ANTHROPOMETRIC MEASUREMENTS AMONG LATE ADOLESCENT INDIVIDUALS

Abstract

Introduction-Purpose

It is very important to evaluate changes in nutritional behavior in late adolescence, which is period of psychosocial maturation, and to evaluate effects of these changes on anthropometric measurements in order to provide foundations of healthy adulthood. In this study, it is aimed to evaluate relationship between the diet quality of individuals in late adolescence and some anthropometric measurements.

Material-Method

In this cross-sectional study, which included 170 late adolescence individuals, a questionnaire including questions about socio-demographic characteristics and health status of individuals and a 24-hour dietary record was applied in order to evaluate the diet quality of individuals. Dietary quality assessments of individuals were made by calculating the mean adequacy ratio MAR) scores calculated using the nutrient adequacy ratio (NAR). In addition, the body weight (kg), height (cm) and waist circumference (cm) measurements of the individuals were taken by the researchers using methods suitable for the technique.

Results

According to MAR, dietary nutrient content of 11.8% was insufficient, 64.1% needed improvement, and 24.1% were good. Since bilateral relations of dietary nutrient content quality with body mass index (BMI), waist circumference, waist-to-height ratio and body fat percentage were evaluated, only waist-to-height ratio and diet quality had a negative correlation ($r_p = -0.127$; $p < 0.05$). According to diet quality classification, individuals with insufficient diet quality had the lowest mean values, but mean differences were not statistically significant ($p > 0.05$).

Conclusion

The diet quality is needs improvement in most of adults in the late adolescence period, and anthropometric measurements of individuals with good diet quality are higher. In this period, which provides basis of nutritional habits in adulthood, more studies are needed to raise awareness about the importance of the results of anthropometric measurements, which is one of the main indicators of diet quality and its reflection on health.

Keywords: late adolescence, diet quality, mean proficiency rate-MAR

COVID-19 PANDEMİ SÜRECİNDE GELENEKSEL VE TAMAMLAYICI TEDAVİ UYGULAMALARI

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Özet
Yeni koronavirüs hastalığı (COVID-19), 2019 Aralık ayında Çin'de görülen, ardından tüm dünyayı etkileyen SARS-CoV-2 virüsünün sebep olduğu ve 11 Mart 2020 tarihinde Dünya Sağlık Örgütü tarafından pandemi olarak ilan edilen bir hastalıktır. Tüm dünyada COVID-19 tedavi ve korunma yöntemleri konusunda yoğun çalışmalar yapılmaktadır. COVID-19 hastalığından korunmada aşılar yaygın olarak uygulansa da, tedavisinde belirsizlikler devam etmektedir. COVID-19 hastalığına bağlı ölümlerin artması ve tedavi seçeneklerindeki belirsizlikler toplumun her kesiminde endişelerin artmasına, virüsten korunmak için alternatif yollar aranmasına ve geleneksel ve tamamlayıcı tıp (GETAT) yöntemlerine ilginin artmasına neden olmuştur.
Geleneksel Çin Tıbbı, 2003 yılında Çin'de SARS-CoV salgınını önlemek ve tedavi etmek için tamamlayıcı bir tedavi olarak benimsenmiştir. Günümüzde de başta Çin olmak üzere pek çok ülke COVID-19 hastalarında morbiditeyi ve mortaliteyi azaltmak için tamamlayıcı tedavilere yönelmiştir. Buna karşın literatürde GETAT yöntemlerinin COVID-19 ile mücadeledeki etkinliklerine yönelik kanıtların yetersiz olduğu belirtilmektedir. Pandemi sürecinde toplumun GETAT yöntemlerine eğilimleri artmıştır. Toplumun virüsün bulaşmasına ve hastalığın oluşma nedenine yönelik düşünceleri ile virüsten korunmak için yaptığı uygulamaların ilişkili olduğu belirtilmektedir.
COVID-19 hastalığının tedavi, önleme ve destekleyici bakımında kullanılan GETAT yöntemleri hakkında bildirilen güncel literatürü ve toplumun bu uygulamalara yaklaşımlarını gözden geçirmek önemlidir.

Bu derlemede pandemi sürecinde Covid-19 tedavi, önleme ve destekleyici bakımında kullanılan GETAT yöntemleri ile toplumun bu yöntemlere yaklaşımı ele alınmıştır.
Anahtar Kelimeler: COVID-19, Geleneksel ve Tamamlayıcı Tıp, Pandemi

TRADITIONAL AND COMPLEMENTARY MEDICINE PRACTICES IN THE COVID-19 PANDEMIC PROCESS

Abstract
The new coronavirus disease (COVID-19) is a disease caused by the SARS-CoV-2 virus, which was seen in China in December 2019 and then affected the whole world, and was declared a pandemic by the World Health Organization on March 11, 2020. There are intensive studies on COVID-19 treatment and prevention methods all over the world. Although vaccines are widely applied in the prevention of COVID-19 disease, uncertainties remain in its treatment. The increase in deaths due to COVID-19 and the uncertainties in treatment options have led to increased concerns in all parts of the society, the search for alternative ways to protect from the virus, and the increased interest in traditional and complementary medicine methods (TCM).
TCM was adopted as a complementary therapy to prevent and treat viral outbreaks such as SARS-CoV in China in 2003. Today, many countries, especially China, have turned to complementary therapies to reduce morbidity and mortality in COVID-19 patients, and while it is stated that some TCM methods can be effective in combating COVID-19, it is stated that the evidence for some applications is insufficient.
During the pandemic process, the tendency of the society to TCM methods has increased. It is stated that the thoughts of the society about the transmission of the virus and the cause of the disease are related to the practices of society do to protect themselves from the virus. It is important to review the current literature reported on TCM methods used in the treatment, prevention and supportive care of COVID-19 disease and the approaches of the society to these practices. In this review, TCM methods used in the treatment, prevention and supportive care of COVID-19 during the pandemic process and the approach of the society to these methods are discussed.
Keywords: COVID-19, Pandemic, Traditional and Complementary Medicine

Giriş
Yeni koronavirüs hastalığı (COVID-19) küresel salgını sürecinde, hem akademik alanda hem de halk arasında geleneksel ve tamamlayıcı tıp (GETAT) uygulamalarına gösterilen ilgi artmıştır (Kaplan, 2020). Yapılan çoğu klinik çalışmada, ilaç ve aşı çalışmalarında geleneksel Çin tıbbı tedavileri incelenmiş ve çoğu bitki bazlı formülasyonlar olan geleneksel Çin tıbbından ilaçlar denenmiştir (Akalin et al., 2020). GETAT yöntemlerinin COVID-19 ile mücadelede etkinliğini değerlendiren çalışmaların sayısı her geçen gün artarken, toplum da virüsten korunmak için alternatif yöntemler arayışına girmiş ve bu arayışlarının sonucunda çeşitli GETAT uygulamalarına başvurmuştur (Kaplan, 2020).

Yeni Koronavirüs Hastalığı ve Geleneksel ve Tamamlayıcı Tedavi Uygulamaları
Yeni koronavirüs hastalığı (COVID-19), 2019 Aralık ayında Çin'de görülen ve ardından tüm dünyayı etkileyen, yüksek mortalite ve morbiditeye neden olan SARS-CoV-2 virüsünün sebep olduğu bir hastalıktır (Ng, 2020).

Tüm dünyada COVID-19 tedavi ve korunma yöntemleri konusunda yoğun çalışmalar yapılmaktadır. COVID-19 hastalığından korunmaya yönelik aşılar önleme için yaygın olarak uygulansa da etkinliği kanıtlanmış bir tedavi yöntemi bulunmamaktadır. Tedavide semptomatik ve destekleyici yaklaşımlarla immün sistem güçlendirilmeye çalışılmaktadır (Azkur et al., 2020; Topaloğlu et al., 2020). Bu nedenle günümüzde COVID-19 ile mücadelede konvansiyonel tedavinin yanı sıra Geleneksel ve Tamamlayıcı Tıp (GETAT) uygulamalarının etkinliğine yönelik çalışmalar yapılmaktadır.

Dünya Sağlık Örgütü (DSÖ)'nün tanımına göre, geleneksel tıp; ruhsal ve fiziksel hastalıklardan korunma, bunlara tanı koyma, iyileştirme veya tedavi etme ve sağlığın sürdürülmesinde kullanılan, farklı kültürlere özgü teori, inanç ve tecrübelere dayalı bilgi, beceri ve uygulamaların bütünüdür. Tamamlayıcı tıp ise bazı ülkelerde geleneksel tıbbın yerine kullanılan ancak ülkenin kendi kültürünün bir parçası olmayan ve mevcut sağlık sistemine entegre edilmemiş sağlık uygulamalarıdır. 2017 yılında DSÖ, hem GETAT hem de konvansiyonel tıbbın bütünleştirici yaklaşımlarını kapsayacak şekilde "Bütüncül (İntegratif) Tıp" olarak yeniden adlandırarak; günümüzde Geleneksel, Tamamlayıcı ve Bütüncül Tıp kavramını oluşturmuştur (DSÖ, 2019; Şahan & İlhan, 2019; Öztürk, Dömbekci & Ünal, 2020). Tamamlayıcı ve Alternatif Tıp Ulusal Merkezi'nin (NCCAM) tamamlayıcı ve alternatif tıp uygulamalarını; "Doğal Ürünler", "Zihin ve Beden Tıbbı" ve "Fiziksel Manipülasyon Temelli Uygulamalar" olmak üzere üç başlıkta toplamıştır (Öztürk, Dömbekci & Ünal, 2020). Türkiye'de Geleneksel ve Tamamlayıcı Tıp Uygulamaları Yönetmeliği 2014 yılında Resmi Gazete'de yayımlanmıştır. Yönetmelikte akupunktur uygulaması, apiterapi, fitoterapi, hipnoz, sülük uygulaması, homeopati, kayropraktik, kupa uygulaması, larva uygulaması, mezoterapi, proloterapi, osteopati, ozon uygulaması, refleksoloji ve müzik terapi uygulamaları tanımlanmış ve bu uygulamaları kimlerin yapabileceği, bu uygulamaların kimlere uygulanabileceği konusunda bilgiler verilmiştir (Resmi Gazete, 2014).

Geleneksel Çin Tıbbı (GÇT), temelleri 8. yüzyılın öncesine dayanan en yaygın kullanılan geleneksel tedavi sistemlerinden biridir (Arslan, Şahne & Sevgi, 2016). Geleneksel Çin Tıbbı, geçmişte de çeşitli salgın hastalıklar ile mücadelede kullanılmıştır. Örneğin 2003 yılında Çin'de SARS-CoV salgını döneminde tamamlayıcı bir tedavi olarak benimsenmiştir. Geçmişteki kanıtlara dayanarak GÇT uygulamalarının COVID-19 ile mücadelede de potansiyel olarak tamamlayıcı bir tedavi olabileceği düşünülmektedir (Li et al., 2021; Liang et al., 2020; Wu et al., 2021). Çin ve Güney Kore'de COVID-19 tedavi kılavuzlarında GETAT uygulamalarına yer verilmiştir (Ng, 2020; Zhang & Liu, 2020). GÇT'nın Çin'de COVID-19'un tedavisinde ve önlenmesinde kullanıldığı, bağışıklığı düzenlediği ve antiviral etki gösterdiği bildirilmiştir (Wu et al. 2021).

Günümüzde bitkisel tedavi anlamına gelen ve kaynağını Çin ve Hindistan'dan alan fitoterapiye ilgi giderek artmaktadır. Çin başta olmak üzere pek çok ülke, COVID-19 hastalarında morbiditeyi ve mortaliteyi azaltmak amacıyla fitoterapiyi kullanmıştır (Akbas & Akcakaya, 2020). Fitoterapinin bağışıklık sisteme üzerindeki olumlu etkileri nedeniyle COVID-19 hastalığından korunmada ve tedavi sürecinde konvansiyonel tedavinin yanında integratif bir tedavi yöntemi olarak kullanılmasının faydalı olacağı öngörülmektedir (Liu et al., 2020). Yapılan bir çalışmada C vitamini, nane ve limon/portakal kullanımı hastaneye yatış oranlarındaki düşüş ile ilişkilendirilmiş ve bu takviyelerin veya biyoaktif bileşenlerinin COVID-19 tedavisinde kullanımlarının daha fazla araştırılması önerilmiştir (Aldwihi et al., 2021).

Kırca ve ark.'nın COVID-19 ile mücadelede bazı alternatif yöntemleri değerlendirdikleri çalışmalarında, yüksek doz C vitamini, Geleneksel Çin Tıbbı, zerdaçal ve ozon terapisinin etkinliği incelemiş ve bu uygulamaların kanıt düzeylerinin yetersiz olduğunu bildirmiştir (Kırca, Kırca & Özdoğan, 2020). COVID-19 tedavisi için Çin'de yapılan klinik çalışmalarda kullanılan geleneksel Çin tıbbı formülasyonlarında yer alan bitkilerin değerlendirildiği bir çalışmada, farklı viral hastalıklarda kullanılan formülasyonların COVID-19 tedavisi için de denendiğini, formülasyonlarda en çok yer alan bitkilerin laboratuvar ve hayvan çalışmalarında etkinliklerin görülmesine rağmen bitkilerin klinik düzeyde güvenli olarak kullanabilmeleri için daha fazla klinik çalışmaya ihtiyaç olduğunu belirtmişlerdir (Akalın ve ark., 2020).

Tai Chi, aerobik kapasiteyi, kas gücünü ve esnekliği arttırdığı ve bağışıklık üzerinde olumlu etkileri olduğu aynı zamanda psikolojik fayda sağladığı düşünülen, yavaş ve kontrollü hareketlerden oluşan Çin kökenli bir zihin beden egzersizidir (Yıldırım, 2014; Zhu et al., 2021). COVID-19 ile mücadele eden bireyler için Tai Chi egzersizinin bağışıklık sistemini güçlendirme, inflamasyon yanıtını azaltma, pulmoner rehabilitasyon ve duygusal iyileşmeyi içeren faydaları olduğu ve pandemi sırasında aktif bir yaşam tarzını sürdürmek için faydalı bir egzersiz olabileceği öngörülmektedir. Bununla birlikte konu ile ilgili kanıt düzeyi yüksek çalışmalara ihtiyaç olduğu vurgulanmaktadır (Xu, Baker & Ren, 2021; Zhu et al., 2021). COVID-19 enfeksiyonunda pulmoner rehabilitasyonda Tai chi egzersizi önerilmektedir (Yılmaz, 2020). Yapılan bir çalışmada COVID-19 salgını sırasında yaşlı erişkinlerde 10 haftalık Tai chi müdahalesinin zihinsel ve fiziksel işlevi iyileştirmede etkili olduğu belirlenmiştir (Solianik et al., 2021).

Ozon tedavisi, medikal amaçlı ve sağlığın korunması, geliştirilmesi, spor performansının artırılması ve estetik amacıyla tüm dünyada yaygın olarak uygulanmaktadır (İkizek & Uzuntarla, 2020). COVID-19'da ozon tedavisinin önerilmesinde ozonun doku hipoksisini ve hiperkoagülopatiyi azaltması, immün fonksiyonları modüle etmesi, fagositik fonksiyonları artırması ve viral replikasyonu bozmasına ilişkin hipotezler etkili oluştur (Özen & Aydoğan, 2020). Literatürde ozon tedavisinin COVID-19 hastalığının trakeal entübasyon ihtiyacına kadarki erken evrelerinde (Marini et al., 2021) ve antivirallerle kombinasyon halinde kullanımının yararlı ve etkili olabileceği bildirilmiştir (Cattel et al., 2021). Ozon tedavisinin COVID-19'da olumlu etkisinin olduğunu gösteren çalışmaların sayısında artış görülse de klinik çalışmalar yetersizdir (Cattel et al., 2021; İkizek & Uzuntarla, 2020; Liu et al., 2020).

Akupunktur, enflamatuvar hastalıkların tedavisinde yaygın olarak kullanılan Çin tıbbının önemli bir parçasıdır. COVID-19 salgını sırasında, akupunktur Çin'de COVID-19 için tamamlayıcı bir tedavi olarak kullanılmıştır. Bununla birlikte, COVID-19'un akupunktur tedavisinin altında yatan mekanizma belirsizliğini korumaktadır. Akupunktur tedavisinin COVID-19 ile ilişkili semptomları hafifletebileceği ve kanser, kardiyovasküler hastalık ve obezite sorunları olan COVID-19 hastaları için ek faydaları olabileceği bildirilmiştir (Han et al., 2021). Ayurveda ve meditasyon gibi yöntemlerin stres ve kaygının azaltılması yolu ile bağışıklığı koruyarak COVID-19 hastalığının önlenmesi ve tedavisinde yararlı olabileceği belirtilmektedir (Tillu et al., 2020). COVID-19 tanılı üç hastada koku ve tat kaybı tedavisinde homeopati uygulamıştır ve uzun süren koku kayıplarından sonra homeopati uygulaması ile hastaların semptomlarında hızlı bir iyileşme olduğu belirlenmiştir. Ancak bu konuda daha geniş gruplarda çalışmalara ihtiyaç olduğu belirtilmektedir (Topaloğlu et al., 2020).

COVID-19 ile mücadelede geleneksel çin tıbbının kullanımına ilişkin yapılan çalışmaların sayısı gittikçe artmaktadır. Buna karşın GETAT uygulamalarının COVID-19 ile mücadeledeki etkisini gösteren kanıtlara ihtiyaç olduğu görülmektedir.

Pandemi Sürecinde Toplumun Geleneksel ve Tamamlayıcı Tedavi Uygulamalarına Yaklaşımı

COVID-19 tedavisinde kullanılan yöntemlerin etkinliklerine ve yan etkilerine ilişkin kaygılar toplumun virüsten korunmak ve hastalığın tedavisi için çeşitli GETAT uygulamalarına yönelmesine neden olmuştur (Alschuler et al., 2020; Çelik, Sungur ve Karasu, 2021; Kargın, 2021; Wu et al., 2021). Buna karşın, COVID-19 pandemisinde toplumun GETAT yöntemlerine eğiliminin nasıl olduğu henüz net olmamakla birlikte (Kargın, 2021), toplumun virüsten korunmak için yaptığı uygulamaların, hastalığın oluşma ve bulaşma nedenine yönelik düşünceleri ile ilişkili olduğu görülmektedir (Kaplan, 2021). Ülkemizde yapılan bir çalışmada, COVID-19 şüphesi ile polikliniğe başvuran hastalardan %27,7'sinin GETAT'ın klasik COVID-19 ilaçlarından daha faydalı olmayacağını düşünmesine rağmen %19,7'sinin rutin ilaçlarla birlikte faydalı olacağına inandığı belirlenmiştir (Kargın, 2021).

Pandemi sürecinde yazılı ve görsel basında, sosyal medyada virüse karşı bağışıklık sistemini güçlendirmenin vurgulanması toplumun çeşitli şifalı bitkilere, karışımlara ve vitaminlere yönelmesine neden olarak fitoterapinin kullanımını arttırmıştır (Kaplan, 2021). Çin bitkisel tıbbının COVID-19 salgınından önce (%89,5) ve sonra (%90,3) yaygın olarak kullanıldığı ve temel amacın bağışıklık sistemini güçlendirmek olduğu belirlenmiştir (Wang et al., 2021). Ülkemizde COVID-19 şüphesi ile hastaneye başvuran hastalar ile yapılan bir çalışmada pandemi döneminde faydalı olduğu düşünülen uygulamaların en sık fitoterapi ve kupa olduğu belirlenmiştir (Kargın, 2021). Bir başka çalışmada da salgın sürecinde en fazla kullanılan GETAT uygulamalarının şifalı bitki tedavileri olduğu ve zencefil, zerdeçal, limon, soğan, sarımsak, elma ya da üzüm sirkesinin yaygın olarak kullanıldığı belirlenmiştir (Kaplan, 2021). Pandemi sürecinde anneler de çocuklarını hastalıktan korumak için bağışıklığı güçlendiren bitkisel kaynaklara ve vitaminlere yönelmiştir (Çelik, Sungur ve Karasu, 2021). Suudi Arabistan Krallığı'nda yapılan toplum temelli bir çalışmada, bireylerin yaklaşık %22,1'inin (n=1,161) pandemi döneminde hastalıktan korunmak için bitkisel ürünler ve besin takviyeleri kullandığı, bu ürünleri denemelerinde temel motivasyon kaynağının sosyal medya ve internet olduğu ve en yaygın kullanılan gıda takviyesinin C vitamini olduğu belirlenmiştir (Alyami et al., 2020). Ülkemizde yapılan bir çalışmada hemşirelik öğrencilerinin COVID-19'e karşı en sık uyguladıkları GETAT uygulamalarının sırasıyla biyolojik uygulamalar, yağlar ile masaj uygulama ve rahatlatıcı müzik dinlemek olduğu belirlenmiştir. Aynı çalışmada öğrencilerinin COVID-19'dan korunmada biyolojik temelli, bilişsel davranışsal tedavi ve manüplatif tamamlayıcı tedavi uygulamaları kapsamında en sık sırası ile bitki çayları, müzik ve masajı kullandıkları ve bunların yanı sıra sülük/hacamat uygulamasını kullandıkları belirlenmiştir (Işık ve Can, 2021). Hong Kong'ta yapılan bir çalışmada, katılanların %40'ından fazlasının pandemi sırasında en az bir GETAT uygulamasını kullandığı, en sık kullanılan yöntemlerin diyet takviyeleri ile Çin bitkisel ilaçları olduğu ve en sık bildirilen endikasyonun bağışıklık sistemini güçlendirmek olduğu belirlenmiştir (Lam et al., 2021). COVID-19 hastalarının COVID-19 tedavisi sırasında ve hatta sonrasında tamamlayıcı ve alternatif tıp ürünü veya evdeki ilaçları kullandığı, çoğunun birden fazla ürün tükettiği ve bu bitkisel ürünlerle ilgili herhangi bir yan etki bildirmedikleri belirlenmiştir (Charan et al., 2021). Bununla birlikte kullanılan bitkisel ürünlerin başka komorbiditeleri olan hastalarda bu ürünlerin kendilerinden kaynaklı veya kullanılan ilaçlar ile etkileşim nedeniyle zararlı bir etkiye sahip olabileceği ve toplumun bu konudaki bilgisini arttırılarak bu yöntemlerin daha güvenli kullanımının sağlanmasının gerekliliği vurgulanmaktadır (Charan et al., 2021).

COVID-19 tanılı hastalarda limon/portakal, bal, zencefil, C vitamini ve çörek otu kullanımının enfeksiyon sırasında önemli ölçüde arttığı, enfeksiyondan önce anason, nane ve kahve kabuğu kullanan hastaların enfeksiyon sırasında bunları kullanmayı bırakma olasılıklarının yüksek olduğu ve limon/portakal, bal, zencefil, C vitamini, çörek otu, nane, Costus ve zerdeçal kullanımının hastaneye yatırılmayan hastalarda hastaneye yatırılanlardan daha yüksek olduğu belirlenmiştir (Aldwihi et al., 2021).

Sonuç ve Öneriler

Tüm dünya ülkeleri COVID-19'a yönelik çözüm arayışı içindedir. Hastalığın önlenmesi ve tedavi edilmesi için öncelikli olarak aşılar ve antiviral tedaviler araştırılmaya devam ederken GETAT uygulamalarının etkinliğini değerlendiren çalışmaların sayısı da gittikçe artmaktadır. Nitekim COVID-19 salgınına bağlı artan mortalite ve morbidite göz önüne alındığında güvenilir olduğu onaylanmış, potansiyel olarak virüsü inhibe edebilecek, bulaşıcılığını azaltabilecek ve enfeksiyon semptomlarını hafifletebilecek tedavilere ihtiyaç duyulmaktadır. Ancak COVID-19 ile mücadelede GETAT uygulamalarının etkinliğine yönelik kanıtlara ihtiyaç olduğu vurgulanmaktadır. Bununla birlikte pandemi sürecinde toplumun hastalığı önlemek ya da hafifletmek amacıyla çeşitli GETAT yöntemlerine eğilimleri artmış ve en sık kullanılan yöntem bitkisel ürünler, gıda takviyeleri gibi biyolojik temelli yaklaşımlar olmuştur.

KAYNAKÇA

Akalin, E., Ekici, M., Alan, Z., Ozbir, E. E., & Yaman, B. A., Aobuliaikemu, N., & Uresin, A. Y. (2020). Traditional Chinese medicine practices used in COVID-19. Turk Kardiyol Dern Ars, 48 (4), 410-424.

Akbas, M. N., & Akcakaya, A. (2020). COVID-19 and Phytotherapy/COVID-19 ve Fitoterapi. Bezmialem Science, 8(4), 428-438.

Arslan, M., Şahne, B. S., & Şar, S. (2016). Dünya'daki geleneksel tedavi sistemlerinden örnekler: genel bir bakış. Mersin Üniversitesi Tıp Fakültesi Lokman Hekim Tıp Tarihi ve Folklorik Tıp Dergisi, 6(3), 100-105.

Aldwihi, L. A., Khan, S. I., Alamri, F. F., AlRuthia, Y., Alqahtani, F., Fantoukh, O. I., ... & Almohammed, O. A. (2021). Patients' Behavior Regarding Dietary or Herbal Supplements before and during COVID-19 in Saudi Arabia. International Journal of Environmental Research and Public Health, 18(10), 5086

Alschuler, L., Weil, A., Horwitz, R., Stamets, P., Chiasson A.M., Crocker, R., & Maizes, V. (2020). Integrative considerations during the COVID-19 pandemic. Explore (NY), 16(6), 354-6.

Alyami, H.S., Orabi, M.A.A., Aldhabbah, F.M., Alturki, H.N., Aburas, W.I., Alfayez AI, et al. (2020). Knowledge about COVID-19 and beliefs about and use of herbal products during the COVID-19 pandemic: a cross-sectional study in Saudi Arabia. Saudi Pharm J., 28(11), 1326-1332.

Azkur, A.K., Akdis M., Azkur D., Sokolowska M., van de Veen, W., Brüggen, M.C., O'Mahony, L., Gao, Y., Nadeau, K., Akdis, C.A. (2020). Immune response to SARS-CoV-2 and mechanisms of immunopathological changes in COVID-19. Allergy, 75(7), 1564-1581.

Cattel, F., Giordano, S., Bertiond, C., et al. (2021). Ozone therapy in COVID-19: A narrative review. Virus Res., 291, 198207

Charan, J., Bhardwaj, P., Dutta, S., Kaur, R., Bist, S. K., Detha, M. D., ... & Sharma, P. (2021). Use of complementary and alternative medicine (CAM) and home remedies by COVID-19 patients: a telephonic survey. Indian Journal of Clinical Biochemistry, 36(1), 108-111.

Çelik, M.Y., Sungur, M., & Karasu, F. (2021). Çocuklarda Uygulanan Tamamlayıcı Tedavi Yöntemleri ve Covid-19. YBH dergisi, 2(1), 85-105.

T.C. Resmî Gazete. (2014). Geleneksel ve Tamamlayıcı Tıp Uygulamaları Yönetmeliği, 27.10.2014, S:29158. Erişim: https://www.resmigazete.gov.tr/eskiler/2014/10/20141027-3.htm

Han, Z., Zhang, Y., Wang, P., et al. (2021). Is acupuncture effective in the treatment of COVID-19 related symptoms? Based on bioinformatics/network topology strategy. Brief Bioinform, 22(5), 1–11.

Işık, M. T., & Can, R. (2021). Bir Grup Hemşirelik Öğrencisinin COVID-19 Riskine Yönelik Koruyucu, Geleneksel ve Tamamlayıcı Tıp Uygulamaları. Mersin Üniversitesi Tıp Fakültesi Lokman Hekim Tıp Tarihi ve Folklorik Tıp Dergisi, 11(1), 94-103.

İkizek, M., & Uzuntarla, Y. U. (2020). Medikal Ozon Tedavisi ve COVID-19. Sağlık Akademisyenleri Dergisi, 7(4), 304-310.

Kaplan, M. (2020) Covid-19: Küresel Salgın Sürecinde Geleneksel ve Tamamlayıcı Tedavi Uygulamaları. Milli Folklor, 16(127), 35-45.

Kargın, N. Ç. (2021). Evaluation of The Knowledge and Attitudes of Patients Admitted to Covid-19 Outpatient Clinic about Traditional and Complementary Medicine. Journal of Contemporary Medicine, 11(5), 631-635.

Kırca, H., Kırca, Ö., & Özdoğan, M. (2020). COVID-19 ispat edilmemiş yöntemler. Yalçın Ş, Özet A, editörler. Kanser ve COVID-19 Pandemisi. 1. Baskı. Ankara: Türkiye Klinikleri, 38- 44.

Lam, C. S., Koon, H. K., Chung, V. C. H., & Cheung, Y. T. (2021). A public survey of traditional, complementary and integrative medicine use during the COVID-19 outbreak in Hong Kong. Plos one, 16(7), e0253890.

Li, Y., Liu, X., Guo, L., Li, J., Zhong, D., Zhang, Y., Clarke, M., & Jin, R. (2020). Traditional Chinese herbal medicine for treating novel coronavirus (COVID-19) pneumonia: Protocol for a systematic review and meta-analysis. Systematic Reviews, 9(75), 1–6.

Liu, M., Gao, Y., Yuan, Y., Yang, K., Shi, S., Zhang, J., et al. (2020). Efficacy and safety of integrated traditional Chinese and Western medicine for corona virus disease 2019 (COVID-19): a systematic review and meta-analysis. J Integr Med., 18(5), 385–394.

Marini, S., Maggiorotti, M., Dardes, N., Bonetti, M., Martinelli, M., Re, L., Carinci, F., & Tavera, C. (2020). Oxygen-ozone therapy as adjuvant in the current emergency in SARS-COV-2 infection: a clinical study. J Biol Regul Homeost Agents, 34(3), 757-766.

Ng, J. Y. (2020). Global research trends at the intersection of coronavirus disease 2019 (COVID-19) and traditional, integrative, and complementary and alternative medicine: a bibliometric analysis. BMC Complementary Medicine and Therapies, 20(1), 1-9.

Özen, Ş., & Aydoğan, D. İ. (2020). 19. COVID-19'da beslenme nasıl olmalıdır? Ozon tedavisinin yeri var mıdır?. COVID-19 Görev Grubu Görüş Raporu, 130(5), 132.

Öztürk, Y. E., Dömbekci, H. A., & Ünal, S. N. (2020). Geleneksel Tamamlayıcı Ve Alternatif Tıp Kullanımı. Bütünleyici ve Anadolu Tıbbı Dergisi, 1(3), 23-35.

Solianik, R., Mickevičienė, D., Žlibinaitė, L., & Čekanauskaitė, A. (2021). Tai chi improves psychoemotional state, cognition, and motor learning in older adults during the COVID-19 pandemic. Experimental gerontology, 150, 111363.

Şahan, D., & İlhan, M. N. (2019). Geleneksel ve tamamlayıcı tıp uygulamaları ve halk sağlığı açısından değerlendirilmesi. Gazi Sağlık Bilimleri Dergisi, 4(3), 12-19.

Tillu, G., Chaturvedi, S., Chopra, A., & Patwardhan, B. (2020). Public health approach of ayurveda and yoga for COVID-19 prophylaxis. The Journal of Alternative and Complementary Medicine, 26(5), 360-364

Topaloğlu, U. S., Saz, A., Tatar, O., Küçük, M. Ö., Gür, A., & Eren, E. (2020). COVID-19 Tanılı Olgulardaki Koku ve Tat Kaybının Tedavisinde Homeopati Bir Umut Olabilir mi?. Journal of Anatolian Medical Research, 5(2), 23-26.

Wang, Y., Yang, G., Gu, Z., Wang, C., Zhang, H., & Xu, L. (2021). The Changes of Cancer Patients' Perception, Attitude and Clinical Practice in Complementary and Alternative Medicine during COVID-19: A Multicenter Before-After Cross-Sectional Study.

Dünya Sağlık Örgütü (World Health Organization). (2019). WHO global report on traditional and complementary medicine 2019. Erişim: https://apps.who.int/iris/bitstream/handle/10665/312342/9789241515436-eng.pdf?sequence=1&isAllowed=y

Wu, X.V., Dong, Y., Chi, Y., Yu, M., Wang, W. (2021). Traditional Chinese Medicine as a complementary therapy in combat with COVID-19-A review of evidence-based research and clinical practice. Journal of Advanced Nursing, 77(4), 1635-1644.

Xu, S., Baker, J. S., & Ren, F. (2021). The positive role of tai chi in responding to the COVID-19 pandemic. International journal of environmental research and public health, 18(14), 7479.

Yıldırım, P. (2014). Tai Chi Egzersizinin Etkileri Ve Klinik Uygulamaları. Türk Fiz Tıp Rehab Derg, 60, 36-42.

Yılmaz, N. (2020). COVID-19 Enfeksiyonu Sonrası Pulmoner Rehabilitasyon. Avrasya Sağlık Bilimleri Dergisi, 3(COVID-19), 130-133.

Zhang, L., & Liu, Y. (2020). Potential interventions for novel coronavirus in China: A systematic review. J Med Virol, 92(5), 479-490.

Zhu, X., Luo, Z., Chen, Y., Wang, L., Chi, W., lian Jiang, L., ... & Zhang, H. (2021). Tai Chi for the elderly patients with COVID-19 in recovery period: A protocol for systematic review and meta-analysis. Medicine, 100(3).

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ÖZET

Cerrahi ağrı, **y**apılan cerrahi girişim sonucunda yara yerinde lokal, humoral ve nöral olarak salınan kimyasal mediyatörlerin aktif hale gelmesi ile başlayan doku iyileşmesi ile sona eren, genellikle kısa süreli ve iyi lokalize olmuş bir ağrı türüdür. Cerrahi insizyon sonrası ilk yedi günde yaşanan ve doku iyileşmesini takiben azalan ağrı akut cerrahi ağrı olarak tanımlanmaktadır. Neredeyse tüm cerrahi prosetürlerden sonra akut ağrı yaşanmaktadır. Ancak bazı durumlarda akut ağrı doku iyileşmesinin olağan süresini aşarak devam etmekte ve kronik ağrıya dönüşmektedir.

Cerrahi sonrası kronik ağrı (CSKA) cerrahi insizyonu takiben en az üç ay devam eden, cerrahi işlem öncesinde var olmayan veya cerrahi öncesi yaşanan ağrıya göre farklı karakterde ya da şiddette olan ağrı olarak tanımlanmaktadır. Ayrıca CSKA insizyon bölgesinde veya bu bölge ile ilişkili alanlarda olan, başka olası sebeplere (kanser, enfeksiyon) bağlı olmayan multifaktöriyel yapıda bir ağrıdır.

Bireyin günlük yaşam aktivitelerini kısıtlayan, anksiyete ve depresyona sebep olan, analjezi kullanım miktarını ve sağlık hizmetlerine olan talebi artıran CSKA'nın tüm cerrahi operasyonlardan sonra görülme olasılığı yaklaşık %10 kadardır. Dünyada her yıl milyonlarca cerrahi operasyonların gerçekleştirildiği düşünüldüğünde ise CSKA'nın büyük bir potansiyele sahip olduğu görülmektedir. Bu nedenle CSKA oluşumunun önüne geçilmesi oldukça önemlidir. Bu derlemede CSKA'nın tanımı, oluşum mekanizması, risk faktörleri ve önlenmesi ele alınmıştır.

Anahtar Kelimeler: Ağrı, Cerrahi Sonrası, Kronik

CHRONIC POSTSURGICAL PAIN

ABSTRACT
Surgical pain is a type of pain that is usually short-lived and well-localized, starting with the activation of local, humoral and neural release of chemical mediators at the wound site as a result of surgical intervention and ending with tissue healing. Acute surgical pain is defined as the pain experienced in the first seven days after the surgical incision and decreasing after tissue healing. Acute pain is experienced after almost all surgical procedures. However, in some cases, acute pain continues beyond the usual time of tissue healing and turns into chronic pain.
Chronic postsurgical pain (CPSP) is defined as pain that persists for at least three months after surgical incision, that does not exist before the surgical procedure, or that has a different character or severity compared to the pain experienced before surgery. In addition, CPSP is a multifactorial pain in the incision area or areas associated with this area, not due to other possible causes (cancer, infection).
The probability of CPSP, which restricts the daily activities of the individual, causes anxiety and depression, increases the amount of analgesia use and the demand for health services, is approximately 10% after all surgical operations. Considering that millions of surgical operations are performed in the world every year, it is seen that CPSP has a great potential. Therefore, it is very important to prevent the formation of CPSP. In this review, the definition, formation mechanism, risk factors and prevention of CPSP are discussed.
Keywords: Chronic, Pain, Postsurgery

Giriş

Cerrahi sonrası kronik ağrı (CSKA) ilk olarak Crombie ve arkadaşları tarafından 1998 yılında tanımlanmış ve sonrasında Werner tarafından düzenlenmiştir (1). Buna göre, cerrahi girişim sonrası en az üç aydır devam eden, cerrahi işlem öncesinde var olmayan veya cerrahi öncesi yaşanan ağrıya göre farklı karakterde ya da şiddette olan, cerrahi alanda veya bu alan ile ilişkili bölgede olan, başka olası sebeplere (kanser, enfeksiyon) bağlı olmayan ağrı CSKA olarak tanımlanmaktadır (2).
CSKA yaklaşık olarak her 10 cerrahi girişimden sonra 1-2 hastada ortaya çıkmakta ve bu hastaların %1'inde ciddi boyutlara ulaşmaktadır (3). Büyük çaplı bir gözlemsel çalışmada cerrahi girişim sonrası 12. ayda hastaların %9,6'sında orta şiddette, %2,2 sinde ise şiddetli CSKA görüldüğü saptanmıştır (4).
Cerrahi işlemin tipi CSKA insidansını ve şiddetini etkilemektedir. CSKA; koroner arter bypass cerrahisi ile toraks cerrahisi gibi majör ameliyatlardan sonra görülebileceği gibi varikosel gibi minör ameliyatlardan sonra da görülmektedir. CSKA'nın bazı cerrahi prosedürlerden sonra görülme sıklığı tablo 1'de verilmiştir (5).

Tablo 1: Bazı cerrahi prosedürlerden sonra tahmini kronik postoperatif ağrı insidansı (5)

Cerrahi türü	Kronik ağrı insidansı (%)
Ampütasyon	50-85
Torakotomi	30-50
Koroner arter baypas ameliyatı	30-50
Mastektomi	20-50
Herniotomi	5-35
Histerektomi	32
Kalça artroplastisi	28
Kolektomi	28
Kolesistektomi	26
Sezaryen	6-10
Vazektomi	5-18

Cerrahi sonrası kronik ağrı oluşum mekanizması

CSKA'nın oluşumu günümüzde hala tam bilinmemekle birlikte bazı karmaşık mekanizmalarla açıklanmaya çalışılmaktadır. Buna en iyi örnek olarak aynı ameliyatta farklı mekanizmalar ile oluşan güdük ağrısı ve fantom ağrısı verilebilir.

CSKA inflamasyon ve doku hasarının bir sonucu olarak ortaya çıkabilmektedir. Kimyasal mediatörlerin salınımı sonucu inflame dokuyu uyaran nosiseptörlerin eşiği azalır (periferik sensitizasyon). Santral sinir sistemi nöronlarının uyarılma yeteneğindeki artışın (santral sensitizasyon) bir sonucu olarak inflamatuar ağrı normal sensoriyel uyarılara artmış yanıt verir ve ağrı meydana gelir

Nöropatik ağrı, beyin veya spinal kordda sinir yaralanmasını takiben meydana gelen ağrıdır. Cerrahi girişim sonrası erken dönemde cerrahi bölge ve yakınında gelişen ağrı inflamasyon, nosiseptörlerin aktivasyonu, ve bazı vakalarda sinir yaralanmaları nedeni ile ortaya çıkmaktadır. Cerrahi girişim sırasında meydana gelen sinir yaralanmaları sonucu nöropatik ağrı hızla gelişebilir ve bazı periferik zararlı uyarı veya periferik inflamasyon olmasa bile kalıcı hale gelebilir. CSKA'nın oluşumunda özellikle cerrahi sinir yaralanmasına bağlı nöronal plastisite gelişmektedir (6).

Cerrahi sonrası kronik ağrı gelişiminde risk faktörleri

CSKA önlenebilmesi için kronik ağrıya neden olabilecek faktörlerin bilinmesi gerekmektedir. Bu risk faktörleri cerrahiye bağlı sinir hasarı, demografik faktörler, genetik, akut cerrahi ağrı, cerrahi girişim öncesi yaşanan ağrı, cerrahi faktörler, psikososyal faktörler olarak sıralanabilir.

Sinir hasarı

Cerrahi girişim bölgesinden geçen majör sinirlerde hasar oluşması sonucu hastada kronik ağrı gelişmektedir.

Demografik faktörler

Cerrahi tiplerine göre ileri yaşın CSKA gelişme riskini azalttığı ileri sürülmektedir. Örneğin meme cerrahisi geçiren genç kadınlar sayısal olarak daha büyük kitleleri oluşturmakta, ameliyat sonrası erken dönemde daha fazla problem yaşamakta ve daha sık CSKA bildirmektedirler. Cerrahi girişim sonrası ağrının kadınlarda daha çok kronikleştiği çalışmalarda bildirilmektedir.

Diğer demografi faktörlerin ise CSKA gelişimi üzerindeki etkileri hala tartışmalıdır (5,7). Turan ve arkadaşları (2016) farklı tiplerde meme cerrahisi uygulanan hastalar ile yaptıkları çalışmada BKI, yaş, ameliyat öncesi ve ciddi akut ameliyat sonrası ağrı, cerrahi tipi, hastanede kalış süresi ve komplikasyon gelişiminin CSKA gelişimi için risk faktörü olarak belirlemişlerdir (8).

Genetik

CSKA'nın ortaya çıkmasında genetik yatkınlığında rolü olabileceği çalışmalar ile bildirilmiştir. Popülasyonun genelinde, klinik ağrı ve fizyolojik nosiseptife hassasiyet bireysel farklılık göstermektedir. Jenerasyon farklılığı ve ağrı deneyimi de farklı cevaplar yansıtmaktadır. Clarke ve arkadaşları (2015) yaptıkları literatür incelemesine göre CSKA gelişiminde genetiğin %30-70 arasında rol oynadığını bildirmektedir (9).

Akut cerrahi ağrı

Bazı cerrahi girişimlerin CSKA gelişiminde risk faktörü olduğu bildirilmektedir. Bu girişimler arasında, kraniyotomi, herni cerrahisi, meme cerrahisi ve total kalça artroplastisi operasyonları yer almaktadır.

Cerrahi girişim öncesi yaşanan ağrı

Cerrahi girişim öncesi yaşanan ağrı, cerrahi girişim sonrası yaşanan ağrının ve gelişebilecek kronik ağrının güçlü bir prediktörüdür. Dahası, cerrahi sonrası yaşanan ağrı yoğunluğunun da gelişen kronik ağrının ana prediktörlerinden biri olduğu da bilinmektedir.

Cerrahi faktörler

Cerrahi girişimin süresi, insizyon tipi ve bölgesi, cerrahi teknik ve cerrahın deneyimi CSKA gelişimi ile ilgili cerrahiye bağlı risk faktörlerindendir.

Psikososyal faktörler

Cerrahi girişim geçirecek olan hastanın yaşadığı çaresizlik, yeterlilik gibi duygular, vücut organı ve dokularının zedeleneceği endişesi, ölüm korkusu, hastalığa yüklediği anlam hastanın yoğun anksiyete yaşamasına neden olmakta. Hastanın yaşadığı bu anksiyete ise hastada cerrahi girişim sonrası kronik ağrı gelişme riskini artırmaktadır (5,7).

Cerrahi sonrası kronik ağrının önlenmesi

Cerrahi sonrası gelişen kronik ağrı bireyin günlük yaşam aktivitelerini kısıtlamakta, anksiyete ve depresyona sebep olmakta, analjezik kullanım miktarını ve sağlık hizmetlerine olan talebi artırarak ekonomik yük oluşturmaktadır. Ayrıca ağrının varlığına bağlı sempatoadrenerjik sistem aktivitesinin artması, solunum, kardiyovasküler, hematolojik, endokrin ve immün sistem hastalığına sahip bireylerde mortalite ve morbiditeyi artırmaktadır. Bu nedenlerle CSKA oluşumunun önüne geçilmesi oldukça önemlidir (1).

Cerrahi sonrası akut ağrının kronik ağrı haline gelmesinde cerrahi tekniğin önemli olduğu bilinmektedir. Minimal invaziv cerrahi, açık prosedürlere göre doku travmasının daha az olması nedeni ile CSKA gelişim riski daha azdır. Cerrahi girişim sonrası kullanılan sütur, sinir yaralanması, oluşan inflamatuar yanıt ve doku tahribatının büyüklüğü gibi etkenler de akut ağrının kronikleşmesinde rol oynamaktadır (10).

Cerrahi girişim sırasında kullanılan anestezik tekniğin kronik ağrı oluşumunun önlenmesinde etkiye sahip olduğu düşünülmektedir. Bölgesel anestezinin laparotomi, sezaryen, kalp cerrahisi, meme cerrahisi gibi cerrahi girişimlerden sonra kronik ağrı gelişimini önlediğini gösteren çalışmalar mevcuttur (11).

Cerrahi girişim öncesi ağrının varlığı ve girişim sonrası akut ağrının şiddeti ve süresi CSKA'nın belirleyicilerindendir. Cerrahi sonrası nöroplastisite (spinal hassasiyet) zamanında tedavi edilmez ise kronik ağrıya dönüşebilir. Bu neden ile cerrahi girişim öncesi ve sonrası erken dönemde iyi yapılan ağrı kontrolü CSKA gelişiminin önlenmesinde oldukça önemlidir (10).

CSKA'yı önlemede çeşitli farmakolojik ajanlar denenmiş ve bazı ajanların ümit verici olduğu sonucuna varılmıştır. Bu ajanlardan biri olan N-Metil-D-Aspartat (NMDA) reseptör antagonistleri, santral plastik değişikliklerde ve kronik ağrıya katkıda bulunan spinal/ kortikal potansiyalizasyonda önemli bir rol oynar. Cerrahi girişim öncesi kullanılan intravenöz ketaminin, cerrahi girişim sonrası analjezik tüketimini azalttığı ve CSKA'yı önlemede olası fayda sağladığı bildirilmektedir (11).

CSKA'nın birçoğu nöropatik ağrıyı içerir. Nöropatik ağrıda tercih edilen gabapentinoidlerin kronik ağrı oluşumunu önlediği ve opioid gereksinimini azalttığı belirtilmektedir (12).

CSKA'yı azaltmak ve iyileşmeyi hızlandırmak için kullanılan epidural analjeziye alternatif olarak ameliyat öncesi intravenöz lidokain kullanımı CSKA'nın önlenmesinde önerilmektedir (13).

Son olarak hem nöropatik ağrıyı azaltmadaki etkinlikleri hem de depresyonun kronik ağrı ile olan ilişkisi nedeniyle kullanımı tercih edilen antidepresanların CSKA'yı önlediği düşünülmektedir (11, 14).

CSKA'nın önlenmesinde bir diğer önemli unsurda cerrahi girişim öncesi yapılan psikolojik hazırlıktır. Cerrahi girişim öncesi hastalara verilecek olan yeterli düzeyde bir danışmanlığın, hastaların cerrahi girişime ilişkin kaygı düzeylerini azaltacak ve kronik ağrı gelişimini önlemeye yardımcı olacaktır (10).

Sonuç olarak; Bireyin günlük yaşam aktivitelerini kısıtlayan, anksiyete ve depresyona sebep olan, analjezi kullanım miktarını ve sağlık hizmetlerine olan talebi artıran CSKA'nın tüm cerrahi operasyonlardan sonra görülme olasılığı yaklaşık %10 kadardır. Dünyada her yıl milyonlarca cerrahi operasyonun gerçekleştirildiği düşünüldüğünde ise CSKA'nın büyük bir potansiyele sahip olduğu ve önüne geçilmesinin oldukça önemli olduğu görülmektedir. Literatürde CSKA'nın önlenmesine yönelik yapılan araştırmaların azlığı göz önüne alınarak bu konuda randomize kontrollü araştırma sayılarının artırılması önerilmektedir. Bu kapsamda yapılan araştırma sonuçlarının tedavi ve bakıma entegre edilmesi ise bakım kalitesini yükselterek ve CSKA gelişim riskini azaltacaktır.

Kaynakça

1. Karaman, Y., Özkarakaş, H., Karaman, S., & et al. (2015). İnguinal herni onarımı sonrası kronik ağrı insidansı. Ağrı Dergisi, 27(2),97-103.

2. Werner, M., & Kongsgaard, U.I. (2014). Defining persistent post-surgical pain: is an update required? British Journal of Anaesthesia, 113 (1),1–4

3. Feyizi, H. (2019). Preoperatif anksiyete düzeyinin postoperatif kronik ağrı gelişimine etkisi. Sağlık bilimleri üniversitesi okmeydanı eğitim ve araştırma hastanesi, İstanbul.

4. Fletcher, D., Stamer, U.M., Pogatzki-Zahn, E., & et al. (2015) . Chronic postsurgical pain in Europe: an observational study. European Journal of Anaesthesiology (EJA), 32(10),725-34.

5. Akkaya, T., & Ozkan, D. (2009). Chronic post-surgical pain. Agri, 21(1), 1-9.

6.Derbent, A., Yılmaz, B., & Uyar, M. (2012). Omurga cerrahisi sonrası kronik ağrı. Ağrı Dergisi, 24(1), 1-8.

7. Kocabaş, H. Z. (2017). Dental implant hastalarında ağrı seyrinin değerlendirilmesi ve kronik postoperatif ağrı ile ilişkisinin belirlenmesi. Hacettepe Üniversitesi Sağlık Bilimleri Enstitüsü, Ankara.

8. Turan, M., Karaman, Y., Tekgül, Z. T., Karaman, S., Uyar, M., & Gönüllü, M. (2016). Meme cerrahisi sonrası görülen kronik postoperatif ağri sıklığı ve risk etmenleri. İzmir Tepecik Eğitim ve Araştırma Hastanesi Dergisi, 26(3), 207-214.

9. Clarke, H., Katz, J., Flor, H., Rietschel, M., Diehl, S. R., & Seltzer, Z. E. (2015). Genetics of chronic post-surgical pain: a crucial step toward personal pain medicine. Canadian Journal of Anesthesia/Journal canadien d'anesthésie, 62(3), 294-303.

10.Thapa, P., & Euasobhon, P. (2018). Chronic postsurgical pain: current evidence for prevention and management. The Korean journal of pain, 31(3), 155.

11.Pogatzki-Zahn, E., & Lavandhomme, P. (2020). Kronik Cerrahi Sonrası Ağrının Önlenmesi. International Association for the Study of Pain.

12. Martinez, V., Pichard, X., & Fletcher, D. (2017) Perioperative pregabalin administration does not prevent chronic postoperative pain: systematic review with a meta-analysis of randomized trials. Pain, 158,775-783.

13.Kranke, P., Jokinen, J., Pace, N.L., & et al. (2015). Continuous intravenous perioperative lidocaine infusion for postoperative pain and recovery. Cochrane Database Syst Rev 7, 1-197.

14.Koh, I.J., Kim, M.S., Sohn, S., & et al. (2019). Duloxetine Reduces Pain and Improves Quality of Recovery Following Total Knee Arthroplasty in Centrally Sensitized Patients: A Prospective, Randomized Controlled Study. J Bone Joint Surg Am, 101,64-73.

HEMŞİRELERİN İŞTEN AYRILMA NİYETLERİ ÜZERİNDE TÜKENMİŞLİK SENDROMUNUN ETKİSİ

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ÖZET
Sağlık emekçileri içinde en büyük grubu oluşturan ve hasta ile birlikte uzun süreli çalışan hemşireler, çalışma ortamındaki olumsuzluklardan en fazla etkilenen sağlık çalışanları olarak kabul edilmektedir. Bu çalışmanın amacı, sağlık kurumlarında çalışan hemşirelerin tükenmişlik algılarının işten ayrılma niyetlerine etkisini incelemektir. Araştırmada, nicel araştırma yöntemi kullanılmıştır. Araştırmanın verileri zincir örnekleme yöntemiyle, Mersin ve Adana illerinde erişilebilen ve çevrimiçi ankete katılım gösteren 464 hemşireden elde edilmiştir. Veri toplama formu Tükenmişlik Ölçeği, İşten Ayrılma Niyeti Ölçeği ve demografik sorulardan oluşmaktadır. Araştırma sonucunda elde edilen verilere SPSS ve AMOS programında regresyon ve korelasyon analizleri yapılmıştır. Tükenmişliğin alt boyutları olan, duygusal tükenme ve duyarsızlaşmanın, bağımlı değişken işten ayrılma niyeti üzerinde anlamlı ve pozitif bir etkiye sahip olduğu; üçüncü boyut olan kişisel başarının, bağımlı değişken işten ayrılma niyeti üzerinde anlamlı ve negatif bir etkiye sahip olduğu görülmüştür. Ayrıca işten ayrılma niyetinde olan hemşirelerin %38'inin işini bırakmayı son 1 yıl içinde düşünmeye başlamış olmasının, Covid-19 salgını sürecinin yoğun ve yıpratıcı etkisiyle ilgili olması yüksek ihtimaldir. Önceki çalışmalarda önerilen duygusal emek davranışı geliştirme çabalarının çok ötesinde sistemli ve sürdürülebilir programlarla, ülke genelinde ve tüm sağlık sektörü çalışanlarını içerecek şekilde stratejiler formüle edilmeli ve uygulanmalıdır. Özellikle kişilik özellikleri başta olmak üzere çok farklı değişkenleri dikkate alarak yapılacak kapsamlı ve boylamsal çalışmalar, sağlık çalışanlarının işe alınması, çağın ihtiyacına göre eğitim ve gelişim sağlanması ve elde tutulması konusunda kilit rol oynayacaktır.
Anahtar Kelimeler: Hemşirelik, Tükenmişlik, İşten Ayrılma Niyeti

THE EFFECT OF BURNOUT SYNDROME ON NURSES' INTENTION TO LEAVE

ABSTRACT
Nurses, who form the largest group among health workers and work with the patient for a long time, are considered as the health workers who are most affected by the negativities in the working environment. The aim of this study is to examine the effect of burnout perceptions of nurses working in health institutions on their intention to leave. Quantitative research method was used in the study. The data of the study were obtained from 464 nurses who participated in the online survey in Mersin and Adana provinces by chain sampling method.

The data collection form consists of the Burnout Scale, the Intention to Leave the Job Scale and demographic questions. Regression and correlation analyzes were performed on the data obtained as a result of the research in SPSS and AMOS programs.
Emotional exhaustion and depersonalization, which are the sub-dimensions of burnout, have a significant and positive effect on the dependent variable of turnover intention; The third dimension, personal achievement, was found to have a significant and negative effect on the dependent variable of turnover intention. In addition, the fact that 38% of the nurses who intend to quit their job have started to think about quitting their job within the last 1 year, it is highly likely that this is related to the intense and wearisome effect of the Covid-19 epidemic process.
Strategies should be formulated and implemented across the country and in a way that includes all health sector workers, with systematic and sustainable programs far beyond the emotional labor behavior development efforts suggested in previous studies. Comprehensive and longitudinal studies, which will be carried out taking into account many different variables, especially personality traits, will play a key role in hiring health workers, providing and retaining training and development according to the needs of the age.
Keywords: Nursing, Burnout, Intention to Leave

1. GİRİŞ

İş dünyasında meydana gelen makineleşme ve teknolojik gelişim, iş yaşantısının öznesi konumunda olan insanın iş yoğunluğunu ve yaşam temposunu da artırmış, giderek fizyolojik ve psikolojik olarak yıpranmasına sebebiyet vermiştir. Özellikle çalışma ortamında hizmet verdikleri kitle ile yüzyüzelik ve yoğun iletişim gerektiren meslek dallarında daha sık görülen stres, yorgunluk ve yıpranma, sadece bireye değil, hizmet verilen hedef kitleye ve çalışılan örgüte de negatif etkiler yaratmaktadır.
Sosyal iletişimin yoğun yaşandığı iş ortamlarında görülme olasılığı yüksek olan, birden bire ortaya çıkan ani bir sorun olmaktan ziyade, "enerjinin giderek azalması" şeklinde kendisini yavaş yavaş hissettiren; bu öncül belirtilerin dikkate alınmaması, önleme yoluna gidilmemesi halinde meydana gelen durum ise "tükenmişlik sendromu" şeklinde ifade edilmektedir (Baron ve West, 2007:2161; Savran, 2013:4).
Bireylerin yaşamlarının her aşamasında karşılaşılabilecek bir durum olan tükenmişlik sendromu, son yıllarda, çalışma hayatında üzerinde en çok çalışılan konularından biri olmuş ve birçok meslek alanında tükenmişlik araştırmaları yapılagelmektedir. Hizmet sektörü, tükenmişlik sendromuna yoğun şekilde maruz kalınan meslek gruplarını barındıran birincil risk grubunu oluşturmaktadır. Hizmet sektörü içinde de özellikle sağlık kurumlarında çalışanların tükenmişliği yoğun şekilde yaşadıkları yapılan çalışmalarla ortaya konmaktadır (Barutçu ve Serinkan 2008; Metin ve Özer, 2007; Kebapçı ve Akyolcu, 2011; Akpınar ve Taş, 2011; Karadağ vd., 2002; Demir ve ark., 2003; Kocabıyık ve Çakıcı, 2008; Özbaş vd., 2006; Şahin vd., 2008). Sağlık mesleği grupları içerisinde ise hemşireler tükenmişlik oranının en yüksek gözlemlendiği grubu oluşturmaktadır (Taycan vd., 2006:106; Simat, 2007:28). Hemşirelerin iş yaşantılarında birçok negatif faktörle karşılaşmaları nedeniyle; bu durumlar onların psikolojilerini, sosyal yaşantılarını ve iş verimliliklerini de negatif etkilemektedir (Duquette vd., 1994:340; Lee vd., 2003:539). Çünkü hemşireler sağlık kurumlarında hasta ve yakınlarının her türlü sorunlarını ilettikleri birinci kademedir ve bu konuda kilit role sahiplerdir.

Uzun çalışma saatleri ve yoğun tempo, acı çeken insan grubuyla –hatta ölümcül hastalarla- bir arada olmanın verdiği stres, hasta ve hasta yakınları ile zaman zaman yaşanan çatışmalar hemşireleri tükenmeye, duyarsızlaşmaya ve zamanla meslekten ayrılmaya yöneltmektedir (Tayfun ve Çatır, 2014:348).

Alanyazında, hemşireleri tükenmişliğe iten nedenler incelendiğinde; bireysel, örgütsel ve işle ilgili nedenler şeklinde gruplandırıldığı görülmektedir. Bu gruplandırmaya göre bireysel etmenler; cinsiyet, yaş, sağlık durumu, eğitim, kişilik, stresle mücadele yeteneği örneklendirilebilir. Örgütsel etmenler; iş güvensizliği, bürokrasi, rol belirsizliği, işyerindeki sosyal desteğin azlığı, kararlara katılamama, yöneticilerden destek alamama, uzun çalışma saatleri, ekip üyeleriyle yaşanan çatışmalar, katı yönetim politikaları, yoğun hasta etkileşimleri, kariyer beklentilerinin gerçekleşmemesi gibi etmenler sayılabilir. İş ile ilgili etmenler ise; uzun ve vardiyalı çalışma süreleri, zaman baskısı, iş yükü, maaş azlığı, mesleğin statü ve prestij algısı yaratmaması, işin çok yönlü olması ve aynı zamanda zihinsel ve fiziksel güçlüğü vb. nedenler hemşirelerde tükenmişliğe neden olabilmektedir (Yavuzyılmaz ve ark., 2007:44; Poncet ve ark., 2007:701; Ebrinç vd., 2002:163; Dolunay ve Piyal, 2003:42; Kaçmaz, 2005:70; Embriaco vd., 2007:482; Shımızutanı vd., 2008:328; Dede ve Çınar, 2008:8; Şahin vd., 2008:120). Bütün bu olumsuzlukların yanında, son birbuçuk yıldır yaşanan Covid-19 salgın süreci, tüm sağlık çalışanları gibi hemşirelerin de özel, iş ve sosyal yaşamını derinden etkilediği, tükenmişlik düzeylerini artırdığı gözlemlenmektedir.

Öte yandan, işyerlerinde yaşanan bu tür sıkıntılı durumlar, çalışma yaşantısının niteliğini zedelemekte, direkt ya da endirekt şekilde iş üretme maliyetlerini artırmakta, mesleki motivasyonu azaltarak çalışanların işlerinden ayrılmalarına sebebiyet vermektedir. Oysa örgütlerin var olması, çalışanlarının örgütte kalmalarına ve örgüte güçlü bağlarla aidiyet hissetmelerine bağlıdır (Silah, 2005:170; Salmela-Aro vd., 2009:163; Çetin, 2004:90). Bu nedenle, özellikle tükenmişlik riski yüksek meslek alanlarında konuya ilişkin analizlerin yapılması ve gereken önlemlerin alınması önem arzetmektedir. Bu bağlamda, hemşirelerin tükenmişlik düzeylerinin belirlenmesi ve işten ayrılma eğilimi üzerindeki etkilerinin incelenmesi bu makalenin amacını oluşturmaktadır.

2. ARAŞTIRMA VE BULGULAR

2.1. Araştırmanın Evreni ve Modeli

Araştırmada, Adana ve Mersin'deki sağlık kurumlarında çalışmakta olan hemşireler çalışmanın evrenini oluşturmaktadır. Bu çalışmada, sağlık kurumlarında çalışan hemşirelerin tükenmişlik sendromlarının işten ayrılma niyeti üzerindeki etkilerinin ölçülmesi amaçlanmaktadır. Tükenmişlik seviyesi yüksek olan işgörenlerin performanslarında azalma, işe devamsızlıkta artış, örgütsel bağlılıkta azalma, ilişkilerde bozulma ve işten ayrılma kararlarında artış görülebilmektedir. Hangi sebepten kaynaklı olursa olsun, bireyin kendi iradesiyle işi bırakmasına sebebiyet verebilecek olan bu niyetin, işten ayrılma davranışına dönüşmeden örgüt yöneticilerince tespit edilerek engellenmesi gerekir; bundan dolayı tükenmişlik ve işten ayrılma niyetinin incelenmesiyle alanyazına katkı sağlamak çalışmanın önemini ortaya koymaktadır.

Kuramdan ve görgül araştırmalardan yola çıkılarak oluşturulan hipotezler aşağıda sunulmuştur.

H_1: Sağlık kurumlarında çalışan hemşirelerin tükenmişlik düzeyleri işten ayrılma niyetlerini anlamlı ve pozitif olarak etkiler.
H_2: Sağlık kurumlarında çalışan hemşirelerin duygusal tükenmişlik düzeyleri işten ayrılma niyetlerini anlamlı ve pozitif olarak etkiler.
H_3: Sağlık kurumlarında çalışan hemşirelerin duyarsızlaşma düzeyleri işten ayrılma niyetlerini anlamlı ve pozitif olarak etkiler.
H4: Sağlık kurumlarında çalışan hemşirelerin kişisel başarı düzeyleri işten ayrılma niyetlerini anlamlı ve negatif olarak etkiler.

2.2. Veri Toplama Aracı

Araştırmada veri toplama yöntemi olarak nicel araştırma yöntemlerinden anket tekniği kullanılmıştır. Anket, çevrimiçi yapılacak şekilde tasarlanmış olup, ücretsiz web sitesi hizmeti olan Google Forms üzerinden -mobil telefonlar aracılığıyla da cevaplanabilecek özellikte- düzenlenmiştir. Anket bağlantısı 10 Eylül- 10 Ekim 2021 tarihleri arasında –zincir (kartopu) örnekleme yöntemi kullanılarak- e-posta ve mobil telefon mesaj uygulamaları aracılığıyla katılımcılara gönderilmiş, çevrelerindeki diğer hemşirelere iletmeleri istenmiştir. 464 katılımcının cevapladığı anket çalışmasında en önemli kısıt, diğer illeri kapsamamış olması, içinde bulunduğumuz Covid-19 salgın sürecinde sağlık kurumlarında çalışan hemşirelerin aşırı yoğun olmaları –benzer anket çalışmalarının da artması- nedeniyle anket cevaplamaya zaman ayıramamaları söylenebilir.
Sağlık kurumlarında çalışan hemşirelerin Tükenmişliklerinin (TÜK) ve tükenmişliğin alt boyutları olan, Duygusal Tükenmişlik (DT), Duyarsızlık (DYR) ve Kişisel Başarının (KBA), bireylerin İşten Ayrılma Niyetleri (İAN) üzerine etkisini belirlemeye yönelik olan bu araştırmada, kullanılan ölçeklere ilişkin bilgiler aşağıda verilmektedir. Araştırmada kullanılan ölçekler aşağıda sunulmuştur.
Tükenmişlik Ölçeği (TUK): Soru formunda sağlık kurumunda çalışan hemşirelerin tükenmişlik seviyesinin ölçülmesi amacı ile Maslach ve Jackson (1981) tarafından geliştirilmiş olan ve Türkçe'ye uyarlaması ile geçerlilik ve güvenilirlik çalışması Ergin (1992) tarafından yapılmış olan Maslach Tükenmişlik Ölçeği kullanılmıştır. Çalışma beşli Likert ölçeği kullanılarak; (1) Hiç, (2) Nadiren (3) Bazen, (4) Çoğu Zaman ve (5) Her Zaman şeklinde değerlendirme yapılması istenmiştir. Ölçek toplam 22 madde ve üç alt boyuttan oluşmaktadır. Bu alt boyutlardan "duygusal tükenme" alt ölçeği 9 maddeden, "duyarsızlaşma" alt ölçeği 5 maddeden ve "düşük kişisel başarı" alt ölçeği 8 maddeden oluşmaktadır. Ölçekte sorular "İş dönüşü kendimi ruhen tükenmiş hissediyorum." ve "Bütün gün insanlarla uğraşmak benim için gerçekten çok yıpratıcı." şeklindedir. Yapılan güvenirlik analizi sonucunda tükenmişlik ölçeğinin toplam Cronbach alfa güvenirlik katsayısı .84 olarak, tükenmişliğin alt boyutları olan duygusal tükenmişlik, duyarsızlık ve kişisel başarı ölçeklerin Cronbach alfa güvenirlik katsayıları sırasıyla, .92, .74, .83 olarak bulunmuştur.
İşten Ayrılma Niyeti Ölçeği (İAN): Sağlık kurumunda çalışan hemşirelerin algılanan işten ayrılma niyetlerinin ölçülmesi amacı ile Rosin ve Korabik'e (1991) ait 4 maddelik ölçekten (TIS-Turnover Intension Scale) yararlanılmıştır. 4 ifadeden oluşan ölçekte sorular "Kariyerimin şu anında, mümkün olsaydı işimi bırakırdım." ve "Önümüzdeki altı ay içerisinde işimi bırakmayı düşünüyorum." şeklindedir. Ancak Covid-19 salgın sürecinin işten ayrılma niyeti üzerinde ne derece etki ettiğinin ayıklanabilmesi için "İşimi bırakmayı son 1 yıl içinde düşünmeye başladım" ifadesi eklenerek 5 madde şeklinde uygulanmıştır.

İşten Ayrılma Niyeti ölçeği de "(1) Kesinlikle Katılmıyorum- (5) Kesinlikle katılıyorum" ifade aralığında beşli Likert şeklinde tasarlanmıştır Bu ölçeğin de güvenirlik analizi yapılmış ve Cronbach alfa güvenirlik katsayısı .88 olarak hesaplanmıştır.

2.3. Verilerin Analizi

Sağlık kurumlarında çalışan hemşirelerin tükenmişliklerinin (TÜK) alt boyutları olan, Duygusal Tükenmişlik (DT), Duyarsızlık (DYR) ve Kişisel Başarının (KBA), bireylerin İşten Ayrılma Niyetleri (İAN) üzerine etkisini belirlemeye yönelik olan bu araştırmada, öncelikle örneklem ve ölçeklere ilişkin bilgilere yer verilmiştir. Araştırma sonucunda elde edilen veriler ışığında oluşturulan modele ilişkin, SPSS ve AMOS programında analizler yapılmıştır. Bu kapsamda öncelikle değişkenler arası korelasyonlar tespit edilmiştir. Daha sonra yapılan regresyon analizleri ile hipotezler test edilmiştir. Tüm bu analizler sonucunda elde edilen bulgular mevcut alanyazın ile karşılaştırılarak yönetici ve araştırmacılara önerilerde bulunulmuştur.

2.4. Bulgular

Araştırma evrenini oluşturan -Adana ve Mersin'de faaliyet gösteren sağlık kurumu çalışanı- hemşirelerin demografik özellikleri aşağıda verilmiştir. Araştırmaya katılanların:

- 41' i erkek (%0.09) ve 423' ü bayan (%91,1),
- 287' si evli (% 61.9), 177' si bekar (% 38.1),
- %43.6'sı 35 yaş ve altında, %45.5'i 5 yıl ve altında çalışma süresine sahip,
- 39' u (%0.08) önlisans, 277' si (%59,7) lisans, ve 148' i (% 31.9) lisansüstü mezunu,
- 335'i (% 72.2) kamuda, 129'u (% 27.8) özel sektörde yer almaktadır.

Araştırma sonucunda elde edilen verilere SPSS ve AMOS programında analizler yapılmıştır. Bu kapsamda, ilk aşamada katılımcıların algıladıkları tükenmişlik düzeyleri ve tükenmişliğin alt boyutları olan "duygusal tükenmişlik", "duyarsızlaşma" ve "düşük kişisel başarı hissi" ile bu değişkenlerin etkisinin olduğu düşünülen işten ayrılma niyeti değişkenlerine ilişkin elde edilen verilerin ortalamaları, standart sapmaları ve aralarındaki korelasyonlara bakılmıştır. Ardından, analizin ikinci aşamasında bu değişkenler arasındaki etkileşimi görmek için regresyon analizleri yapılmıştır. Analiz sonucunda elde edilen ortalamalar, standart sapmalar ve korelasyon değerleri Tablo 1' de verilmektedir.

Tablo 1'de de görüldüğü gibi araştırmaya konu edilen tüm bağımlı ve bağımsız değişkenler arasında anlamlı ilişkiler bulunmaktadır. Bu nedenle değişkenler arasında önemli etkiler öngörülebilmektedir.

Bağımsız değişkenlerin, bağımlı değişkenler üzerindeki açıklama güçlerini ortaya koymak amacıyla regresyon analizleri yapılmıştır. Regresyon analizlerinde, İşten Ayrılma Niyeti (İAN) bağımlı değişken olarak ele alınmış, Tükenmişlik (TÜK) ve tükenmişliğin alt boyutları olan, Duygusal Tükenmişlik (DT), Duyarsızlık (DYR) ve Kişisel Başarının (KBA), bağımsız değişken olarak ele alınarak bağımlı değişken üzerindeki etkileri incelenmiştir.

Regresyon analizlerinin ilk aşamasında hemşirelerin tükenmişlik algısı bir bütün olarak ele alınarak, bağımlı değişken işten ayrılma niyeti üzerindeki etkileri incelenmiştir. Sonuçlar değerlendirildiğinde, Tablo 2' de de görüldüğü gibi tükenmişliğin bağımlı değişken işten ayrılma niyeti üzerinde anlamlı ve pozitif bir etkiye sahip olduğu görülmektedir. Bu kapsamda Hipotez 1 onaylanmıştır.

Tablo 1. Verilere İlişkin Ortalama, Standart Sapma ve Korelasyon Değerleri

	Ort.	**S.S.**	**1**	**2**	**3**	**4**	**5**
1. TÜK	3.16	.55	**(.84)**				
2. DT	3.19	.99	.86**	**(.92)**			
3. DYR	2.42	.84	.84**	.68**	**(.74)**		
4. KBA	3.87	.64	.15**	-.22**	-.21**	**(.83)**	
5. İAN	2.57	1.23	.53**	.64**	.50**	-.27**	**(.88)**

*p< .05 ** p< .01

Tablo 2. Basit Regresyon Analizleri

İşten Ayrılma Niyeti				
Değişkenler	**R^2**	**Düz. R^2**	**F**	**β**
Tükenmişlik	.283	.281	182.1**	**.532****

**p≤.01

Tablo 3. Basit Regresyon Analizleri

İşten Ayrılma Niyeti				
Değişkenler	**R^2**	**Düz. R^2**	**F**	**β**
Duygusal Tükenmişlik	.413	.411	324.4**	**.642****
Duyarsızlık	.245	.243	149.7**	**.495****
Kişisel Başarı	.072	.070	35.80**	**-.268****

*p< .05, **p≤.01

Regresyon analizlerinin ikinci aşamasında tükenmişliğin alt boyutları olan, duygusal tükenmişlik, duyarsızlık ve kişisel başarının, bağımlı değişken işten ayrılma niyeti üzerindeki etkileri incelenmiştir. Sonuçlar değerlendirildiğinde, Tablo 3'te de görüldüğü gibi duygusal tükenmişlik ve duyarsızlığın bağımlı değişken işten ayrılma niyeti üzerinde anlamlı ve pozitif bir etkiye sahip olduğu ve üçüncü boyut olan kişisel başarının, bağımlı değişken işten ayrılma niyeti üzerinde anlamlı ve negatif bir etkiye sahip olduğu görülmektedir. Bu kapsamda Hipotez 2, 3 ve 4 onaylanmış olmaktadır. Tablo 4'te ise araştırmanın hipotez sonuçları yer almaktadır.

Tablo 4. Hipotez Testi Sonuçları

HİPOTEZLER	**SONUÇ**
H_1: Sağlık kurumlarında çalışan hemşirelerin tükenmişlik düzeyleri işten ayrılma niyetlerini anlamlı ve pozitif olarak etkiler.	Onaylandı
H_2: Sağlık kurumlarında çalışan hemşirelerin duygusal tükenmişlik düzeyleri işten ayrılma niyetlerini anlamlı ve pozitif olarak etkiler.	Onaylandı
H_3: Sağlık kurumlarında çalışan hemşirelerin duyarsızlaşma düzeyleri işten ayrılma niyetlerini anlamlı ve pozitif olarak etkiler.	Onaylandı
H4: Sağlık kurumlarında çalışan hemşirelerin kişisel başarı düzeyleri işten ayrılma niyetlerini anlamlı ve negatif olarak etkiler.	Onaylandı

Yapılan çalışmalarda her ne sebeple olursa olsun hizmet verdiği sağlık kurumlardan ayrılma niyetinde olan ve muvafakat almaya çalışan hemşirelerin sayısı her geçen gün artmaktadır. Sağlık kurumlarında çalışan hemşirelerin önemli oranda işten ayrılma niyetinde olması hasta bakımı hizmet niteliğini ve sürekliliğini etkilemekte, dolayısıyla kurumun verimliliğini aşağı çekmektedir (Abaan ve Duygulu, 2004:66). Araştırmaya katılan hemşirelerin işten ayrılma niyetini belirleme amacıyla sorulan ifadelere vermiş oldukları yanıtların oransal dağılımı Tablo 5'te görülmektedir. "Kariyerimin şu anında, mümkün olsaydı işimi bırakırdım" ifadesine katılanların oranı %45,8 (213) gibi oldukça yüksek bir oran çıkmıştır. İfadeye katılan hemşirelerin %55,7'si 35 yaş ve altında, %63,4'ü ise 5 yıl ve daha az hizmet süresine sahip grubu oluşturmaktadır.

Tüm dünyada ve Türkiye'de, 2020 yılından beri büyük mücadeleler verilen Covid-19 salgın sürecinde, her kademeden sağlık çalışanlarının işyükü, stresi ve tükenmişlik düzeyi ciddi şekilde artmış, yüksek derecede özveri ile çalışmak durumunda kalmışlardır. Bu sebeple araştırmada kullanılan ve Rosin ve Korabik'e (1991) ait 4 maddelik ölçeğe, "İşimi bırakmayı son 1 yıl içinde
düşünmeye başladım" ifadesi eklenerek 5 madde şeklinde uygulanmıştır. Bu ifadeye katılım gösteren hemşirelerin oranı %38 (176) düzeyindedir. Bu sonuç da salgın sürecinde sağlık kurumu çalışanlarının tükenmişlik düzeylerinde, dolayısıyla işten ayrılma niyetlerinde önemli sayılabilecek artış gözlemlendiğini ortaya koymaktadır.

Tablo 5. Ankete Katılan Hemşirelerin İşten Ayrılma Niyetlerinin Oransal Dağılımı (n=464)

İfadeler	Kesinlikle katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle katılıyorum
Kariyerimin şu anında, mümkün olsaydı işimi bırakırdım	%25,5	%14,6	%14,2	%12,6	%33,2
Önümüzdeki altı ay içerisinde işimi bırakmayı düşünüyorum	%45,4	%16,4	%17,9	%8	%12,4
Şu anda yeni bir iş arıyorum	%54,1	%17,9	%11,5	%5,1	%11,5
İşimi bırakmayı düşünüyorum	%38,4	%17,1	%16,9	%10,2	%17,3
İşimi bırakmayı son 1 yıl içinde düşünmeye başladım	%32,8	%15,3	%13,8	%14	%24

3. SONUÇ

Bu araştırmada, Adana ve Mersin'de sağlık kurumlarında çalışan hemşirelerin tükenmişlik algılarının işten ayrılma niyeti üzerinde etkilerinin olup olmadığı ortaya konmaya çalışılmıştır. Araştırma kapsamında tasarlanan hipotezleri analiz edilebilmek için ihtiyaç duyulan bilgiler, Adana ve Mersin'deki kamu ve özel sektör sağlık kurumlarında çalışan hemşirelerden, çevrimiçi metotla, kartopu örneklemesi yöntemiyle ve bu çalışma için dizayn edilmiş olan anket formu aracılığıyla toplanan verilerden oluşmaktadır. 464 anketle sağlanan verilere uygulanan analizlerin sonuçları, araştırma için oluşturulan hipotezlerinin tamamının desteklendiği gerçeğini ortaya koymaktadır.

Alanyazında, tükenmişlik algılarının işten ayrılma niyetine etkisini inceleyen çok sayıda ulusal ve uluslararası çalışma yapılmış, iki değişken arasında pozitif yönlü ve anlamlı bir ilişki tespit edilmiştir. Bu çalışmada, bireylerin duygusal tükenmişlik ve duyarsızlaşma düzeylerinin bağımlı değişken işten ayrılma niyeti üzerinde anlamlı ve pozitif bir etkiye sahip olduğu ve üçüncü boyut olan kişisel başarının, bağımlı değişken işten ayrılma niyeti üzerinde anlamlı ve negatif bir etkiye sahip olduğu görülmektedir. Elde edilen bu sonucun, alan yazında yapılmış olan çalışmalarla (Çalışkan, A. ve Özkan H., 2020; Sayıl vd., 1997; Cortese, 2012; Heinen vd.,2013; Mc Carthy vd., 2007; Gardulf vd., 2005; Ribeiro, 2014; Karadağ vd., 2001; Çalışkan, ve Bekmezci, 2019; Çalışkan, ve Pekkan, 2019) desteklendiği görülmektedir.

Ayrıca,"Kariyerimin şu anında, mümkün olsaydı işimi bırakırdım" ve "İşimi bırakmayı son 1 yıl içinde düşünmeye başladım" ifadelerine verilen cevaplara, genç ve meslekte hizmet süresi az hemşirelerde nispeten yüksek katılımın görülmesi de alanyazında bu konuda yapılan çalışmalardan elde edilen sonuçlarla (Flinkman vd., 2008; Takase, 2010; Şen Bezirci ve Kocaman 2013; Lavoie vd., 2011; Hayes vd., 2012; Gieter vd.,2011; Sürer ve Kocaman, 2009; Pathman vd.,2002) benzerlik göstermektedir. Bu araştırmalardan elde edilen sonuçlar yaş ve kıdem değişkenlerinin işten ayrılma niyeti üzerinde önemli derecede etkisi olduğunu ortaya koymaktadır.

Sağlık çalışanlarının çalıştıkları kurumlara duydukları bağlılık, -diğer örgütsel değişkenlerde olduğu gibi- sağlık bakım çıktılarına direkt etki etmektedir. Tükenmişliğin negatif etkilerini giderebilmek, en azından asgari düzeye indirebilmek için, alınması gereken önlemler bireysel ve örgütsel olmak üzere iki grupta ele alınmalıdır. Her şeyden önce hemşirelerin, verdikleri hizmetin doğasında stres faktörünün yer aldığının farkında olmaları gerekmektedir. Kişi, stresin farkında olduğunda, onu kabullenme, tanımlama, baş etme ve yönetme konusunda daha kararlı davranacaktır. Bu nedenle bireysel çaba ve programlara meslek hayatının her aşamasında yer vermek durumundadırlar.

Diğer taraftan gerek örgütsel gerekse devlet bazında karar verici ve uygulayıcıların tükenmişlik sendromunun etkilerini ve işten ayrılma niyetlerini azaltacak radikal çözümler üretmeleri gerekmektedir. Covid-19 pandemi sürecinin milat olarak kabul edilip, insanüstü çaba sarf ederek aşırı yoğun ve yıpratıcı çalışma temposu sonucunda işten ayrılma niyetlerinin azaltılmasının sağlanması zorunluluk arz etmektedir. Yapılan önceki çalışmalarla ortaya koyulan, -zaten varolan- tükenmişlik ve işten ayrılma niyetinin bu çalışmalarda yer alan; eğitim programları düzenlemek, psikolojik danışmanlık desteği sağlamak, iş zenginleştirilmesi, moral ve motivasyon artırıcı toplantılar, taltif ve takdir çalışmaları ile duygusal emek davranışı geliştirme çabalarının çok ötesinde sistemli ve sürdürülebilir programlarla, ülke genelinde ve tüm sağlık sektörü çalışanlarını içerecek şekilde stratejiler formüle edilmeli ve uygulanmalıdır. Özellikle kişilik özellikleri başta olmak üzere çok farklı değişkenleri dikkate alarak yapılacak kapsamlı ve boylamsal çalışmalar, sağlık çalışanlarının işe alınması, çağın ihtiyacına göre eğitim ve gelişim sağlanması ve elde tutulması konusunda kilit rol oynayacaktır.

KAYNAKÇA

Abaan, S. ve Duygulu S 2004). Hemşirelerin Çalıştıkları Kurumdan Ayrılmalarına Yol Açabilecek Olası Nedenlerin ve Örgüte Bağlılıklarının İncelenmesi, Hacettepe Üniversitesi Hemşirelik Yüksekokulu Dergisi, 11(2), 61-73.

Akpınar, A. T., ve Taş, Y. (2011). Acil Servis Çalışanlarının Tükenmişlik İle İş Doyum Düzeyleri Arasındaki İlişkiyi Belirlemeye Yönelik Bir Araştırma, Türkiye Acil Tıp Dergisi, 11(4), 161-165.

Baron, D. N., and Weste. (2007). The Emotional Costs of Caring Incurred By Men and Women in The British Labour Market. Social Science & Medicine, 65 (10): 2160 – 2171.

Barutçu, E.ve Serinkan, C. (2008). Günümüzün Önemli Sorunlarından Biri Olarak Tükenmişlik Sendromu ve Denizli'de Yapılan Bir Araştırma, Ege Akademik Bakış Dergisi, 8(2), ss. 541-561.

Cortese, G.C. (2012). Predictors of Critical Care Nurses İntention To Leave The Unit, The Hospital, And The Nursing Profession. Open Journal of Nursing, 3, 311-326.

Çalışkan, A. ve Bekmezci, M. (2019). Aşırı İş Yükünün İşten Ayrılma Niyetine Etkisinde İş Tatmini ve Yaşam Tatmininin Rolü: Sağlık Kurumu Çalışanları Örneği. Adıyaman Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 11(31), 381-431.

Çalışkan, A. ve Özkan H. (2020). Örgütsel Bağlılığın Tükenmişliğe Etkisi İş Tatmininin Aracılık Rolü Mersin İli Kamu Hastaneleri Hemşirelerine Yönelik Bir Uygulama, Afyon Kocatepe Üniversitesi Sosyal Bilimler Dergisi, 22(1):1 80-194.

Çalışkan, A. ve Pekkan, N.U. (2019). Sağlık Sektörü Çalışanlarında Tükenmişlik Duygusunun İşten Ayrılma Niyetine Etkisi: Kişi-Örgüt Uyumunun Aracılık Rolü, Business and Economics Research Journal, 10 (2), 469-481.

Çetin, F., Basım, H.N. ve Aydoğan, O. (2011). Örgütsel Bağlılığın Tükenmişlik İle İlişkisi: Öğretmenler Üzerine Bir Araştırma. Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi. 25, 61-70,

Dede, M., Çınar, S. (2008). Dahiliye Yoğun Bakım Hemşirelerinin Karşılaştıkları Güçlükler ve İş Doyumlarının Belirlenmesi, Maltepe Üniversitesi Hemşirelik Bilim ve Sanatı Dergisi, 1(1), 3-14.

Demir, A., Ulusoy, M., Ulusoy, M. F. (2003). Investigation of factors İnfluencing Burnout Levels İn The Professional And Private Lives Of Nurses. Int J Nurs Stud, 40, 807-827.

Dolunay, A. B. ve Piyal, B. (2003). Öğretmenlerde Bazı Mesleki Özellikler Ve Tükenmişlik. Kriz Dergisi, 11(1), 35-48.

Duquette A., Kerouac S., Sandhu, B. (1994). Factors Related to Nursing Burnout: A Review of Empirical Knowledge, Issues Mental Health Nursing 15(4): 337-358.

Ebrinç, S., Açıkel, C., Başoğlu, C., Çetin, M., Çeliköz, B. (2002). Yanık Merkezi Hemşirelerinde Anksiyete, Depresyon, İş Doyumu, Tükenme ve Stresle Başa Çıkma: Karşılaştırmalı bir Çalışma, Anadolu Psikiyatri Dergisi, 3, 162-168.

Embriaco, N., Papazian, L., Kentish-Barnes, N., Pochard, F., Azoulay, E. (2007). Burnout Syndrome Among Critical Care Healthcare Workers. Current Opinion in Critical Care, 13, 482- 488.

Ergin C. (1992). Doktor ve Hemşirelerde Tükenmişlik ve Maslach Tükenmişlik Ölçeğinin Uyarlanması, Türk Psikologlar Derneği Yayınları, Ankara, 143-154.

Flinkman, M., Laine, M., Leino-Kilpi, H., Hasselhorn, H. M,, Salantere, S. (2008). Explaining Young Registered Finnish Nurses' İntention To Leave The Profession: A Questionnaire Survey. International Journal of Nursing Studies, 245, 727-739.

Gardulf A., Söderström I., Orton M., Eriksson L. E., Arnetz B. & Nordström G. (2005). Why do Nurses at a University Hospital Want to Quit Their Jobs?, Journal of Nursing Management, 13, 329–337.

Gieter, D.S., Hofmans, J., Pepermans, R. (2011). Revisiting the impact Of Job Satisfaction And Organizational Commitment On Nurse Turnover İntention: An İndividual Differences Analysis, International Journal of Nursing Studies, 48, 1562-1569.

Hayes, L.J., O'Brien Pallas, L., Duffield, C., Shamian, J., Buchan, J., Hughes, F., et al. (2012). Nurse Turnover: A Literature Review - An Update, International Journal of Nursing Studies, 49:7, 887-905.

Heinen M.M., van Achterberg T., Schwendimann R. et al. (2013) Nurses' İntention To Leave Their Profession: A Cross Sectional Observational Study İn 10 European Countries, International Journal of Nursing Studies 50 (2), 174–184.

Kaçmaz, N. (2005). Hemşirelerde İş Stresi ve Tükenmişlik, İ.Ü.F.N. Hem Dergisi, 13(54), 65-75.

Karadağ F, Karagöz N, Ateşçi Ç.A, Varma G, Oğuzhanoğlu N.K. (2001). Denizli İli'nde Çalışan Hemşirelerde İş Doyumu, Nöropsikiyatri Arşivi, a; 38(4).

Karadağ, G., Sertbaş, G., Güner, İ. C., Taşdemir, H. S., Özdemir, N. (2002). Hemşirelerin İş Doyumu Ve Tükenmişlik Düzeyleri İle Bunları Etkileyen Bazı Değişkenlerin İncelenmesi. Hemşirelik Forumu Dergisi, 5(6), 8-15.

Kebapçı, A. ve Akyolcu, N. (2011). Acil Birimlerde Çalışan Hemşirelerde Çalışma Ortamının Tükenmişlik Düzeylerine Etkisi, Türkiye Acil Tıp Dergisi, 11(2), 59-67.

Kocabıyık, Z. O., Çakıcı, E. (2008). Sağlık Çalışanlarında Tükenmişlik ve İş Doyumu, Anadolu Psikiyatri Dergisi, 9, 132-138.

Lavoie, T.M., Paquet, M., Marchionni, C., Drevniok, U. (2011). Turnover Intention Among New Nurses, Journal of Nursing in Staft Development, 27:1, 39-45.

Lee H., Song R., Suk Y. (2003). A Comprehensive Model for Predicting Burnout in Korean Nurses, Journal of Advanced Nursing 44(5): 534-545.

Maslach, C. & Jackson, S. E. (1981). The Measurement Of Experienced Burnout, Journal of Occupational Behavior, Vol.2, pp. 99-113.

McCarthy, G., Tyrrell, M.P., Lehane, E. (2007). Intent To "Leave" Or "Stay" İn Nursing. Journal of Nursing Management, 15; 248-255.

Metin., Ö, ve Özer., F, G, (2007). Hemşirelerin Tükenmişlik Düzeylerinin Belirlenmesi, Atatürk Üniversitesi Hemşirelik Yüksekokulu Dergisi, Cilt, 10, Sayı, 1, ss. 58-66.

Özbaş, A., Bolol, N., Solmaz, Ş., Çavdar, İ., Akyolcu, N., Urhan, S., Yıldız, L. (2006). Kulak Burun Boğaz Kliniğinde Çalışan Hemşirelerde Tükenmişlik. İ.Ü.F.N. Hem Derg, 14(56), 41-48.

Pathman, D. E., Konrad, T. R., Williams, E. S., Scheckler, W. E., Linzer, M., & Douglas, J. (2002). Physician Job Satisfaction, Job Dissatisfaction, And Physician Turnover. Journal of Family Practice, 51(7), 593.

Poncet, M. C., Toullic, P., Papazian, L., Kentish-Barnes, N., Timsit, J., Pochard, F., Chevret, S., Schlemmer, B., Azoulay, E. (2007). Burnout Syndrome in Critical Care Nursing Staff, American Journal of Respiratory and Critical Care Medicine, 175, 699-703.

Ribeiro Vf, Filho Cf, Valenti Ve, Ferreira M, De Abreu Lc, De Carvalho Td, Et Al. (2014). Prevalence Of Burnout Syndrome in Clinical Nurses At A Hospital Of Excellence, Int Arch Med.7:22.

Rosin, H. M., and Korabik, K. (1991). Workplace Variables, Afective Responses, And İntention To Leave Among Women Managers, Journal Of Occupational Psychology, 64(4), 317-330.

Salmela-Aro, K., Tolvanen, A. and Nurmı, J.E. (2009). Achievement Strategies During University Studies Predict Early Career Burnout and Engagement, Journal of Vocational Behavior. 75, 162– 172.

Savran, S. (2013), Üçüncü Büyük Depresyon Kapitalizmin Alacakaranlığı (Vol. 198). Yordam Kitap.

Sayıl I., Haran S., Ölmez Ş., Özgüven H. D. (1997). Ankara Üniv. Hastanelerinde Çalışan Doktor ve Hemşirelerin Tükenmişlik Düzeyleri, Kriz Dergisi, (2): 71-77.

Shımızutanı, M., Odagırı, Y., Ohya, Y., Shımomıtsu, T., Krıstensen, T.S., Maruta, T., Iımorı, M. (2008). Relationship of Nurse Burnout with Personality Characteristics and Coping Behaviors, Industrial Health, 46, 326–335.

Silah, M. (2005). Endüstride Çalışma Psikoljisi. Ankara: Seçkin Yayıncılık.

Simat, Ö. (2007). Psikiyatri Kliniklerinde Çalışan Hemşirelerin Tükenmişlik Düzeylerinin Araştırılması, Yüksek Lisans Tezi, İstanbul Üniversitesi, Sağlık Bilimleri Enstitüsü, İstanbul.

Sürer, P., Kocaman, G. (2009). Hastanede Çalışan Hemşirelerin İşten Ayrılma Nedenleri. DEÜ Hemşirelik Yüksekokulu Yaz Konferansı- 6, İzmir.

Şahin, D., Turan, F. N., Alparslan, N., Şahin, İ., Faikoğlu, R., Görgülü, A. (2008). Devlet Hastanesinde Çalışan Sağlık Personelinin Tükenmişlik Düzeyleri, Nöropsikiyatri Arşivi, 45, 116-121.

Şen Bezirci, S., Kocaman, G. (2013). Farklı Kuşaklardaki Hemşirelerin Meslekten ve İşten Ayrılma Niyetleri İle İş Doyumlarının İncelenmesi. 1. Ulusal Hemşirelikte Yönetim Sempozyumu, İstanbul.

Takase, M. (2010). A Concept Analysis Of Turnover İntention: Implications For Nursing Management. Collegian, 17, 3-12.

Taycan O, Kutlu L, Çimen S, Aydın N. (2006). "Bir Üniversite Hastanesinde Çalışan Hemşirelerde Depresyon ve Tükenmişlik Düzeyinin Sosyodemografik Özelliklerle İlişkisi". Anatolian Journal of Psychiatry. 7:100-108.

Tayfun, A., ve Çatır, O. (2014). Hemşirelerin Örgütsel Sinizm Düzeylerinin İncelenmesi, İşletme Araştırmaları Dergisi, 6(3), 346-365.

Yavuzyılmaz, A., Topbaş, M., Çan, E., Çan, G., Özgün, Ş. (2007). Trabzon İl Merkezindeki Sağlık Ocakları Çalışanlarında Tükenmişlik Sendromu İle İş Doyumu Düzeyleri Ve İlişkili Faktörler, TSK Koruyucu Hekimlik Bülteni, 6 (1), 41-50.

KONTROL EDİLMEYEN BİR DİYABETİK HASTADA RETINAL NEOVASKÜLARİZASYONA İKİNCİ İKİLİ AKUT VİTRE KANAMA İLE BİR YÜKSEK İRTİFA RETİNOPATİSİ OLGUSU

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Özet
Yüksek irtifa retinopatisi, dağ tırmanıcıları ve kısa sürede yüksek rakımlara çıkan kişilerde popülasyona göre daha sık görülen bir durumdur. Yüksek rakımlarda oksijen miktarının ve basıncının düşmesi ile retinal damarlarda kanamalar görülebilmektedir. Bu kanamalar sıklıkla periferik retina alanlarında olmasından dolayı asemptomatik bir seyir izlemekle birlikte ciddi kanamaların olduğu durumlarda semptomatik hale gelmektedir. Bu olgu sunumunda 37 yaşında erkek hasta deniz seviyesinden 2850 metreye çıktıktan sonra her iki gözde de görmede azalma şikayeti ile başvuran hasta tartışılmıştır. Hastanın fundus fotoğrafları ve fundus fluorescein anjiografi görüntüleri sunulmuştur. Yüksek rakımlara çıkılması sağlıklı hastalarda retinopati yapması yanında diyabetik retinopati gibi vasküler retina hastalığı olanlarda da mevcut retinopatiyi kötüleştirebilmektedir. Dağ tırmanıcılığının ve yüksek irtifalara seyahatlerin artması nedeniyle göz hastalıkları uzmanlarının yüksek irtifa retinopatisini tanımaları ve tedavisini bilmeleri önem arz etmektedir.
Anahtar Kelimeler: vitreus kanamaları, yüksek irtifa retinopatisi, şeker hastalığı

A CASE OF HIGH-ALTITUDE RETINOPATHY WITH BILATERALLY ACUTE VITREOUS HEMORRHAGE SECONDARY TO RETINAL NEOVASCULARIZATION IN AN UNCONTROLLED DIABETIC PATIENT

Abstract
High altitude retinopathy (HAR) is a condition frequently seen among mountain climbers or individuals who reach high altitudes quickly. Hemorrhages in retinal vessels can be seen with the decrease in oxygen pressure at high altitudes. Although these hemorrhages often follow an asymptomatic course due to the peripheral retinal areas, they become symptomatic in cases of severe hemorrhages.

This case report describes a 37-year-old male who presented with reduced vision in both eyes after ascending 2850 meters above sea level. The associated fundus photography and fundus fluorescein angiography images of the patient are presented. Travelling high altitudes can cause retinopathy in healty people but can also worsen patients with existing vascular retinopathy such as diabetic retinopathy. Due to the increase in mountain climbing and travel to high altitudes, it is important for ophthalmologists to recognize and treat high altitude retinopathy.
Keywords: vitreous hemorrhages, high altitude retinopathy, diabetes

Introduction

In a high-altitude environment, factors such as low atmospheric oxygen, strong ultraviolet radiation, and low humidity can induce a series of pathophysiologic events that can result in disorders of the cardiovascular, respiratory, and ocular systems (1-2).
High Altudite Retinopathy (HAR) is usually seen in altitudes above 4000 meters. Most of the time HAR is asymptomatic, in the form of scattered superficial hemorrhages. It can recover spontaneously in 1-2 weeks. Lowering the patient to low altitudes accelerates recovery. Dilatation of retinal vessels may also be seen. Blurred vision, visual field loss, and even blindness may develop (3-5).
The first report of HAR was published in 1968 by Singh et al. They observed papilledema, retinal venous dilation, and retinal hemorrhage (6).

Case Report

A 37-year-old male presented with 10 days history of sudden onset painless vision decrease in both eyes. He went to Erzincan plateau at 2850 meters altitude 14 days ago. He climbed within 20 minutes from 1200 meters altitude. He noticed a central field defect on the 4th day of the holiday. He said that he drunk more alcohol than on routine days during the holiday. His medical history was unremarkable.
At the ocular examination, the best-corrected visual acuity (BCVA) was 0,7 LogMAR in the right eye and 0,3 LogMAR in the left eye. Anterior segment examination of both eyes was normal. Fundus examination of both eyes [Fig.1-2] revealed venous dilatation and tortuosity, vitreous hemorrhages located generally in the lower quadrants. The maculas of both eyes were normal.
Fundus Fluorescein Angiography (FFA) was performed. Although both posterior poles were natural in the FFA, the image was flu due to vitreous hemorrhages and ischemic mid-peripheral neovascularizations were available in both eyes especially in lower quadrans. [Fig.3-5] Patient was consulted to internal medicine in terms of diseases that could lead these changes such as hereditary spherocytosis, sickle cell anemia, diabetes and hypertension.
The patient underwent a complete hemogram, basic coagulation profile and peripheral blood smear, which revealed no abnormality. The patient's blood pressure and carotid ultrasound were normal. Only abnormality detected was fasting plasma glucose level (314 mg/dl) and HbA1C (10%). Patient was diagnosed as diabetes and insulin treatment was started.
He underwent a general physical check-up and imaging to rule out cardiac or neurological abnormalities, which turned out to be normal.

Discussion

HAR is usually seen at altitudes above 4000 meters. In this case, 2850 meters altitude was observed. The reason why we consider HAR is that the patient ascends from an altitude of 1200 meters to 2850 meters in a time as short as 20 minutes.

The patient's sudden vitreous hemorrhage was attributed to uncontrolled diabetes and HAR. As in other HAR patients, there was venous dilatation however there was no superficial retinal hemorrhage. There were large neovascularizations in the mid periphery.

In the literature, vitreous hemorrhage has been observed in three HAR patients and the other patients have usually asymptomatic superficial retinal hemorrhages (7).

Low oxygen at high altitude, vasodilatation triggered by drinking alcohol and high blood sugar all together suggest that the patient is developing neovascularization. Bleeding on the 4th day of the holiday is important to show how fast neovascularization develops.

Conclusion

Uncontrolled diabetic patients should be warned that retinopathy may worsen before travelling to high altitude areas. With increasing popularity of mountaineering and travelling high altitudes, ophthalmologists should be alert to diagnose and treat this rare condition.

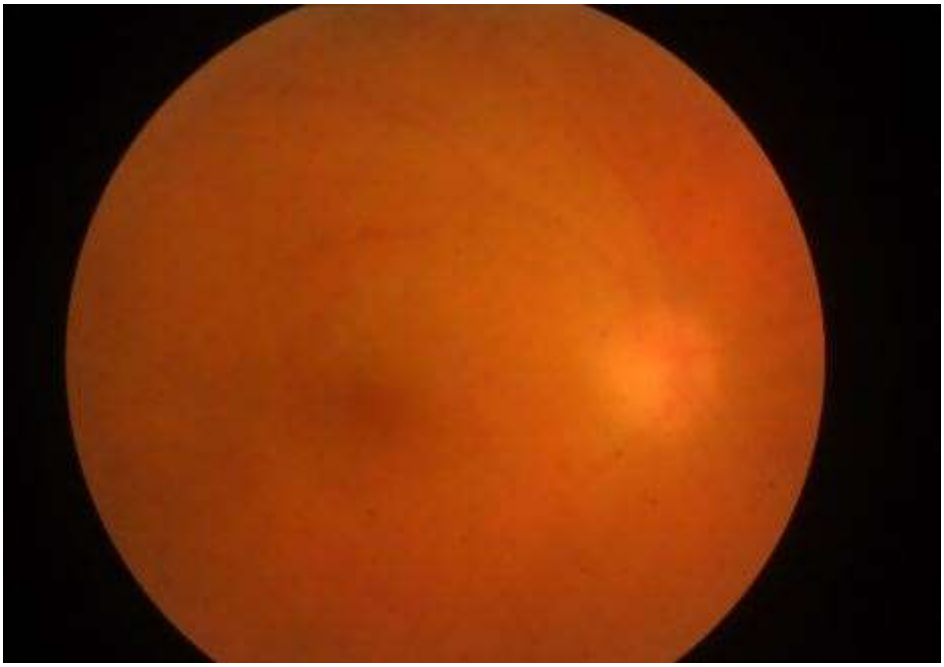


Figure 1: Fundus Photo of Right Eye

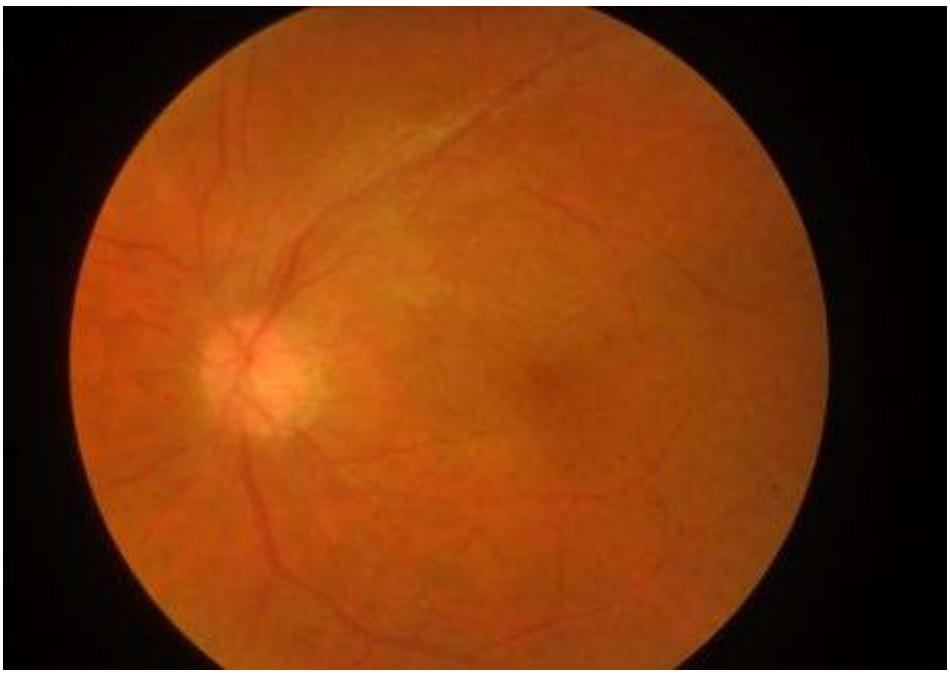


Figure 2: Fundus Photo of Left Eye

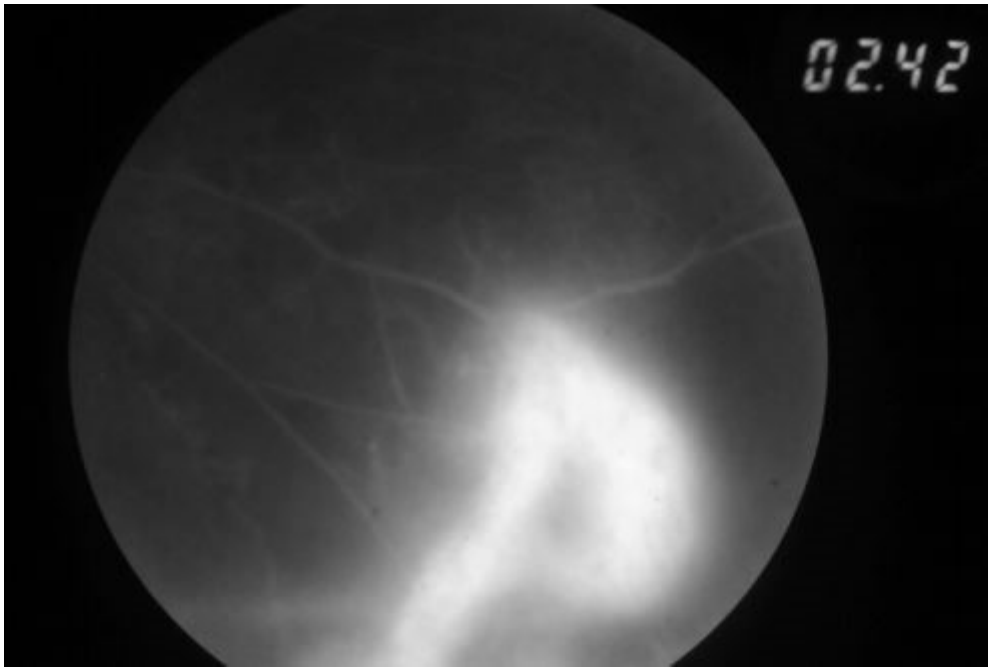


Figure 3: Neovascularization Appearance of Fundus Fluorescein Angiography

References:

1.Tian X, Zhang B, Jia Y, et al. Retinal changes following rapid ascent to a high-altitude environment. Eye (Lond). 2018 Feb;32(2):370-374.

2.Wilczyński M, Kucharczyk M, Filatow S. High-altitude retinopathy--case report. Klin Oczna. 2014;116(3):180-3

3.Mukhtar A, Khan MS, Habib A,et al.Visual outcome of retinal vein occlusion in patients residing at high altitude. J Pak Med Assoc. 2017 May;67(5):735-738.

4.Bhandari SS, Koirala P, Regmi N, et al. Retinal Hemorrhage in a High-Altitude Aid Post Volunteer Doctor: A Case Report. High Alt Med Biol. 2017 Sep;18(3):285-287.

5.Willmann G, Schatz A, Gekeler F, et al. Estimated incidence of high-altitude retinal hemorrhages. Graefes Arch Clin Exp Ophthalmol. 2018 Jan;256(1):231-232.

6.Singh I, Khanna PK, Srivastava MC. Acute Mountain sickness. New Engl J Med 1969; 280: 143–145.

7.Butler FK, Harris DJ Jr, Reynolds RD. Altitude retinopathy on Mount Everest, 1989. Ophthalmology. 1992 May;99(5):739-46

OPEN HEART SURGERY IN PATIENTS WITH CHRONIC RENAL FAILURE

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ABSTRACT

Aim

Cardiovascular pathologies are important causes of mortality and morbidity in patients with chronic renal failure (CRF). Although cardiac surgery has been performed more frequently in dialysis-dependent chronic kidney patients in recent years, mortality and morbidity rates are still higher. Cardiac surgery mortality in patients with CRF is between 3-25%. Fluid electrolyte disorder, hemodilution and coagulation disorders that occur in heart surgeries are responsible for most of mortality and morbidity rates. In this study, the outcomes of patients with dialysis-dependent CRF who underwent cardiac surgery were evaluated retrospectively.

Methods

57 patients with hemodialysis-dependent CRF who underwent cardiac surgery under cardiopulmonary bypass (CPB) between January 2015 and October 2021 were included in the study. The perioperative findings of these patients were reviewed retrospectively from the files of the patients.

Results

Forty (70.1%) of the patients were male, 17 (29.9%) were female, and the mean age was 59.5 years (range, 32-76 years). Coronary bypass was performed in 46 patients, valve replacement with coronary bypass in 6 patients, valve replacement in 2 patients, left ventricular aneurysmectomy with coronary bypass in 2 patients, and left carotid endarterectomy with valve replacement in 1 patient. The mean cross-clamp time was 53.2 minutes and the total perfusion time was 90 minutes in the surgeries. The average length of stay in the intensive care unit was 61.1 hours, and the total hospital stay was 9.8 days. Postoperative mortality was 15.7% (n: 9).

Conclusion

Cardiac surgery operations can be performed in many centers under acceptable risks for patients with CRF. Improvement in symptoms of these patients, prolongation of life quality and duration is possible with successful cardiac intervention. With appropriate preoperative preparation, good patient follow-up, it is possible to have acceptable morbidity and mortality rates.

Keywords: Cardiac surgery, chronic renal failure, mortality

CİNSİYET HORMONLARININ LAPAROSKOPİK KOLESİSTEKTOMİ GEÇİREN HASTALARDA POSTOPERATİF AĞRI DÜZEYLERİNE ETKİSİ[1]

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ÖZET

Amaç

Bu çalışmanın amacı preoperatif cinsiyet hormonları seviyelerinin laparoskopik kolesistektomi geçiren hastalarda postoperatif ağrı düzeylerine etkisini belirlemekti.

Materyal ve Metot

Deneysel tipte olan çalışmaya, araştırma kriterlerine uyan 89 hasta dahil edildi. Hastalar cinsiyetlerine ve menopoz öncesi ve sonrası dönemde oluşlarına göre 3 gruba ayrıldı; Erkek hasta (n:28), menopoz sonrası kadın hasta (n:31), normal siklus döneminde kadın hasta (n:30). Normal siklustaki kadınlar da foliküler fazda ve lüteal fazda oluşlarına göre yeniden gruplandırıldı. Veri toplama aracı olarak Tanıtıcı Özellikleri Belirleme Formu, Görsel Kıyaslama Ölçeği (VAS) ve Hasta Takip Formu kullanıldı. Hastalardan ameliyat öncesinde venöz kan numuneleri alındı. Bu numunelerde, kadın ve erkek hastalarda estradiol (est), testosteron (tes) ve progesteron (pro) düzeyleri ölçüldü.

Bulgular

Erkeklerde hissedilen ağrı şiddetinin kadınlardan daha düşük olduğu ve hastalar total olarak değerlendirildiğinde VAS skorlarının testosteron düzeyleri ile ters ilişkili ve güçlü korelasyon gösterdiği izlendi. Bununla birlikte subgrup analizlerinde erkeklerde est düzeylerinin primer rol oynadığı, postoperatif daha ileri dönemde ise est/tes oranının belirleyici olduğunu tespit edildi. Kadınlarda ise menopoz sonrası dönemde hissedilen ağrı düzeyinde en belirleyici etken est/pro oranı iken menopoz öncesi dönemde kadınlarda menstrual siklusun farklı evrelerine göre değişiklik görülmedi.

[1] Bu çalışma, Niğde Ömer Halisdemir Üniversitesi Bilimsel Araştırmalar Proje Birimi tarafından desteklenmektedir (Proje No: SAT 2020/5-HIDEP).

Sonuç
Bu çalışmanın sonucunda hem cinsiyetler arası hem de kadınlarda menopoz öncesi ve sonrası normal fizyolojik dalgalanmaların ağrı üzerindeki etkilerinin ayrı ayrı incelenmesi gerektiğini saptandı. Menopoz sonrası en belirleyici etken est/pro oranı iken; erkeklerde estradiol düzeyleri tespit edildi.
Anahtar Kelimeler: Gonadal streroidler, laparoskopik kolesistektomi, postoperatif ağrı, postoperatif bakım, menstrual siklus

THE EFFECTS OF SEX HORMONES ON POSTOPERATIVE PAIN IN PATIENTS WITH LAPAROSCOPIC CHOLECYSTECTOMY

ABSTRACT
Objective
This experimental study aimed to determine the effect of preoperative sex hormone levels on postoperative pain levels in patients undergoing laparoscopic cholecystectomy.

Material and Method
The study included a total of 89 patients who met the study inclusion criteria. The patients were divided into 3 groups based on their gender and pre- and post-menopausal periods. Normal-cycle women were also regrouped based on their follicular and luteal phase. Data were collected using a descriptive characteristics form, a patient follow-up form, and the Visual Analogue Scale. Venous blood samples taken from the patients before surgery were used to measure their levels of estradiol, testosterone, and progesterone levels.

Results
Male patients had lower pain levels than female patients. Subgroup analyzes suggested that their estradiol level played a primary role in males, and that the estradiol/ testosterone ratio was determinant in the late postoperative period. In female patients, the estradiol/ progesterone ratio was the most determining factor for the level of pain felt in the post-menopausal period, whereas there was no change in the pre-menopausal period at different stages of the menstrual cycle. Sex hormones were found to be effective for predicting postoperative pain severity.

Conclusions
These results have revealed that the effects of normal physiological fluctuations on pain in both genders and in pre- and post-menopausal women should be examined separately. This study mainly concluded that the factor most determining for of pain level was the est/pro ratio in women during the post-menopausal period and the est level in men.
Keywords: Sex hormones, laparoscopic cholecystectomy, postoperative pain, menstrual cycle

GİRİŞ
Laparoskopik kolesistektomi yöntemi, kolelitiazisin cerrahi tedavisinde kullanılan endoskopik bir girişimdir (Lv and Bai, 2016). Bu operasyonun ardından, hastaların çoğunda ciddi karın ağrısı olmakta ve güçlü analjeziklere ihtiyaç duyulmaktadır (Soper, Bartesu and Claymen, 1992).

Laparoskopik kolesistektomi sonrası erken dönemde yetersiz ağrı tedavisi pulmoner fonksiyon bozukluklarına neden olabileceği gibi (Youssef and Hassan, 2017), erken ayağa kalkmayı engelleyen şiddetli ağrının neden olduğu hareket azalması, tromboemboli riskini yükseltmektedir (Wang and Keck, 2004). Ayrıca ağrısı olan hastada oluşan kaygı, kas tonüsünü artırarak kramplara da neden olmaktadır (Pinto, Vieira, Pereira and Almeida, 2017). Tüm bu olumsuz sonuçlar göz önüne alındığında, postoperatif ağrı yönetiminin önemi ortaya çıkmaktadır.

Erkek ve kadınlarda, ağrıya verilen tepki kadar, ağrı prevalansı ve ağrıya bağlı analjezik ihtiyacının farklılık gösterdiği uzun zamandır bilinmektedir. Cinsiyetler arasında ortaya çıkan bu farklılıkların sosyal, kültürel ve biyolojik varyasyonlardan kaynaklanabileceği öne sürülmektedir (Hurley and Adams, 2008).

Gonadal hormonların ağrıdaki kesin rolleri bilinmemekle birlikte farklı mekanizmalar önerilmiştir. Östrojen ve androjenler gibi nöro-aktif steroidler olarak da adlandırılan spesifik steroidlerin, santral ve periferde reseptörlerine bağlanmasının çeşitli nörotransmitter ve reseptörlerin hem ekspresyon düzeyinde hem de aktivite düzeyinde artışını tetiklediği gösterilmiştir. Sonuçta bu artış, beyinde ağrı ve analjezi ile ilişkilendirilen alanlarda ortaya çıkan uyarıların derecesinde farklılıklara neden olmaktadırlar (McEwen and Milner,2017). Bununla birlikte, stres ve ağrının baskılanması cevabına katılan opioid nörotransmitterlerin ve μ opioid reseptörlerin ekspresyonunun dolaşımdaki östrojen ve testosteron düzeyleri ile modifiye edilebileceği öne sürülmüştür (Zubieta, Dannals and Frost, 1999).

Yakın dönemde ağrı eşiği, ağrı toleransı ve tedaviye cevapta cinsiyetler arası farklılıkları inceleyen çok sayıda çalışma yapılsa da ortak bir görüş ortaya konulamamıştır (Maurer, Lissounov, Knezevic, Candido and Knezevic, 2016). Ancak ağrı algılanmasında cinsiyete bağlı ortaya çıkan farklılıkların major nedeninin eşey hormonlarının konsantrasyonundaki bireysel varyasyonlar olduğu düşünülmektedir (Hurley and Adams, 2008). Bununla birlikte kadınlarda menstrual siklus boyunca ortaya çıkan hormon seviyelerindeki dalgalanmaların da ağrı eşiği ve algılanması üzerine etkili olduğu genel olarak ortaya konulmuştur (Riley, Robinson, Wise, Price and 1999).

Ameliyat sonrası ağrı yönetimi, hastaların iyileşme sürecini hızlandıracaktır. Genellikle ağrı tedavisinde rutin analjejikler uygulanmaktadır. Cinsiyet hormonlarının ağrı üzerindeki etkisinin belirlenmesi ile cinsiyete özel ağrı yönetimi planlanabilir. Böylece gerekli ve yeterli analjejik tedavisi sağlanır.

Bu doğrultuda, bu çalışma ile erkeklerde ve kadınlardaki menopoz öncesi ve sonrası dönemde menstrual siklusun farklı evrelerinde laparoskopik kolesistektomi sonrası ağrı düzeylerinin sex hormon düzeyleri ile ilişkisinin araştırılması amaçlandı.

MATERYAL VE METHOD

Bu araştırma, cinsiyet hormonlarının laparoskopik kolesistektomi geçiren hastalarda postoperatif ağrı düzeylerine etkisini belirlemek amacıyla deneysel bir çalışma olarak planlandı ve yapıldı. Araştırmaya etik kurul onayı ve Niğde Ömer Halisdemir Üniversitesi Eğitim ve Araştırma Hastanesi'nden gerekli izinler alındıktan sonra başlandı. Araştırmanın evrenini, Mart 2019- Şubat 2020 tarihleri arasında Niğde Ömer Halisdemir Üniversitesi Eğitim Araştırma Hastanesi Genel Cerrahi Kliniğinde laparoskopik kolesistektomiye alınan hastalar, örneklemini ise belirtilen evrenden, araştırmaya katılmayı kabul eden ve dahil edilme/edilmeme kriterlerini karşılayan 61 kadın (31'i menapoz, 30'u menstrural siklusu devam eden) ve 28 erkek hasta oluşturdu.

Çalışmaya katılmayı gönüllü olarak kabul eden, 18 yaş ve üzerinde olan, açıklanan bilgilerin anlaşılmasını ve ağrı şiddetini doğru olarak ifade edebilmesini engelleyecek iletişim güçlüğü ve mental yetersizliği olmayan, genel anestezi ile laparoskopik kolesistektomi uygulanan, cerrahi girişim sonrası VAS'a göre ağrı düzeyini 4 ve üzeri olarak ifade eden tüm hastalar örneklem kapsamına alındı. Buna ek olarak çalışmaya sadece düzenli menstrual siklusa sahip olan kadın hastalar dahil edildi.

Hem erkek hem de kadın hastalar için; steroid tedavisi alan, daha önce abdominal cerrahi uygulanan, düzenli anajezik alan, ciddi hepatik, renal, kardiyak yetmezliği olan hastalar, cerrahi girişim sonrasında şiddetli kanama, bulantı, kusma gibi herhangi bir komplikasyon gelişen, ağrı düzeyini etkileyebileceğinden ameliyat bölgesine dren yerleştirilmiş olan hastalar çalışma dışında bırakıldı. Ayrıca menstrual dönemde olan kadın hastalar çalışmaya dahil edilmedi.

Çalışma süresince hastalara uygulanacak anestezik ve analjezik ajanlar standardize edildi. Kadın hastalar menstrual döngünün fazlarına göre yeniden gruplandırıldı. Bu açıdan kadın hastalar arasında menstruasyonun ilk gününden hesaplanmak üzere, mid-foliküler faz (6-12. gün) ve late-luteal faz (20-24. gün) olmak üzere iki ayrı grup oluşturularak da değerlendirildi (Ahmed 2019).

Çalışmaya alınan hastaların, operasyon öncesi venöz kan örnekleri alındı. Bu numunelerde, kadın ve erkek hastalarda estradiol, testosteron ve progesteron düzeyleri ölçüldü.

Hastaların postoperatif 1., 2., 6., 12., 18., 24. saatlerde VAS skorları, solunum hızları, kalp hızları, sistolik ve diyastolik kan basınçları ve vücut sıcaklıkları kaydedildi.

Verilerin toplanmasında ilgili literatür ışığında hazırlanmış olan 'Tanıtıcı Özellikleri Belirleme Formu', 'Görsel Kıyaslama Ölçeği' ve 'Hasta Takip Formu' kullanıldı.

Tanıtıcı Özellikleri Belirleme Formu

Bu form literatür doğrultusunda araştırmacı tarafından hazırlanan hastaların yaşı, cinsiyeti gibi sosyodemografik özelliklerine ilişkin soruları içermektedir (Soens , Wang , Berta , Strichartz, 2015; Ahmed, Khan , Ali, Haqnawaz, Hussain, Azam, 2012).

Görsel Kıyaslama Ölçeği (GKÖ)

Price ve arkadaşları (1983) tarafından geliştirilen bir skala olup, hastada ağrının şiddetini ölçmektedir. GKÖ 10 cm uzunluğunda vertikal veya horizontol hat üzerinde iki ucu farklı isimlendirilmiş bir skaladır (0=ağrı yok, 10=en şiddetli ağrı). Hastadan bu hat üzerinde hissettiği ağrı şiddetine karşılık gelen noktayı işaretlemesi istenir. İşaret konulan nokta ile hattın en düşük ucu (0=ağrı yok) arasındaki mesafe santimetre olarak ölçülmekte ve bulunan sayısal değer hastanın ağrı şiddetini göstermektedir (Price, McGrath, Rafii, Buckingham, 1983).

Hasta Takip Formu

Bu form literatür doğrultusunda araştırmacı tarafından hazırlanan hastaların postoperatif 1., 2., 6., 12., 18., 24. saatlerde VAS skorları, solunum hızları, kalp hızları, sistolik ve diyastolik kan basınçları ve vücut sıcaklıkları değerlerini içermektedir.

Veri Toplama

Laparoskopik kolesistektomi ameliyatı uygulanacak hastalardan operasyon öncesi venöz kan numuneleri alındı. Bu numunelerde, kadın ve erkek hastalarda östrojen, testosteron ve progesteron düzeyleri ölçüldü. Elde edilen veriler kullanılarak estradiol, testosteron (est/tes) ve estradiol, progesteron (est/pro) oranları hesaplandı.

Hastalara ameliyat öncesi tanıtıcı özellikleri belirleme formu dolduruldu. Ağrı ölçeği tanıtıldı. Hasta ameliyattan sonra kliniğe kabul edildiğinde GKÖ' ye göre ağrı şiddeti değerlendirildi. Aynı zamanda hastaların solunum hızları, kalp hızları, sistolik ve diyastolik kan basınçları ve vücut sıcaklıkları ölçüldü. Bu değerlendirme ve ölçümler 1., 2., 6., 12., 18., 24. saatlerde tekrarlandı.

Veri Analizi

Verilerin değerlendirilmesinde Statistical Package for the Social Sciences (SPSS) 24.00 paket programı kullanıldı. Verilerin normal dağılıma uygunluğu shapiro wilk testi ile değerlendirildi. Normal dağılıma uyan veriler ortalama±standart sapma; uymayanlar ise median ve %25-%75 persentillerle verildi.

Çalışma sonunda, erkeklerde ve kadınlarda, estradiol, progesteron ve testosteron düzeyleri ile altı pointte elde edilen ağrı skorlarının herbiri arasında ayrı ayrı korelasyon analizi yapıldı. Bununla birlikte her iki cinsiyette de est/tes ve estradiol/progesteron oranları hesaplanarak da ağrı skorları ile korelasyonuna bakıldı. Kadın hastalar menstrual siklusun gününe göre kendi aralarında gruplandırıldı, ağrı düzeyleri altı pointte student t test ile değerlendirildi. Böylece siklusun ağrı üzerine etkisi de belirlendi.

BULGULAR

Hastaların demografik verileri tablo 1'de ortaya konuldu. Tablo 2' ye bakıldığında hissedilen ağrının kadın ve erkeklerde farklı düzeylerde olduğu tespit edildi. Ancak menopoz döneminde (tablo 2) ve normal siklusta olan kadınlarda; bununla birlikte siklusun farklı evrelerinde (tablo 3) ağrı algısında bir farklılık saptanmadı.

Hastalar gruplara ayrılmadan total olarak ele alındığında sadece testosteron düzeyleri ile VAS skorları arasında ters ilişkili anlamlı bir korelasyon görüldü. Ayrıca 1. saat VAS düzeyleri hariç Est/Tes değerleri de benzer şekilde korelasyon gösterirken diğer hormon düzeyleri ve est/pro oranı ile doğrudan bir ilişki gösterilemedi. Menopoz grubundaki kadın hastalarda, postoperative 1., 6., ve 12. Saatte VAS değerleri ile progesteron düzeyleri arasında ters yönlü anlamlı bir korelasyon görüldü. Yine bu grupta est/pro oranlarında da 24. Saat dışında pozitif yönlü anlamlı bir ilişki saptandı.

Erkeklerde 1. Ve 2. Saat VAS değerleri ile estradiyol değerleri arasında anlamlı bir korelasyon gösterilirken; 6. Saatte est/pro değeri ile anlamlı korelasyon olduğu ortaya konuldu. Normal siklustaki kadınlarda ise hem kendi aralarında hem de sub-grup analizlerinde anlamlı bir korelasyona rastlanmadı.

Tablo 1. Demographics parameters of the patients						
	Kadın					
	Menopoz	Normal Siklus	Erkek	P*	P**	P***
n	31	30	28			
Yaş (yıl)	62.16±9.69	37.07±6.63	59.86±12.70	0.001	0.825	0.001
Boy (cm)	157.05±29.67	162.63±7.80	175.96±6.30	0.467	0.001	0.020
Kilo (kg)	81.39±13.17	73.07±19.10	80.11±11.58	0.153	0.971	0.256

Data was shown with mean ± standart deviation. P*: Menopoz ve normal siklus; P**: Menopoz ve erkek; P***: Normal siklus ve erkek gruplararası farkı göstermek için kullanıldı.

Tablo 2. Tüm Hastaların VAS skorları ve Hormon Düzeyleri			
Total Hasta (n: 89)			
VAS_1	7.0 (6.0-7.0)	**Testosteron**	28.15 (20.01-306.48)
VAS_2	6.0 (5.0-7.0)	**Progesteron**	0.30 (0.18-0.62)
VAS_6	5.0 (4.0-6.0)	**Estradiol**	38.78 (25.49-75.69)
VAS_12	4.0 (3.0-5.0)	**Est/Tes**	1 (3.6-0.12)
VAS_18	3.0 (1.0-4.0)	**Est/Pro**	129.80 (70.76-207.49
VAS_24	1.0 (0.0-2.5)		

Data was shown with median with interquartile range

Tablo 3. Hasta Gruplarının VAS skorları ve Hormon Düzeylerinin karşılaştırılması

	Kadın					
	Menopoz	Normal Siklus	Erkek	P*	P**	P***
VAS_1	7.0 (6.0-8.0)	7.0 (6.0-8.0)	6.0 (6.0-7.0)	0.614	0.166	0.017
VAS_2	6.26 ± 1.48	7.0 (6.0-7.0)	6.0 (5.0-6.0)	0.293	0.043	0.001
VAS_6	5.39 ± 1.43	6.0 (5.0-6.0)	5.0 (4.0-5.0)	0.304	0.006	0.001
VAS_12	4.19 ± 1.58	4.80 ± 1.63	3.0 (3.0-4.0)	0.150	0.005	0.001
VAS_18	3.45 ± 1.69	3.27 ± 1.84	0.0 (0.0-2.0)	0.720	0.001	0.001
VAS_24	1.0 (1.0-4.0)	1.5 (0.0-0.4)	0.0 (0.0-1.0)	0.848	0.001	0.002
Testosteron	23.79±8.33	23.29±7.95	390.1 (310.6-648.3)	NA	NA	NA
Progesteron	0.18 (0.04-0.39)	0.64 (0.19-3.60)	0.3 (0.22-0.4)	NA	NA	NA
Estradiol	23.79 (16.04-33.20	118.92 ±72.08	35.78 (34.89-51.23)	NA	NA	NA
Est/tes	1.00 (0.68-1.41)	5 (2.66- 7.19)	0.08 (0.07-0.14)	0.001	0.001	0.001
Est/Pro	129.78 (78.72-195.30)	127.60 (35.45-381.66)	142.62 (88.65-175.18)	0.891	0.913	0.583

Data was shown with mean ± standart deviation or median with interquartile range. P*: Menopoz ve normal siklus; P**: Menopoz ve erkek; P***: Normal siklus ve erkek gruplararası farkı göstermek için kullanıldı.

Tablo 4. Normal siklustaki kadınların alt gruplarında VAS skorları ve hormon düzeylerinin karşılaştırılması

	Kadın Normal Siklus		
	Luteal	Foliküler	P
VAS_1	7.22 ± 1.30	7.40 ± 1.58	0.793
VAS_2	6.89 ± 1.45	6.90 ± 1.52	0.987
VAS_6	6.00 ± 1.50	5.90 ± 1.50	0.887
VAS_12	4.67 ± 1.87	4.90 ± 1.52	0.768
VAS_18	3.33 ± 2.44	3.30 ± 1.89	0.972
VAS_24	2.44 ± 2.13	1.60 ± 1.65	0.344
Testosteron	25.57 ± 6.66	23.09 ± 9.31	0.518
Progesteron	0.62 (0.48-6.50)	0.49 (0.17-2.03)	0.567
Estradiol	128.10 ±94.68	107.72 ± 86.54	0.630
Est/tes	5.37 (1.18-7.14)	3.73 (1.51-7.78)	0.968
Est/Pro	80.92 (32.77-333.94)	106.7 (37.52-911.66)	0.604

Data was shown with mean ± standart deviation or median with interquartile range.

Tablo 5. Tüm grup ve alt grupların VAS ve hormon düzeyleri arasındaki ilişki

	Normal Siklus		
	Late Luteal Faz	Foliküler Faz	P
n	9	10	
Yaş (yıl)	39.66 ± 5.05	35.10 ± 7.75	0.152
Boy (cm)	160.78 ± 6.22	167.50 ± 7.50	0.050
Kilo (kg)	67.00 ±13.09	71.30 ± 19.81	0.589

Tablo 6. Tüm Gruplar ve Sub-grupların VAS ile hormon düzeyleri arasındaki korelasyon analizleri

Grup		VAS_1	VAS_2	VAS_6	VAS_12	VAS_18	VAS_24
Total Hasta	Testosteron	Rho:-0.256 P:0.043	Rho:-0.285 P:0.007	Rho:-0.287 P:0.002	Rho:-.363 P:0.001	Rho:-.496 P:0.001	Rho:-.309 P:0.004
	EST/TES	Rho: 0.175 P:0.100	Rho: 0.301 P:0.004	Rho: 0.324 P:0.002	Rho: 0.389 P:0.001	Rho: 0.458 P:0.001	Rho: 0.302 P:0.004
Menopoz	Progesteron	Rho:-0.547 P:0.001	-	-	-	Rho:-0.436 P:0.014	Rho:-0.408 P:0.023
	EST/PRO	Rho:0.578 P:0.001	Rho:0.396 P:0.027	Rho:0.353 P:0.048	Rho:0.477 P:0.007	Rho:0.412 P:0.021	-
Erkek	Estradiol	Rho:-0.581 P:0.001	Rho:-0.430 P:0.022	-	-	-	-
	EST/TES	-	-	Rho:0.945 P:0.014	-	-	-

SONUÇ

Bu çalışmanın sonucunda hem cinsiyetler arası hem de kadınlarda menopoz öncesi ve sonrası normal fizyolojik dalgalanmaların ağrı üzerindeki etkilerinin ayrı ayrı incelenmesi gerektiği ortaya koymaktadır. Menopoz sonrası en belirleyici etken EST/PRO oranı iken; erkeklerde estradiol düzeyleri olduğu bu çalışmanın ana bulgularıdır.

KAYNAKLAR

Ahmed A, Khan F, Ali M, Haqnawaz F, Hussaın A, Azam SI. Effect of the 333 menstrual cycle phase on post-operative pain perception and analgesic 334 requirements. Acta Anaesthesiologica Scandinavica 2012; 56(5): 629-635. doi: 335 10.1111/j.1399-6576.2012.02661.x

Craft RM. Modulation of pain by estrogens. Pain 2007; 132(1): 3-12. doi: 327 10.1016/j.pain.2007.09.028

Hellström B, Anderberg UM. Pain perception across the menstrual cycle phases 320 in women with chronic pain. Perceptual and Motor Skills 2003; 96(1): 201-211. 321 doi: 10.2466/pms.2003.96.1.201

Hurley RW, Adams MCB. Sex, gender and pain: an overview of a complex 301 field. Anesthesia & Analgesia 2008; 107: 309-317. doi: 302 10.1213/01.ane.0b013e31816ba437

Kashanian M, Dadkhah F, Zarei S, Sheikhansari N, Javanmanesh F. Evaluation 310 the relationship between serum progesterone level and pain perception after 311 cesarean delivery. J Matern Fetal Neonatal Med. 2019; 32(21): 3548-3551. doi: 312 10.1080/14767058.2018.1466274

Kuba T, Wu H-BK, Nazarian A, Festa ED, Barr GA, Jenab S, Inturrisi CE, 323 Quinones-Jenab V. Estradiol and progesterone differentially regulate 324 formalininduced nociception in ovariectomized female rats. Hormones and 325 Behavior 2006; 49: 441-449. doi: 10.1016/j.yhbeh.2005.09.007

Lv Y, Bai G. Abdominal drainage versus no abdominal drainage for 284 laparoscopic cholecystectomy: A systematic review with meta-analysis and trial 285 sequential analysis. International Journal of Surgery 2016; 36: 358-368. doi: 286 10.1016/j.ijsu.2016.11.083

Maurer AJ, Lissounov A, Knezevic I, Candido KD, Knezevic NN. Pain and sex 314 hormones: a review of current understanding. Pain Management 2016; 6(3): 315 285-296. doi: 10.2217/pmt-2015-0002

McEwen BS, Milner TA. Understanding the broad influence of sex hormones 304 and sex differences in the brain. Journal of Neuroscience Research 2017; 95(1-305 2): 24-39. doi: 10.1002/jnr.23809

Pinto PR, Vieira A, Pereira D, Almeida A. Predictors of acute post-surgical pain 298 following inguinal hernioplasty. Journal of Pain 2017; 18: 947-955. doi: 299 10.1016/j.jpain.2017.03.003

Price DD, McGrath PA, Rafii A, Buckingham B. The validation of visual 337 analogue scales as ratio scale measures for chronic and experimental pain. Pain 338 1983; 17: 45-56. doi: 10.1016/0304-3959(83)90126-4

Riley JL, Robinson ME, Wise EA, Price D. A meta-analytic review of pain 317 perception across the menstrual cycle. Pain 1999; 81(3): 225-235. doi: 318 10.1016/S0304-3959(98)00258-9

Soens M, Wang JC, Berta T, Strichartz G. Systemic Progesterone 329 Administration in Early Life Alters the Hyperalgesic Responses to Surgery in 330the Adult: A Study on Female Rats. Anesthesia & Analgesia 2015; 121(2): 545-331 555. doi: 10.1213/ANE.0000000000000800

Soper NJ, Bartesu JA, Claymen RV. Comparison of early postoperative results 288 for laparoscopic versus standart open cholecyctectomy. Surgery, Gynecology 289 and Obstetrics 1992; 2: 114-118.

Wang HL, Keck JF. Foot and hand massage as an intervention for postoperative 295 pain. Pain Management Nursing 2004; 5: 59-65. doi: 296 10.1016/j.pmn.2004.01.002

Youssef NFA, Hassan ADA. The Effect of hand and foot massage on alleviating 291 pain and anxiety of abdominal post-operative patients at a University Hospital: 292 A randomized control trial. IOSR Journal of Nursing and Health Science 2017; 293 3: 56-65. doi: 10.9790/1959-0603035665

Zubieta JK, Dannals RF, Frost JJ. Gender and age influences on human brain 307 mu-opioid receptor binding measured by PET. American Journal of Psychiatry 308 1999; 156: 842-848. doi: 10.1176/ajp.156.6.842

MEME KANSERLİ KADINLARDA SEMPTOM YÖNETİMİ VE YAŞAM KALİTESİ: FARKINDALIK TEMELLİ PROGRAMLARIN ETKİLİĞİ ÜZERİNE BİR DERLEME ÇALIŞMASI

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ÖZET
Meme kanseri insidansı son yıllarda gelişmiş ve gelişmekte olan ülkelerde hızla artmaktadır. Meme kanseri sıklıkla kadınlarda görülmektedir ve bu süreçte yaşam kalitesini sağlamak ve sürdürmek önemlidir. Meme kanserli kadınlar kanser tanısına, tedavi yöntemlerine ve izlem sürecine bağlı olarak fiziksel ve psikolojik birçok semptom deneyimlemektedir. Bu semptomlar meme kanserli kadınların yaşam kalitesini olumsuz yönde etkilemektedir. Yaşam kalitesinde azalma, depresyon ve anksiyete başta olmak üzere psikolojik sıkıntıların yanı sıra uyku düzensizlikleri, yorgunluk, kanserin tekrarlanma korkusu sıklıkla rastlanan kanserin uzun ve kısa dönem etkileri olarak belirlenmiştir. Meme kanserli kadınların yaşam kalitesinin arttırılabilmesi için fiziksel ve psikolojik semptomların iyileştirilmesi önemlidir. Son zamanlarda meme kanseri tanısı almış hastalar için psikososyal müdahalelerin geliştirilmesinde ve yaygınlaştırılmasında önemli ilerlemeler yaşanmıştır. Bu süreçte meme kanserli kadınlar için semptom yönetimine yönelik birçok yöntem denenmektedir. Bu müdahale çeşitlerinin tıbbi tedavinin başarısını arttırmanın yanında kanser hastalarının yaşam kalitesine de olumlu yönde etkileri olduğu için kullanımı önem kazanmıştır. Farkındalık temelli stres azaltma müdahaleleri de son yıllarda sık kullanılan yöntemlerdendir. Bilinçli farkındalık, bilerek ve belirli bir şekilde, yargılamadan dikkatini içinde bulunulan ana vermek olarak tanımlanmaktadır. Bilinçli farkındalığın olumlu bir yeniden değerlendirme yapabilmek için kişinin baş etme kapasitesini güçlendirmektedir. Kanser tanısı almış bireylerinin bilinçli farkındalığının olmasının içinde bulundukları duruma karşı daha aktif olmalarını sağlayarak psikolojik iyi oluşlarını arttırdığı bilinmektedir. Ayrıca, hemşirelerin meme kanserli kadınlara bilgi vererek farkındalık yaratması ve yönlendirmesi, psikologlar tarafından semptoma uygun müdahalelerin yapılması meme kanserli kadınların yaşam kalitesini arttırabilir.
Anahtar Kelimeler: Meme kanseri, semptom yönetimi, farkındalık temelli stres azaltma, yaşam kalitesi, bilinçli farkındalık

SYMPTOM MANAGEMENT AND QUALITY OF LIFE IN WOMEN WITH BREAST CANCER: A REVIEW ON THE EFFECTIVENESS OF MINDFULNESS-BASED PROGRAMS

ABSTRACT
The incidence of breast cancer has been increasing rapidly in developed and developing countries in recent years. Breast cancer is frequently seen in women, and it is important to ensure and maintain the quality of life in this process. Women with breast cancer experience many physical and psychological symptoms depending on the cancer diagnosis, treatment methods and follow-up process. These symptoms negatively affect the quality of life of women with breast cancer. Decreased quality of life, psychological problems, especially depression and anxiety, as well as sleep disorders, fatigue, fear of recurrence of cancer are determined as long- and short-term effects of cancer. It is important to improve physical and psychological symptoms in order to increase the quality of life of women with breast cancer. Recently, there has been significant progress in the development and dissemination of psychosocial interventions for patients diagnosed with breast cancer. In this process, many methods for symptom management have tried for women with breast cancer. The use of these types of interventions has gained importance as they have positive effects on the quality of life of cancer patients as well as increasing the success of medical treatment. Mindfulness-based stress reduction interventions are also frequently used methods in recent years. Mindfulness is defined as giving attention to the present moment, consciously and in a specific way, without judgment. Mindfulness strengthens one's coping capacity to make a positive reassessment. It is known that the conscious awareness of individuals diagnosed with cancer increases their psychological well-being by enabling them to be more active in the situation they are in. In addition, providing information by nurses to women with breast cancer to raise awareness and guide them, and interventions are appropriate for symptoms by psychologists that can increase the quality of life of women with breast cancer.
Keywords: Breast cancer, symptom management, mindfulness-based stress reduction, quality of life, mindfulness

INTRODUCTION
Breast cancer is the most common type of cancer in both developed and developing countries. With an estimated 1.7 million newly diagnosed cancer cases (23% of all cancers), it is the most common cancer among women and ranks second. In recent years, the mortality rate from breast cancer has increased by 14% (Ferlay et al., 2012). Breast cancer is common among women between the ages of 55 and 64 in developed countries. The age of breast cancer diagnosis is 62 in the USA and 51 in Turkey, and the most populous group is in the 45-49 age group (Turner et al., 2005). It is known that rapid westernization, especially in the young population, increases the incidant of breast cancer in Turkey. The Ministry of Health has raised the screening age from 50-69 to 40-69 years of age due to the fact that the prevalence of breast cancer under the age of 50 in Turkey accounts for 47% of all cancer cases (Kara and Keskinkilic, 2017).

Common Symptoms in Breast Cancer

Women with breast cancer face physical and psychological stressors due to cancer and experience problems. Many of these problems are related with diagnosis, treatment, trauma of breast loss and the negative effects of all these on quality of life (Long et al., 2004). Many women with breast cancer reported that they have concerns about physical, psychological, social and spiritual problems such as pain, body image problems, sexual difficulties and social isolation that lead to a decrease in their quality of life (Ganz, 2008).

In addition to anxiety, there is a period of crisis during the diagnosis phase, which includes acute stress responses (Blow et al.,2011; Bronze-Accent, 2021). In primary and systematic treatments and follow-up periods, there are thoughts related with uncertainty, and depression may develop in the upcoming period (Sütçü, 2010). In general, it is seen that every stage of treatment from the diagnosis of breast cancer causes high levels of stress and depression in women. In addition, physical symptoms such as worsening sleep quality, fatigue, fear of metastasis; depression, sexual dysfunctions due to body image changes; concerns about diagnosis, treatment process; negative thoughts about disease and process; disorders in social relations are common (Ganz, 2008). Patients were found to be more dissatisfied with their treatment for cancer-related symptoms such as anxiety, fatigue, weakness, loss of appetite than cancer (Blow and Ryan, 2011). As it is seen, interventions to prevent stress are very important to cope with problems experienced by women with breast cancer during the diagnosis, treatment and follow-up process. In the literature, it has been reported that mindfulness-based stress reduction interventions are effective on some symptoms in coping with the complications of treatments and increase the quality of life in cancer patients. (Faller et al.,2013; de la Torre-Luque Gambara and Cruzado, 2016). In addition to reducing anxiety and depression in women diagnosed with cancer, mindfulness-based interventions have increased the number of cytokines, lymphocytes and enzymes, making their bodies capable of better responding to infections (Bilgiç and Can Gürkan, 2021).

Evaluation of the Level of Mindfulness

Stress that is not well managed can shape the lives of individuals. Mindfulness-based stress reduction interventions can help to enjoy the time experienced, fight diseases and accept negative life experiences as they are (Korukçu and Kukulu, 2015). Therefore, the level of mindfulness of the woman with breast cancer should be evaluated before being included in the intervention program.

The level of mindfulness can be evaluated by the "Conscious Awareness Scale". This scale measures individual differences in a person's ability to be aware of instantaneous experiences and to be wary of experiences. The scale was developed by Brown and Ryan (2003) and adapted by Özyeşil and his friends (2011) into the Turkish culture. The scale consists of 15 items and has a single-factor structure. The scale is 6 - Likert type (Almost always-Almost never). As your total score increases, so the level of mindfulness increases. The Cronbach alpha of the scale is 0.80 (Brown and Ryan, 2003).

Mindfulness-Based Stress Reduction Programs/Methods in Symptom Management

The foundations of the Mindfulness Based Stress Reduction Program were laid by Kabat-Zin and his colleagues (2009) and began to be widely used. Mindfulness-based stress reduction programs encourage acceptance of negative thoughts without permanent involvement in the mind (Daniel, 2015). These intervention programs are used for both preventive and therapeutic purposes (Kabat-Zinn, 2009).

A meta-analysis reported that regulating mindfulness-based structured intervention programs from 1.5 hours (Carlson et al., 2016) to 3.5 hours (Henderson et al., 2012) and 8 sessions (Lengacher et al., 2009; Zhang et al., 2017) may be effective. Daily life activities include body scanning, yoga and meditation exercises. The program requires being interested in the present time, performing activities in an open and accepting manner.

Mindfulness-based research involving women with breast cancer has shown that mindfulness-based methods such as meditation and yoga training have yielded more successful results (Yastibaş and Dirik, 2018). In an awareness-based study, it was stated that intervention in male prostate patients does not make a difference and attributions related with masculinity can be the reason of this situation (Champbers et al., 2017). Therefore, it may be important to evaluate the results of mindfulness-based interventions in men with breast cancer.

Attitudes Applied in Mindfulness-Based Stress Reduction Programs

Jon Kabat-Zinn (2009) explains the basic attitudes of mindfulness practices as follows:

* **Non- judgement:** Awareness is gained by assuming that the individual is an impartial witness to his own experience. Almost everything perceived is labeled and classified by the mind according to the meanings attributed to it individually (Matchim et al.,2011). It is generally seen that individuals react mechanically and unconsciously as a result of categorization and judgment (Raingruber, 2007). It is argued that when individuals find their minds judging something, they should not try to stop it, because this judgment is necessary to develop awareness.

* **Patience:** It is defined as accepting that everything will happen when it should. Patience simply means being open to every moment of life, accepting every minute in its own integrity, knowing that everything will happen when it should happen (Kabat-Zinn, 2009). When judgmental thoughts come to the mind, it is necessary to accept that they are part of reality and life.

* **Novice mind:** It is defined as a willingness to see everything as if it were happening for the first time (Tsang et al., 2012). Instead of constantly thinking about past experiences, it is necessary to give the opportunity to be open to innovations with a novice mind.

* **Trust:** It is described as confidence in oneself and basic wisdom. According to Raingruber (2007), it is much better to trust one's own intuition and expertise than to be guided by outsiders to guide the steps, life and decisions one takes, even if they sometimes make mistakes. In addition, it is easier for these individuals to trust other people and bring out the good in them (Kabat-Zinn, 2009).

* **Not to be ambitious:** The person must accept that he or she will have experience in mindfulness even if he does nothing. Mankind prefers to strive for a purpose in order to constantly achieve something. The aim of mindfulness studies is to hear one's own body by drawing attention to the state of existence without any purpose.

* **Acceptance:** It means seeing everything as it is, not as we want to see it. Most of us try to suppress unwanted emotions and avoid difficult experiences; however, this effort is sometimes out of place and can create more stress for individuals. In this context, acceptance is defined as a surrender that we are willing to see ourselves in all its reality. It is necessary to look at positive and negative life from the same distance, to accept failure as we accept success (Atalay, 2019).

* **To give permission:** This means that whatever the person is experiencing; rather than clinging to them, recognizing that they are happening and letting them pass (Bilgic and Gürkan, 2021). When the individual returns to his inner world, he finds himself judging something and should let these judgments pass (Tsang et al., 2012). One should notice them and not chase them any longer.

Methods Applied in Mindfulness Based Stress Reduction Programs

There are many techniques used to develop mindfulness skills, which is the most important step towards consciousness. Germer (2009) states that mindfulness interventions consist of three layers such as "stop", "observe", "come back". layer is expressed as reducing our speed while walking and seeing the formations around us. To observe is to feel the experience in all its dimensions. It is being able to feel the breath, the sensation and the emotion. Go back, from time to time the focus of attention may be lost; but the important thing is to realize it. Thus, the moment we realize it, we regain our focus and can continue to experience the moment fully.

In addition, Pollak and his colleagues (2019) analyze mindfulness practices under three headings as informal, formal and seclusion. In other words, this includes short, routine activities, daily chores (Example: brushing teeth, locking the door) that are done with awareness out of autopilot. In other words, short, routine activities with awareness from autopilot include daily tasks (Example: brushing teeth, locking the door). Formal, such as breath awareness, body scanning; regular and systematic practices are structured practices with a definite place, time and method. The practice of seclusion includes behaviors such as spending the individual's daily routines with awareness for a few days, allocating time for structured practices, and delaying communication with others.

In addition to these, techniques such as mindful listening, mindful breathing, mindful eating, mindful walking, labeling emotions, body scanning, loving kindness to ourselves, and compassionate existence are used for the development of mindfulness skills (Pollak et al., 2019; Ameli, 2016). (Pollak et al., 2019; Ameli, 2016).

Impact of Mindfulness-Based Stress Reduction Programs on Symptom Management and Quality of Life

In the studies, the effect of intervention programs was evaluated in relation to psychology and quality of life. With these intervention programs, psychological problems such as anxiety, stress, depression were determined to decrease (Lerman et al., 2011), while some studies found that physical symptoms did not decrease (Würtzen et al., 2015). In the literature, some studies found that the intervention did not have a significant effect on the level of pain (Reich et al., 2012) and in others on somatic symptoms (Würtzen et al., 2015). Lengacher et al. (2009) found a significant reduction in physical symptoms such as pain and fatigue.

RESULT

Although it is known that mindfulness-based interventions are effective in women with breast cancer, it is difficult to determine which intervention is more effective or ineffective on which symptom. It is often reported in the literature that mindfulness-based interventions reduce psychological distress and help to improve the quality of life. However, it was observed that the number of studies evaluating the effect of mindfulness-based interventions on physical symptoms was small and the results were contradictory. Studies are needed to evaluate the results of increasing intervention studies for the evaluation of physical symptoms of women with breast cancer. In addition, the evaluation of the results of the study with male patients with breast cancer will contribute to the literature. Furthermore, nurses can identify women with breast cancer in the early stages of diagnosis and treatment, inform them about mindfulness-based stress reduction programs/methods, and direct them to intervention programs often performed by psychologists. In this context, they can help alleviate the psychological symptoms experienced by women during the diagnosis, treatment and follow-up of breast cancer.

REFERENCES

1. Ameli R (2016) 25 Mindfulness Lesson: Now It's Time to Live Healthy (Translation Ed. Z Atalay, K Ögel). Ankara, Nobel Academic Publishing.

2. Atalay, Z. (2019). Mindfulness-Conscious Awareness: The Art of Staying In the Moment with Awareness. Istanbul, Revolution Publishing House.

3. Bilgiç G, and Gürkan,OC. (2021). Mindfulness and Uses in Women's Health. IGUSABDER, 14 (2021): 363-375.

4. Brown, K. W., & ryan, R.M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. Journal of Personality and Social Psychology, 84, 822-848.

5. Blow AJ, Swieciciki P, Hann P, Osuch JR, Symonds LL, Smith SS et al. (2011) The emotional journey of women experiencing a breast abnormality. Qual Health Res., 9:1316-1:1334 p.m.

6. Chambers SK, Occhipinti S, Foley E, Clutton S, Legg M, Berry M et al. (2016) Mindfulness-based cognitive therapy in advanced prostate cancer: a randomized controlled trial. J Clin Oncol, 34:1-7.

7. Carlson LE, Tamagawa R, Stephen J, Drysdale E, Zhong L, Speca, M (2016) Randomized-controlled trial of mindfulness-based cancer recovery versus supportive expressive group therapy among distressed breast cancer survivors (MINDSET): long-term follow-up results. Psychooncology, 25:750-759.

8.de la Torre-Luque, A, Gambara, H, López, E, & Cruzado JA. (2016). Psychological treatments to improve quality of life in cancer contexts: A meta-analysis. International Journal of Clinical and Health Psychology: IJCHP, 16(2), 211–219.

9. Nine. Daniel S. (2015). Cognitive behavior therapy for patients with cancer. J Adv Pract Oncol, 6:54-56.

10. Ferlay, J., Soerjomataram, I., Dikshit, R., Eser, S., Mathers, C., Rebelo, M., et al. (2015). Cancer incidence and mortality worldwide: sources, methods and major patterns in GLOBOCAN 2012. International Journal of Cancer, 136(5), E359–E386.

11.Ganz PA. (2008). Psychological and social aspects of breast cancer. Oncology (Williston Park), 10:642-646 p.m.

12. Germer, C. (2009). The mindful path to self-compassion: Freeing yourself from destructive thoughts and emotions. Guilford Press.

13. Henderson VP, Clemow L, Massion AO, Hurley TG, Druker S, Hébert JR (2012) The effects of mindfulness-based stress reduction on psychosocial outcomes and quality of life in early-stage breast cancer patients: a randomized trial. Breast Cancer Res Treat, 131:99-109.

14. Kabat-Zinn J. (2009). Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness, New York, Bantam Dell Publishing.

15. Black F and Keskinkilic B. (2017). Turkey Cancer Statistics. Ministry of Health General Directorate of Public Health.1-65. file:///C:/Users/ASUS/Desktop/Kanser%20 Psikoloji/Turkiye_Kanser_Istatistikleri_2017.pdf

16. Korukcu, O., & Kukulu, K. (2015). A Program to Protect Integrity of Body-Mind Spirit: Mindfulness Based Stress Reduction Program. Current Approaches to Psychiatry, 7(1),

17. Lengacher CA, Johnson-Mallard V, Post-White J, Moscoso MS, Jacobsen PB, Klein TW et al. (2009) Randomized controlled trial of mindfulness-based stress reduction (MBSR) for survivors of breast cancer. Psychooncology, 6:1261-1272.

18. Matchim Y, Armer JM, Stewart BR (2011). Effects of mindfulness-based stress reduction (MBSR) on health among breast cancer survivors. West J Nurs Res., 33:996-1016.

19. Lerman R, Jarski R, Rea H, Gellish R, Vicini F (2012) Improving symptoms and quality of life of female cancer survivors: a randomized controlled study. Ann Surg Oncol, 7:373-378.

20. Özyeşil Z., Arslan C., Cutter S. and Deniz ME. (2011). Bilinçli Farkındalık Ölçeği'ni Türkçeye Uyarlama Çalışması Adaptation of the Mindful Attention Awareness Scale into Turkish. Education and Science, 36(160): 224-235.

21. Pollak SM, Pedulla T, Siegel RD (2019) Mindfulness Mindfulness Mindfulness Based Psychotherapy Skills (Translation Ed.B Long). Istanbul, APAMER Psychology Publications.

22. Raingruber R (2007) The effectiveness of Tai Chi, Yoga, Meditation, and Reiki healing sessions in promoting health and enhancing problem solving abilities of registered nurses. Issues Ment Health Nurs, 28:1141-1155.

23. Reich RR, Lengacher CA, Alinat, CB, Kip KE, Paterson C, Ramesar S et al. (2017). Mindfulness-based stress reduction in post-treatment breast cancer patients: imediate and sustained effects across multiple symptom clusters. J Pain Symptom Manage, 53:85-95.

24. Sütçü G. (2010). Examination of patients whose diagnosis surgery time is recent in terms of anger, depression, stress coping and social support variables (Masters Thesis). Ankara, Ankara University.

25. Tsang SC, Mok ES, Lam SC, Lee JK (2012) The benefit of mindfulness-based stress reduction with patients with terminal cancer. J Clin Nurs, 21:2690-2696.

26. Bronze Accent A. (2021). Effectiveness of cognitive behavioral therapies in Women with breast cancer: a systemayic review. Current Approaches in Psychiatry; 13(1):34-51.

27. Turner J, Kelly B, Swansonc C, Allison R, Wetzig N. (2005). Psychosocial impact of newly diagnosed advanced breast cancer. Psychooncology, 2:396-407.

28. Uzun, O., Aslan, F. E., Selimen, D., & Koç, M. (2004). Quality of life in women with breast cancer in Turkey. Journal of nursing scholarship: an official publication of Sigma Theta Tau International Honor Society of Nursing, 36(3), 207–213.

29. Würtzen H, Dalton SO, Christensen J, Andersen KK, Elsass P, Flyger HL et al. (2015) Effect of mindfulness-based stress reduction on somatic symptoms, distress, mindfulness and spiritual wellbeing in women with breast cancer: Results of a randomized controlled trial. Acta Oncol, 54:712-719

30. Yastibas C and Dirik G. (2018). Cancer and Mindfulness based Intervention Programs: Systematic Review. Current Approaches in Psychiatry. 10:385–403.

31. Zhang M, Huang L, Feng Z, Shao L, Chen L. (2017). Effects of cognitive behavioral therapy on quality of life and stress for breast cancer survivors: A meta-analysis. Minerva Med, 108:84-93.

COVİD 19 SÜRECİNDE DÜZENLİ OLARAK FİZİKSEL AKTİVİTELERE KATILAMAYAN DOWN SENDROMLU BİREYLERİN GENEL SAĞLIK SORUNLARI VE RİSK FAKTÖRLERİNİN DEĞERLENDİRİLMESİ

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Özet
Bu çalışmanın amacı; daha önce düzenli olarak fiziksel aktivitelere katılan Down sendromlu bireylerin Covid-19 süreciyle birlikte düzenli olarak fiziksel aktivitelere katılamamaları sonucunda oluşan sağlık sorunlarını değerlendirmektir. Bu amaçla daha önce düzenli olarak fiziksel aktivitelere katılan ve yaşları 13-18 arasında değişen 12 down sendromlu birey tespit edildi. Down sendromlu bireyler 2017-2019 yılları arasında Malatya ili Yeşilyurt ilçesinde engelli bireylere yönelik etkinlikler yapan spor kulüplerine katıldılar. Down sendromlu bireyler hafif zihinsel engelliler gurubuna girmektedirler ve kendilerini ilgilendiren durumlar hakkında karar veremezler. Bu nedenle sağlıklı bilgiler almak için Down sendromlu bireylerin anne-babalarıyla (24 kişi) yüz yüze görüşmeler sağlandı. Görüşme kapsamında velilere 'çocuğunuzda sağlık sorunları oluştu mu, ev ortamında ne tür riskler ile karşılaştınız, çocuğunuz agresif tutumlar sergiledi mi' soruları soruldu. 24 velinin (12 kadın, 12 erkek) vermiş olduğu cevaplar kendi aralarında kategorize edilerek değerlendirilip istatistiksel olarak analiz edildi. Veri toplama metodu olarak nitel araştırma yöntemi tercih edilmiştir. Verilerin toplanmasında odak grup görüşmelerinden faydalanılmış ve görüşmeler sırasında yarı yapılandırılmış soru formu kullanılmıştır. Nitel araştırma metotlarından mülakat tekniği tercih edilmiştir. Görüşmeye katılan 20 veli hareketsizliğe bağlı olarak çocuklarında genel sağlık sorunları (solunum problemleri, vücutlarının çeşitli yerlerinde oluşan yaralar) oluştuğunu belirtti. 20 veli çocuklarının hareketsizlik sonucunda kilo aldıklarını bu durumun genel sağlık açısından riskler uluşturduğunu belirttiler. Görüşmeye katılan 4 veli çocuklarına ev ortamında fiziksel aktivite ortamı oluşturduklarını ve hareketsizliğe bağlı oluşabilecek olumsuz etkileri kısmen engelliklerini belirttiler. Görüşmeye katılan bütün veliler çocuklarının Covid-19 sürecinde evde kaldıkları süre içerisinde daha agresif bir tutum sergilediklerini belirttiler.
Sonuç olarak Covid-19 sürecinde fiziksel aktivitelere katılamayan down sendromlu bireylerde hareketsizliğe bağlı olarak sağlık sorunları oluştuğu ve bu bireylerin agresif tutumlar sergiledikleri tespit edilmiştir.
Anahtar Kelimeler: Down sendromu, covid- 19, fiziksel aktivite

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GENERAL HEALTH ISSUES AND RISK FACTORS ASSESSMENT OF DOWN SYNDROMES THAT CANNOT BE INTERRED WITH PHYSICAL ACTIVITIES IN THE COVID 19 PROCESS

Abstract
The purpose of this study is to assess health problems that have occurred because individuals with down syndrome who have previously participated in physical activities regularly, cannot participate in physical activities on a regular basis with the Covid 19 process. For this purpose, 12 down syndrome individuals who had previously participated in physical activities and aged between 13-18. Individuals with down syndrome joined sports clubs in Yeşilyurt district of Malatya, Malatya, which held events for disabled people between 2017-2019. Individuals with down syndrome enter a group of slightly mentally handicapped individuals and cannot decide on situations that are relevant to them. Therefore, in order to obtain healthy information, there were face-to-face conversations with the parents of individuals with down syndrome (24 people). Parents were asked to "Did your child have health problems, what kind of risks did you face in the home environment, did your child exhibit aggressive attitudes" during the discussion. The answers given by 24 parents (12 women, 12 men) were categorized and analyzed statistically. Qualitative research method is preferred as a data collection method. Focus group conversations were utilized in the data collection and the semi-structured questionnaire was used during the discussions. The interviewing technique is preferred from qualitative research methods. The 20 parents attending the meeting stated that their children had general health problems (respiratory problems, wounds in various parts of their bodies) due to inactivity. The 20 parents said their children gained weight as a result of inactivity, and that the risks of general health have been put to risk. The 4 parents attending the meeting told their children that they created a physical activity environment in the home environment and partially blocked the negative effects that could be due to inactivity. All the parents attending the meeting said their children were more aggressive during the Covid 19 process during their stay at home.
As a result, it has been determined that in individuals with down syndrome who are unable to participate in physical activities in the Covid 19 process, health problems are occurring due to inactivity and these individuals are demonstrating aggressive attitudes.
Keywords: down syndrome, covid- 19, physical activity

Giriş

Evde veya işyerinde hareketsiz kalma, sürekli araç ile hareket etmek genel anlamda fiziksel aktivitede bulunmama, vücudun hareketsiz kalmasına sebebiyet vermektedir. Yeterince fiziksel aktivitelere katılmamak ve hareketsiz kalmak hem vücut sağlığı hem de ruh sağlığı için olumsuz durum teşkil edebilir. Hareketsizlikten kaynaklanan olumsuz durumlar gittikçe çağımızın büyük bir sorunu haline gelmektedir. Bu olumsuz durumlar aşırı kilo alımına, kalp-damar hastalıklarına yol açmaktadır. Amerika'da 1915 yılında yapılan bir araştırmada böbrek hastalıkları, kalp hastalıkları ve kan basıncı yüksekliği gibi fiziksel aktivite ile ilgili dejeneratif hastalıkların giderek arttığı belirtilmiştir (MacAuley, 1984; Paffenbarger ve ark. 2001). Sağlıklı ve olumlu gelişimin şartlarından biri de çocuklukta bilinçli hareketlilikten geçmektir. Hareketlilikle birlikte çocuk pasif ve bağımlı durumdan becerikli, aktif, meraklı ve araştırmacı bir yapıya dönüşür, kendi kişiliğini belirler, çevresini keşfeder. Bireylere sağlıklı genel bir gelişimin sağlanabilmesi için serbest fırsatlar oluşturulmalıdır.

İleriki yaşlarda kişiliğin ve karakterin oluşumunda çocukluk döneminde edinilen olumlu, olumsuz deneyimler ve yaşanmışlıkların etkili olduğu bilinmektedir (Orhan ve Ayan, 2018). Doğaları gereği çocuklar sürekli hareket etme eğilimindedirler. Çocukluk döneminde kazanılan fiziksel aktivite alışkanlıkları yetişkinlikte daha sağlıklı bir yaşam sürmesine etken olmaktadır (Zahner ve ark, 2013). Bu sebeple hareketlilik, sadece çocuğun fiziksel gelişimini etkilemekle kalmaz, aynı zamanda zihinsel gelişimine de katkı sağlar. Yapılan bir araştırmada okul öncesi bireylerin fiziksel gelişimlerinin sağlanması açısında günde ortalama 2 saat düzenli ve istekli fiziksel aktivite yapmaları gerektiği açıklanmaktadır (Graf ve Klein 2011). Covid-19, dünya genelinde yüzlerce ülkeye hızlı bir şekilde yayılan bir pandemidir. 2020 yılının ilk aylarında Dünya Sağlık Örgütü, yeni tip korona virüs hastalığı anlamına gelen Covid-19 hastalığını, ciddi akut solunum sendromu olarak tanımlamıştır (Şahinler ve ark.2020). Günümüzde ülkelerin hemen hemen hepsi Covid-19 virüsünün bulaş riskinin en aza indirilmesi veya ortadan kalkması için çeşitli tedbirler almaktadırlar. Ülkemizde de sağlık bakanlığı yazılı ve görsel medya aracılığı ile çeşitli çağrılar yaparak ve zaman zaman uygulamalar yaparak virüsten asgari şekilde etkilenmenin tedbirlerini almaktadır. İlk ve orta dereceli okullar ile üniversitelerde yüz yüze yapılan eğitimlere uzun süre ara verilip, eğitim ve öğretim için uzaktan eğitim kararları alındı (Tural,2020). Down sendromlu bireylerde obezite riski fazla olduğundan fiziksel aktivite egzersizleri çok önemlidir. Bu bireylerin fiziksel aktiviteye katılımlarını olumsuz yönde etkileyen başlıca nedenler kas hipotonisi, aşırı eklem hareketliliği, bağ dokularının gevşek olması, obeziteye eğilimli olmaları, solunum ve dolaşım sistemlerinin az gelişmiş olması ve akranlarına oranla daha kısa boylu olmalarıdır (Pastore ve ark., 2000, Ilkım ve ark.2021).

Metot

Daha önce düzenli olarak fiziksel aktivitelere katılan ve yaşları 13-18 arasında değişen 12 down sendromlu birey tespit edildi. Down sendromlu bireyler 2017-2019 yılları arasında Malatya ili Yeşilyurt ilçesinde engelli bireylere yönelik etkinlikler yapan spor kulüplerine katıldılar. Down sendromlu bireyler hafif zihinsel engelliler gurubuna girmektedirler ve kendilerini ilgilendiren durumlar hakkında karar veremezler. Bu nedenle sağlıklı bilgiler almak için Down sendromlu bireylerin anne-babalarıyla (24 kişi) yüz yüze görüşmeler sağlandı. Veri toplama metodu olarak nitel araştırma yöntemi tercih edilmiştir. Verilerin toplanmasında odak grup görüşmelerinden faydalanılmış ve görüşmeler sırasında yarı yapılandırılmış soru formu kullanılmıştır. Katılımcılar ile yüz yüze veya telefon ile görüşmeler sağlanmıştır. Katılımcıların vermiş oldukları cevaplar kendi arasında kategorize edilerek değerlendirildi.

Bulgular

Görüşmeye katılan 20 veli hareketsizliğe bağlı olarak çocuklarında genel sağlık sorunları (solunum problemleri, vücutlarının çeşitli yerlerinde oluşan yaralar) oluştuğunu belirtti. 20 veli çocuklarının hareketsizlik sonucunda kilo aldıklarını bu durumun genel sağlık açısından riskler uluşturduğunu belirttiler. Görüşmeye katılan 4 veli çocuklarına ev ortamında fiziksel aktivite ortamı oluşturduklarını ve hareketsizliğe bağlı oluşabilecek olumsuz etkileri kısmen engellediklerini belirttiler. Görüşmeye katılan bütün veliler çocuklarının Covid-19 sürecinde evde kaldıkları süre içerisinde daha agresif bir tutum sergilediklerini belirttiler.

Tablo 1: Genel sağlık sorunu oluşma durumu

Genel sağlık sorunu Oluşma durumu	Sağlık sorunu oluştu	Sağlık sorunu oluşmadı	Toplam
Katılımcılar	20	4	24

Tablo 1'e göre görüşmeye katılan 20 veli hareketsizliğe bağlı olarak sağlık sorunu yaşadıklarını belirtirken. 4 veli çocuklarına ev ortamında fiziksel aktivite ortamı oluşturduklarını ve hareketsizliğe bağlı oluşabilecek olumsuz etkileri kısmen engelliklerini belirttiler.

Sonuç

Engelli bireylerin toplumla iç içe olmaları, bazı temel motor becerilerinin ve fiziksel özelliklerinin gelişmesi için hareketlilik, egzersiz ve spor bir araç olarak görülmektedir. Özel eğitim öncesi, sırası ve sonrasında fiziksel aktivitelerin teşvik edilmesi oldukça önemlidir. (Van der Woude ve ark, 2020). Sportif aktiviteler toplumu teşkil eden bireyler için olduğu gibi engelli bireyler için de bir ihtiyaçtır (Kınalı 2003). Aktif yaşam tarzı normal bireyler için ne kadar önemliyse engelli bireyler için de bir o kadar önem arz etmektedir. Düzenli olarak fiziksel aktivitelere katılım gösteren engelli bireyler uzun vadeli sağlık sorunu ile karşılaşmamaktadırlar. (Houdijk ve Janssen, 2017). Down sendromlu bireyler fiziksel olarak dirençsiz bir yapıya sahipler. Bu nedenle bu bireylerin bağışıklık sistemleri düşüktür. Bağışıklık sistemlerinin düşük olmalarından dolayı özellikle covid-19 sürecinde bu bireyler sosyal ortamlardan uzak tutuldu. Elde edilen bulgulardan da anlaşılacağı üzere 20 katılımcı down sendromlu çocuklarını bu süreçte fiziksel aktivitelere gönderemediler. Fiziksel aktivitelerden uzak kalan bireyler bu süreçte sağlık sorunları yaşadılar. Yine katılımcılardan elde edilen bilgiler doğrultusunda az sayıda veli (4 veli) ev ortamında down sendromlu bireylere fiziksel aktiviteler uygulayarak bireylerin fiziksel olarak daha güçlü kalmalarını sağlamışlardır.

İnsanoğlunun doğasında sürekli hareketli olma eğilimi vardır. Hareketsizlik sonucu tüm bireyler zaman zaman sağlık sorunları yaşıyabilmektedirler.Sonuç olarak fiziksel aktiviteler normal bireylerin sağlık gelişimleri için ne kadar önemli ise Down sendromlu bireyler için de bir o kadar önem arz etmektedir.

Kaynaklar

Graf, C., Klein, D. (2011). Bewegung bei Vorschulkindern: Empfehlungen und Wirklichkeit. Journal für Klinische Endokrinologie und Stoffwechsel. 4 (2). S. 16-20.

Houdijk, H. & Janssen, T. W. J. (2017). Disability and rehabilitation on the move: mobility, exercise and sports for people with physical disabilities. Disability and Rehabilitation 39:2, pages 113-114.

Ilkım, M., Özoğlu, F., Şimşek, E., & Keskin, M. T. (2021). Düzenli fiziksel aktiviteye katılan ve katılmayan down sendromlu bireylerin mutluluk ve öz saygı düzeylerinin ebeveynler tarafından değerlendirilmesi (Malatya il örneği).

Kınalı, G. (2003). Zihin Engellilerde Beden- Resim- Müzik Eğitimi. Farklı Gelişen Çocuklar. (Ed: A. Kulaksızoğlu), İstanbul: Epsilon Yayınları,244

MacAuley, D. A. (1994). History of physical activity, health and medicine. J R Soc Med, 87, s.32-35.

Orhan, R., Ayan, S. (2018). Psiko-Motor ve Gelişim Kuramları Açısından Spor Pedagojisi. Kırıkkale Üniversitesi Sosyal Bilimler Dergisi. 2(8). 523-540.

Paffenbarger, R.S., Steven, J., Blair, N., I-Min, Lee. (2001). A history of physical activity, cardiovascular health and longevity. Int J Epidemiol. 30, 1184-92.

Pastore E., Marino B., Calzolari A., Digilio M.C., Giannotti A. & Turchetta A. (2000). Clinical and Cardiorespiratory Assessment in Children With Down Syndrome Without Congenital Heart Disease. Archives of Pediatrics & Adolescent Medicine.;154:408-410

Şahinler, Y., Ulukan, M., & Ulukan, H. (2020). Covid-19 Sürecinde Fiziksel Aktivite Yapan Spor Bilimleri Fakültesi Öğrencilerinin Saldırganlık Düzeylerinin İncelenmesi. Akdeniz Spor Bilimleri Dergisi, 3(1), 171-184.

Tural, E. (2020). Covıd-19 Pandemi Dönemi Ev Karantinasında Fiziksel Aktivite Düzeyinin Yaşam Kalitesine Etkisi. Van Sağlık Bilimleri Dergisi, 13(Covıd-19 Özel Sayı), 10-18.

Van der Woude, L. H. V., Houdijk, H. J. P., Janssen, T. W. J., Seves, B., Schelhaas, R., Plaggenmarsch, C., Mouton, N. L. J., Dekker, R., Van Keeken, H., De Groot, S. & Vegter, R. J. K.. (2020). Rehabilitation: mobility, exercise & sports; a critical position stand on current and future research perspectives. Disability and Rehabilitation 0:0, pages 1-16.

Zahner, L., TW-Team. (2013). Bedeutung von Sport und Bewegung für die Entwicklung von Kindern und Jugendlichen. Institut für Sport und Sportwissenschaften, Universität Basel.

PLACE OF PHYSICAL EXERCISE IN DIALYSIS CARE

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Abstract
There is significant psychological distress in adults recieving hemodialysis therapy. Myofascial pain related to dialysis is important issue associated with other psychosomatic problems. Hemodialysis patients experience fear and anxiety due to insertion pain which might result with psychological complications. Supportive care is best addressed by using a combination of treatments. Relaxation exercises have been reported to have positive effect on the control of fatigue and pain.
Here in this review, place of music in dialysis care is the subject discussed by the help of latest articles published in the field.
Keywords: Exercise, muscle relaxation, dialysis, pain, depression

1. Introduction
Frequency of chronic kidney disease and end-stage renal disease requiring dialysis therapy are increasing globally. Instead of technological advances, treatment is still resource intensive (Klarenbach et al., 2014). Elderly people comprise a large and growing proportion of the global dialysis population (Foote et al., 2016). There is significant psychological distress in adults with end-stage kidney disease. However, psychological treatments tailored to address the unique challenges are absent (Hudson et al., 2016). More than 80% of these patients receive hemodialysis therapy three times every week in a dialysis clinic. This requires challenging frequent travel for elderly people and patients at unstable conditions (Kalantar-Zadeh et al., 2016). Myofascial pain related to dialysis is important issue associated with other psychosomatic problems. Effective interventions are required to reduce pain of these patients (Hsu et al., 2021). Chronic pain symptom is common in hemodialysis patients (Sathiavageesan et al., 2021).
Despite regular treatment by hemodialysis, patients on hemodialysis are affected by uremic syndrome, which is marked by fatigue. Fatigue is supposed as the most common and the most severe symptom ever reported by patients with chronic kidney disease (Motedayen et al., 2014).
Insertion of dialysis needles produce fear and anxiety due to pain which may result with psychological complications at patients undergoing hemodialysis in the long term (Ghods et al., 2015).

2. Anxiety and depression
Starting dialysis is an important life event (Mok et al., 2019). Shift from pre-dialysis chronic kidney disease stage to renal replacement therapy makes significant stress on patients. Stress, anxiety and depression are common in this population which probably play role on dialysis modality choice (Bezerra et al., 2018). Dialysis patients show anxiety symptoms which impact quality of life largely (Schouten et al., 2019). Starting renal replacement therapy influences physical, psychological and social aspects of life significantly (Rebollo Rubio et al., 2017).

Anxiety and depression are widespread between end stage renal failure patients (Chan et al., 2018). Anxiety and depression frequently coexist in end-stage-kidney disease patients (Schouten et al., 2020), and are related with conditions resulting with poorer health outcomes (decreased quality of life and survival) (Brito et al., 2019). Although anxiety and depression are frequent comorbid disorders in dialysis patients, they remain underrecognized and often untreated (Preljevic et al., 2012).
Chronic kidney disease is a risk factor for psychosocial impairment (Moreira et al., 2015). Cognitive impairment, anxiety, and depression may be related to various factors, such as complications of hemo/peritoneal dialysis, uremic encephalopathy, psychosocial burden of the disease, and various comorbidities in patients with chronic kidney failure (Ozcan et al., 2015). Body image changes in chronic renal failure patients are associated with invasive treatment interventions. Additionally, sexual problems are frequent in patients of dialysis (Öyekçin et al., 2012).

3. Exercise and muscle relaxation for dialysis patients

Because of high symptom burden, numerous comorbidities, and shortened life expectancy, dialysis patients are increasingly recognized as appropriate candidates for early and continuous supportive care (Culp et al., 2016).
Pain is rarely managed with only one type of therapy. It is best addressed by using a combination of treatments (multimodal pain management approach). This may include the use of medications, injection therapies, massage, physical therapy, acupuncture and more. Because there are so many different pain medications available, when managing pain with medication it is important to determine the correct type for the presenting pain symptoms. It is also important to use medications that are safe for the kidneys. Preferably, these techniques should be taught by a trained provider, and then practiced at home for the most successful pain management (Nelli & Gulur, 2020).
Patients receiving hemodialysis treatment may experience several symptoms at the same time, such as fatigue and pain. Progressive relaxation exercises have been reported to have positive effect on the control of these symptoms (Serin et al., 2020). Psychological mediation within the nephrology departments is becoming frequent (Ratti et al., 2017). Patients of peritoneal dialysis face social isolation and physical inactivity problems (Yu et al., 2016).
Sedentary lifestyle is frequent in hemodialysis patients whose physical capabilities are largely reduced when compared with healthy subjects, and evidence exists that sedentary dialysis patients are at higher risk of death as compared to non-sedentary ones. Dialysis patients may suffer from cardiovascular disease, diabetes, malnutrition, depression, which limits their exercise capacity; conversely, regular physical exercise may favor rehabilitation and correction of several cardiovascular, metabolic and nutritional abnormalities. Many observational, population-based studies show that the level of physical activity is related to quality of life and nutritional status, as well as to the survival probability (Cupisti et al., 2013).
Among people on in-center hemodialysis, patient activation, readiness and willingness to manage their own health care is low. This is exacerbated by passive patients care receive method. Patient enabling for active role during care may lead to healthy behaviors, reductions in burden and healthcare system costs. To increase activation of patients, “patient-first” approach and equiping patients with self-management capacity is needed.

Changes in healthcare team training, delivery care models, promoting interventions (health coaching, peer mentoring etc.) are required. Changes for technology support for self-monitoring and self-access to records are also helpful (Hussein et al., 2021).

In a study of Olvera-Soto et al., (2016), during hemodialysis sessions, patients performed resistance exercise with ankle weights and resistance bands twice a week for 12 weeks. Anthropometric measurements were conducted on arm muscle circumference and arm muscle area and dynamometry was used for handgrip strength measurement. Exercise tolerance was adequate without any adverse effect. Twice a week resistance exercise was found safe and helpful to improve muscle mass and strength patients on hemodialysis.

As a sensorimotor disorder, restless legs syndrome is highly common in hemodialysis patients. In a study conducted by Aliasgharpour et al., (2016), effect of stretching exercises on restless legs syndrome in hemodialysis patients was assessed. Stretching exercises were performed on legs during the dialysis for half an hour, three times a week for 8 weeks in intervention group. Data were collected by using the international restless legs syndrome study group scale. The results showed that the majority of participants were suffering from moderate restless legs syndrome. The symptom severity of this syndrome meaningfully changed eight weeks after intervention in the intervention group compared to the control group. The results highlighted the significance of training and performing the stretching exercises during dialysis for the purpose of improving restless legs syndrome symptoms and the quality of care of hemodialysis patients.

Shahgholian et al., (2016) included 90 patients of hemodialysis who were diagnosed with restless leg syndrome. During four weeks, foot reflexology and stretching exercises were applied 3 times per week for 30 to 40 minutes. Changes in restless leg syndrome severity score were significantly higher in reflexology and stretching exercises groups than control group. No significant difference were observed between reflexology massage and stretching exercises groups. As a result, reflexology and stretching exercises found helpful to reduce restless leg syndrome severity and recommended to the patients.

To evaluate the effect of a 12-week breathing-based leg exercises program on quality of life under stabilizing heart rate variability and reducing fatigue in regular hemodialysis patients, Eighty-six patients with end-stage renal disease undergoing hemodialysis were included in a trial of Huang et al., (2021). The breathing-based leg exercises program comprised abdominal breathing and low-intensity leg exercise, including leg lifts, quadriceps femoris contraction and knee flexion, and lasted for 15 minutes at one time, three times a week for 12 weeks. Continuing breathing based leg exercises during hemodialysis for at least 12 weeks improved quality of life of end-stage renal disease patients without any affect on their vital signs stability.

Total 21 outpatients (aged >65) received intradialytic leg exercises with resistance bands during one year in the study of Kato et al., (2021). Multi-frequency bioimpedance device was used to evaluate fat and muscle mass. Band exercises changed physical performance and increased body weight after one year resistance. But participants did not gained muscle mass but fat mass. Triglyceride levels increased significantly after 1-year exercises. Serum creatinine levels was elevated. This application have potential for clinical benefit for body mass index in elderly hemodialysis patients but optimal dietary modification is needed to balance muscle and fat mass increase.

Conclusions

The use of such exercises is better to be implemented by healthcare professionals. Optimal dietary modification is needed to achieve a balanced increase of muscle and fat mass. It is common in study results that breathing-based exercises during hemodialysis for at least many weeks improved the quality of life of patients with and did not affect the stability of their vital signs.

Data on the effect of exercises on anxiety and depression is very limited.

Literatures

Aliasgharpour, M., Abbasi, Z., Razi, S. P., & Kazemnezhad, A. (2016). The effect of stretching exercises on severity of restless legs syndrome in patients on hemodialysis. Asian journal of sports medicine, 7(2).

Bezerra, C. I. L., Silva, B. C., & Elias, R. M. (2018). Decision-making process in the pre-dialysis CKD patients: do anxiety, stress and depression matter?. BMC nephrology, 19(1), 1-6.

Brito, D. C. S. D., Machado, E. L., Reis, I. A., Carmo, L. P. D. F. D., & Cherchiglia, M. L. (2019). Depression and anxiety among patients undergoing dialysis and kidney transplantation: a cross-sectional study. Sao Paulo Medical Journal, 137, 137-147.

Chan, K. M., Cheung, C. Y., Chan, Y. H., Chan, H. W., Chak, W. L., & Chau, K. F. (2018). Prevalence and impact of anxiety and depression in Chinese peritoneal dialysis patients: a single centre study. Nephrology, 23(2), 155-161.

Culp, S., Lupu, D., Arenella, C., Armistead, N., & Moss, A. H. (2016). Unmet supportive care needs in US dialysis centers and lack of knowledge of available resources to address them. Journal of pain and symptom management, 51(4), 756-761.

Cupisti, A., D'Alessandro, C., Bottai, A., Fumagalli, G., & Capitanini, A. (2013). Physical activity and exercise training: a relevant aspect of the dialysis patient's care. Internal and emergency medicine, 8(1), 31-34.

Foote, C., Kotwal, S., Gallagher, M., Cass, A., Brown, M., & Jardine, M. (2016). Survival outcomes of supportive care versus dialysis therapies for elderly patients with end-stage kidney disease: a systematic review and meta-analysis. Nephrology, 21(3), 241-253.

Ghods, A. A., Abforosh, N. H., Ghorbani, R., & Asgari, M. R. (2015). The effect of topical application of lavender essential oil on the intensity of pain caused by the insertion of dialysis needles in hemodialysis patients: a randomized clinical trial. Complementary therapies in medicine, 23(3), 325-330.

Hsu, Y. T., Ng, H. Y., Lee, Y. Y., Huang, Y. C., & Tsai, M. Y. (2021). Assessing the Efficacy of Chinese Herbal Medicine for Dialysis-related Myofascial Pain in the Fistula Arm: Study Protocol for a Pilot Randomized Trial.

Huang, H. Y., Hung, K. S., Yeh, M. L., Chou, H. L., Yeh, A. L., & Liao, T. Y. (2021). Breathing-based leg exercises during hemodialysis improve quality of life: A randomized controlled trial. Clinical Rehabilitation, 02692155211000738.

Hudson, J. L., Moss-Morris, R., Game, D., Carroll, A., & Chilcot, J. (2016). Improving Distress in Dialysis (iDiD): A tailored CBT self-management treatment for patients undergoing dialysis. Journal of Renal Care, 42(4), 223-238.

Hussein, W. F., Bennett, P. N., Abra, G., Watson, E., & Schiller, B. (2021). Integrating Patient Activation Into Dialysis Care. American Journal of Kidney Diseases.

Kalantar-Zadeh, K., Wightman, A., & Liao, S. (2020). Ensuring choice for people with kidney failure-dialysis, supportive care, and hope. N Engl J Med, 383(2), 99-101.

Kato, M., Shibata, M., Asai, K., Harada, K., Ito, I., Tawada, H., ... & Taniguchi, S. (2021). One-year intradialytic leg exercises with resistance bands and fat mass increase in elderly hemodialysis patients: a retrospective study. Renal Replacement Therapy, 7(1), 1-11.

Klarenbach, S. W., Tonelli, M., Chui, B., & Manns, B. J. (2014). Economic evaluation of dialysis therapies. Nature Reviews Nephrology, 10(11), 644-652.

Mok, M. M., Liu, C. K., Lam, M. F., Kwan, L. P., Chan, G. C., Ma, M. K., ... & Chan, T. M. (2019). A longitudinal study on the prevalence and risk factors for depression and anxiety, quality of life, and clinical outcomes in incident peritoneal dialysis patients. Peritoneal Dialysis International, 39(1), 74-82.

Moreira, J. M., Soares, C. M. B. M., Teixeira, A. L., e Silva, A. C. S., & Kummer, A. M. (2015). Anxiety, depression, resilience and quality of life in children and adolescents with pre-dialysis chronic kidney disease. Pediatric nephrology, 30(12), 2153-2162.

Motedayen, Z., Nehrir, B., Tayebi, A., Ebadi, A., & Einollahi, B. (2014). The effect of the physical and mental exercises during hemodialysis on fatigue: a controlled clinical trial. Nephro-urology monthly, 6(4).

Nelli, A., & Gulur, P. (2020). Managing Chronic Pain in Dialysis Patients. DPC Education Center. pp:22-23.

Olvera-Soto, M. G., Valdez-Ortiz, R., Alvarenga, J. C. L., & de los Ángeles Espinosa-Cuevas, M. (2016). Effect of resistance exercises on the indicators of muscle reserves and handgrip strength in adult patients on hemodialysis. Journal of Renal Nutrition, 26(1), 53-60.

Ozcan, H., Yucel, A., Avşar, U. Z., Çankaya, E., Yucel, N., Gözübüyük, H., ... & Aydınlı, B. (2015). Kidney transplantation is superior to hemodialysis and peritoneal dialysis in terms of cognitive function, anxiety, and depression symptoms in chronic kidney disease. In Transplantation proceedings (Vol. 47, No. 5, pp. 1348-1351). Elsevier.

Öyekçin, D. G., Gülpek, D., Sahin, E. M., & Mete, L. (2012). Depression, anxiety, body image, sexual functioning, and dyadic adjustment associated with dialysis type in chronic renal failure. The International Journal of Psychiatry in Medicine, 43(3), 227-241.

Preljevic, V. T., Østhus, T. B. H., Sandvik, L., Opjordsmoen, S., Nordhus, I. H., Os, I., & Dammen, T. (2012). Screening for anxiety and depression in dialysis patients: comparison of the Hospital Anxiety and Depression Scale and the Beck Depression Inventory. Journal of psychosomatic research, 73(2), 139-144.

Ratti, M. M., GB, D. Z., Sangiovanni, E., Vai, B., Limido, A., Bertoli, S., ... & Spotti, D. (2017). Quality of life, anxiety and distress in patients suffering from chronic kidney disease: Pre-dialysis and start of dialytic treatment. Giornale italiano di nefrologia: organo ufficiale della Societa italiana di nefrologia, 34(1).

Rebollo Rubio, A., Morales Asencio, J. M., & Eugenia Pons Raventos, M. (2017). Depression, anxiety and health-related quality of life amongst patients who are starting dialysis treatment. Journal of renal care, 43(2), 73-82.

Sathiavageesan, S., Annamalai, I., Malayappan, A., Melchizedek, K., Ramajayam, R., & Annadurai, A. (2021). Restless leg syndrome presenting as chronic severe limb pain in a dialysis patient. Hemodialysis International.

Schouten, R. W., Haverkamp, G. L., Loosman, W. L., Shaw, P. K. C., van Ittersum, F. J., Smets, Y. F., & Siegert, C. E. (2019). Anxiety symptoms, mortality, and hospitalization in patients receiving maintenance dialysis: a cohort study. American Journal of Kidney Diseases, 74(2), 158-166.

Schouten, R. W., Nadort, E., van Ballegooijen, W., Loosman, W. L., Honig, A., Siegert, C. E., ... & Broekman, B. F. (2020). General distress and symptoms of anxiety and depression: A factor analysis in two cohorts of dialysis patients. General hospital psychiatry, 65, 91-99.

Serin, E. K., Ovayolu, N., & Ovayolu, Ö. (2020). The effect of progressive relaxation exercises on pain, fatigue, and quality of life in dialysis patients. Holistic nursing practice, 34(2), 121-128.

Shahgholian, N., Jazi, S. K., Karimian, J., & Valiani, M. (2016). The effects of two methods of reflexology and stretching exercises on the severity of restless leg syndrome among hemodialysis patients. Iranian journal of nursing and midwifery research, 21(3), 219.

Yu, Z. L., Seow, Y. Y., Seow, P. S., & Tan, B. L. K. (2016). Effectiveness of a day care program in supporting patients on peritoneal dialysis and their caregivers. International urology and nephrology, 48(5), 799-805.

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ÖĞRETMEN ADAYLARININ EĞİTİM PROGRAM OKURYAZARLIĞI İLE ÖĞRETMENLİK MESLEĞİNE YÖNELİK TUTUMLARI ARASINDAKİ İLİŞKİNİN İNCELENMESİ

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Özet
Bu araştırmanın amacı öğretmen adaylarının program okuryazarlığı ile öğretmenlik mesleğine yönelik tutumları arasındaki ilişkinin incelenmesidir. Araştırma ilişkisel tarama modeline göre yürütülmüştür. Uygun durum örneklemesi kullanılan araştırmanın çalışma grubunu 2021-2022 eğitim-öğretim yılında Fırat Üniversitesi 'Bilgisayar ve Öğretim Teknolojileri Eğitimi', 'Fen Bilgisi Öğretmenliği', 'Matematik Öğretmenliği', 'Resim iş Öğretmenliği', 'Sınıf Öğretmenliği', 'Sosyal Bilgiler Öğretmenliği', 'Türkçe Öğretmenliği' ve 'Okul Öncesi Öğretmenliği' bölümlerinde öğrenim gören 4. sınıf öğrencileri oluşturmaktadır. Araştırmada veri toplama aracı olarak Bolat (2017) tarafından geliştirilen Eğitim Programı Okuryazarlığı Ölçeği ve Üstüner (2006) tarafından geliştirilen Öğretmenlik Mesleğine Yönelik Tutum Ölçeği kullanılmıştır. Verilerin analizi bilgisayar destekli istatistik programı ile yapılmıştır. Öncelikle Kolmogorov-Smirnov testi kullanılarak normallik testi yapılmıştır. Daha sonra ise öğrencilerin eğitim program okuryazarlıklarının ve öğretmenlik mesleğine yönelik tutumlarının cinsiyet ve bölüm değişkeni açısından farklılaşıp farklılaşmadığına ilişkin istatistiksel analizler yapılmıştır. Son olarak ise Pearson Korelasyon katsayısı ile öğrencilerin eğitim program okuryazarlığı ile öğretmenlik mesleğine yönelik tutumları arasındaki ilişkiye bakılmıştır. Araştırma ile öğrencilerin eğitim programı okuryazarlıklarının ve öğretmenlik mesleğine yönelik tutumlarının birbirini etkilediği ve bölüm değişkeni bağlamında farklılaştığı sonucuna ulaşılmıştır.
Anahtar Kelimeler: Program okuryazarlığı, öğretmenlik mesleği, tutum, eğitim fakültesi

INVESTIGATION OF THE RELATIONSHIP BETWEEN EDUCATIONAL PROGRAM LITERACY AND ATTITUDES TO THE TEACHING PROFESSION OF TEACHER CANDIDATES

Abstract
The aim of this study is to examine the relationship between prospective teachers' curriculum literacy and their attitudes towards the teaching profession. The research was carried out according to the relational screening model. The study group of the research is Fırat University 'Computer and Instructional Technologies Education', 'Science Education', 'Mathematics Teaching', 'Painting Education', 'Classroom Teaching', 'Social Studies Teaching', 'Turkish Teaching' and 'Preschool Teaching' ' consists of 4th grade students studying in the departments. Curriculum Literacy Scale developed by Bolat (2017) and Attitude towards Teaching Profession Scale developed by Üstüner (2006) were used as data collection tools in the research. The analysis of the data was made with a computer-aided statistical program. First of all, Kolmogorov-Smirnov test was applied and it was checked whether the data showed normal distribution.

Then, statistical analyzes were conducted to determine whether students' educational program literacy and attitudes towards the teaching profession differ in terms of gender and department variables. Finally, the Pearson Correlation coefficient was used to measure the relationship between students' curriculum literacy and their attitudes towards the teaching profession. As a result of the research, it was concluded that the literacy of the students and their attitudes towards the teaching profession affected each other and differed in the context of the department variable.
Keywords: Program literacy, teaching profession, attitude, faculty of education

GİRİŞ

Eğitim amaçlarının tasarlanan biçimde gerçekleşmesi eğitim faaliyetlerinin bir program çerçevesinde yürütülmesine bağlıdır. Çünkü eğitim faaliyetlerinde amaçlanan sonuçların gerçekleşmesi hem tutarlı hem de ayrıntılı bir planlama yapılmasını gerektirmektedir. Planlamada hedef bireyde davranış değişikliği oluşturmaktadır. Planlanmış davranış değişikliklerinin etkili biçimde gerçekleştirilmesi öğrenme olarak açıklanmaktadır. Öğrenmenin gerçekleştirilmesi ise eğitim-öğretim uygulamalarının önceden belirlenen tasarımlar ve planlar çerçevesinde gerçekleştirilmesi ile sağlanır (Sezgin, 1994: 3). Bu plan eğitim programı olarak karşımıza çıkmaktadır. Eğitim programı öğrencilerin yaşantılarının düzenlenmesidir. Taba ve Tyler eğitim programını istenilen hedef ve davranışların kazanılması için belirlenen stratejilerin yer aldığı yazılı doküman şeklinde ifade etmişlerdir (Demirel, 2010: 3). Bir kazanım ve içeriğin ne için, nasıl nerede, ne zaman ve kimin ile yapılacağını gösteren önceden hazırlanmış çizelgeye eğitim programı denir (Uşun, 2012: 13).
Öğrenene hem okulda hem okul dışında planlanmış etkinlikler aracılığı ile öğrenme yaşantıları düzeneği sunan eğitim programları; hedef, içerik, öğrenme-öğretme süreci ile ölçme ve değerlendirme öğeleri arasında sağlanan dinamik bir ilişkidir (Demirel, 2010: 5-6). Eğitim programından etkili bir şekilde faydalanabilmek beraberinde eğitim programının bu bileşenlerine hâkim olmayı gerektirmektedir (Erdem ve Eğmir, 2018). Bu dört bileşenin eğitim programı üzerindeki önemini kavrayabilmek için eğitim programı okuryazarlığı becerilerinin geliştirilmesi önemlidir. Eğitim programı okuryazarlığı bileşenler bağlamında değerlendirildiğinde hedef boyutu; 'hedefleri anlayabilme, ayırt edebilme, sınırlılıklar ve tutarlılıklar çerçevesinde belirleyip yazabilme' yeterliklerini içermektedir. İçerik boyutu; 'hedefe uygun içerikleri seçebilme, tespit edebilme, yazabilme, zenginleştirebilme ve eksiklikleri tamamlayabilme ile içeriğin öğrenci seviyesine uygunluğunu denetleyebilip içeriği konunun amaçlarına uygun tasarlayabilme' yeterliklerini içermektedir. Öğrenme–öğretme süreçleri boyutu; 'amaçlara uygun öğretim yöntemleri-tekniklerini belirleyerek bu yöntemlere-tekniklere uygun süreçleri tasarlayabilme ve değerlendirebilme, sürece uygun materyal ve etkinlikler seçebilme ve tasarlayabilme' yeterliklerini içerir. Son olarak ölçme ve değerlendirme boyutu ise; 'hedefe uygun ölçme ve değerlendirme yöntemi seçebilme, ölçme ve değerlendirme aracı hazırlayabilme, ölçme araçlarını okuyabilip sonuçlarını yorumlayabilme' yeterliklerin içermektedir (Bolat, 2017: 129).
Öğretmenlik mesleğine yönelik önemli bir yeterlik olan program okuryazarı olabilmenin, öğretmen adaylarının mesleklerine yönelik tutumları üzerinde de etkili olması beklenmektedir. Çünkü öğretmenlik mesleğinde sürece yön veren eğitim programlarını doğru okuyup yazabilmek, süreci önceden belirlenen planlar çerçevesinde doğru yürütebilmenin temelidir.

Eğitim ve öğretim sürecini önceden belirlenen planlar çerçevesinde yürütebilmek öğretmenlerin hem sürece hem de mesleklerine yönelik tutumlarını olumlu bağlamda etkilemektedir. Bu nedenle araştırmada öğretmen adaylarının program okuryazarlık düzeyleri ile öğretmenlik mesleğine yönelik tutumları arasındaki ilişki incelenmiştir.

Araştırmanın Amacı

Bu araştırmanın genel amacı öğretmen adaylarının program okuryazarlığı ile öğretmenlik mesleğine yönelik tutumları arasındaki ilişkinin incelenmesidir. Bu genel amaç çerçevesinde aşağıdaki sorulara cevap aranmıştır:

1. Öğretmen adaylarının program okuryazarlık ve öğretmenlik mesleğine yönelik tutum düzeyleri cinsiyet değişkenine göre farklılaşmakta mıdır?
2. Öğretmen adaylarının program okuryazarlık ve öğretmenlik mesleğine yönelik tutum düzeyleri bölüm değişkenine göre farklılaşmakta mıdır?
3. Öğretmen adaylarının program okuryazarlık ve öğretmenlik mesleğine yönelik tutum düzeyleri arasındaki ilişki ne düzeydedir?

YÖNTEM

Araştırma Deseni

Bu araştırma ilişkisel tarama modeli ile gerçekleştirilmiştir. Tarama araştırmasında bir grubun belirli ve bazı özelliklerini ortaya çıkarmak amacıyla veriler toplanır. İlişkisel araştırmalarda ise değişkenler arasında bulunan ilişkileri belirleyip neden-sonuç ile ilgili ipuçları elde etmek amaçlanır (Büyüköztürk vd., 2012: 14-15). Bu doğrultuda araştırmada öğretmen adaylarının program okuryazarlık ve öğretmenlik mesleğine yönelik tutum düzeyleri arasındaki ilişki incelenmek istendiği için ilişkisel tarama modeli kullanılmıştır.

Çalışma Grubu

Araştırmanın çalışma grubu belirlenirken uygun durum örneklemesi kullanılmıştır. Bu örneklemede üzerinde rahatça araştırma yapılabilecek kişi ve gruplar araştırmaya dahil edilir (Sönmez ve Alacapınar, 2014: 142). Bu doğrultuda araştırmanın çalışma grubuna 2021-2022 eğitim öğretim yılında Fırat Üniversitesi ‘Bilgisayar ve Öğretim Teknolojileri Eğitimi (7)’, ‘Fen Bilgisi Öğretmenliği (12)’, ‘Matematik Öğretmenliği (41)’, ‘Resim iş Öğretmenliği (16)’, ‘Sınıf Öğretmenliği (54)’, ‘Sosyal Bilgiler Öğretmenliği (40)’, ‘Türkçe Öğretmenliği (34)’ ve ‘Okul Öncesi Öğretmenliği (36)’ bölümlerinde öğrenim gören 240 son sınıf öğrencisi dahil edilmiştir.

Veri Toplama Araçları

Araştırmada Eğitim Programı Okuryazarlığı Ölçeği (EPOÖ) ve Öğretmenlik Mesleğine Yönelik Tutum Ölçeği (ÖMYTÖ) veri toplamak amacıyla kullanılmıştır. Bolat (2017) tarafından geliştirilen ‘EPOÖ’ 29 maddeden ve okuma ile yazma şeklinde 2 alt faktörden oluşmaktadır. 15 maddeden oluşan okuma alt faktörünün güvenirlik katsayısı 0.89 iken 14 maddeden oluşan yazma alt faktörünün güvenirlik katsayısı ise 0.091 şeklindedir. Beşli Likert tipinde olan ölçeğin tamamına ait güvenirlik katsayısı 0.94’tür. Üstüner (2006) tarafından geliştirilen ‘ÖMYTÖ’ ise 34 maddeden ve tek boyuttan oluşmaktadır. Beşli Likert tipindeki ölçeğin güvenirlik katsayısı 0.93 şeklindedir.

Verilerin Analizi

Toplanan veriler bilgisayar destekli istatistik programı ile analiz edilmiştir. İstatistiksel analizleri belirlemek için verilerin normal dağılım gösterip göstermediklerine bakılmıştır. Çalışma grubu 50'den büyük olduğu için Kolmogorov-Smirnov normallik testi uygulanmıştır. Test sonucunda p değeri 0.05'ten büyük olması verilerin normal dağılım gösterdiği, küçük olması ise normal dağılım göstermediği şeklinde yorumlanır. Normal dağılım göstermeyen veriler için çarpıklık ve basıklık katsayılarına bakılarak -2 ile +2 değerleri aralığında olması halinde verilerin normal dağılım gösterdiği kabul edilir (Büyüköztürk, 2007: 42; Kalaycı, 2010: 212; Yazıcıoğlu ve Erdoğan, 2014: 247; Büyüköztürk, Çokluk ve Köklü, 2019: 59). Ölçeklere uygulanan Kolmogorov-Smirnov testi Tablo 1'de yer almaktadır.

Tablo 1. Ölçeklere İlişkin Kolmogorov-Smirnov Testi

		K-S	p	Çarpıklık Katsayısı	Basıklık Katsayısı
EPOÖ	Okuma	0.053	0.200	-0.178	-0.273
	Yazma	0.080	0.001	-0.022	-0.893
	Ölçeğin Tamamı	0.078	0.001	0.000	-0.806
ÖMYTÖ		0.163	0.000	-1.208	0.755

Her iki ölçek de normallik varsayımını karşıladığı için parametrik testler kullanılmıştır. Görüşlerin cinsiyete göre değerlendirilmesinde bağımsız gruplar t testi; bölüme göre değerlendirilmesinde ise varyans analizi kullanılmıştır. İki ölçek arasındaki ilişkiyi değerlendirmek amacıyla pearson korelasyon katsayılarına bakılmıştır

BULGULAR

Tablo 2. Eğitim Programı Okuryazarlık Ölçeğinin Cinsiyet Değişkeni İçin t Testi Sonuçları

	Cinsiyet	n	$\overline{X}$	ss	sd	t	p
Okuma	Kadın	175	3.87	0.62	238	-0.775	0.439
	Erkek	65	3.95	0.74			
Yazma	Kadın	175	3.73	0.73	238	-1.937	0.054
	Erkek	65	3.93	0.73			
EPOÖ	Kadın	175	3.80	0.65	238	-1.416	0.158
	Erkek	65	3.94	0.71			

Tablo 2'de okuma alt boyutuna [t(238)=-0.775; p>0,05], yazma alt boyutuna [t(238)=-1.937; p>0,05] ve ölçeğe [t(238)=-1.416; p>0,05] ilişkin öğretmen adaylarının görüşlerinin cinsiyet değişkenine göre anlamlı bir biçimde farklılaşmadığı belirlenmiştir. Kadın ($\overline{X}$ =3.80) ve erkek ($\overline{X}$ =3.94) öğretmen adaylarının eğitim programı okuryazarlık seviyeleri çok katılıyorum düzeyindedir.

Tablo 3. Eğitim Programı Okuryazarlık Ölçeğinin Bölüm Değişkeni İçin Varyans Testi Sonuçları

	Bölüm	n	$\overline{X}$	ss	V.K.	K.T.	sd	K.O.	F	p	LSD
Okuma	BÖTE	7	4.18	0.39	Grup.	3.764	7	0.538	1.269	0.267	-
	Mat.	41	3.86	0.85	Grup.İçi	98.335	232	0.424			
	Fen Bil.	12	3.91	0.79	Toplam	102.099	239				
	Türkçe	34	3.74	0.75							
	Sınıf	54	3.93	0.55							
	Okul Ö.	36	3.88	0.63							
	Sosyal B.	40	4.07	0.62							
	Resim İş	16	3.63	0.98							
Yazma	BÖTE	7	4.23	0.57	Grup.	2.903	7	0.415	0.767	0.615	-
	Mat.	41	3.69	0.87	Grup.İçi	125.385	232	0.540			
	Fen Bil.	12	3.82	0.60	Toplam	128.288	239				
	Türkçe	34	3.69	0.80							
	Sınıf	54	3.82	0.59							
	Okul Ö.	36	3.76	0.75							
	Sosyal B.	40	3.89	0.83							
	Resim İş	16	3.64	0.37							
EPOÖ	BÖTE	7	4.21	0.43	Grup.	3.143	7	0.449	1.008	0.426	-
	Mat.	41	3.78	0.84	Grup.İçi	103.364	232	0.446			
	Fen Bil.	12	3.87	0.52	Toplam	106.506	239				
	Türkçe	34	3.72	0.76							
	Sınıf	54	3.87	0.55							
	Okul Ö.	36	3.82	0.66							
	Sosyal B.	40	3.98	0.69							
	Resim İş	16	3.64	0.37							

Tablo 3'te okuma alt boyutuna [F(7-239)=1.269; p>0,05], yazma alt boyutuna [F(7-239)=0.767; p>0,05] ve ölçeğin tamamına [F(7-239)=1.008; p>0,05] ilişkin öğretmen adaylarının görüşleri bölüm değişkenine göre anlamlı bir şekilde farklılaşmamaktadır. En yüksek eğitim programı okuryazarlık düzeyi BÖTE bölümünde ortaya çıkmıştır.

Tablo 4. Öğretmenlik Mesleğine Yönelik Tutum Ölçeğinin Cinsiyet Değişkeni İçin t Testi Sonuçları

	Cinsiyet	n	$\overline{X}$	ss	sd	t	p
ÖMYTÖ	Kadın	175	4.16	0.65	238	0.031	0.975
	Erkek	65	4.16	0.62			

Tablo 4'te öğretmenlik mesleğine yönelik tutum ölçeğine [t (238) =0.031; p>0,05] ilişkin öğretmen adaylarının görüşlerinin cinsiyet değişkenine göre farklılaşmadığı ortaya çıkmıştır. Kadın ($\overline{X}$ =4.16) ve erkek ($\overline{X}$ =4.16) öğretmen adaylarının öğretmenlik mesleğine yönelik tutum seviyeleri çok katılıyorum düzeyindedir.

Tablo 5. Öğretmenlik Mesleğine Yönelik Tutum Ölçeğinin Bölüm Değişkeni İçin Varyans Testi Sonuçları

	Bölüm	n	$\overline{X}$	ss	V.K.	K.T.	sd	K.O.	F	p	LSD
ÖMYTÖ	BÖTE	7	4.11	0.80	Grup. Ar.	9.558	7	1.365	3.552	0.001	2-5,6,7,8 4-7,8
	Mat.	41	3.80	0.81	Grup.İçi	89.183	232	0.384			
	Fen Bil.	12	4.15	0.54	Toplam	98.741	239				
	Türkçe	34	4.06	0.65							
	Sınıf	54	4.23	0.65							
	Okul Ö.	36	4.19	0.57							
	Sosyal B.	40	4.36	0.46							
	Resim İş	16	4.51	0.02							

Tablo 5'te öğretmenlik mesleğine yönelik tutum ölçeğine [F(7-239)=3.552; p<0,05] ilişkin öğretmen adaylarının tutum düzeylerinin bölüm değişkeni bağlamında anlamlı bir biçimde farklılaştığı belirlenmiştir. Bu farklılaşma Matematik ile Sınıf, Okul Öncesi, Sosyal Bilgiler ve Resim İş; Türkçe ile Sosyal Bilgiler ve Resim İş öğretmenliği bölümleri arasında gerçekleşmektedir. Öğretmenlik mesleğine yönelik en yüksek tutum düzeyi Resim iş öğretmenliği bölümünde ortaya çıkmıştır.

Tablo 6. Öğretmen Adaylarının Eğitim Programı Okuryazarlık ile Öğretmenlik Mesleğine Yönelik Tutum Düzeyleri Arasındaki Korelasyon Sonuçları

		Okuma	**Yazma**	**EPOÖ**	**ÖMYTÖ**
Okuma	P.Correlation	1	.862''	.963''	.252''
	Sig. (2-tailed)		.000	.000	.000
	N	240	240	240	240
Yazma	P.Correlation	.862''	1	.967''	.282''
	Sig. (2-tailed)	.000		.000	.000
	N	240	240	240	242
EPOÖ	P.Correlation	.963''	.967''	1	.277''
	Sig. (2-tailed)	.000	.000		.000
	N	240	240	240	240
ÖMYTÖ	P.Correlation	.252''	.282''	.277''	1
	Sig. (2-tailed)	.000	.000	.000	
	N	240	240	240	240

Pearson Korelayon katsayısının 1.00 olması ölçekler arasında mükemmel pozitif bir ilişki olduğunu,-1.00 olması mükemmel negatif bir ilişki olduğu ve 0.00 olması ise ilişkinin olmadığını ifade eder. Katsayı değerinin yer aldığı aralıklar ilişkiyi yorumlama için önemlidir. Bu aralık 1.00-0,70 arasında ise yüksek, 0.70-0.30 arasında ise orta ve 0.30-0.00 arasında ise düşük seviyede ilişki olduğu anlamına gelir. (Büyüköztürk, 2007: 42). Tablo 6 değerlendirildiğinde öğretmen adaylarının eğitim programı okuryazarlık düzeyi ile öğretmenlik mesleğine yönelik tutum düzeyleri arasında düşük ancak pozitif ve anlamlı bir ilişki olduğu (r=.277, p<.01) belirlenmiştir. Eğitim programı okuryazarlık ile öğretmenlik mesleğine yönelik tutum düzeyleri birbirlerini pozitif yönde etkilemektedir.

SONUÇ ve TARTIŞMA

Yapılan analizler sonucunda hem cinsiyet hem de bölüm değişkenine göre de öğretmen adaylarının eğitim programı okuryazarlık düzeylerinde anlamlı farklılık ortaya çıkmamıştır. En yüksek eğitim programı okuryazarlık düzeyi BÖTE bölümünde öğrenim gören öğretmen adaylarında olduğu belirlenmiştir. Ayrıca hem kadın hem de erkek öğretmen adaylarının eğitim programı okuryazarlık seviyeleri ise yüksek düzeyindedir. Benzer şekilde Erdem ve Eğmir (2018) de araştırmalarında cinsiyet değişkeni bağlamında anlamlı bir farklılık ortaya çıkmadığı ve öğretmen adaylarının eğitim programı okuryazarlığı düzeylerinin yüksek olduğu sonucuna ulaşmışlardır. Çetinkaya ile Tabak (2019) da araştırmalarında eğitim programı okuryazarlığı bağlamında öğretmen adaylarının yeterli düzeyde olduğu sonucuna ulaşmışlardır.

Öğretmenlik mesleğine yönelik tutum düzeyi bağlamında kadın ve erkek öğretmen adaylarının yüksek tutuma sahip olduğu ve farklılaşmanın olmadığı belirlenmiştir. Benzer şekilde Zembat, Akşin Yavuz, Tunçeli ve Yılmaz (2018) araştırmalarında öğretmenlik mesleğine yönelik öğretmen adaylarının tutumlarında cinsiyete göre farklılaşmadığı sonucunu elde etmişlerdir.

Bölüm değişkeni bağlamında ise Matematik ile Sınıf, Okul Öncesi, Sosyal Bilgiler ve Resim İş; Türkçe ile Sosyal Bilgiler ve Resim İş öğretmenliği bölümleri arasında anlamlı farklılık gerçekleşmektedir. Öğretmenlik mesleğine yönelik en yüksek tutum düzeyinin Resim iş öğretmenliği bölümünde olduğu belirlenmiştir. Kara (2020) da araştırmasında eğitim fakültesi görsel sanatlar öğretmen adaylarının yüksek düzeyde öğretmenlik mesleğine yönelik tutuma sahip oldukları sonucuna ulaşmıştır. Son olarak ise öğretmen adaylarının eğitim programı okuryazarlık düzeylerinin öğretmenlik mesleğine yönelik tutum düzeylerin pozitif etkilediği sonucuna ulaşılmıştır.

KAYNAKLAR

Bolat, Y. (2017). Eğitim Programı Okuryazarlığı Kavramı ve Eğitim Programı Okuryazarlığı Ölçeği. Turkish Studies, 12(18), 121-138.

Büyüköztürk, Ş. (2007). Sosyal Bilimler İçin Veri Analizi El Kitabı (8. Baskı). Ankara, Pegem Akademi.

Büyüköztürk, Ş., Kılıç-Çakmak, E., Akgün, Ö. A., Karadeniz, Ş. ve Demirel, F. (2012). Bilimsel Araştırma Yöntemleri (12. Baskı). Ankara, Pegem Akademi.

Büyüköztürk, Ş., Çokluk, O. ve Köklü, N. (2019). Sosyal Bilimler İçin İstatistik (21. Baskı). Ankara, Pegem Akademi.

Çetinkaya, S. ve Tabak, S. (2019). Öğretmen Adaylarının Eğitim Programı Okuryazarlık Yeterlilikleri. Ondokuz Mayıs Üniversitesi Eğitim Fakültesi Dergisi, 38(1), 296-309.

Demirel, Ö. (2010). Kuramdan Uygulamaya Eğitimde Program Geliştirme (12. Basım). Ankara, Pegem Akademi.

Erdem C. ve Eğmir, E. (2018). Öğretmen Adaylarının Eğitim Programı Okuryazarlığı Düzeyleri. Afyon Kocatepe Üniversitesi Sosyal Bilimler Dergisi, 20(2), 123-138.

Kalaycı, Ş. (2010). SPSS Uygulamalı Çok Değişkenli İstatistik Teknikleri (5. Baskı). Ankara, Asil Yayın Dağıtım.

Kara, S. (2020). Görsel Sanatlar Öğretmen Adaylarının Öğretmenlik Mesleğine Yönelik Tutumları Ve Öğretmenlik Öz Yeterlik İnançlarının İncelenmesi. Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi, 54, 49-73.

Sezgin, S.S. (1994). Mesleki ve Teknik Eğitimde Program Geliştirme (3. Baskı). Ankara, Gazi Büro Kitapevi.

Sönmez, V. ve Alacapınar, F.G. (2014). Örneklendirilmiş Bilimsel Araştırma Yöntemleri (Genişletilmiş 3. Baskı). Ankara, Anı Yayıncılık.

Uşun, S. (2012). Eğitimde Program Değerlendirme Süreçler Yaklaşımlar ve Modeller. Ankara, Anı Yayıncılık.

Üstüner, M. (2006). Öğretmenlik Mesleğine Yönelik Tutum Ölçeğinin Geçerlik Ve Güvenirlik Çalışması. Kuram ve Uygulamada Eğitim Yönetimi Dergisi, 45, 109-127.

Yazıcıoğlu, Y. ve Erdoğan, S. (2014). SPSS Uygulamalı Bilimsel Araştırma Yöntemleri. Ankara, Detay Yayıncılık.

Zembat, R., Akşin-Yavuz, E., Tunçeli, H. İ. ve Yılmaz, H. (2018). Öğretmenlik Mesleğine Yönelik Tutum İle Akademik Motivasyon Ve Başarı Arasındaki İlişkinin İncelenmesi. Kuramsal Eğitimbilim Dergisi, 11(4), 789-808.

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Özet
Erken dönemde çocukların eğitilerek kendini ifade etmesine, ahlaki, kültürel değerler edinmesine, yaratıcılık kabiliyetini keşfetmesine olanak tanımak çok geliştirici olacaktır. Bu çabanın arkasındaki amaç, çocukları gerçek bir yaşama hazırlamak ve onların davranışlarını donanımlı kılarak iyi bir insan olmalarına fırsat tanımaktır. Çocukların erken dönemde eğitilerek bilişsel gelişimlerinin arttırılması onların bilinçli yaşamlarının önünü açacaktır. Çünkü bu dönemde çocukların bilinçlenmesi yaşamlarını rahatlatacaktır. Ancak çocukların bilinçsiz kalması yaşamlarını problematik bir hale dönüştürebileceği gibi bazen de bilinçsizlik bizzat problemin kaynağı olabilir. Çocukluk eğitimine ilişkin kuram ve yaklaşımlar bu dönemin eğitimin felsefesini temellendirdiği gibi kimlik oluşum sürecini de başlatmış olur. Bilim dünyasında erken çocukluk eğitimine ilişkin kuramlar ve felsefi yaklaşımlar dikkate alındığında ortaya çıkan temel ilke çocukluk yıllarından itibaren kimlik oluşuma katkı sunmaktır. Bu konuda İlerlemeci Kuramlar, Psikodinamik Kuramlar ve Yapılandırmacı Kuramlar başlıca kuram ve felsefi yaklaşımlardır. İlerlemeci kuram, temel varsayımını değişim üzerine kurmaktadır. Bundan kasıt, eğitimde her türlü katı disiplin, şahıs merkezli, pasif alıcı ve değişmez gerçekler gibi bir anlayışa karşı çıkmaktır. Bunun yerine birey merkezli, değişim odaklı ve çeşitlilik üzerine bir anlayış inşa etmektir. Psikodinamik kuram, erken çocukluk kuramlarını ve uygulamalarını etkisi altında bırakarak yetişkin ile çocuk arasındaki ilişkiyi irdelemektedir. Benlik, özsaygı, kendilik değeri, duygusal gelişim ve çocukluk deneyimleri gibi kavramları ilgi alanına alır. Bundan hareketle de insandaki duygusal ve sosyal gelişimin gerekli olduğuna vurgu yapar. Yapılandırmacı kuram, eğitimde öğrenciyi pasiflikten kurtarıp onu aktif hale getirir. Öğrencinin yaşam deneyimlerini nasıl anlamlandırdığını, anlamlı öğrenmenin nasıl ortaya çıktığını ve bu süreçte ne tür bilişselliklerin vuku bulduğunu izah etmektedir. Bu kuramlar, yaklaşımları ile çocukların kimlik yapısını da doğrudan etkilemektedir. Tüm kuram ve yaklaşımlar, çocukların kimlik oluşumlarında gördükleri ihtiyaçları, eksikleri, ihmalkarlıkları, görünmezleri vs gibi alanlara değinerek onların kimlik oluşumlarına ışık tutmuş ve felsefi açıdan temellendirmiştir. Bunlar sayesinde erken dönem çocukluk eğitimi çocukların birçok gelişim alanlarını beslediği gibi kimliksel gelişim alanını da desteklemiştir.
Anahtar Kelimeler: Çocukluk, Eğitim, Kimlik

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CHILDHOOD EDUCATION AND IDENTITY

Abstract
In the early period, it will be very developing to allow children to express themselves, to acquire moral and cultural values, and to discover their creativity skills by educating them. The purpose behind this effort is to prepare children for a real life and to equip them with their behavior and give them the opportunity to become good people. Increasing the cognitive development of children by educating them in the early period will pave the way for their conscious lives. Because raising awareness of children during this period will ease their lives. However, unconsciousness of children can turn their lives into a problematic one, and sometimes unconsciousness can be the source of the problem itself. Theories and approaches related to childhood education not only grounded the philosophy of education of this period, but also started the identity formation process. Considering the theories and philosophical approaches related to early childhood education in the scientific world, the basic principle that emerges is to contribute to the formation of identity from childhood. In this regard, Progressive Theories, Psychodynamic Theories and Constructivist Theories are the main theories and philosophical approaches. Progressive theory bases its basic assumption on change. What is meant by this is to oppose any kind of rigid discipline in education, a person-centered, passive receptive and immutable reality. Instead, it is to build an understanding of individual-centered, change-oriented and on diversity. Psychodynamic theory examines the relationship between adult and child by influencing early childhood theories and practices. It is interested in concepts such as self, self-esteem, self-worth, emotional development and childhood experiences. Based on this, it emphasizes the necessity of emotional and social development in human beings. Constructivist theory saves the student from passivity in education and makes him active. It explains how the student makes sense of life experiences, how meaningful learning emerges, and what kinds of cognitions occur in this process. These theories directly affect the identity structure of children with their approaches. All theories and approaches have shed light on children's identity formations by touching on areas such as their needs, deficiencies, negligence, invisibility etc. Thanks to these, early childhood education not only nurtures many developmental areas of children, but also supports the area of identity development.
Keywords: Childhood, Education, Identity

GİRİŞ

Erken dönem çocukluk eğitimi, bireysel özelliklerden gelişim düzeylerine kadar çocuklara çeşitli, zengin, sağlıklı ve farklı olanaklar hazırlayan ve onları duyuşsal, bedensel ve sosyal yönden besleyip örgün eğitimin ilk kademesine hazırlayan bir eğitim dönemidir. Bu dönemde çocuklar, duygu gelişimi, kültürel ve ahlaki değerler, düşünme, yorumlama, analiz etme ve problem çözme konularında eğitilebilirler. Farklı alanlarda gelişimin yanında erken çocukluk eğitimi çocuklarda kimlik oluşumu için kritik bir döneme denk gelmektedir. Erken çocukluk eğitimine ilişkin kuram ve yaklaşımlar bu eğitimin felsefesini temellendirdiği gibi bu dönemde kimlik oluşumunun da sağlam temelleri atılmış olur. Bu kapsamda çalışmada erken çocukluk eğitimi döneminde çocuklarda kimlik oluşumu çeşitli yaklaşımlar açısından değerlendirilmeye çalışılmıştır. Sonuç olarak çocuğun kendisi olmayı başarması demek aslında kimlik oluşumunun gelişimine uygun gerçekleşmesi demektir.

Çocukların gelişimine uygun kimlik oluşum süreçleri farklı kuram ve yaklaşımlara göre farklılık arzetse de her kuram ve yaklaşımın bu sürece katkı sunduğu bir gerçektir. Tüm kuram ve yaklaşımlar, çocukların kimlik oluşumlarında gördükleri ihtiyaçları, eksikleri, ihmalkârlıkları, görünmezleri vb. alanlara değinerek onların kimlik oluşumlarına ışık tutmuş ve felsefi açıdan temellendirmiştir. Erken dönem çocukluk eğitimi için ortaya çıkan kuram ve yaklaşımların ortaya koyduğu en temel ilke çocukluk yıllarından itibaren kimlik oluşumu desteklenmelidir. Bu kuram ve yaklaşımlar sayesinde kimliksel gelişim erken dönem çocukluk eğitiminin önemli bir parçası haline gelmiştir.

Çocukluk Eğitimi

Eğitim, insan doğasının değişime uğramasında ve şekillenmesinde araçsal bir faktördür. Söz konusu araçsallık, en iyi kendini çocukluk eğitimde gösterir (Akto, 2020, s. 327). Çocukluk eğitimi, psikoloji, gelişim, felsefe ve sosyoloji alanlarıyla ilişkili bir şekilde ele alınmadır. Bu disiplinler, çocukluğa özgü gereksinimlerin karşılanması gerektiğine dikkat çekmekte ve ona özel önem vermektedirler. Çocuklukla doğrudan ilişkili gereksinimler, onu yetişkinlikten ayıran bir özellikte olduğuna vurgu yapmakta ve kendine özgü süreçlerinin var olduğunu ortaya koymaktadır (Fionda, 2001; Jenks, 2005). Üretken, yapıcı, nitelikli ve sağlıklı nesillerin yetiştirilmesi çocukluk eğitimiyle doğrudan ilişkidir. Özellikle çocukluk yıllarında çocukların sosyal, zihinsel, bedensel, duyuşsal ve psiko-motor alanlarda gelişimlerinin doğru bir seyirde ilerlemesi için erken yaşta eğitimlerine başlanmalıdır. Bu yaklaşım zorunlu eğitimin ilk kademesine kadar devam ettirilmesi faydalı olacaktır. En başat faydalarından biri çocukların ilköğretime hazırlamaktır (Akto, 2017, s. 1076). Bu nedenle çocukluk yıllarındaki eğitimin, sonraki eğitim yıllarının temel yapı taşlarından olduğunu ve tüm yaşamı etkilediğini söyleyebiliriz (Akto, 2020, s. 327). Bundan ötürü çocukluk yıllarında çocukların, gerekli beceri, bilgi ve donanımları artırılmalıdır (Akto, 2017: s. 1076). Bunları sağlamanın en kolay yolu ise gelişim bilimidir. Gelişimde son yıllarda erken dönem çocukluğunun öneminin fark edilmesi, bu dönemin örgün eğitime dahil edilmesi ile birlikte erken dönem çocuklarının eğitim programları ve eğitim ortamlarının değerlendirilmesine olan ilgiyi de artırmıştır (Billington, 2006, 42-43; Lidz, 2003, 10-11; Snow, & Van Hemel, 2008; Thambirajah, 2011). Gelişim alanlarında tüm çocukların gelişim ve öğrenme türlerinin birbirinin aynı olmaması, gelişimin doğası gereği bireysel farklılığı merkeze aldığı içindir. Sosyal ve kültürel ortamlar da çocukluk eğitiminde gelişim kadar etki etmektedir. Bu sebeple erken dönem çocuklarının taleplerini ortaya koymak ve karşılamak için gelişim, eğitim ve değerlendirmeyi tektipleştirmek doğru olmayacaktır (Shepard, Kagan, & Wurtz, 1998, s.4-5). Çocukların bilgi edinim süreçleri sadece kâğıt-kalemle sınırlı değildir. Çünkü bilgi, çocuklar tarafından kendine özgü otantik koşullarda yapılandırılır. Etkileşim ve deneyimler çocukların bilgi edinim süreçlerini kolaylaştırmaktadır. Bunun için çocuklar, görüp duyduklarını zihnide canlandırmalı, nesneleri manipüle etmeli, görseller oluşturmalı ve nesnelere temas etmelidirler (Bredekamp, & Rosegrant, 1995, 21-22; Naeyc, 1998, Shepard, Kagan ve Wurtz, 1998).

2. Kimlik

Kimlik en genel manada, insanın özelliklerinin bütününü kuşatır. Kimliğin, bireysel kimlikten toplumsal kimliğe kadar yaygın bir perspektifi vardır (Aşkın, 2007). Erikson, kimlik kavramını için: “Kimlik, önceki bütün özdeşim ve benlik imajları ile tamamlanmadır.

Diğer bir deyişle gerçekte kimlik biçimlenmesi süreci umulan geleceğin ışığında, önceki bütün özdeşimlerin yeniden yapılanmasıdır" (Evans, R. I., 1981: 36). Ona göre (1968) süreç ve bilinç kimliği tanımlayan iki temel öğedir. Bilinç olarak kimlik, kişinin kendine has duygularına hitap ederken, süreç olarak kimlik ise, kişinin yaşamını sürmesi için bilinç dışı uğraş ve çabalara hitap etmektedir. Grup dayanışması ve idealleri bu çabanın göstergeleri arasındadır. Bunlardan hareketle Hendry, Meyer ve Kloep (2007), kimliği yenilik, denetim, sosyal yapılanma ve süreklilik duygusu veren bir yaşam hikayesi olarak açıklamışlardır.
Kimlik kavramının anlaşılır kılan birtakım kuram ve yaklaşımlar vardır. Bunlardan en çok bilinenler kimlik statüleri ile kimlik stilleridir. Kimlik statülerinin en önde gelen ismi Marcia'dır. Marcia kimliği, kişinin çevresine ve kendine duyduğu anlamlılık düzeyi olarak açıklamıştır. Önemli olan bu anlamlılık duygusunun süreklilik oluşturarak zamanları aşmasıdır (Marcia, 1994, s.70). Marcia, ergenliği kimlik gelişimi için doruk nokta olarak tanımlamıştır. Çünkü Marcia'ya göre ergenlik, kimliği doğrudan etkileyen cinsel, ahlaki, biyolojik ve bilişsel açıdan değişimlerin çok hızlı olduğu bir dönemdir (Marcia, 2002a). Kimlik stillerinde ise en bilinen simalardan biri Berzonsky'dir. Berzonsky, kimlik oluşumu aşamalarında insanların benzer tepkiler verdiğini söyler. Berzonsky, kişi kimliğinin oluşmasında sosyal-bilişsel süreçleri çok önemli bulmuştur (Berzonsky, 2003; Berzonsky, 2005). Bu nedenle Berzonsky, sosyal-bilişsel süreçleri kimlik stillerinin izahında merkeze almıştır.

Çocukluk Eğitimi ve Kimlik

Erken çocukluk eğitimine ilişkin kuram ve yaklaşımlar bu eğitimin felsefesini temellendirdiği gibi bu dönemde kimlik oluşumunun da sağlam temelleri atılmış olur. Bilim dünyasında erken çocukluk eğitimi için ortaya çıkan kuramlar ve felsefi yaklaşımlar dikkate alındığında ortaya çıkan temel ilke çocukluk yıllarından itibaren kimlik oluşuma katkı sunmaktır. Bu konuda başlıca kuram ve felsefi yaklaşımlar şunlardır: 1. İlerlemeci Kuramlar, 2. Psikodinamik Kuramlar ve 3. Yapılandırmacı Kuramlar (Morrison, 2004; Pound, 2011).

İlerlemeci Kuramlar

İlerlemeci kuram, pragmatik felsefi yaklaşımın eğitime uyarlanması olarak ortaya çıkmıştır. Bu felsefe temel varsayımını değişimdir. Bundan kasıt, eğitimde her türlü şahıs merkezli, katı disiplin, pasif alıcı ve değişmez realiteler gibi bir perspektife karşı konumlanmaktır. Bunun yerine çeşitlilik üzerine bir anlayış inşa etmekte, değişime odaklanmakta ve birey merkezli bir anlayış geliştirmektedir. Bunun için eğitimin demokratik bir ortamda gerçekleştirilmesi şarttır. Çünkü çocukların düşüncelerini açıkça ortaya koyması ve özgürce kimliklerini oluşturup ona sahip çıkması ancak demokratik eğitim ortamında gerçekleşebilir. Böylesi bir ortamda çocuklar, birbirleriyle bilgi paylaşımında bulunabilir ve birbirlerine özgürce temas edip etki edebilirler. İlerlemeci kuram, çocukların ilgi ve ihtiyaçları doğrultusunda eğitimin programlanması gerektiğini savunmakta, onların eğitim süreçlerine aktif bir kimlikle katılımını desteklemektedir (Pound, 2011).

3.2. Psiko-dinamik Kuramlar

Psiko-dinamik yaklaşım, insanı doğduğu andan itibaren merak konusu eder. İnsan davranışlarına yoğunlaşarak insanı anlamaya çalışır ve onlardaki dinamizmi ortaya çıkarır. Çocukluk yılları hakkında yorum getiren kuramlara etki ederek çocuk ve yetişkin arasındaki ilişkiye anlam katar.

Doğumdan hemen sonraki yılların tüm tecrübelerinin ileriki yaşlarda ne denli etki bıraktığına dikkat çeker. Psikodinamik yaklaşım, kendilik değeri, özsaygı, benlik, çocukluk deneyimleri ve duygusal gelişim gibi kavramları merak konusu eder. Çocukluk yılları uygulamalarında bu kavramların dikkate alınmasını doğru kabul eder. Bundan hareketle insandaki sosyal ve duygusal gelişimin bir ihtiyaç olduğunu savunur (Pound, 2011). Yetişkin dönemde ortaya çıkan bazı davranışların değişim ve dönüşümünü çocukluk yıllarını esas alarak açıklar.

3.3. Yapılandırmacı Kuramlar

Geleneksel davranışçı kuramları yerinden eden, geleneksel bilim dünyasının öğrenme paradigmasını sarsan ve yeni bir devrim olarak nitelenen bilişsel kuramlar gelişmiştir. Bu kuramların genel adı yapılandırmacı kuramdır. Yapılandırmacı kuram, her şeyden önce davranışçı öğrenme kuramına karşıt bir kuram olarak ortaya çıktığı söylenebilir. Çünkü davranışçı öğrenme kuramı, öğrenmeden çok öğretimi hedeflemektedir. Bu kurama göre bilgi öğretmenden öğrenciye doğrudan aktarılan bir şeydir. Öğrenimin olabilmesi için de tepki ile uyarıcı arasında bir ilişki olmalıdır. Tepki ile uyarıcı ilişkisinde tepki veren (öğrenci) pasif pozisyondadır. Yapılandırmacı öğrenme kuramı ise, bilgiyi öğrenen tarafından yeniden yapılandırılarak elde edilmesine anlam vermektedir. Çünkü bu kuramın temel felsefesi, öğrenciyi pasiflikten kurtarıp onu aktif hale getirmektir. Burada yapılmak istenen öğrencinin çevresel uyaranları gözlemlemesi ve onlardan ölçülebilir davranışlar sergilemesi değildir. Aksine anlamlı öğrenmenin nasıl ortaya çıktığını, öğrencinin yaşam deneyimlerini nasıl anlamlandırdığını ve bu süreçte ne tür bilişselliklerin ortaya çıktığına açıklık getirmektir. Bu kurama göre, bilgi ezberlenerek elde edilmez. Bilgi, kişinin yaşam tecrübesi dikkate alınarak kendisi tarafından yeniden yapılandırmak, uyarlamak ve yorumlamak suretiyle elde edilendir (Malatyalı ve Yılmaz, 2010; Pound, 2011). Yapılandırmacı kuram, kimlik oluşum sürecini kimliği etkileyen öz bilinç ile öz çabanın bir yöntemi olarak görmektedir. Çünkü yapılandırmacı yaklaşım çocukları pasiflikten kurtarıp onları kendi kimlik yapılanmasının aktif bir aktörü haline getirmektedir.

SONUÇ

Çocukluk eğitimi için ortaya çıkan kuram ve yaklaşımların ortaya koyduğu ilkeler çocukluk yıllarından itibaren kimlik oluşumu desteklemiştir. Bu kuram ve yaklaşımlar sayesinde kimliksel gelişim çocukluk eğitiminin önemli bir parçası haline gelmiştir.

KAYNAKÇA

Akto, Akif (2017), “Okul Öncesi Değerler Eğitiminde Kullanılan Yöntem ve Teknikler (Nitel Bir Araştırma)”. e-Şarkiyat İlmi Araştırmalar Dergisi. ISSN:1308-9633, Cilt:9, Sayı:2 (18), s. 1074-1095.

Akto, Akif, “Erken Çocukluk ve Değerler Eğitimi”, Uluslararası Sosyal Araştırmalar Dergisi Cilt: 13 Sayı: 74 Yıl: 2020, 326-340.

Aşkın, M. (2007). Kimlik ve Giydirilmiş Kimlikler. Atatürk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 10(2), 213-220.

Billington, T. (2006). Working With Children: Assessment, Representation and Intervention. 42-43. Londra: SAGE Publication.

Bredekamp, S., & T. Rosegrant, (ed.). (1995). “Reaching potentials: Transforming early childhood curriculum and assessment”, Washington, DC: 2: 21-22.

Berzonsky, M. D. (2003). "The Structure of Identity: Commentary on Jane Kroger's View of Identity Status Transition". Identity: An International Journal of Theory and Research, 3 (3), 231-345.

Berzonsky, M. D. (2005). "Ego identity: A Personal Standpoint in a Postmodern World". Identity: An International Journal of Theory and Research, 5 (2), 125-136.

Evans, R. I. (1981). Dialogue with Erikson. New York: Praeger Publishes.

Hendry, L. B., Mayer, P. and Kloep, M. (2007). "Belonging or Opposing? A Grounded Theory Approach to Young Peoples". Cultural Identity in Majority/Minority Societal Context, Identity: An International Journal of Theory and Research, 7(3), 1-24.

Fionda, J. (2001). Legal Concepts of Childhood: an Introduction. (Ed. Julia Fionda) Legal Concepts of Childhood içinde 3-18, Oxford:Hart Publishing.

Jenks, C. (2005). Childhood, (2.baskı), NewYork: Routledge.

Lidz, C.S. (2003). Early Childhood Assessment. 10-11. New Jersey: John Wiley & Sons, Inc.

Malatyalı, E., Yılmaz, K. (2010). "Yapılandırmacı Öğrenme Sürecinde Kavramlar ve Önemi: Kavramların Pedagojik Açıdan İncelenmesi". The Journal of International Social Research, Vol.3 No.14:320-332.

Marcia, J. E. (1994). "Ego Identity and Object Relations". In J. M. Masling and R. F. Bornstein (Eds), Empirical Perspectives on Object Relations Theory, Washington, DC, American Psychological Association.

Marcia, J. E. (2002a). "Adolescence, Identity, and the Bernardone Family". Identity: An International Journal of Theory and Research, 2 (3), 199-209.

Morrison, G.S. (2004). Early Childhood Education Today. (9.Baskı), New Jersey: Pearson Education, Inc.

Naeyc, Naeyc (1998). "Learning to read and write. Developmentally appropriate practice for children". Young Children, 53 (4): 30–46. Erişim Tarihi: 18.07.2016. https://www.naeyc.org/files/naeyc/file/positions/PSREAD98.PDF

Pound, L. (2011). Influencing Early Childhood Education:Key Figures, Philosophies and Ideas. Glasgow: Open University Press.

Shepard, L., Kagan, S. L. & Wurtz, L. (1998). "Principles and recommendations for early childhood assessments". Goal 1 Early Childhood Assessments Resource Group, Washington, DC: National Education Goals Panel. Erişim Tarihi: 03.08.2021. http://govinfo.library.unt.edu/negp/reports/prinrec.pdf, s.4-5.

Snow, C.E. & Van Hemel, S.B. (2008). Early Childhood Assessment: Why, What and How. 15-43. Washington: The National Academies Press.

Thambirajah, M.S. (2011). Developmental Assessment of the School-Aged Child with Developmental Disabilities. P. 57-60. Londra: Jessica Kingsley Publishers.

ERKEN ÇOCUKLUK DÖNEMİNDE AÇIK HAVA ÖĞRENME ORTAMLARININ FAYDALARININ DEĞERLENDİRİLMESİ

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Özet
Teknolojinin sürekli gelişmesiyle birlikte iç mekân oyununu dış mekân oyunuyla dengelemek daha da önemli bir hale gelmektedir. Geleneksel dönemlerde, birçok kişi öğrenmenin tek yolunun çocukların önlerindeki tahtaya odaklanacakları bir sınıf ortamı olduğuna inanmaktaydı. Ancak bu yaklaşım ve görüşler günümüzde yerini, farklı metot ve eğitsel modellerin üzerine inşa edilen öğrenme öğretme tekniklerine bırakmıştır. Halen sınıf içi ortamlardan yararlanılsa da gittikçe daha fazla sayıda okul, açık havada verilen eğitimi tercih eder hale gelmiştir. Erken çocukluk eğitimine yönelik kurumlarda dış mekân olarak ilk akla gelen yer okulun bahçesi olmaktadır. Okul bahçesi, iç mekânda verilen eğitimin devamının gerçekleştirildiği, çocukların hem fiziksel gelişiminin hem de psikomotor, bilişsel, dil, sosyal, duygusal gelişimlerinin desteklendiği öğrenme ortamı olarak tanımlanmaktadır. Bahçe, Froebel'in eğitim çalışmalarının da merkezinde yer almış, konuya yönelik çalışmalarda çocukların doğayla uyum içerisinde yetişmelerini teşvik etmek için, her çocuğun kendi küçük bahçesini oluşturmasının önemi vurgulanmıştır. Yapılandırılmamış açık hava öğrenme ortamları çocukların yaratıcılığını geliştirmelerine, problemlere çözüm bulmalarına, yaparak yaşayarak deneyim kazanmalarına ve doğayı keşfetmelerine yardımcı olabilmektedir. Bu çalışmada eş-zamanlı uygulamalar da gerçekleştirilerek açık hava ortamlarında öğrenmenin ne olduğu, amacı, faydaları, sınıf dışı ortamların bir öğretim yeri olarak nasıl kullanılabileceği ve ne tür faaliyetlerin uygulanabileceği detaylı bir şekilde açıklanarak konuya ilişkin eğitimcilere yol gösterici noktaların vurgulanması ve içeriğin değerlendirilmesi amaçlanmıştır. Ayrıca çalışmada alanyazına ilişkin meta-analiz raporları sunulmuş, açık hava öğrenme ortamlarının özellikle erken çocukluk dönemindeki önemine ilişkin pragmatik çalışmalar incelenmiş ve faydalı olabilecek çeşitli bilgiler sunulmuştur. Elde edilen tüm veriler, sınıfların ve okulların duvarları tamamen ortadan kaldırılmasa bile, bir yerden başlamanın bir yolunun bulunması gerekliliğini ortaya koymaktadır. Mevcut durumda, çocuklar için en uygun öğrenme ve yetişme-büyüme ortamının iç ve dış mekânın tam entegrasyonun sağlanması ve doğada öğrenme ortamlarının artırılmasıyla elde edileceği düşünülmektedir. Çalışmada açık hava öğrenmelerinin çocuklara hangi konularda fayda sağladığına dair birtakım bilgiler sunulmuştur. Bu bilgiler ışığında açık havada geçirilen kaliteli zamanın çocuklara başka etkinlik türlerinin sağlayamayacağı öğrenme ve gelişim fırsatlarını sağladığı görülmüştür.
Anahtar Kelimeler: Erken çocukluk, dış mekân, oyun

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EVALUATION OF THE BENEFITS OF OUTDOOR LEARNING ENVIRONMENTS IN EARLY CHILDHOOD

Abstract
With the continuous development of technology, it becomes even more important to balance indoor play with outdoor play. In traditional times, many believed that the only way to learn was in a classroom setting where children would focus on the blackboard in front of them. However, these approaches and views have left their place to learning and teaching techniques built on different methods and educational models. Although classroom environments are still used, more and more schools are opting for outdoor education. The first place that comes to mind as an outdoor space in early childhood education institutions is the garden of the school. The school garden is defined as a learning environment where the continuation of the education given indoors is carried out, and where both the physical development of children and their psychomotor, cognitive, language, social and emotional development are supported. The garden was also at the center of Froebel's educational studies, and the importance of each child creating their own small garden was emphasized in order to encourage children to grow up in harmony with nature. Unstructured outdoor learning environments can help children develop their creativity, find solutions to problems, gain experience by doing and discover nature. In this study, it is aimed to emphasize the guiding points for the educators and evaluate the content by explaining in detail what learning in open air environments is, its purpose, benefits, how out-of-class environments can be used as a teaching place and what kind of activities can be applied by performing simultaneous applications. In addition, meta-analysis reports on the literature were presented in the study, pragmatic studies on the importance of outdoor learning environments, especially in early childhood, were examined and various useful information was presented. All the data obtained reveal the necessity of finding a way to start from somewhere, even if the walls of classrooms and schools are not completely removed. In the current situation, it is thought that the most suitable learning and growth environment for children will be achieved by providing full integration of indoor and outdoor spaces and increasing learning environments in nature. In the study, some information was presented about which subjects outdoor learning benefits children. In the light of this information, it has been seen that quality time spent outdoors provides children with learning and development opportunities that other types of activities cannot provide.
Keywords: Early childhood, outdoor, play

Giriş

Öğrenme süreçlerinde açık hava, eğitimin dışarıda gerçekleştirilmesi anlamına gelmektedir. Açık hava öğrenme deneyimleri, eğitim müfredatını genişletme ve zenginleştirme aracıdır. Fen, doğa, coğrafya, bilim ve matematik gibi önceden belirlenmiş hedefleri olan ayrı bir disiplin değildir; bu süreç basitçe, gerçek hayattaki sorunları belirleme ve çözümlemede doğrudan deneyimleme fırsatı sunmaktadır. Açık hava öğrenme ortamları, yaratıcı yaşamın tadını çıkaracak beceriler edinme, insan ve onun doğal çevresine ilişkin kavramlar oluşturma ve doğaya karşı ilgi ve merak geliştirme ve edinme fırsatları sunan bir öğrenme ortamıdır (Staempfli, 2009; Waite, 2010). Doğa içerisinde öğrenme yaparak yaşayarak ve deneyimler yoluyla gerçekleşmektedir. Doğa ile direkt ilişki kurulduğu için, öğrenme esnasında tüm duyu organları aktif bir şekilde kullanılmaktadır.

Bu sayede çocukların bilgiyi, tutum ve davranışlara dönüştürme becerileri daha kolay gerçekleşebilmektedir.

Erken çocukluk dönemine ilişkin yapılan birçok araştırma, özellikle küçük yaş çocuklarının açık alana daha fazla ihtiyaçları olduğunu göstermektedir. Sınıfların ve okulların duvarları tamamen ortadan kaldırılmasa bile, bir yerden başlamanın bir yolunun bulunmasının gerekliliği vurgulanmıştır. Mevcut durumda, çocuklar için en uygun öğrenme ve büyüme ortamı iç ve dış mekânın tam entegrasyonun sağlanması ve doğada öğrenme ortamlarının artırılmasıdır (Tucker, 2008; Waite, 2010).

Açık hava ortamlarında öğrenmelere ilişkin tarihsel süreç ve bu yaklaşımın gelişim serüveni incelendiğinde, literatürde 'Outdoor Learning, Outdoor Education, Outdoor Schools' tanımlamalarıyla yer alan dış mekan öğrenme ortamlarına ilişkin yaklaşımların, 20. yy. başlarında Kuzey Avrupa'da açık hava okulları oldukça yaygınlık göstermeye başladığı görülmüştür. Bu okullar esasen II. Dünya Savaşı dönemlerinde ortaya çıkan tüberküloz hastalığının yayılımını önlemek ve bu hastalıkla mücadele etmek amacıyla tasarlanmıştır. Okulların, iyi havalandırılmış ve mümkün olduğunca açık konseptli olması öne çıkarılmış, çocukların açık havaya maruz kalmalarının oldukça önemli olduğu yaklaşımına göre okullar yapılandırılmıştır. Dersler ve etkinlikler etrafı çevreleyen orman içerisinde verilmiştir. Bu uygulamaların metropol çocuk ve gençlerinin bağımsızlık ve özgüven duygularını kazanmalarını sağlayacağı düşünülmüştür. Açık hava okulları modeli 1970'lere dek popüleritesini korumuştur (Priest, 1986; Tsai, 2006; Shanely, 2006). Sonraki yıllarda ise bulaşıcı hastalıklara karşı tedavi süreçlerinde ortaya çıkan yeni gelişmeler, antibiyotiklerin yaşamımıza girmesi ve evdeki sosyal koşulların gelişmesi ile açık hava okullarına olan ihtiyaç giderek azalmaya başlamış ve bu okullar yavaş yavaş yok olma sürecine girmiştir. Günümüzde ise ortaya çıkan Covid-19 pandemisinin de etkisi ile açık hava öğrenme ortamlarına olan ilgi tekrar artış göstermeye başlamıştır.

Açık Havada Eğitimin Amaçları

Günümüzde, bir parçası olduğu doğa ile insanların bağlarının koptuğunun gerçeği ve bu durumun yeni kuşaklarda daha baskın bir biçimde görülmesi, bu eğitimin gerekliliğini ve amaca hizmet eden uygulama süreçlerinin yapılandırılmasını ortaya koymaktadır. Eğitimde açık hava ortamlarının bir yöntem olarak kullanılmasının temel amacı, çocukların küçük yaşlardan itibaren doğayla tam temas halinde olmalarıdır. Bu doğrultuda konunun özünde diğer amaçlar ise şunlardır:

- Zorlukların üstesinden nasıl gelineceğini öğrenmek,
- Kişisel ve sosyal gelişimi artırmak,
- Doğa ile daha derin bir ilişki ve anlam geliştirmek,
- Daha nitelikli öğretme ve deneyimler yoluyla kazanımları artırmak.

Açık hava eğitimi; benlik, diğerleri ve doğal dünya olmak üzere üç alanı kapsamaktadır. Bu üç alanın göreceli vurgusu bir programdan diğerine değişmektedir. Bir açık hava eğitim programı, örneğin, aşağıdaki amaçlardan birini (veya daha fazlasını) vurgulayabilmelidir:

- Açık havada hayatta kalma becerilerini öğretmek
- Problem çözme becerilerini geliştirmek
- Suç işlemeyi azaltmak
- Ekip ve işbirlikli çalışma becerilerini geliştirmek
- Liderlik becerilerini geliştirmek
- Doğal ortamları anlamak ve anlamlandırmak

- Maneviyatı teşvik etmek
- Aktif, ilk elden öğrenme deneyimleri sağlamak.

Çocuklar İçin Açık Havada Öğrenmenin Faydaları

Günümüz zamanı ve çağında, çocuklar kapalı alanlarda gittikçe daha fazla zaman geçirme eğilimindedir. Çoğu çocuk televizyona, akıllı telefonlara ve diğer aletlere yapışmış durumdadır. Televizyonda çizgi film izlemek veya saatlerce telefon kullanmak sağlıklarını etkileyebilmektedir. Uzun süreli oturarak vakit geçirmek çocuklarda obezite başta olmak üzere çeşitli sağlık sorunlarına yol açabilmektedir. Oysaki insan fizyolojisi, doğası gereği tabiatta fiziksel olarak aktif bir şekilde yaşamını sürdürebilecek biçimde programlanmıştır.

Açık havada eğitsel faaliyetlerde bulunmak çocuklarda zihinsel ve fiziksel sağlığı iyileştirilebilmektedir. Açık havada oyun oynamaya maruz kalmak onların kişiliğini şekillendirebilmekte ve temel sosyal becerilerini geliştirmelerine yardımcı olabilmektedir.

Açık hava ortamlarının faydaları her yaştan çocuklar için oldukça fazladır. Açık hava aktivitelerinin faydalarından bazıları aşağıda listelenmiştir:

- Çocuklara yeni şeyler öğrenme fırsatı verir.
- Fiziksel gelişimlerine yardımcı olabilir.
- Yaratıcılıklarını artırabilir.
- Sosyal beceriler kazanmalarına yardımcı olabilir.
- Olumlu tutum geliştirmelerine yardımcı olabilir.
- Kişilik gelişimlerine yardımcı olur.
- Çocuklarda dikkat süresinin iyileşmesine yardımcı olur.
- Motor becerilerini güçlendirir.
- Doğa sevgilerini geliştirir.
- Daha sağlıklı bir yaşam tarzı sürmelerini sağlar.

Açık havada çocuklar çoğunlukla yetişkin denetiminden uzaklaşarak kişisel deneyimler elde etmektedirler (White, 2008). Bu açıdan bakıldığında açık havada öğrenmenin, çocukların özerklik ve bağımsızlık duygularını geliştirmeleri açısından da önemli olduğu söylenebilmektedir. Ayrıca, açık havada yetişkin müdahalesi olmadan gerçekleştirilen etkinlikler, yaratılan faaliyetler ve oynanan serbest oyunlar çocukların sosyalleşme ve yaratıcılık becerilerine de katkı sağlamaktadır (Moore & Wong, 1997; Frost, Wortham & Reifel, 2001).

Açık havada oyun, çocukların sosyal çevrelerini keşfetmelerini; kum, su ve çamurla eğlenceli duyusal deneyimleri elde etmelerini; kendi oyunlarına has mekânlar bulabilmelerini, yaratmalarını; çeşitli objeler toplamalarını ve hobilerini geliştirmelerini sağlamakta ve bunlara ilişkin zengin fırsatlar sunmaktadır (Clements, 2004). Doğal ortamlarda gerçekleştirilen bu olumlu deneyimler, çocukların çevreye karşı duyarlı davranışlar sergilemelerini, doğayı yakından tanımalarını sağlamakta; doğal ortamlarda oynamak okul öncesi dönemde etkili bir çevre ve doğa eğitimi için de temeli oluşturmaktadır (Wilson, 2008). Konuya ilişkin, Turgut & Yılmaz (2010) erken çocukluk eğitiminde, çocukların gelişimlerinin ve öğrenmelerinin desteklenmesi sürecinde oyun ve etkinlik alanlarının doğal veya doğala yakın konseptler olmasını, oyun ekipmanlarının ise taş, su, ağaç, odun, çiçek, böcek vb. gibi doğal varlıklar olmasını önermektedirler.

Açık havada öğrenme, ayrıca, çocukların risk ve mücadele içerikli oyunlarla yaşamsal deneyimler edinmelerine fırsatlar sunmaktadır. 'Riskli oyun', çocuklar için fiziksel yaralanma ihtimali barındıran, heyecanlı, eğlenceli ve mücadeleyi gerektiren bir form olarak tanımlanmaktadır (Sandseter, 2007). Riskli oyunlar, çocukların korku ile eğlenceyi dengelemeyi öğrenmelerini sağlayan, korku ve fobileri ile baş edebilme becerilerini destekleyen oyun aktiviteleridir (Sandseter & Kennair, 2011; Sandseter, Sando & Kleppe, 2021). Bunların yanı sıra, çocuklar açık hava ortamlarında riskli oyunları oynarken özgüven, özfarkındalık, direnç, bağımsızlık ve yaratıcı düşünme becerilerini geliştirebilmektedirler (Gill, 2007; Coster & Gleave, 2008; Bundy, Luckett, Tranter, Naughton, Wyver, Ragen & Spies, 2009; Knight, 2012).

Sınıf Dışı Ortamlar Bir Öğrenme Ortamı Olarak Nasıl Kullanılabilir? ve Ne Tür Faaliyetler Uygulanabilir?

Açık hava öğrenmelerinin gerçekleşebileceği en yakın yer okulun bahçesidir. Sınıf belirli zaman aralıklarında dışarıya taşınabilmelidir. Sınıfta olmayı gerektiren durumlarda ise dışarıyı içeriye taşımak mümkün olabilmelidir.

Dış mekânın sınıfa taşınması hedeflenmişse, öğrenme ortamında doğal malzemeler kullanılmalıdır. Sonbahar mevsimi için sınıfa kurumuş yapraklar, kozalaklar vb. materyaller getirebilir. Örüntü oluşturmak için plastik yerine dallar ve yapraklar kullanılabilir. Eğitimciler bunun gibi birçok yaratıcı örnek ortaya koymalıdırlar. Çocuklar, açık havada ileri geri koşmaktan çok daha fazla oyun imkanına sahiptirler. Oyun süresinin bir kısmı keşif yaparak geçirilebilir. Çocuk kirlenmiş bir biçimde dış mekânda oynayabilir ve yaşayan canlıları gözlemleyebilir. Çocukların açık havada fayda sağlamak amaçlı yapması gereken en önemli durumlardan biri fiziksel olarak zorlanmaktır. Eğer bir salıncak setiyle oynama imkanları varsa, örneğin, denge aleti ve maymun parmaklıklarına hâkim olmak onlara fiziksel ve psikolojik avantajlar sağlayabilecektir (White, 2008; Fagen, 2011; Rideout, 2011).

Su, kum, toprak ve çamur gibi doğal malzemeler eski çağlardan beridir oyunlarda ve oyuncak yapımında kullanılmaktadır. Antik oyuncaklar incelendiğinde araştırmalar o dönemde kullanılan oyuncakların temel yapım malzemelerinin pişmiş toprak olduğunu ortaya koymaktadır. Hughes (2010), iki yaş çocuğunun bir oyun materyali olan kille tanışması gerektiğini ifade etmiş, çocuğun kili ezerek, sıkıştırarak ve kalıplaştırarak duygularını keşfedebileceğini belirtmiştir. Kilin yanı sıra su ve kum oyunları da çocuk üzerinde aynı etkiyi sağlayabilecektir. Çocuk yaşı ilerledikçe ilgi ve merakı dahilinde bu materyallerle vakit geçirmeye devam etmekte ancak bu materyalleri uygulama şekli ve oyun biçimi yaşı ilerledikçe farklılaşmakta ve çocuk farkına varmadan yaratıcı sanat ürünleri ortaya koyabilmektedir.

Açık Hava Ortamlarında Yapılan Eğitsel Aktiviteler

Araştırma kapsamında, erken çocukluk döneminde açık hava öğrenme ortamı etkinliklerine ilişkin yapılan literatür değerlendirme çalışmaları ile eş-zamanlı olarak birtakım aktiviteler uygulanmış sonuçları incelenmiş ve sayısal veriler genel bir tablo içerisinde ortaya konmuştur.

Tablo 1. Çocukların açık hava ortamlarında tercih ettikleri eğitsel etkinliklere ilişkin elde edilen betimsel istatistikler

Açık Hava Eğitsel Aktiviteleri	%	f
- Kum havuzuyla oynama	100	
- Su havuzuyla oynama	88,3	
- Oyun parkında oynama	76,6	
- Top oynama	51,8	
- Çiçek dikme	51,1	
- Dürbün ve büyüteç kullanma	38,7	
- Yakalama-Kaçma oynama	38,7	
- Kaplarla oynama	38,7	
- Tekerlek ve yuvarlak nesnelerle oynama	38,7	
- Terazi ve kolçaklarla oynama	38,7	
- Taş veya kozalaklarla oynama	38,8	
- Arabalarla oynama	25,9	
- Bahçedeki hayvanları sevme	25,9	

Açık hava ortamlarında uygulanan eğitsel aktivitelere ilişkin yapılan çok sayıda araştırma incelenmiş, benzer kriterler uygulanmış ve veri tablosu ortaya konmuştur. (Tablo:1) Tablo 1'e göre çocukların tamamı (%100) bahçede kum havuzuyla oynamaktan mutlu olurken, %88,3'ü ise su havuzuyla oynamaktan mutlu olmuştur. Çocukların yapmaktan en keyif aldığı üçüncü sıradaki açık hava aktivitesi ise oyun parkında (%76,6) oynamaktır. Daha sonra sırası ile top oynama %51,8 çiçek dikme %51,1 aktivitelerini tercih etmişlerdir. Ayrıca çocukların %38,7'sinin, dürbün ve büyüteç kullanma, yakalamaca oynama, tekerleklerle oynama, kovalarla oynama, taşlarla oynama, terazi kullanma aktivitelerini, %25,9'unun bahçedeki hayvanları gözlemleme ve arabalarla oynamayı tercih ettikleri görülmüştür.

Tablo 2. Açık hava öğrenme ortamlarında uygulanan etkinliklere ilişkin yapılan araştırma sonuçlarına göre, açık alan etkinlikleri ile sınıf etkinlikleri arasındaki farklara ilişkin betimsel istatistikler

Kapalı Uçlu Değerlendirme Soruları	f
Açık hava/bahçe etkinlikleri sınıf etkinliklerine kıyasla daha eğlencelidir	9
Açık hava ortamında/bahçede kullandığım materyaller sınıfta yoktur	7
Açık hava ortamında/bahçedeki etkinliklerin daha uzun sürmesini istiyorum	7
Bahçede yaptığım etkinlikleri sınıfta yapamıyorum	6

Araştırma kapsamında alanyazın tarama sürecinde eşzamanlı olarak gerçekleştirilen aktivitelerde çocuklara birtakım sorular yöneltilmiştir. Bu sorular değerlendirildiğinde ise Tablo 2' ye göre 12 çocuktan 9'u açık hava ortamlarında yapılan aktiviteleri sınıftaki etkinliklere göre daha eğlenceli bulurken, çocuklardan 7'si açık hava ortamında/bahçede bulunan materyallerin sınıfta olmadığını, yine çocuklardan 7'si açık hava ortamında/bahçedeki etkinliklerin daha uzun sürmesini istediğini belirtmiştir. Ayrıca çocuklardan 6'sı bahçede yaptıkları atlama-zıplama oyunu, kum, su ile oynama, bitki dikme vb. etkinlikleri sınıfta yapamadıklarını belirtmiştir.

Tartışma ve Sonuç

Açık hava ortamlarında yapılan eğitsel aktiviteler, iç mekân aktivitelerine kıyasla daha geniş bir alan ve materyal imkânı sağlamaktadır. Açık havada çocuklar daha özgürce hareket edebilir, benliklerini keşfedebilir ve tüm gelişim alanlarını destekleyecek aktivitelerde bulunabilirler. Yapılan araştırmalarda açık alan aktivitelerinde çocukların özellikle psikomotor alanda kapalı alan aktivitelerine göre daha başarılı oldukları bildirilmiştir. Elde edilen tüm veriler, deney yapma, sanatsal etkinlikler hazırlama vb. kapalı alan aktivitelerinin çocukların gelişimlerinde belirli alanları, açık hava oyunlarının ise daha farklı gelişim alanlarını ağırlıklı olarak desteklediğini göstermiştir (Studer, 1998; Perry, 2001; Khan & Islam, 2014). Bu noktada her aktivitenin gelişimdeki yeri farklı bir amaca hizmet edebilir çıkarımı ile açık hava öğrenme ortamlarında aktivitelere mutlaka yer verilmesi gerekliliği söylenebilmektedir.

Öyle ki açık havada oyun oynamak, çocuklara serbest hareket etme fırsatı sunarak bedensel gelişimlerini; araştırma ve keşif yapma fırsatları sağlayarak zihinsel gelişimlerini; akranlarıyla iletişim kurma ve sosyalleşmeleri için imkanlar sağlayarak sosyal gelişimlerini desteklemektedir (Maynard & Waters, 2007; Wilson, 2008; Stone & Faulkner, 2014).

Keyifli ve eğlenceli bir oyun materyali olarak nitelendirilen kum, gerek ucuz gerekse sağlıklı bir malzeme olarak öne çıkmaktadır. Yapılan araştırmalar kumla oynamanın çocuklarda zihinsel, sosyal ve bedensel gelişimi desteklediğini ortaya çıkarmıştır (Wallace, White & Stone, 2010; Olowe, Ojoko & Onuegbu, 2020; Öyle ki kum, hem çocukların bireysel becerilerini geliştirmekte hem de beraber oynanılan süreçte yardımlaşma ile problem çözme becerilerini çocuğa kazandırması bakımından sosyal gelişimi de desteklemektedir. Ayrıca seçici dikkat, konsantrasyon, bir işi başlama ve bitirme, sebatlık, yaratıcı fikirler üretme gibi beceriler de kum oyunları aracılığı ile elde edilmekte ve bilişsel gelişime katkılar sağlamaktadır. Açık hava ortamlarında kumla, dallarla, taşlarla oynayan çocuk yaratıcı bir süreç içerisine girmekte ve yaratıcı becerilerini kum oyunları sayesinde ortaya koyabilmektedir. Bu oyunlarla öz-düzenleme ve duygu kontrolünü de öğrenmektedir. Son olarak açık hava öğrenme ortamlarında çocuk oynarken küçük kaslarını geliştirmekte, el-göz becerileri kazanabilmekte ve toprakta çimlerde güneş ışığı alarak oynamanın fiziksel olarak yarattığı güçlenmeyle beden sağlığı açısından da daha iyi olabilmektedir. Tüm bu özelliklerine dayanarak açık hava öğrenme ortamlarının eğitsel araç olarak kullanılması ve bu konuda planlamalar yapılması gerekliliği söylenebilmektedir.

Açık hava öğrenme ve oyun ortamları, iç mekâna kıyasla daha geniş bir alan ve doğal materyal, araç gereç imkanına sahiptir. Bunun yanı sıra açık havada oyun oynamak, çocuklara sosyal çevrelerini keşfetmeleri, toprak, çim, ağaç, su, kum, çeşitli bitki ve hayvanlar ile eğlenceli duyusal deneyimleri yaşamaları kendi oyunlarına özgü mekanlar araştırma veya yaratmaları, nesnelere ulaşmaları, toplamaları, incelemeleri ve farklı hobiler geliştirmeleri için de zengin fırsatlar sunabilmektedir. Bu sebeple eğitimciler müfredatta açık hava öğrenme ortamlarına ilişkin eğitsel aktivitelere, geleneksel oyun türlerine yer vermeli, yarı yapılandırılmamış modeller ile açık alanda oyun, bahçe etkinlikleri, doğa aktiviteleri gerçekleştirmelidirler.

Günümüzde çocuklar için açık hava öğrenme ortamlarının düzenlenmesine ilişkin birtakım çalışmalar yürütülmekte, çocuğa en az zarar verici malzemeler seçilerek bu alanların düzenlenmesi sağlanmaktadır.

Açık hava öğrenme ortamlarında bulunan malzemeler oldukça ekonomik ve kolay bulunan malzemelerdir ve geleneksel çocuk oyunları başta olmak üzere bu ortamlarda gerçekleştirilen aktiviteler çok fazla pahalı ve karmaşık yapı gösteren materyallere ihtiyaç duymayan aktivitelerdir. Bu yönüyle açık hava ortamlarında öğrenme süreçlerine yer verilmesi ve daha fazla desteklenmesi önerilmektedir.

Açık hava öğrenme ortamlarından en yüksek yararın elde edilmesi için uygulanabilecek faaliyetler şunlardır:

- Doğada bulunan kullanılabilecek tüm materyallerle şekil-zemin öğretimi, örüntü oluşturma, matematik-cebir becerileri, sanatsal içerikli özgün ürün oluşturma ve drama faaliyetleri gerçekleştirilebilir. Bu aşamada önemli olan aktiviteleri belirli sınırlar çerçevesinde özgür kalınarak gerçekleştirmektir.
- Sınıf içi uygulamalar ile dışarı uygulamaları birleştirilebilir. Örneğin; büyük bir kâğıt üzerine resim çizilerek çocukların o resme boya damlatmaları istenebilir. Daha sonra da çocuklar tarafından hazırlanan o kâğıt yağan yağmurun altına bırakılarak, yağmurun ona nasıl şekil verdiği gözlemlenebilir.
- Günümüz çocuklarının sınıf ortamında gerçekleştirdiği faaliyetler çoğunlukla plastik ve yapay malzemelerden üretilmiş, doğal malzeme içermeyen ürünlerden oluşmaktadır. Oysaki çocuk aktivitelerinde doğal malzemelerin kullanılması, hatta doğal malzemenin kendi ortamında bulunarak uygulanması oldukça önemlidir.
- Açık hava ortamları geniş bir mekânda aktivite yapılmasına imkân sağlamaktadır. Bu sebeple doğal tehlikelere karşı uyanık olunmalı, çocukların belirli kontrol dahilinde tehlikelerden kendilerini koruyabilmeyi öğrenmelerine imkân tanınmalıdır.
- Açık hava ortamlarında yapılan aktiviteler ile çocukların doğayla bütünleşmelerine imkân verilmeli, gerektiğinde üzerlerinin çamurlanması, ıslanmaları, vb. durumlar çok fazla sorun edilmeden aktiviteler yürütülmelidir.
- Çocukların duyusal gelişimlerini destekleyecek etkinliklere de sıklıkla yer verilmelidir.

Kaynakça

Bundy, A.C., Luckett, T., Tranter, P.J., Naughton, G.A., Wyver, S.R., Ragen, J. & Spies, G. (2009). The risk is that there is 'no risk': A simple, innovative intervention to increase children's activity levels. International Journal of Early Years Education,17(1), 33-45.

Clements, R. (2004). An investigation of the status of outdoor play. Contemporary Issues in Early Childhood, 5(1), 68-80.

Coster, D. & Gleave, J. (2008). Give us a go! Children and young people's views on play and risk-taking. https://www.playday.org.uk/wp-content/uploads/2015/11/give_us_a_go___children_and_young_peoples_views_on_play_and_risk_taking.pdf.

Fagen, R. M. (2011). Play and development. In A. D. Pellegrini (Ed.), Oxford handbook of the development of play (pp. 83–100). England: Oxford University Press.

Frost, J.L., Wortham, S. & Reifel, S. (2001). Play and child development. Prentice-Hall, Inc., Upper Saddle River, New Jersey.

Gill, T. (2007). No fear: Growing up in a risk averse society. London: Calouste Gulbenkian Foundation.

Hughes, F. (2010). Children, play and development. London: Sage.

Khan, M. & Islam, Z. (2014). Outdoor as learning environment for children at a primary school of bangladesh. Proceedings of the 45th International Conference of Environment Design Reseacrh Association (EDRA).

Knight, S. (2012). Why adventure and why risk in the early years?. Child Links, 3, 15-18.

Maynard, T. & Waters, J. (2007). Learning in the outdoor environment: A missed opportunity? Early Years: An International Journal of Research and Development, 27(3), 255-265.

Moore, R.C. & Wong, H. (1997). Natural learning: The life history of an environmental schoolyard: Creating environments for rediscovering nature's way of teaching. Berkeley: MIG Communications.

Olowe, P. Ojoko, B.A. & Onuegbu, I.E. (2020). Water and sand play: more than just fun for pre-school children. Contemporary Journal of Research in Early Childhood Care & Education, 1,17-27.

Perry, J.P. (2001). Outdoor play: Teaching strategies with young children. New York: Teachers College Press.

Priest, S. (1986). Redefining outdoor education: A matter of many relationships. Journal of Environmental Education, 17(3), 13-15.

Rideout, V.J. (2011). Zero to eight: Children media use in America. San Francisco: Common Sense Media.

Sandseter, E.B.H. (2007). Categorizing risky play—how can we identify risk-taking in children's play? European Early Childhood Education Research Journal, 15(2), 237-252.

Sandseter, E.B.H., & Kennair, L.E.O. (2011). Children's risky play from an evolutionary perspective: The anti-phobic effects of thrilling experiences. Evolutionary Psychology, 9(2), 257–284.

Sandseter, E.B.H., Sando, O.J. & Kleppe, R. (2021). Associations between children's risky play and ecec outdoor play spaces and materials. International Journal of Environmental Research and Public Health, 18(3354)1-15.

Shanely, S.D. (2006). Towards an understanding of an outdoor education program: Listening to participants' stories. PhD Thesis, University of Florida, USA.

Staempfli, M.B. (2009). Reintroducing adventure into children's outdoor play environments. Environment and Behavior, 41(2) 268-280.

Stone, M.R. & Faulkner, G.E. (2014). Outdoor play in children: Associations with objectively-measured physical activity, sedentary behavior and weight status. Preventive Medicine, (65),122-127.

Studer, M. L. (1998). Developing on outdoor classroom: Blending classroom curriculum & outdoor play space. Teksas Child Care, 12-19.

Tsai, J.T. (2006). The identification of the components for an outdoor education curriculum in Taiwan. PhD Thesis, Indiana University, USA.

Tucker, P. (2008). The physical activity levels of preschool-aged children: A systematic review. Early Childhood Research Quarterly, 23(4), 547–558.

Turgut, H. & Yılmaz, S. (2010). Ekolojik temelli çocuk oyun alanlarının oluşturulması. III. Ulusal Karadeniz Ormancılık Kongresi, Cilt IV. Artvin, 20-22 Mayıs 2010, s. 1618-1630.

Waite, S. (2010). Losing our way? The downward path for outdoor learning for children aged 2–11 years. Journal of Adventure Education & Outdoor Learning, 10(2), 111-126.

Wallace, A.H., White, M. J. & Stone, R. (2010). Sand and water table play. The National Council of Teachers of Mathematics, Inc.

White, J. (2008). Playing and learning outdoors: making provision for high-quality experiences in the outdoor environment. New York: Routledge.

Wilson, R. (2008). Nature and young children: Encouraging creative play and learning in natural environments. New York: Routledge.

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Özet
Öğrenme güçlüğü, çocukların akademik başarılarını ve okul performansını doğrudan etkileyebilen, fark edilmesi çoğunlukla zaman alan ve bu süreçte müdahale eğitim yaklaşımlarında geç kalınması sebebiyle birtakım yakınmaların yerleşik biçimde devam ettiği süreci içerisine alabilen bir gelişimsel farklılık olarak karşımıza çıkmaktadır. Son yıllarda çocuklarda gözlenen öğrenme güçlüğü ve buna eşlik eden kaygı, depresyon, psikosomatik problemler gibi ruhsal durumların ve benzer gelişimsel farklılıkların ilkokul döneminde farkedilmesi, sağaltım süreçleri açısından gecikmelere neden olmaktadır. Bu bağlamda, dikkatli yapılan çeşitli gözlem teknikleri ile çocuklarda ortaya çıkan belirteçlerin okul öncesi dönemde erken fark edilmesi çocukların eğitsel ve gelişimsel olarak desteklenmesi ve telafi eğitim modellerinin uygulanması açısından büyük önem arz etmektedir. Ancak bu dönem çocuklarının gelişimsel özellikleri gereği kendilerini direkt ifade etme becerilerinin kısıtlı olması sebebi başta olmak üzere birtakım nedenlerle erken dönem bu belirtilerin farkedilmesi oldukça güç hale gelmektedir. Eğitimciler bu dönemde çocukları ancak oyun, resim, drama, somatik yakınmalar vb. projektif yollarla gelişimsel açıdan tanılayabilmekte ve onların dışavurumlarından çeşitli çıkarımlar yapabilmektedirler. Toplumun ruh sağlığı düzeyini yükseltmek için, çocukluk döneminde ortaya çıkan gelişimsel farklılıklara ilişkin koruyucu / önleyici hizmetlerin mümkün olan en erken müdahale yaklaşımlarıyla etkin bir şekilde verilmesi gerekmektedir. Bunun için de risk altında bulunan hedef kitlelerdeki çocuklarda gözlenebilen erken dönem belirtilerin taranması ve tanınması öncelik kazanmaktadır. Bu araştırmada disleksi (özel öğrenme güçlüğü) okul öncesi dönemde fark edilebilir mi? sorusuna cevap aranmıştır. Nitelikli bir gözlem ve yetkin uzman danışmanlığıyla çocuklarda fark edilen davranışlar, bu farklılığa ilişkin çocuğun risk altında olup olmadığını ortaya çıkarabilmektedir. Öğrenme güçlüğü, Disleksi, Discalculi, Disgrafi denen farklı gelişimsel yakınmaları içerisine alan şemsiye bir kavram olarak literatürde ele alınmaktadır. Bu sebeple erken dönem belirtilerinin değerlendirilme süreci tahmin edilenden daha da güç ve karmaşık olabilmektedir. Bu sebeple çalışmada özellikle eğitsel ve gelişimsel açıdan uzman görüşü destekli olarak uygulanmış farklı değerlendirme ve tespit yöntemleri irdelenmiştir. Bu amaca yönelik olarak, literatürde yayımlanmış pratik-uygulamalı çalışmalar, gerek meta-analiz gerek ise sistematik derleme şeklinde araştırma içerisinde ele alınmıştır. Çalışma ile okul öncesi dönemde görülebilen özel öğrenme güçlüğünün en erken dönemde ortaya çıkabilecek belirteçlerinin değerlendirilmesi, erken gelişimsel tanı ve sağaltım süreçleri hakkında eğitimcilere ve ebeveynlere yol gösterici bir takım ana öğeler sunulmuştur.
Anahtar Kelimeler: Disleksi, erken tanı, çocuk, belirteç

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EVALUATION OF LEARNING DISABILITYSYMPTOMS SEEN IN PRESCHOOL PERIOD

Abstract
Learning disability emerges as a developmental difference that can directly affect children's academic achievement and school performance, often takes time to be noticed, and can involve a process in which some complaints continue in a settled manner due to the delay in intervention education approaches in this process. Recognition of mental conditions such as learning difficulties and accompanying anxiety, depression, psychosomatic problems and similar developmental differences observed in children in recent years, in primary school period, causes delays in treatment processes. In this context, early recognition of the markers emerging in children through careful observation techniques in the pre-school period is of great importance in terms of supporting children educationally and developmentally and applying compensatory education models. However, due to the developmental characteristics of children in this period, their ability to express themselves directly is limited, and for some reasons, it becomes very difficult to notice these symptoms in the early period. In this period, educators can only teach children about games, painting, drama, somatic complaints, etc. They can diagnose developmentally in projective ways and make various inferences from their expressions. In order to increase the mental health level of the society, protective / preventive services related to the developmental differences that occur in childhood should be provided effectively with the earliest possible intervention approaches. For this, screening and recognizing the early symptoms that can be observed in children in the target groups at risk gain priority. Can dyslexia (special learning disability) be noticed in the preschool period in this study? The answer to the question has been sought. Behaviors noticed in children with qualified observation and competent expert consultation can reveal whether the child is at risk regarding this difference. Learning disability is discussed in the literature as an umbrella concept that includes different developmental complaints called Dyslexia, Dyscalculi, and Dysgraphia. For this reason, the evaluation process of early symptoms may be more difficult and complex than anticipated. For this reason, different evaluation and detection methods applied with the support of expert opinion, especially in educational and developmental terms, were examined in this study. For this purpose, the practical-applied studies published in the literature have been discussed in the research as both meta-analysis and systematic review. With the study, a number of main items were presented to guide educators and parents about the evaluation of the markers that may occur in the earliest period of special learning disability that can be seen in the pre-school period, early developmental diagnosis and treatment processes.
Keywords: Dyslexia, early diagnosis, child, marker

Giriş

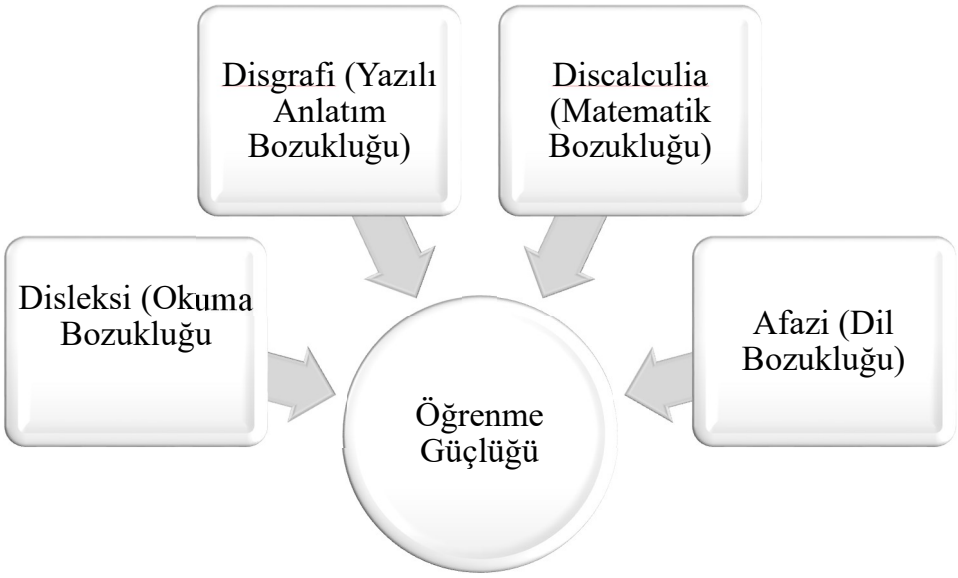
Öğrenme bireyin çevresiyle etkileşimleri sonucunda meydana gelen nispeten kalıcı, izli olduğu düşünülen davranış değişmesi olarak tanımlanmaktadır (Senemoğlu, 2005; Gür, 2013). Öğrenmeyle ilişkili insan davranışlarının tamamına yakın bir kısmı sonradan öğrenilmiş davranışlardır ve bu davranışlar insan yaşamının belirleyicisi durumundadır.
Öğrenme sürecinin gerçekleşmesinde ise bireylerin sahip oldukları beyin işlevleri ve öğrenme mekanizmaları önemli rol oynamaktadır. Bu mekanizmanın ise en aktif ve işlemsel olduğu dönemin erken çocukluk dönemi olduğu bilinmektedir.

Okul öncesi dönemde çocuklar daha kalıcı ve hızlı bir biçimde öğrenmektedirler. Bu dönemde çocuklar, çevrelerindeki bireylere, olgulara, ortamlara, kendilerine özgü düşünüş, davranış ve duyuş şekillerinden yararlanarak uyum göstermektedir (OECD, 2007; Gilboa & Marlatte, 2017; Zeithamova, Mack, Braunlich, Davis, Seger, Van Kesteren & Wutz, 2019).

Öğrenmeyi etkileyen çeşitli faktörler bulunmaktadır ve bu faktörler bireyler arası farklılık gösterebilmektedir. Öğrenmeyi etkileyen faktörler öğrenmenin niteliğini ve kalitesini belirlemekte dolayısıyla zekâ, yetenek, beceri gibi kavramlar bu noktada ortaya çıkmaktadır. Faktörlerden bir veya birkaçında yaşanan birtakım olumsuzluklar veya farklılıklar öğrenme sürecini de olumsuz etkileyebilmektedir. Öğrenme güçlüğü ise bu bir dizi farklılıklardan biri olarak karşımıza çıkmaktadır. Ancak genel olarak ilgili literatür incelendiğinde öğrenme güçlüğü, sağ-sol beyin, hipokampus, ters düşünme gibi bir takım beyin işlevlerine ilişkin öğrenmeyi etkileyen durumların öğrenme faktörleri adı altında incelenmediği görülmektedir. Bu durum ise öğrenme güçlüğünün değerlendirilmesinde önemli bir engel teşkil etmektedir (Morrison, Reber, Bharani & Paller, 2015; Romero, Barense & Moscovitch, 2019).

Öğrenme güçlüğü, normal ya da normal üzerinde zekâya sahip (IQ>85), primer düzeyde psişik bir başka hastalığı bulunmayan, belirgin biçimde beyin patolojisi bulunmayan, duyuşsal engeli olmayan, konuşma, dinleme, okuma, yazma, mantık yürütme ve matematik-aritmetik becerilerinin öğrenilmesi, kazanılması ve gerek günlük yaşamda gerek ise akademik alanda kullanılmasında önemli düzeyde güçlükler yaşayan, sekonder açıdan kendini yönetebilme, sosyal algı ve iletişim problemleri de yaşayan, standart eğitimlere rağmen zekası ile yaşına uygun başarıyı gösteremeyen bireylerdeki nörolojik kökene dayalı gelişimsel bir farklılık olarak nitelendirilmiştir (Demir, 2005; Rose, 2009).

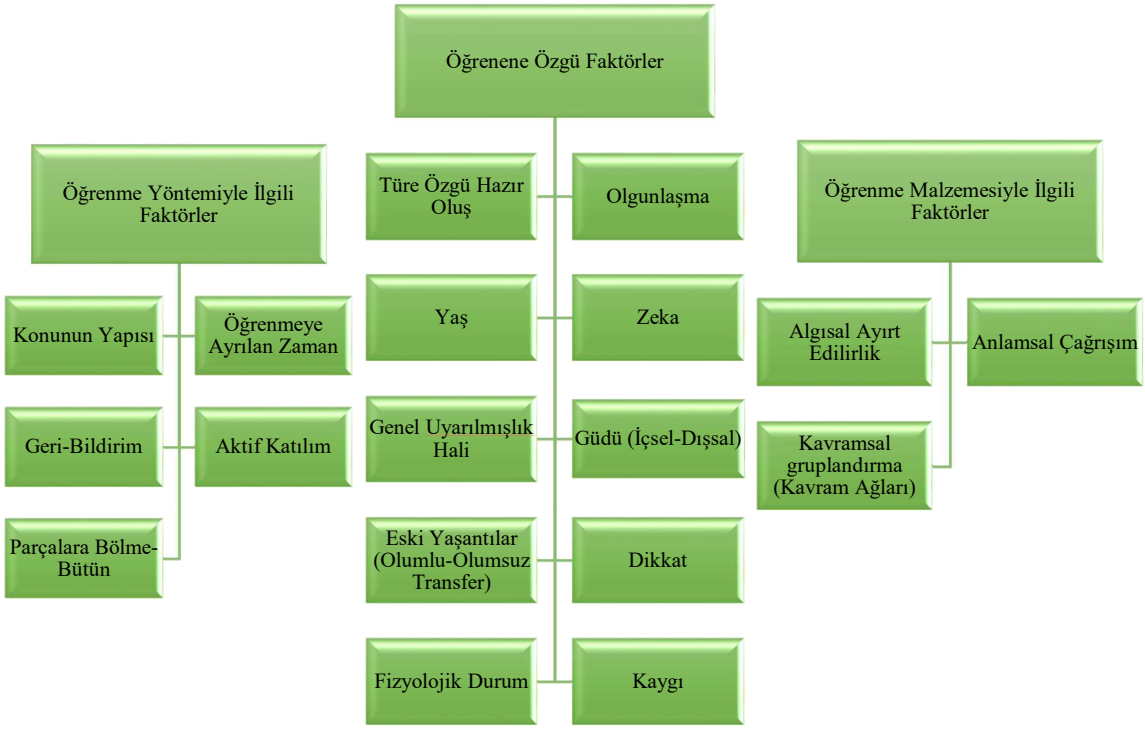
Öğrenme güçlüğü kendi içerisinde karakteristik özellikler gösteren bir takım farklı türlere ayrılmaktadır. Bunlar; Disleksi, Disgrafi, Diskalkuli, Afazi şeklinde sınıflandırılmıştır. Bu aşamada Öğrenme Güçlüğü temel şemsiye bir kavram olarak ele alınabilmektedir.



Şekil 1. Öğrenme güçlüğü türleri

Yüzyıllar boyunca yapılan çalışmalar değerlendirilerek, literatürde öğrenmeyi etkileyen faktörler aşağıda yer alan şekildeki biçimde incelenmiştir. Ancak öğrenme güçlüğünün aşağıda yer alan faktörlerden hiçbiri ile doğrudan bir bağlantısı bulunmadığı gerçektir.

Çünkü alttaki diyagramlarda görülen faktörler dışında, öğrenmeyi etkileyen çok sayıda faktörler bulunduğu düşünülmektedir. Öğrenme güçlüklerinin kaynağının belirlenmesi ise değerlendirme süreçlerini doğrudan etkileyecektir. Bu çalışmanın konusu bahsedilen açıdan değerlendirildiğinde birtakım eksikliklere de ışık tutması bakımından önem arz etmektedir.
Dolayısıyla, diyagramlarda gösterilen faktörler, Öğrenme Güçlüğü başta olmak üzere bir takım gelişimsel farklılıklara ilişkin öğrenme süreçlerini açıklamada yetersiz kalmaktadır. Öğrenme güçlüğünü ise daha başka farklı faktörlerin etkilediği düşünülmektedir. Son yıllarda yapılan tahminlere göre bunlar; genetik faktörler, organik faktörler (beyindeki yapısal farklılıklar, merkezi sinir sistemi anomalileri, nörotransmitter dengesizlikleri), çevresel ve biyokimyasal faktörler (doğum öncesi vitamin eksiklikleri, teratojenler vb.) biçiminde ele alınmaya başlanmıştır.



Şekil 2. Klasik yaklaşımlara göre öğrenmeyi etkileyen faktörler

Yukarıda yer alan öğrenmeyi etkileyen faktörler içerisinde öğrenme güçlüğüne ışık tutabilecek, nedenlerini, süreçlerini açıklayabilecek, öğrenme güçlüğünün hangi faktöre ilişkin farklılıktan kaynaklandığını ortaya çıkarabilecek bir durumun kapsam içerisinde yer almadığı görülmektedir.
Öğrenme güçlüğü ilk kez 1896'da Dr. Morgan tarafından 'konjenital kelime körlüğü' tanısı ile yayımlanmıştır. 1930-1940 yılları arasında 'Minimal Beyin Hasarı', daha sonra ise 'Minimal Beyin Disfonksiyonu' olarak açıklanmıştır (Wiig & Semel, 1984; Gresham, 1988; Demir, 2005; Sin, Tsang, Poon & Lai, 2010).

1988'de Amerika Ulusal Öğrenme Güçlüğü Birleşik Komitesi'nin (NJCLD) yayımladığı tanımlamada özel öğrenme güçlüğünün kapsayıcı genel bir terimi ifade ettiği ve konuşma, okuma, yazma, dinleme, mantıksal akıl yürütme ve matematik-aritmetik becerilerinin elde edilmesinde ve uygulanmasında yer alan heterojen bir bozukluk olduğu ortaya konmuştur. Bu bozukluğun birey/çocuk açısından doğuştan olduğu konusu önemle vurgulanmış ve özellikle dikkat eksikliği ve hiperaktivite bozukluğu ile birlikte görülebileceği de eklemiştir (Stuebing, Fletcher, Branum-Martin & Francis, 2012; Unruh & Mckellar, 2013).

Öğrenme güçlüğü sıklıkla bir alt kolu olan Disleksi biçiminde adlandırılmaktadır (En sık rastlanan türü olması sebebiyledir). Disleksi adıyla bilinen okuma bozukluğu, bireyin ortalama zekâya sahip olmasına ve aldığı eğitim her birey gibi benzer standartlara tabii olmasına rağmen okuma başarısındaki geriliği ifade etmektedir (Hammill, 1990; Cortiella, 2009; Judge & Watson, 2011).

Yapılan araştırmalar bu bireylerin bilişsel/zihinsel düzeylerinin muhakeme, düşünme, mantık yürütme, örüntü oluşturma, algılama gibi soyut bölümlerinin sağlam, normal hatta ileri düzeyde olmasına rağmen izole olarak fonolojik işlemleme süreçlerinde kelimeleri telaffuz etmede ve deşifrede zorluklarının bulunduğunu göstermiştir (Cortiella, 2009; Hale, Hain, Murphy, Cancelliere, Bindus & Kubas, 2013). Öğrenme güçlüğünde de erken tanı çok önemlidir. Ebeveynlerin, çocuklarının farklı gelişimini, diğer çocuklarından ya da akran gruplarından fark edebilmeleri mümkündür. Birçok aile sorunu görmezden geldiğinden, bir kısmı gerçekten göremediğinden, bir kısmı nereden destek alabileceğini bilmediğinden, bir kısmı da gerek hekimler gerek ise de okulların rehberlik birimlerince yanlış yönlendirildiğinden tanılamaları yapılamamakta veya tanı koymada geç kalınmaktadır. Ayrıca öğrenme güçlüğü gerek gelişimsel gerek ise tıbbi tanısı oldukça karmaşık bir süreci içerisinde barındıran birtakım farklılıklar içermektedir.

Özgül öğrenme güçlüğü olan çocukların anneleriyle yapılan çalışmalarda çocukların tanı almadan önce dil gelişimi ile ilgili olarak özgül öğrenme güçlüğünün belirtilerine özellikle erken dönemde dil gelişiminde yaşanan gecikmeler ve ifade güçlükleri olduğuna vurgu yapılmıştır. Bu çalışmalardaki anneler çocuklarının tanı almadan önce genel gelişimsel özelliklerine yönelik bilgiler verirken özbakım becerileri ile ilgili olarak da görüş bildirmişlerdir. Bu görüşler arasında özellikle kişisel bakımlarını yapmak ile ilgili kendi kendine yetebilme becerilerinin desteğe ihtiyacı olduğu düşüncesi yer almaktadır. Bu sonuçları destekler nitelikte yapılan araştırmalarda özgül öğrenme güçlüğü yaşayan çocuklarda kişisel bakım ve sağlığın korunması ile ilgili diğer gelişim alanlarının özellikleri ile bağlantılı olarak bazı güçlükler yaşandığı bildirilmiştir (Kerr, Fraser & Felce, 1996).

Okuma güçlüğünün yaşanmasında erken tanılama, çocuğun 5-6 yaşlarına dek gelişim becerilerinin ve gelişim alanlarının gözlenmesi aracılığıyla ileride okuma-yazma güçlükleri yaşayıp yaşamayacağının tespit edilmesidir (Gür, 2013). Hutchinson, Whiteley, Smith & Connors (2004) "The Early Identification Of Dyslexia: "Disleksinin Erken Tanısı'' adlı çalışmalarında en yüksek düzeydeki etkinin görülebilmesi için disleksinin mümkün olabilecek en erken tanılama süreçlerinin önemli bir gerçek olduğunu çocukların bireysel eğitim amaçlarını kolay hale getirmek ve erken müdahale etkilerini en iyi düzeye çıkarmak için, okuma güçlüğünün mümkün olduğu kadar erken saptanması gerektiğini, okuma güçlüğünün erken belirlenmesinin sadece akademik açıdan değil sosyal-duygusal, davranışsal ve psikolojik problemlerin önüne geçebileceğini ifade etmişlerdir.

Yine benzer çalışmalarda, okuma güçlüğünün mümkün olabilecek en erken sürede belirlenmesi gerektiği ve bunun için, cümle tekrarı, okuma alıştırmaları, çocukluk döneminde anne-baba eğitimi, zaman yönetimi gibi birtakım faktörlerin sorunun tespit edilmesinde rol oynayacağı belirtilmiştir (Gür, 1999; Gür, 2013).

Öğrenme güçlüğünün erken yaşlarda tanılanmasında ve müdahale süreçlerinde, okulöncesi eğitim kurumlarında görevli eğitimciler, ilköğretim ilk kademe sınıf öğretmenleri ve çocuk hekimleri oldukça önemli rol oynamaktadırlar. Öğretmenlerin öğrenme problemi olan çocuğu erken yaşlarda fark edebilmesi ve çocuğun normal gelişim gösteren çocuklardan daha farklı öğrenebilme tarzlarına sahip olduğu gerçeğini kabul edebilmesi, öğrenme güçlüğüne sahip çocuk açısından, çocuğa özel biçimde hazırlanmış bireyselleştirilmiş eğitim programı (BEP) ve farklı değerlendirme tekniklerini uygulamayı da devamında ortaya koyacaktır. Eğitimcilerin, göstereceği bu önemli çaba sayesinde öğrenme güçlüğüne sahip çok sayıda çocuk, erken müdahale şansını yakalayabilecek ve olası olumsuz durumların en aza indirgenmesi sağlanacaktır. Ayrıca, çocuğunda bir problem olduğunu düşünen ve bu sebeple çocuk hekimlerine başvuran ebeveynler, hekimlerin doğru tanılama ve hızlı yönlendirmeleri sayesinde erken özel eğitim destek programlarından yaralanabileceklerdir (Salman, Özdemir, Salman, Özdemir, 2016).

Yapılan pek çok çalışmada, öğrenme güçlüğü konusunda ailelerin, eğitimcilerin ve çocuk hekimlerinin yeterli bilgi düzeyinde olmaması ve/veya konuya gereken önemi vermemeleri, çocukta bir problem olduğu düşünülse dahi, hızlı ve doğru tanılama yapılmadığı için, gereken değerlendirme ve destek özel eğitim hizmetlerinin zamanında alınamadığı görülmektedir (Thomas & Whitten, 2012).

Ülkemizde ise genellikle öğrenme güçlüğü yaşayan çocuklar, rehberlik araştırma merkezlerine gönderilmekte ve burada yapılan değerlendirmelerden sonra kaynaştırma raporu almaktadır. Kaynaştırma raporu alan çocukların çoğunluğu zihinsel engelli olarak algılanmaktadır. Bu öğrenme güçlüğünün yeterince tanınmamasından kaynaklanan bir durumdur (Aslan, 2015). Bu sorun tanılama süreçlerinin gecikmesini olumsuz etkileyen bir başka etkendir. Ancak genel anlamda tanılama ve erken farkındalığı olumsuz etkileyen en önemli faktörün değerlendirme kriterlerini ve erken dönem belirtileri fark edememek, gözden kaçırmak olduğu net biçimde kabul edilmektedir.

Tartışma ve Sonuç

Ülkemizde Özel Öğrenme Güçlüğü tanısı genellikle ilkokulun ikinci ve üçüncü sınıflarında konmaktadır. Erken tanı, erken müdahaleyi getirmektedir anlayışı ele alındığında, bu yaşlarda tanılanan çocuklar, erken müdahaleden ve özel eğitim hizmetlerinden geç yararlanmaktadırlar. Bu durum, özel eğitimin süresini uzatmakla birlikte, özel eğitim giderlerini arttırmakta, bireyin müdahaleden en yüksek verimi alamamasına neden olmaktadır. Ayrıca erken fark edilemeyen çocuklarda okula devam etmede sorunlar, sosyal problemler, uyum sorunları, psikolojik birtakım problemler görülmektedir. Bu sebeple çocukların yaşadıkları akademik başarısızlıkla devam eden süreç öğrenilmiş çaresizliğe dönüşmekte ve okula karşı olumsuz algılara sahip olmalarına neden olmaktadır (Demir, 2005; Aslan, 2015).

Oysaki öğrenme güçlüğünün henüz bebeklik ve okul öncesi dönemde bir takım somut belirtileri bulunmaktadır. Çocuklarda görülen çeşitli kilit belirtiler, öğretmenlerin ve ebeveynlerin konuya ilişkin detaylı bilgilendirilmeleri ve farkındalıklarının artırılması yoluyla erken dönemde tanılanmalıdır. Ortaya konan çalışma, bu açıdan ele alınarak bir takım gelişimsel belirtilere dikkat çekilmesi hedeflenmiştir.

Genel olarak öğrenme güçlüğü türlerinin değerlendirilmesinde kullanılabilecek bir takım davranış ve beceri ölçütleri/belirtileri bulunmaktadır. Öğrenme güçlüğünün çok sayıda belirtileri ve ölçütleri ortaya konmuştur. Bunların bir kısmına yönelik tartışmalar halen devam ederken, özellikle ebeveynlerin de farkındalığını harekete geçirebilecek somut ve görece daha kolay farkedilebilen birtakım ölçütleri ortaya koymak önemlidir. Araştırmalar sonucunda elde edilen bu ölçütler aşağıda sunulmuştur. Süreç, çeşitli uzman destekleriyle psikopedagojik yaklaşımlarla yönetilmelidir. Bu noktada okul öncesi dönem oldukça önemlidir. Bu ölçütler şunlardır: (Araştırma kapsamında kaynakçada yer alan tüm kaynakların genel değerlendirilmesi sonucunda derlenmiştir)

- Konuşma veya telaffuzda gecikmeler
- Bir şeyi isimlendirirken kelime bulmada zorluk
- Yaşından daha az sözcük dağarcığına sahip olma
- Okuma-yazmayı ve sayıları öğrenmede genel olarak zorluk
- Yüklem-fiillerde, temel sözcüklerde zorlanma (gitmek, vermek, almak vb)
- Hecelerin yerini değiştirme
- Dinleme ve izlemede güçlük
- Ses-harf arası ilişkinin öğrenilmesinde güçlük
- Harflerin yerini karıştırma
- İki anlamlı (Kafiyeli) kelimeleri ve deyimleri anlamada güçlük
- Özellikle disgrafide kelimeler arası boşlukla harfler arası boşluğun eşit olduğu, ters harf yazımlarının bulunduğu, büyük-küçük harflerin karıştırıldığı tipik yazı stili
- Renk ve sayı kavramları ile harfleri öğrenmede güçlük
- Derslerde özellikle geometrik şekilleri çizmede zorluk yaşama
- Dikkat ve odaklanma sorunları yaşama
- Yön bulmada zorluk ve yönleri karıştırma (Sağ-solu, kuzey-güneyi devamlı karıştırma vb.)
- Matematik işaretlerini karıştırma (+ ve x işaretlerini karıştırma vb.)
- Ev ödevlerini sıklıkla unutma
- Arkadaşlık kurmada zorluk
- Yeni becerileri öğrenmede yavaşlık
- Günlük rutin işleri izlemede ve yapmada zorluk
- Arkadaşlarıyla ilişki kurmakta ve sürdürmekte zorluk
- Zaman ve mekân sorunları yaşama
- (Yazı yazarken) el tercihini netleştirememe
- Yazı yazarken kalemi hatalı tutma
- Koordinasyon gerektiren büyük ve küçük motor becerilerde zorluk(Düğme ilikleme, bisiklet sürme, vb.)
- Plan yapmakta güçlük çekme
- Planlamada zorluk yaşama
- Her konuda düşünmeden harekete geçme
- Sık sık sakarlık ve kaza yaşama

Sonuç olarak öğrenme güçlüğünün erken belirtilerinin tanımlanması ve çocuğun erken müdahale programları ve gerekli sağlık ve eğitim hizmetlerine yönlendirilmesi son derece önemlidir. Destek ve eğitim verilmemesi sebebiyle yüksek başarısızlık gösterebilen bu çocukların okula devam etmemeleri suç ve işsizlik oranının artmasına neden olabilir ve çocukların ileride sağlıklı bir kimlik ve uygun rol edinim sürecini geciktirebilir ya da olumsuz etkileyebilir.

Bu sebeple okul öncesinde, eğitimcilerin ve ebeveynlerin öğrenme güçlüğünün erken tanılama sürecine katkıda bulunmasının gerekliliği ortaya çıkmaktadır. Bu sebeple okul öncesi öğretmenlerine, ailelere ve uzmanlara büyük ölçüde görev düşmektedir.

Öneriler

Okul öncesinde çalışan eğitimcilerin, Özel Öğrenme Güçlüğü erken dönem belirtilerine yönelik bilgi birikimlerini desteklemek için hizmet içi eğitimler ve ailelerin de bu konuda bilgilerini arttırmak amacıyla seminerler düzenlemeleri, okul öncesi eğitim kurumlarının hedefinin sadece normal gelişim gösteren çocuğu okula hazırlamak değil, dezavantajlı çocuğu belirleme ve gönderme öncesi süreci doğru ve etkin bir şekilde değerlendirme olduğu da bilinmelidir.

Yapılan çalışmalar, sistematik ve planlı bir biçimde uygulanan erken farkındalık sürecinin ve çocuklara zaman zaman ölçüt odaklı bakış açısı ile yaklaşmanın pek çok öğrenme güçlüğüne sahip çocuğun ayrıca ek bir ayrıntılı değerlendirilmesine gerek kalmadan farkedilebileceğini göstermektedir.

Ülkemizde anaokulu ya da birinci sınıfta öğrenme güçlüğünü belirlemede kullanılan standart bir tarama aracı olmamakla birlikte öğrenme güçlüğünün kapsamlı tarama testleriyle belirlenmesi kuşkulu ve güvenilir olmayan bir yaklaşımdır. Bu sebeple testlerden ziyade ölçüt odaklı yaklaşımlar ve çocuğun nitelikli gözlemlenmesi önem arz etmektedir.

RAM'da çalışan personellerin öğrenme güçlüğü eğitsel değerlendirmeleri genellikle akademik değerlendirme ve uygulanan zekâ testi sonuçlarına göre yapılmaktadır. Öğrenme güçlüğünün belirlenmesinde zeka testlerinin kullanılması artık kabul gören bir yaklaşım olmamakla birlikte, üstün zekaya sahip öğrenme güçlüğü belirtileri olan çocukların tanılanamamalarına neden olabilmektedir. Sonuç olarak okul öncesi dönemde öğrenme güçlüğü belirtileri ve uygun tarama araçlarının kullanılması konusunda RAM çalışanlarının, eğitimcilerin ve ebeveynlerin ölçütlere ilişkin bilgilerinin arttırılması ve hizmet içi eğitimlerin düzenlenmesi gerekmektedir.

Kaynakça

Aslan, K. (2015). Özgül öğrenme güçlüğünün erken dönem belirtileri ve erken müdahale uygulamalarına dair derleme. Hacettepe University Faculty of Health Sciences Journal, 1(2),577-588.

Cortiella, C. (2009). The state of learning disabilities. New York: National Center for Learning Disabilities.

Demir, B. (2005). Okulöncesi ve ilköğretim birinci sınıfa devam eden öğrencilerde özel öğrenme güçlüğünün belirlenmesi. Yayımlanmış Yüksek Lisans Tezi, Marmara Üniversitesi: İstanbul.

Gilboa, A. & Marlatte, H. (2017). Neurobiology of schemas and schemamediated memory. Trends in Cognitive Sciences, 21, 618 –631.

Gresham, F. (1988) Social competenceand motivational characteristics of learning disabled students. In Margaret C.Wing et al (Eds) Handbook of special education: Research and practice, Vol.2.Advances in Education, Pergamon press.

Gür, H. & Korkmaz, E. (2003). İlköğretim 7. sınıf öğrencilerinin problem ortaya atma becerilerinin belirlenmesi. Matematikçiler Derneği.

Gür, H. (1999). Learning to teach mathematics and the place of active learning. Doktora Tezi, Leicester University, Leicester, İngiltere.

Hale, J.B., Hain, L.A., Murphy, R., Cancelliere, G., Bindus, D.L. & Kubas, H.A. (2013). The enigma of learning disabilities: Examination via a neuropsychological framework. In C. A. Noggle and R. S. Dean (Eds.), The neuropsychology of psychopathology (pp. 75-93). New York, NY: Springer Publishing Co.

Hammill, D.D. (1990). On defining learning disabilities: An emerging consensus. Journal of Learning Disabilities, 23, 74-84.

Hutchinson, J.M., Whiteley, H.E., Smith, C.D. & Connors, L. (2004). The early identification of dyslexia: Children with English as an additional language. Dyslexia: An International Journal of Research and Practice, 10(3), 179–195.

Judge, S. & Watson, M. R. S. (2011). Longitudinal outcomes for mathematics achievement for students with learning disabilities. The Journal of Educational Research, 104, 147-157.

Kerr, M., Fraser, W. & Felce, D. (1996). Primary health care for people with a learning disability. British Journal of Learning Disabilities, 24,2-8.

Morrison, R.G., Reber, P.J., Bharani, K.L., Paller, K.A. (2015) Dissociation of category-learning systems via brain potentials. Front Hum Neurosci 9,389.

OECD (2007), Understanding the Brain: The Birth of a Learning Science, OECD, Paris.

Romero, K., Barense, M.D. & Moscovitch, M. (2019). Coherence and congruency mediate medial temporal and medial prefrontal activity during event construction. Neuroimage 188,710 –721.

Rose, J. (2009). Identifying and teaching children and young people with dyslexia and literacy difficulties: An independent report. DCSF Publications: London.

Salman, U., Özdemir, S., Salman, A.B. & Özdemir, F. (2016). Özel öğrenme güçlüğü 'Disleksi'. FNG & Bilim Tıp Dergisi;2(2),170-176.

Senemoğlu, N. (2005). Gelişim öğrenme ve öğretim. Gazi Kitapevi: Ankara.

Sin, K.F., Tsang, K.W., Poon, C.Y. & Lai, C.L. (2010). Upskilling all mainstream teachers: What is viable? In C. Forlin (Ed.), Teacher education for inclusion: Changing paradigms and innovative approaches (pp. xx). Abingdon: Routledge

Stuebing, K.K., Fletcher, J.M., Branum-Martin, L. & Francis, D. J. (2012). Evaluation of the technical adequacy of three methods for identifying specific learning disabilities based on cognitive discrepancies. School Psychology Review, 41(1), 3- 22.

Thomas, G. & Whitten, J. (2012). Learning support for students with learning difficulties in India and Australia: Similarities and differences. The International Education Journal: Comparative Perspectives, 11(1), 3–21.

Unruh, S. & Mckellar, N.A. (2013). Evolution, not revolution: School psychologists' changing practices in determining specific learning disabilities. Psychology in the Schools, 50, 353-365.

Wiig, E.H. & Semel, E. (1984). Language assessment and intervention for the learningdisabled child. 2. Edition, Columbus,OH: Merril.

Zeithamova, D., Mack, M.L., Braunlich, K., Davis, T., Seger, C.A., Van Kesteren, M.T.R. & Wutz, A. (2019). Brain mechanisms of concept learning. The Journal Neuroscience, 39(42), 8259 – 8266.

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DİN KÜLTÜRÜ VE AHLAK BİLGİSİ DERSİ (4-8. SINIFLAR) ÖĞRETİM PROGRAMINDA YER ALAN KAZANIMLAR KAPSAMINDA YARARLANILAN HADİSLER ÜZERİNE İNCELEME VE DEĞERLENDİRME (5. SINIF DERS KİTABI ÖRNEĞİ)

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ÖZET
Din Kültürü ve Ahlak Bilgisi dersi ülkemizde tüm eğitim kademelerinde okutulan zorunlu dersler arasında yer almaktadır. 2018 yılında yapılandırmacı öğrenme modeli kapsamında öğrenci merkezli öğrenme vb. yaklaşımlar dikkate alınarak, birbirini tamamlayıcı bir biçimde Din Kültürü ve Ahlak Bilgisi Dersi (4-8. Sınıflar) Öğretim Programı hazırlanmıştır. Bu çalışmada öğretim programında yer alan 5. sınıf ünite ve kazanımları esas alınarak, Millî Eğitim Bakanlığı tarafından (2018) hazırlanan ders kitabında yararlanılan hadisler incelenmiştir. Bu bağlamda 5. sınıf öğretim programı ve ders kitabı incelendiğinde, Allah İnancı (sekiz kazanım), Ramazan ve Oruç (beş kazanım), Adap ve Nezaket (altı kazanım), Hz. Muhammed ve Aile Hayatı (beş kazanım), Çevremizde Dinin İzleri (beş kazanım) adıyla beş ünite ve toplamda yirmi dokuz kazanım bulunmaktadır. Hadis ilmi yönünden de bakıldığında da kitapta yer alan hadislerin, *Kütüb-i sitte* eserleri başta olmak üzere temel hadis kaynaklarından hadislerle desteklenerek işlendiği görülmektedir. Bir ders için en önemli materyal iyi hazırlanmış bir ders kitabıdır. Dolayısıyla Din Kültürü ve Ahlak Bilgisi öğretiminde ders kitabı hazırlanırken, Hz. Peygamber'in (sas) söz, fiil ve takrirleri olarak tanımlanan İslam'ın ikinci temel kaynağı hadislerden yararlanma, konular işlenirken yararlanılan hadislerin sayı bakımından yeterlilik durumu, hadislerin ve hadislerde yer alan kavramların, konu, kazanım ve öğrencilerin seviyesine olan uygunluğu, doğru anlaşılması ve yorumlanması, Kur'an ve Sünnet bütünlüğü çerçevesinde konular işlenirken yararlanılan hadislerin ilgili ayetlerle ve disiplinlerarası yaklaşım çerçevesinde diğer bilim dallarıyla olan ilişkisi vb. hususlar büyük önem arzetmektedir. Bu çalışmanın amacı 5. sınıf ders kitabında yararlanılan hadislerin, tüm bu hususlar göz önünde bulundurularak incelenmesi ve değerlendirilmesidir.
Anahtar Kelimeler: Din Kültürü ve Ahlak Bilgisi, Öğretim Programı, Kazanım, Hadis, 5. Sınıf

ANALYSIS AND EVALUATION ON THE HADITH USED WITHIN THE SCOPE OF THE GAINS IN RELIGIOUS CULTURE AND MORAL KNOWLEDGE COURSE (4TH-8TH GRADES) CURRICULUM (5TH GRADE TEXTBOOK EXAMPLE)

ABSTRACT
Religious Culture and Moral Knowledge course is among the compulsory courses taught in all education levels in our country. In 2018, student-centered learning etc. within the scope of constructivist learning model taking into account the approaches, the Curriculum for Religious Culture and Moral Knowledge Course (4th-8th Grades) has been prepared in a complementary manner.

In this study, based on the 5th grade units and gains in the curriculum, the hadiths used in the textbook prepared by the Ministry of National Education (2018) were analyzed. In this context, when the 5th grade curriculum and textbook are analyzed, Faith in Allah (eight achievements), Ramadan and Fasting (five achievements), Decency and Kindness (six achievements), Prophet Muhammad and Family Life (five achievements), Traces of Religion in Our Environment (five achievements) with names, there are five units and a total of twenty-nine gains. In terms of hadith science, it is seen that the hadiths in the book are supported by hadiths from the main hadith sources, especially the works of Kutub al-Sitta. The most important material for a lesson is a well-prepared textbook. Therefore, while preparing the textbook in Religious Culture and Moral Knowledge teaching, benefiting from the hadiths, the second main source of Islam, which is defined as the words, actions and approvals of the Prophet Muhammad, the adequacy of the hadiths used in the processing of the subjects in terms of number, the suitability of the hadiths and the concepts in the hadiths to the subject, gain and level of the students, correct understanding and interpretation, the connection between the hadiths and the related verses used while the subjects are being handled within the framework of the integrity of the Qur'an and the Sunnah, relationship with other disciplines within the framework of interdisciplinary approach, etc. matters are of great importance. The aim of this study is to analyze and evaluate the hadiths used in 5th grade textbook, taking into account all these issues.

Keywords: Religious Culture and Moral Knowledge, Curriculum, Gain, Hadith, 5th grade

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BAKIM SİSTEMLERİNDE YAŞLANMANIN ROLÜ: SORUNLARI BAKIM ETİĞİ PERSPEKTİFİNDEN DÜŞÜNMEK

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ÖZET
Sosyal hayatın kaçınılmaz bir gerçeği olan yaşlanma, genetik yapıdan kaynaklanan ve çevresel olarak modüle edilen, aynı zamanda bir toplumun nüfus yapısını ve kompozisyonunu etkileyen bir süreçtir. Geçmişte yaşam süresinin daha kısa olması ve doğum oranlarının yüksek olması nedeniyle dünya nüfusunun demografik yapısı, çok daha genç bir görünümdeyken günümüzde hem ölüm hem de doğurganlık oranlarının düşmesiyle yaşlı bir görünüme kavuşmaya başlamıştır. Yaşlanma süreci, fiziksel ve zihinsel iyi oluşu engelleyerek ve kronik hastalıklara yakalanma olasılığını artırarak insan vücudunda önemli değişikliklere yol açmakta, yaşlıların günlük temel aktivitelerini bağımsız bir şekilde yerine getirmelerini engellemektedir. Bu nedenle yaşlılara yönelik bakım hizmetleri, sağlık ihtiyaçlarının yanı sıra günlük ihtiyaçları da karşılayacak şekilde tasarlanmalıdır.
Küresel yaşlanmadaki hızlı artıştan dolayı özellikle yaşlı yetişkinlere bakım verme konusu daha fazla dikkat çekmektedir. Bu durum tıbbi hizmetlerden yararlanmanın yanı sıra bakım hizmetlerine bağımlılığın artmasını ve daha fazla yararlanma gerekliliğini de beraberinde getirmektedir. Nüfusun hızla yaşlanmasının bir sonucu olarak birçok ülkede bakım sistemleri hızla etkilenmektedir. Bakım sistemlerine ilişkin raporlar incelendiğinde, toplumsal cinsiyete duyarlı ve bakım çalışanları için insana yakışır çalışma koşulları sağlayacak şekilde olmadığı göze çarpmaktadır. Bakım konusundaki bu adaletsiz yapı, bakım etiği anlayışının doğmasına neden olmuştur. Bakım işi hem değerleri hem de pratiği kapsadığından, etik perspektif ile ele alınması oldukça önemlidir. Bu çalışma, dünya nüfusunun demografik değişim sürecini gözler önüne sererek bakım sistemlerinin toplumsal cinsiyete duyarlı olmayan yapısını, bakım etiği anlayışından değerlendirmeyi amaçlamaktadır.
Anahtar Kelimeler: Yaşlanma, bakım, sosyal bakım, bakım etiği, toplumsal cinsiyet

THE ROLE OF AGING IN CARE SYSTEMS: THINKING OF ISSUES FROM THE PERSPECTIVE OF CARE ETHICS

ABSTRACT
Aging, an inevitable fact of social life, is a process that originates from the genetic structure and is modulated environmentally, and also affects the population structure and composition of a society. While the demographic structure of the world population was much younger due to the shorter life expectancy and high birth rates in the past, today it has begun to gain an older appearance with the decrease in both death and fertility rates. The aging process leads to significant changes in the human body by hindering physical and mental well-being and increasing the likelihood of chronic diseases, preventing the elderly from performing their daily basic activities independently. For this reason, care services for the elderly should be designed to meet their daily needs as well as their health needs.

Due to the rapid increase in global aging, the issue of caring for older adults, in particular, attracts more attention. In addition to benefiting from medical services, this situation brings with it an increase in dependency on care services and the need to benefit more. As a result of the rapid aging of the population, care systems are rapidly affected in many countries. When the reports on care systems are examined, it is striking that they are not gendered responsive and do not provide decent working conditions for care workers. This unfair structure in care has led to the emergence of the understanding of care ethics. Because care work encompasses both values and practice, it is very important to consider it from an ethical perspective. This study aims to evaluate the gender-insensitive structure of care systems from the perspective of care ethics by revealing the demographic change process of the world population.
Keywords: Aging, care, social care, care ethics (ethics of care), gender

1. GİRİŞ

Yaşlanma, her canlının karşılaştığı geri dönüşü olmayan bir süreçtir. Son yüzyılda doğum oranlarının düşmesi ve insan ömrünün uzaması, yaşlı nüfusun toplam nüfus içindeki oranının artmasına neden olmuş ve dünya nüfusu hızla yaşlanmaya başlamıştır. Demografik değişimlere ilişkin değerlendirmeler birçok gelişmeyi içermektedir. En önemli gelişmeler ise bakım sistemleriyle ilgilidir. Hızlı nüfus yaşlanması, yaşlı bakımının sosyal ve ekonomik maliyetini önemli ölçüde artırmıştır. Küresel yaşlanmadaki hızlı büyüme ivmesi, yaşlı yetişkinlere bakım verme konusunu daha fazla gündeme taşıyacaktır.

Bakımla ilgili araştırmalar karmaşık, duygusal ve ilişkisel olduğundan, etik prosedürler sınırlı kalmaktadır. Bu nedenle ücretli ve ücretsiz bakım emeğinde kadın ve erkeklerin orantısız dağılımı, bakımın istenmeyen bir iş olduğu ve bakım verenlerin statülerinin düşük, bakım alanların ise acınası bir durumda olduklarına ilişkin bazı algılar söz konusudur. Bakımı, bakım etiği çerçevesinde ele almak konuya ahlaki bir boyut kazandıracak, bakım deneyimlerini anlamayı ve iyileştirmeyi amaçlayan çalışmalar için de fayda sağlayacaktır. Çünkü bakım etiği, çatışan ihtiyaçlar ve değerleri uzlaştırmak için ele alınabilecek bir yaklaşımdır. Böylece bu çalışma tarama yöntemine dayalı olarak, dünya nüfusunun demografik değişim sürecini inceleyerek bakım sistemlerinin toplumsal cinsiyete duyarlı olmayan yapısını, bakım etiği anlayışından değerlendirmeyi amaçlamaktadır.

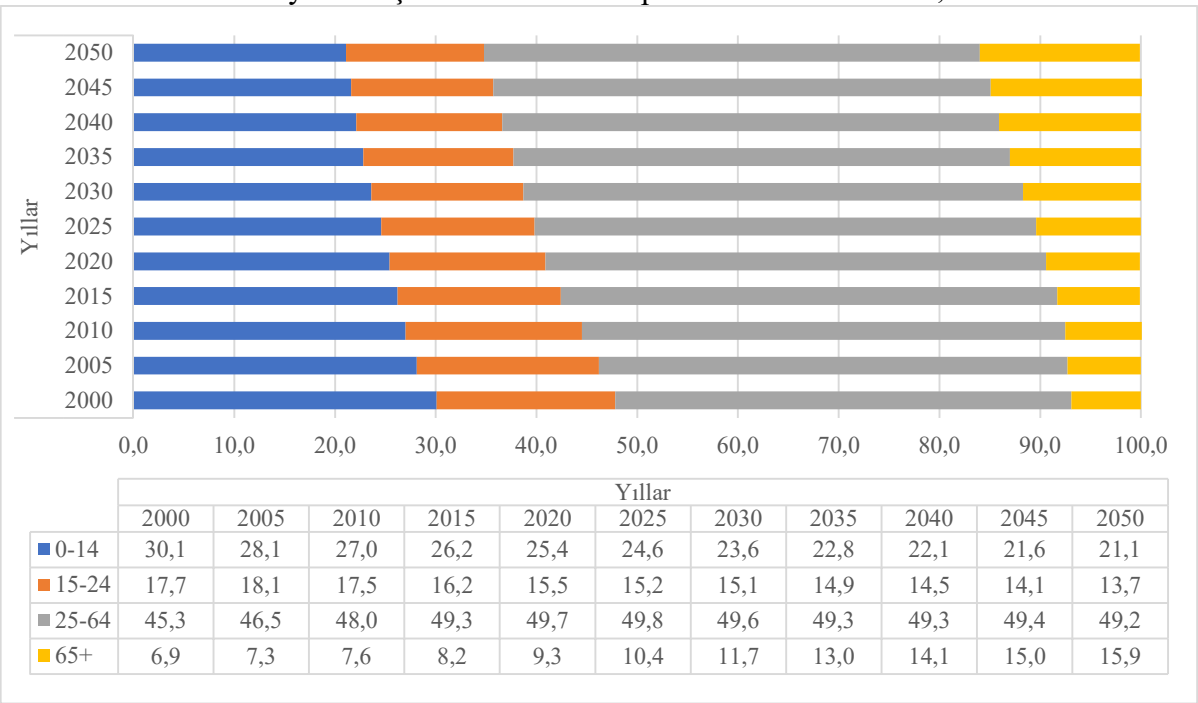
2. YAŞLANMA VE DÜNYANIN YAŞLANMA SÜRECİ

Yaşlanma, her canlı için rahim içinde başlayan ve ölüme kadar devam eden bir değişim süreci olarak kabul edilmektedir. Genel anlamda ise gücünü kaybetmiş ve ağır işlerle baş edemeyen kişiler, yaşlı olarak kabul edilebilir. İnsanların günlük rutinlerini değiştirdiği, kişisel algılarını ve sağlıkla ilgili alışkanlıklarını etkilediği için yaşamda karşılaşılan en önemli değişik olarak görülebilir (Chacón, Bartolomé, Font, & Cabrera, 2019, s. 4). Geleneksel olarak yaşlılar, yaşlılık aylığına hak kazanma yaşına dayalı olarak ‘‘65 yaş ve üstü’’ kişiler olarak tanımlanır. Bireysel düzeyde bir kişinin 65 yaşında (veya herhangi bir başka yaşta) mutlaka zayıf veya bağımlı hale gelmediğini vurgulamak önemlidir. Bu nedenle yaşlılar grubu, tek tip olmaktan uzaktır (Australian Institute of Health and Welfare, 2014, s. 2).

Yaşlanma, insan yaşamının tüm yönlerine önemli sonuçlar ve çıkarımlar getirir. Sadece nüfus yapısı ve konumu açısından değil, aynı zamanda yaşam düzenlemeleri, aile kompozisyonu ve aile ilişkileri, büyüme açısından ekonomik dinamikler, tasarruflar, yatırım ve tüketim, işgücü piyasaları, emekli maaşları, sağlık ve sağlık hizmetleri, konut ve göç, oy verme kalıpları ve temsil vb.

Bu değişiklikler genel olarak sosyal politikayı ve özel olarak sosyal çalışmayı da etkiler. Dünyanın yaşlanmaya doğru eğilen yapısını daha açık bir şekilde görebilmek adına Tablo 1 incelenebilir.

Tablo 1: Dünyada Yaş Grubuna Göre Toplam Nüfusun Yüzdesi, 2000-2050



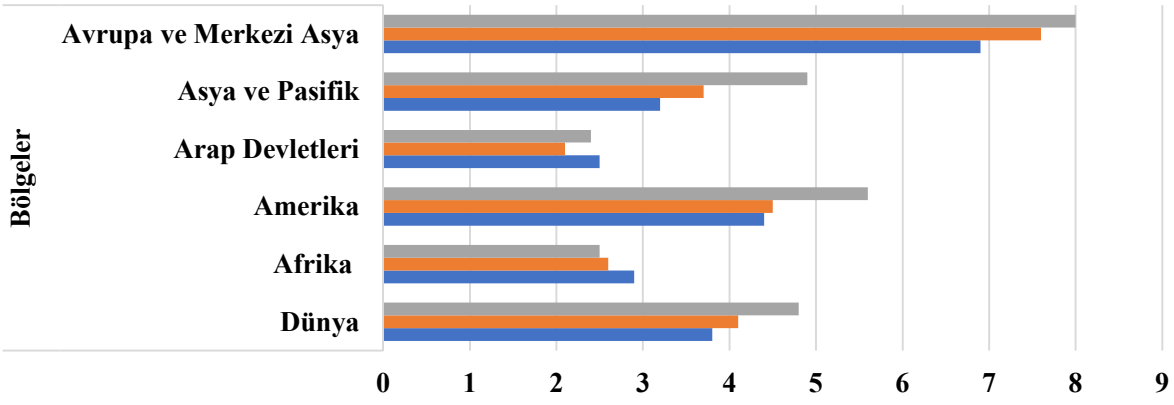
	Yıllar										
	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
0-14	30,1	28,1	27,0	26,2	25,4	24,6	23,6	22,8	22,1	21,6	21,1
15-24	17,7	18,1	17,5	16,2	15,5	15,2	15,1	14,9	14,5	14,1	13,7
25-64	45,3	46,5	48,0	49,3	49,7	49,8	49,6	49,3	49,3	49,4	49,2
65+	6,9	7,3	7,6	8,2	9,3	10,4	11,7	13,0	14,1	15,0	15,9

Kaynak: (United Nations, Department of Economic and Social Affairs, Population Division, 2019)

Tablo 1'de görüldüğü gibi, dünya üzerinde çalışma çağındaki (25- 64 yaş) ve daha büyük (65+ yaş) kişilerin toplam nüfus içindeki payları artarken, çocuk (0- 14 yaş) ve gençlerin (15- 24 yaş) giderek azalmaktadır. 2000 yılında, çalışma çağındaki nüfus dünya nüfusunun en büyük payını (%45,3) oluştururken, onu çocuklar (%30,1) ve gençler (%17,7) izlemekteydi. 65 ve üzeri yaş grubu ise nüfusun sadece %6,9'unu oluşturduğu görülmektedir. Oysa 2020 yılında 0-14 yaş grubunun oranının %25,4'e düştüğü, 65 yaş ve üzeri nüfusun oranının ise %9,3'e yükseldiği ortadadır. Tablo 1'deki grafikte yıllar geçtikçe nüfusun, genç nüfustan yaşlı nüfusa kayacağı açıkça görülmektedir. Nitekim 2000'den 2050'ye kadar dünya yaşlı nüfus oranının hızla artacağı, çalışma çağındaki nüfus oranının da artma eğiliminde olacağı, ancak çocuk ve gençlerin payının azalacağı tahmin edilmektedir.

Sanayi toplumlarında yaşanan ekonomik dönüşümler, yaşamsal beklenti ve kaygıların değişmesi, yaşam süresinin uzaması ve yaşam tarzlarının kültürel olarak yeniden yapılandırılması, günümüz çağdaş toplumlarında yaşlanma kavramının daha detaylı incelenmesine yol açmıştır. Toplumsal yapının hızlı hareketi yaşlılık kavramını dönüştürmüş ve yeniden şekillendirmiştir. Ülkelerde yaşlanmaya doğru kayan nüfus değişiklikleri, daha fazla sağlık hizmeti, uzun süreli bakım hizmetleri ve kapsamlı sosyal güvenlik hakları talebine yol açmıştır.

Tablo 2: Bakıma bağımlılık oranları, 2000, 2015 ve 2030 (Yaşlılar %)



	Bölgeler					
	Dünya	Afrika	Amerika	Arap Devletleri	Asya ve Pasifik	Avrupa ve Merkezi Asya
2030	4,8	2,5	5,6	2,4	4,9	8
2015	4,1	2,6	4,5	2,1	3,7	7,6
2000	3,8	2,9	4,4	2,5	3,2	6,9

Kaynak: (ILO, 2018, s. 23)

Sosyal bir risk olan yaşlanma durumunda insanların sağlığı bozulmakta, sakatlıkları gelişmekte ve bakıma ihtiyaçları artmaktadır. Bu durumda yaşlıların bakıma bağımlılık oranlarının artması beklenmektedir. Tablo 2'ye göre üst ve orta düzey gelir grubunda bulunan ülkelerin yer aldığı bölgeler, düşük gelir düzeyine sahip ülkelerin bulunduğu bölgelere kıyasla yaşlılar için en fazla bakıma bağımlılık oranlarını kaydetmektedir. Ayrıca dünyanın yaşlı bakım bağımlılık oranlarının artış eğiliminde olduğu görülmektedir.

3. YAŞLI BAKIMINDAKİ OLASI SORUNLAR

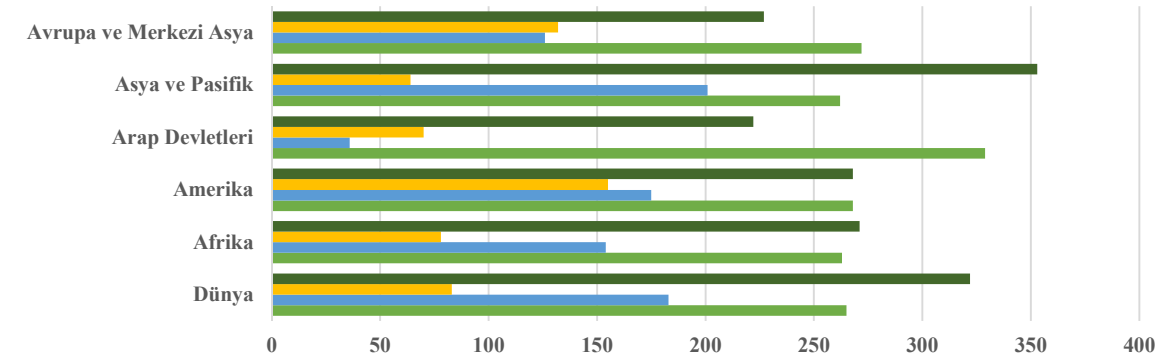
İçinde hem onur ve erdem duygularını barındıran hem de güvenli bir yaşlılık sürecini desteklemeye yönelik bakım politikaları, yalnızca yaşlılar için değil, özellikle de uzun vadede onlardan fayda sağlayacak olan gençler için de ciddi bir endişe kaynağıdır. Çünkü her geçen gün yaşlı nüfus oranı diğer nüfusların oranına göre artma eğilimindedir. Bu nedenle yaşlılara yönelik bakım sisteminde sorunların daha sık bir şekilde ortaya çıkması olasıdır. Bu sorunların bir kısmı yaşlıya bağlı iken, diğer kısmı çevresel faktörlere bağlıdır.

Yaşlılık döneminde görülen problemlerin pek çoğu, yaşanılan ülkenin sosyal, ekonomik, politik hatta kültürel özellikleriyle ilgilidir. Bu nedenle yaşlanma ile ortaya çıkan pek çok sorunu toplumsal sorunlar olarak ele almak oldukça doğrudur. Yaşlıları bireysel olarak etkileyen sorunların başında ise daha sık hastalanma veya daha fazla kronik hastalıklara maruz kalma riskleri gelir. Sağlığın bozulması, yaşlıların yaşam standardını düşüren, bir anlamda onları yoksullaştıran kuşkusuz en önemli sorundur. Bu nedenle ahlaki değerlerden zengin kaliteli bakım hizmetlerine talep doğmaktadır. Diğer bireysel sorunlardan biri de ekonomiyle ilgilidir. Yaşlanmayla gelen fiziksel değişikliklerin kötü ekonomik koşullara zemin hazırlaması olasıdır. Bu durumda da yaşlıların hayat kalitesi öncesine göre zorlaşacak, psikolojik ve sosyal açıdan etkileyecektir.

Yaşlılık döneminde ortaya çıkan diğer bir sorun ise toplumsal uyumla alakalıdır (Kurt, Beyaztaş, & Erkol, 2010, s. 34). Yaşlılık döneminde yaşlıların sosyal ilişkilerinde aksaklıklar görülebilir. Çünkü bu dönem bir eşik dönemidir. Yaşlanma ile bireyler üretici konumundan tüketici konumuna geçmekte, sosyal rollerinden kopmaktadır (Sarıipek & Ayhan, 2021, s. 63).

Dünyanın nüfus projeksiyonunda görülen yaşlanmaya doğru eğilim, sadece yaşlıların yaşayabileceği muhtemel sorunları önemsemeyi yetersiz kılar. Yaşlılara bakım sağlayacak, özen gösterecek ve yaşam standartlarını iyileştirecek ve bakım verenler için de sorunları önlemeye gayret eden bir sistemin oluşturulması önemlidir. Bu noktada bakım verenlerin, özellikle hane içinde ücretsiz bakım verenlerin genellikle kadınlar olduğu bilinmektedir. Bakım, geçmişten günümüze kadınlara atfedilen geleneksel bir rol olarak algılanmaktadır. Nitekim bu konuyla ilgili çeşitli politikalar gündeme gelmiş ve uygulamaya da konmuştur. Ancak son veriler ışığında politikalar ve uygulamaların yeterli olmadığı söylenebilir.

Tablo 3: Cinsiyet bazında ücretli ve ücretsiz bakım işine günlük harcanılan zaman



	Dünya	Afrika	Amerika	Arap Devletleri	Asya ve Pasifik	Avrupa ve Merkezi Asya
Ücretli Bakım İşi- Erkek	322	271	268	222	353	227
Ücretsiz Bakım İşi- Erkek	83	78	155	70	64	132
Ücretli Bakım İşi- Kadın	183	154	175	36	201	126
Ücretsiz Bakım İşi- Kadın	265	263	268	329	262	272

Kaynak: (ILO, 2019)

Tablo 3'e göre Dünya'da ve tüm bölgelerde, değişen oranlarda, kadınların erkeklerden daha fazla günlük ücretsiz bakım işlerine zaman ayırdığı gösterilmektedir. Bu durumda, ücretsiz bakım işlerinde kadınların temel olarak rol oynadığı söylenebilir. Erkeklerin ise ücretsiz bakım işine ancak ücretli olarak katılım sağladıkları söylenebilir. Refah seviyesi düşük veya yüksek, her ülkenin bulunduğu bölgelerde ücretsiz bakım işinde harcanılan zaman söz konusu olduğunda kadınların çoğunlukta olduğu göze çarpmaktadır. Bu durumda gelenekselleşmiş bakım verme rolünün hala kadınlara atfedildiği kabul edilebilir. Ücretsiz bakım işinin ağır yükünün cinsiyetler arası eşit olmayan dağılımı için dört temel neden tanımlanabilir. Bunlar (Akt. DCED, 2019);

* Sosyal normlar: Ev ve bakım faaliyetleri kadınların işi olarak görülmekte ve kadınlar için orantısız bir şekilde ücretsiz bakım işi yapmaları yönünde toplumsal beklenti ve baskı vardır.

* Politika ve sosyal kurumlar: Bakım hizmetlerinin yetersiz sunumu gibi eksik politikalar ve uygulamada zayıf kalan sosyal kurumlar, kadınlar için daha fazla ücretsiz çalışmaya yol açar.
* Ekonomik çevre: İşgücü piyasası koşulları (işe alma politikaları, sosyal korumalar ve ücretler vb.) kadınları istenmeyen bir çalışma ortamına maruz bırakabilir ve onları resmi işlerden caydırabilir.
* Teknoloji ve altyapı: Yetersiz teknoloji ve altyapı, kadınların fiziksel olarak zorlayıcı ve zaman alıcı ücretsiz işlere yönlendirir.

Kadınlar, yüksek kaliteli istihdam fırsatlarına erkeklere göre daha sınırlı erişime sağlama eğilimindedirler. Bunun bir nedeni, hane içinde ücretsiz çalışma saatlerinin eşit olmayan dağılımıdır. Kadınlar, özellikle hanedeki yaşlılar ve çocuklar için ücretsiz bakım işlerinin çoğunu yapmaktadır. Günlük zaman kullanımı raporları, ücretsiz ve ücretli çalışma dahil edildiğinde, kadınların erkeklerden daha uzun süre çalıştığını göstermektedir. Ücretsiz ev işinin bu orantısız yükünün kadınların işgücü piyasasına katılımı üzerinde olumsuz bir etkisi vardır (International Labour Organization, 2018, s. 19).

4. SORUNLARI BAKIM ETİĞİ PERSPEKTİFİNDEN DEĞERLENDİRMEK

Etik kavramı hem bir konu olarak hem de bir inceleme alanı (ahlak felsefesi) olarak ele alınabilir. Etik, toplumsal davranışları yönlendiren sosyal normları konu edinen bir kavramdır. Bir inceleme alanı olarak ele alınan etik ise davranışları açıklama veya anlamlandırmadan ziyade onları değerlendirmeye dönük normatif bir disiplindir. Toplumsal davranış kalıplarını düşünmek yalnızca etik kavramını değil, ahlak kavramını da gündeme getirir. Ahlak, toplumun en bilinen kalıplarını içine alan bir kavramdır. Bu kalıplar, toplumdaki kişilerin statülerinden bağımsız bir şekilde her statüden kişiyi ilgilendirir. Toplumdaki doğru-yanlış, iyi-kötü, güzel-çirkin vb. algılara ilişkin ayrım ahlak kalıplarına göre şekillenmektedir. Öyleyse ahlak kalıpları, kişinin çocukluğunda öğrendiği kurallar olarak tanımlanabilirken, etik; belirli bir mesleğin, kurumun, işin veya grubun kalıpları olarak tanımlanabilir (Resnik, 2004, s. 30-32).

Bakım işi; hizmeti alanlar ve verenlerin farklı çıkarları olduğundan, uygulama ve hizmet sunumlarının çok yönlü oluşundan ve maliyetinden dolayı karmaşıktır ancak her yerde bulunan ve olmazsa olmaz bir olgudur. Bu nedenle bakım ile etik kavramı harmanlandığında doğan bakım etiği yaklaşımı diğer etik yaklaşımlarından farklı olacaktır. Çünkü bakım etiğini genel olarak diğer etik yaklaşımlarından ayıran en önemli faktör, sorumluluk, kırılganlık ve bağımlılık ile inşa edilmiş sosyal ilişkilere yaptığı vurgudur (Sevenhuijsen, 1998; Tronto, 1993). Toplumsal ahlak kalıplarının cinsiyetçi, bozulmuş ve yozlaşmış kısımlarını feminist yaklaşımla ele alan bakım etiği, geleneksel etik teorileri kabul etmez. Geleneksel etik teoriler içinde sevgi, şefkat vb. duyguları barındırmazlar ve oldukça soyuttur. Oysa bakım etiği, insanların birbirine değer vermesini ve ilgi göstermesini savunmaktadır. Soyut kavramlara ve katı kurallara dayanmaktansa, karşılıklı sevgi ve ilginin başrolde olduğu ilişkiler, bakım etiğinin özünü oluşturur (Gilligan, 1993).

Yaşlanma süreci, bazı yaşlıları fiziksel ve zihinsel yetersizliklere karşı daha savunmasız hale getirir. Bu durumda yaşlıların, günlük yaşam faaliyetlerini yerine getirmekte zorlanabilecekleri söylenebilir. Böylece yaşlılar başkalarının yardımına ihtiyaç duyabilecek ve bakım hizmetlerine talebinde artış görülmesi beklenecektir. Yaşlanmanın getirdiği sorunlar ile bakım hizmetlerinin karmaşık yapısı birleştiğinde hem bakım hizmeti alanlar hem de bakım hizmeti verenlerin pek çok zorlukla karşılaşması muhtemeldir.

Ayrıca yaşlıların ihtiyaç duyduğu bakım hizmetleri uygulamalarının çeşitliliğinden dolayı yaşlıların bakım hizmetlerine erişim yolları da farklıdır. Bu gerçek, tüm yaşlılara gereken bakım sağlanmasında birçok ahlaki soruyu gündeme taşımaktadır (Tronto, 1998).

Bakım etiği anlayışının hüküm sürdüğü bir yaşlı bakım sisteminde, yaşlıların ihtiyaçları ahlaki boyutlarda karşılanmış olacak ve bakım verenler arasındaki cinsiyetçi ayrımların da önüne geçilmiş olacağı beklenir. Ücretsiz bakımı geleneksel olarak kadına atfeden algılarla savaşan feminist bilim insanlarının savunduğu bakım etiği yaklaşımı, kadınların ekonomik fırsatları kaçırmaması, kendine daha çok zaman ayırması ve en önemlisi emeğinin karşılığını almasına yöneliktir. Öyleyse bakım sistemlerinin kadın merkezci yapısı, bakım etiği anlayışı ile eşitliğe kavuşabilir ve toplum refahına katkı sağlanabilir.

Yaşlılar, diğer nüfus gruplarına göre özel ihtiyaçlara sahip olsalar da onları, herkesin bakıma muhtaç olduğu daha geniş bağlamdan ayrı olarak düşünmek doğru değildir. Ahlaki boyutların, sevginin, ilginin, şefkatin vb. duyguların ön plana çıktığı bakım etiği anlayışıyla inşa edilmiş bir bakım sisteminde bakım verenler ve bakım alanların çıkarlarının uzlaşması beklenerek yaşlılıkta daha iyi bir yaşam sürecinin, bakım hizmetleri yoluyla sağlanabileceğini bilmek önem kazanacaktır.

5. SONUÇ

Dünyanın tüm bölgelerinde erkekler, ücretli bakım işlerinde önemli rol oynarken, çoğunlukla ücretsiz bakım işine katılımları oldukça düşüktür. Kadınlar ise ücretsiz bakım işinin büyük kısmını yapmaktadır. Bu durum toplumsal bir eşitsizlik yaratmakta hem bakım alan yaşlılar için hem de bakım veren bilhassa kadınlar için hoş olmayan sorunlar yaratmaktadır. Yaşlı bağımlılığının artmasıyla her geçen gün bu tarz sorunların artması da beklenmektedir. Yaşlanma ile ortaya çıkan sorunların önemli kısmı ahlaki sınırların ihlal edilmesinden kaynaklanmaktadır. Bakım işini bakım etiği ile ele almak hem bakım verenler hem alanlar hem de devlet ve tüm toplum için sorunların çözülmesine zemin hazırlayacaktır.

Dünya nüfusunun yaşlı nüfusa doğru eğilimi dikkate alındığında, bakım talebinin sürekli artma eğiliminde olduğu açıkça görülmektedir. Bu durumda bakım emeği ve ona ilişkin tüm faktörler, her geçen gün önem kazanmaktadır. Bakımın hanede başlaması en temel bakım hizmetinin ücretsiz bakım hizmetleri olduğunu kabul etmeyi sağladığından, ücretsiz bakım işini tanımak, azaltmak ve yeniden dağıtmak, bakım verenler ile bakım alanların huzurunu oluşturacak, toplumsal refahı sağlamada önemli olacaktır. Toplumsal refahı sağlayacak bu faktörler ise ahlaki boyutu yüksek bir bakım anlayışının varlığıyla mümkün olabilir. Bu nedenle küresel bir bakım etiğinin tüm dünyada hâkim olması gerekmektedir.

KAYNAKÇA

Australian Institute of Health and Welfare. (2014). Australia's health 2014. Canberra: AIHW: Australia's health series no. 14. Cat. no. AUS 178.

Chacón, C., Bartolomé, M., Font, S., & Cabrera, E. (2019). How to Undertake Aging in a Healthy Way: Changes and Opportunities. Aquichan.

DCED. (2019, Kasım 1). Gender lens investing: An introduction. WEEWG Briefing: https://www.enterprise-development.org/wp-content/uploads/Unpaid-care-work-WEEWG-briefing-November-2019.pdf

Gilligan, C. (1993). In a Different Voice: Psychological Theory and Women's Development. Cambridge: Harvard University Press.

ILO. (2018). Care Work And Care Jobs For The Future Of Decent Work . Geneva: International Labour Organization .

ILO. (2019, September 26). Advancing social justice, promoting decent work. International Labour Office: https://www.ilo.org/global/about-the-ilo/multimedia/maps-and-charts/enhanced/WCMS_721348/lang--en/index.htm

International Labour Organization. (2018). Global Wage Report 2018/19. Geneva: ILO

Kurt, G., Beyaztaş, F. Y., & Erkol, Z. (2010). Yaşlıların Sorunları ve Yaşam Memnuniyeti. Adli Tıp Dergisi, 24(2), 32-39.

Resnik, D. B. (2004). Bilim Etiği (1. b.). (V. Mutlu, Çev.) Ayrıntı Yayınları.

Sarıipek, D. B., & Ayhan, E. E. (2021). Yaşlıların Uzun Dönemli Bakım Hizmetleri Yoluyla Sosyal İçermesi ve Eşiktelik Yaklaşımı. Sosyal Güvenlik Dergisi, 11(1), 55- 68.

Sevenhuijsen, S. (1998). Citizenship and the Ethics of Care: Feminist Considerations on Justice, Morality and Politics. New York: Routledge.

Tronto, J. C. (1993). Moral Boundaries: a Political Argument for an Ethic of Care. New York: Routledge.

Tronto, J. C. (1998). An Ethic of Care. Journal of the American Society on Aging, 22(3), 15-20.

United Nations, Department of Economic and Social Affairs, Population Division. (2019). World Population Ageing 2019: Highlights. New York: United Nations.

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GİRİŞİMCİLİK EĞİTİMİ VE BECERİ EDİNDİRME KURSLARININ KADINLARIN GİRİŞİMCİLİK NİYETİ ÜZERİNDEKİ ETKİSİ: AİLE DESTEK MERKEZLERİ ÜZERİNE BİR ARAŞTIRMA

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ÖZET
Girişimci olmak gerçekten doğuştan var olan kişisel bir özellik midir yoksa birey çevresel faktörler ya da kişinin aldığı eğitimler sonucunda mı oluşmaktadır? Bu soru temelinde birçok araştırma yapılmakta ve girişimciliği etkileyen unsurların neler olduğu tespit edilmeye çalışılmaktadır. Her ne sebeple olursa olsun girişimciliği etkileyen çok fazla faktör mevcuttur. Yapılan çeşitli araştırmalara ortaya konan bu faktörlerden birisi de araştırmaya konu edilen cinsiyet değişkenidir. Ülkemizde girişimcilik eğitimleri yoluyla girişimcilik davranışını ve niyetini geliştirmeye yönelik çalışmalar yürütülmektedir. Kadınların iş ve sosyal hayata entegrasyonun sağlanması belirli oranda yürütülen bu çalışmaların başarısı ile mümkün olabilmektedir. Kadınların girişimcilik niyetini etkileyen unsurlar ve bu unsurlar ile kadın girişimcilik niyeti arasındaki ilişkinin tespit edilmesi önemlidir. Bu ifadeler temelinde, çalışmanın amacı Aile Destek Merkezlerinde kursiyerlere verilen girişimcilik eğitimlerinin kadınların girişimcilik niyetlerinde istatiksel olarak anlamlı bir farklılık oluşturup oluşturmadığını belirlemektir. Araştırmada Aile Destek Merkezinde beceri edindirme kursları katılmış ve girişimcilik eğitimi almış olan 78 kadına Girişimcilik Niyeti Ölçeği uygulanmıştır. Katılımcıların aldığı girişimcilik eğitimlerinin öncesi ve sonrası girişimcilik niyetlerindeki değişimleri tespit edebilmek için bağımlı örneklem t testi uygulanmıştır. Araştırmanın sonucunda, kadınların aldığı girişimcilik eğitimi sonrası girişimcilik niyetlerinin, eğitim öncesi girişimcilik niyetlerinden anlamlı bir şekilde yüksek olduğu tespit edilmiştir. Araştırmanın sonuç kısmında uygulayıcılara yönelik çeşitli öneriler sunulmuştur.
Anahtar Kelimeler: Kadın Girişimciliği, Kadın Girişimcilik Niyeti, Girişimcilik Eğitimi, Beceri Edindirme Kursları

THE EFFECT OF ENTREPRENEURSHIP EDUCATION AND SKILLS DEVELOPLMENT COURSES ON WOMEN'S ENTREPRENEURSHIP INTENTION: A CASE STUDY OF FAMILY SUPPORT CENTER

ABSTRACT
Is being an entrepreneur really an innate personality trait or does the individual result from environmental factors or the education? On the basis of this question, researchers is carried out and it is tried to determine what factors affect entrepreneurship. Whatever the reason, there are many factors that affect entrepreneurship intention or behavior. One of these factors revealed in various researches is gender which is the subject of the research. In Turkey, various studies are carried out to improve entrepreneurial behavior and intention through entrepreneurship education. Integration of women into business and social life is possible with the success of these studies carried out to a certain extent. It is important to determine the factors affecting women's entrepreneurial intention.

On the basis of these statements, the purpose of the study is to determine whether entrepreneurship education in the Family Support Centers creates a statistically significant difference in the entrepreneurial intentions of women. In the study, the Entrepreneurial Intention Scale was applied to 78 women who attended skill development courses at the Family Support Center and received entrepreneurship education. In order to determine the changes in the entrepreneurial intentions of the women before and after the entrepreneurship education they received, the paired sample t-test was applied. As a result of the analyzes, it was determined that the entrepreneurial intentions of women after entrepreneurship education were significantly higher than the entrepreneurial intentions before the education. In the conclusion part of the study, various suggestions for practitioners were presented.
Keywords: Women's Entrepreneurship, Women's Entrepreneurship Intention, Entrepreneurship Education, Skill Development Courses

1.Giriş

Girişimciliğin ülkemizin sosyo-ekonomik gelişimine katkısı ve desteği büyük bir önem arz etmektedir. Rekabetin hızla kıskaca girdiği bir dünyada ülkemizin girişimciliği destekleyen ve özendiren devlet politikaları yürütmesi ise kaçınılmazdır. Özellikle kadınlara yönelik bu alanda düzenlenen kurslar ve faaliyetler bunun önemli göstergelerinden biridir.

Sosyal devlet olmanın gereği olarak özellikle dezavantajlı grupta bulunan kadınlara yönelik açılan Aile Destek Merkezleri ülkenin sosyo-ekonomik gelişimine destek olmaktadır. Kendi öz yeterliliklerinin ve becerilerinin farkında olmayan kadınların bu kurslar ve eğitimlerle yeni üretim araçlarını keşfetmeleri, ürünler ve hizmetler ortaya koymaları bölgesel ve ulusal kalkınmaya katkı sağlayacaktır. Girişimcilik eğitimleri ile kadınlara sağlanan destekler bu etkinin gücünü artırabilecektir. Bu bağlamda da girişimciliğin kadınlar üzerindeki etkisi daha fazla karşılık bulacak ve her bir girişimcilik faaliyeti diğer girişimcilik niyetine sahip kadın için özendirici bir unsur olacaktır.

Hızla önem kazanan ve yükselişe geçen kadın girişimcilik, sadece geri kalmış ve gelişmekte olan bölgeler açısından değil aynı zamanda gelişmiş bölgeler açısından da ciddi bir öneme sahiptir. Bölgesel kalkınmada ve bölgenin sahip olduğu dinamiklerin harekete geçirilmesinde girişimciliğin geliştirilmesi son derece önem arz etmektedir. Şüphesiz bu potansiyelin en önemlilerinden biri de kadın girişimciliğidir. Kadın girişimcilik kadınların kendi kazançlarını elde ederek ekonomik bağımsızlıklarını kazanmalarında önemli bir araç olmaktadır. Bunun yanı sıra kadınların iş hayatına ve dolayısıyla ülke ve bölge ekonomisine sunduğu katkı yönüyle de önemli bir yere sahiptir. Ayrıca kadın girişimciler, girişimcilik faaliyetleri ile ekonomik ve toplumsal hayata katma değeri yüksek ürün ve hizmetler ortaya koyarak ülke ekonomisinin geliştirmesinde önemli bir kaldıraç kuvveti oluşturabilir.

Ülkemizde son yıllarda kadın girişimciliğini desteklemek ve artırmak amacıyla kamu ve sivil toplum kuruluşları tarafından projeler yürütülmekte ve çeşitli destekler sağlanmaktadır. Bu durumun altında yatan temel sebep kadın girişimcilik faaliyetlerinin erkeklere oranla henüz istenilen seviyede olmamasıdır. Bu nedenle özellikle son yıllarda kamu ve yerel idareler tarafından kadınların sosyal hayata entegrasyonu ve mesleki ve sosyokültürel gelişimleri ve bilgi düzeylerindeki artışı sağlamak amacıyla açılan destek ve kültür merkezlerinin artan sayısı göze çarpmaktadır.

Bu ifadeler ışığında çalışmanın amacı kadınların sosyal hayata entegrasyonu ve istihdama katkısını artırmaya yönelik açılan Aile Destek Merkezlerinde verilen girişimcilik eğitimlerinin kadınların girişimcilik niyetlerine olan etkisini tespit etmektir.

1.Girişimci ve Girişimcilik Kavramı

Girişimcilik girişim kavramının işlevsellik kazandığı hali olarak tanımlanabilmektedir. Diğer bir ifadeyle girişimcinin kar elde etmek amacı ile risk üstlenerek üretim faktörlerini bir araya getirmesidir. Girişimcilik kavramının gelişmesinin temelinde insan bulunmaktadır. Bu durum girişimciliğin gelişmesi insan ve insana etki eden birçok faktörü içinde barındırmasına neden olmaktadır. Hâkim sosyo-kültürel yapı, yaşanan örf ve adetler bu faktörlere örnek olarak verilebilir. Toplumun kendi dinamikleri ile girişimcilik yeteneklerinin gelişmesine imkân sağlaması dolaylı olarak toplumsal kalkınmanın da önünü açmaktadır (Özcan ve Taş, 2010).

2.Kadın Girişimciliği Kavramı

Araştırmalar, Türkiye'de kadın girişimciliğin ilk olarak 19.yy. başlarına dayandığı ve yaklaşık olarak II. Meşrutiyetin ilan edildiği dönemlerde başladığını, 1980'li yıllara gelindiğinde ise kadın girişimciliğin hızlandığı ve ülkede kendine bir yer edinmeye başladığını söylemektedir (Gökakın, 2000). Diğer bir araştırmada ise Çakıcı (2004) Türkiye'de kadın girişimciliğin 1990'lı yılların başından itibaren hızlı bir gelişme ve büyüme ivmesi kazandığını belirtmiştir. Özellikle 1990 yılında evli kadınların eşlerinden bağımsız olarak iş kurabilmesine imkân tanıyan 'eş izni' şartının Türk Medeni Kanunundan kaldırılması ve Çalışma ve Sosyal Güvenlik Bakanlığı bünyesinde kurulan Kadının Statüsü Genel Müdürlüğü (KSGM) faaliyetlerinin bu gelişmedeki katkısı büyüktür. Günümüz Türkiye'sine bakıldığında ise artık kadının sadece belli bir meslek ya da faaliyet kolunda çalışan bir iş gücü, emekçi olmadığı, aynı zamanda kendi işini kurabilen bir girişimci olarak iş dünyasındaki yerini aldığı görülmektedir (Narin vd., 2006). Fakat kadının sadece eğitim gördüğü alanda kendi mesleğini icra etmesi girişimcilik olarak kabul edilemez. Kendi iş fikri için bireysel olarak tüm riski üstlenen, kendi kurduğu ya da sahibi olma vasfı ile ortağı olduğu şirketin gelecek planlarını yapabilen kişi olması gerekmektedir (Ecevit, 1993). Kadınları girişimciliğe yönlendiren en temel faktör gelir elde etme amacıdır. Erkek girişimciliğine etki eden faktörlere benzer olarak işsizlik ve ekonomik seçeneklerde yaşanan darboğaz kadınları girişimciliğe iten önemli faktörler arasında yer almaktadır (Keskin, 2014).

3. Aile Destek Merkezleri ve Kadın Girişimciliği

Beşerî sermayenin korunması, gelişimi ve yoksulluğun nesiller arası aktarımının önüne geçilmesi yoksullukla mücadeledeki hedeflerden en önemlisidir. Aile Destek Merkezleri 3294 sayılı kanun kapsamındaki fakru zaruret halinde bulunan kadınlara yönelik açılan merkezlerdir. Nüfusu 10.000'i geçen yerlerde hizmet vermek üzere açılmaktadır. Her 50.000 nüfusa kadar bir adet olmak üzere açılabilir. Kadınların sosyal hayata entegrasyonu ve mesleki ve sosyokültürel gelişimleri ve bilgi düzeylerindeki artış sağlamak temel amaçlar arasındadır (SYGM, 2018).

2019 yılı verilerine göre, Güneydoğu Anadolu ve Doğu Anadolu bölgeleri öncelikli olmak üzere Türkiye'nin birçok bölgesinde kadınlara psikososyal, mesleki ve kişisel yönden gelişimlerine destek olmak amacıyla 31 ilde 116 Sosyal Yardımlaşma ve Dayanışma Vakfına bağlı olarak 201 Aile Destek Merkezi açılmıştır. ADEM'lerde kurslara katılan kadınlar, mesleki eğitimin ardından ilgili kurumların verdiği hibe ve kredilerle kendi iş yerini kurabilmektedir. Ayrıca kurslarda eğitim gören kadınlara İŞKUR tarafından günlük eğitim ücreti ödenmektedir. Bu ücret sayesinde merkez kursiyeri kadınlar belirli düzeyde aylık gelir elde edebilmektedir.

Aile Destek Merkezlerinde sosyal, kültürel, mesleki ve sportif olmak üzere 4 ana başlık altında kurslar verilmektedir. Kurslarda kadınlara aşçılık, pastacılık, kuaförlük vb. eğitimleri alabilmektedir (https://www.ailevecalisma.gov.tr).
İfade edilen tüm bu unsurlar Aile Destek Merkezlerinin kadınların sosyal ve kültürel gelişimlerinin yanı sıra girişimcilik yolunda belirli düzeyde ivme kazandırabilecek bir merkez olduğunu göstermektedir.

4. Yöntem

Araştırmada çalışma verileri yüz-yüze anket yöntemi ile elde edilmiştir. Araştırma verilerinin analizinde SPSS 22 ve AMOS 23 istatistik programları kullanılmıştır. Araştırma hipotezlerini test etmek amacıyla tek gruplu ilişkili ön test- son test analizi uygulanmıştır.

4.1. Araştırmanın Amacı

Bu çalışmanın amacı beceri eğitim ve kurs merkezlerinde girişimcilik eğitimi alan kadınların girişimcilik niyetlerindeki değişimi belirlemektir. Bu amaç doğrultusunda çalışmanın araştırma hipotezi;
H1: Beceri edindirme kurslarına katılan kadınların girişimcilik eğitimi öncesi ve sonrası girişimcilik niyetlerine ilişkin ölçüm sonuçları arasında istatistiksel olarak anlamlı bir fark vardır.

4.2. Araştırma Örneklemi

Araştırmanın örneklemini Tokat Aile Destek Merkezinde beceri kurs ve eğitimlerine katılan 78 kadın oluşturmaktadır. Katılımcıların demografik özelliklerine ilişkin bulgulara bakıldığında eğitim ve kurslara katılan kadınların 27-52 yaş aralığında bulunduğu, örneklem grubunun ortalama yaşının 40,8 olduğu tespit edilmiştir. Katılımcıların 36'sı ilköğretim mezunu, 33'ü lise mezunu, 6'sı ön lisans, 3'ü lisans mezunudur. Katılımcıların 72'si evli 6 'sı bekardır. Katılımcıların 18'i daha önce bir meslek kolunda sosyal güvence kapsamında çalıştığını beyan etmiştir.

4.3. Veri Toplama Araçları ve Verilerin Toplanma Süreci

Araştırmada toplam üç bölümden oluşan bir anket formu uygulanmıştır. Anket formunun ilk bölümünde katılımcılardan aile destek merkezlerindeki kurs ve eğitim programlarına katılma neden ya da nedenleri kısa cümlelerle/kelime grupları ile ifade etmesi istenmiştir. İkinci bölümde 5'li Likert tipi derecelendirme ölçeğine göre hazırlanmış Girişimcilik Niyeti Ölçeği yer almaktadır. Son bölümde ise katılımcıların demografik özelliklerini (yaş, eğitim durumu, medeni durum, meslek durumu) belirlemek amacıyla açık ve kapalı uçlu sorular yöneltilmiştir.
Girişimcilik Niyeti Ölçeği: Araştırmada Linan ve Chen (2009) tarafından geliştirilen, altı ifade ve tek boyuttan oluşan Girişimcilik Niyeti Ölçeği kullanılmıştır. Ölçeğin Türkçe uyarlaması Şeşen ve Basım (2012) tarafından yapılmıştır. Ölçeğin yapısal geçerliliğini test etmek amacıyla doğrulayıcı faktör analizi yapılmıştır. İlk test verileri ile yapılan birincil düzey doğrulayıcı faktör analizi neticesinde ölçeğin kabul edilebilir uyum iyiliği (x2/df: 4,236, RMSEA: ,064, NFI: 0,953, CFI: 0,964, GFI: 0,934) değerlerine sahip olduğu tespit edilmiştir. Ölçeğin Cronbach alfa iç tutarlılık katsayısı ön test için 0,924 son test için 0,943 olarak tespit edilmiştir.

Araştırmada veri toplama sürecinde Tokat Aile Destek Merkezinde beceri kurs ve eğitimleri almaya gelen kadınlara Linan ve Chen (2009) tarafından geliştirilen Girişimcilik Niyeti Ölçeği uygulanmıştır. Beceri kursları ve eğitimlerine katılan kadınlara 6 saatlik temel girişimcilik eğitimi verilmiştir. Bu eğitimin ardından ön testte uygulanan Girişimcilik Niyeti Ölçeği katılımcılara tekrar uygulanmıştır.

4.4. Bulgular

Çalışmada ilk olarak katılımcılardan Aile Destek Merkezlerindeki kurs ve eğitim programlarına katılma neden ya da nedenlerini kısa cümlelerle/kelime grupları ile ifade etmesi istenmiştir. Elde edilen bulgular Tablo 1'de özetlenmektedir.

Tablo 1: Kadınları Aile Destek Merkezlerinde Kurs ve Eğitim Programlarına Katılma Nedenleri

	Frekans Değeri	**Yüzdelik Oranı**
Bir Meslek Kolunda Beceri Kazanmak	15	19,2
Üretmek, Aile Bütçesine Katkı Sağlamak	27	34,6
Hobi Edinmek	36	46,2

Tablo 1' den elde edilen bulgulara göre katılımcıların kurs ve eğitim programlarına katılma nedenleri üç ana başlık altında toplanmıştır. Katılımcıların %19,2 bir meslek kolunda beceri kazanmak, %34,6'sı üretmek, aile bütçesine katkı sağlamak, %46,2 sinin ise bir hobi edinmek amacıyla kurs ve eğitim programlarına katıldığı tespit edilmiştir.

Çalışmanın bu aşamasından sonra H1 hipotezinin testine ilişkin analizlere geçilmiştir. Yapılan ön test ve son test sonuçlarına ait bulgular Tablo 2' de sunulmuştur.

	n	**X**	**SS**	**t**	**p**
Ön Test	78	15,26	1,004		
Son Test	78	20,23	1,006	2,36	,02*

*p<0,05

Tablo 2 incelendiğinde alınan girişimcilik eğitimi sonrası kadınların girişimcilik niyet (t: 2,36; p= ,02) puan ortalamaları istatistiksel olarak anlamlı bulunmuştur. Kadınların girişimcilik niyeti son test puan ortalamaları (X:20,23), ön test puan ortalamalarından (X:15,26) daha yüksek olduğu tespit edilmiştir. Bu sonuçlara göre beceri edindirme kurslarında alınan girişimcilik eğitiminin kadınların girişimcilik niyeti üzerinde anlamlı bir artış sağladığı ifade edilebilir. Bu sonuçlar temelinde H1 hipotezi desteklenmektedir.

5. Sonuç ve Öneriler

Araştırma bulgularından elde edilen sonuçlar temelinde kadınların %53,8 'inin üretmek, gelir elde ederek aile bütçelerine katkı sağlamak ya da bir meslek dalında beceri edinmek nedenleri ile aile destek merkezlerinde verilen kurslara katıldığını ifade etmiştir. Bu sonuçlar önemli bir oranda beceri kurslarına katılan kadınların üretim yapmak ve iş kurmak gayretinde olduğunu göstermektedir.

Araştırmada aile destek merkezlerindeki kurslara katılan kadınlara yönelik verilen girişimcilik eğitimlerinin kadınların girişimcilik niyetleri üzerinde anlamlı bir artışa neden olduğu tespit edilmiştir. Bu sonuçlar yerel ve mülki idari yönetimleri tarafından açılan kültür merkezleri ve aile destek merkezlerinde girişimcilik eğitim programlarının düzenlenmesi gerekliliğini ortaya koymaktadır. Bu merkezlerde beceri edindirme kurslarının yanı sıra kadınlara belirli periyodlarla düzenli olarak girişimcilik eğitimi verilmelidir. Bu girişimcilik eğitimleri sayesinde kadınların girişimcilik kabiliyetleri ve niyetleri artacaktır.

KAYNAKÇA

Aile, Çalışma ve Sosyal Hizmetler Bakanlığı Resmi Web Sitesi, (2020). https://www.ailevecalisma.gov.tr/tr-tr/haberler/kadinlarimiz-adem-projemizle-meslek ediniyor/.

Çakıcı, A. (2004). Kadın Girişimcilerin İşletme Fonksiyonlarındaki Etkisinin Belirlenmesine Yönelik Bir Araştırma. Yönetim Bilimleri Dergisi 2(1).

Ecevit, Y. (1993). Kadın Girişimciliğinin Yaygınlaşmasına Yönelik Bir Model Önerisi: Kadın Girişimciliğini Özendirme ve Destekleme Paneli Bildiriler ve Tartışmalar, Devlet Bakanlığı Kadın ve Sosyal Hizmetler Müsteşarlığı: Kadının Statüsü ve Sorunları Genel Müdürlüğü, Eğitim Semineri, Yayın No: 74, 30-35.

Gökakın, Z.Ö. (2000). Doksanlı Yılların Yeni Kahramanları: Türkiye'de Girişimci Kadın Profili, 8. Yönetim ve Organizasyon Kongresi Bildiriler Kitabı, Nevşehir.

Keskin, S. (2014). Türkiye'de Kadın Girişimcilerin Durumu. Girişimcilik ve Kalkınma Dergisi 9(1): 71-94.

Liñán, F., & Chen, Y. W. (2009). Development and Cross–Cultural Application of a Specific Instrument to Measure Entrepreneurial Intentions. Entrepreneurship Theory And Practice, 33(3), 593-617.

Mungan, S. (2013). Kadın Girişimcilik Değerleri ile Kadın Girişimcilik Algısı Arasındaki İlişkide Girişimcilik Eğitimlerinin Rolü. T.C. Marmara Üniversitesi Sosyal Bilimler Enstitüsü İşletme Anabilim Dalı Yönetim ve Organizasyon Bilim Dalı Yayınlanmamış Yüksek Lisans Tezi.

Narin, M., Marşap A., & Gürol M. A. (2006). Global Kadın Girişimciliğinin Maksimizasyonunu Hedefleme: Uluslararası Arenada Örgütlenme ve Ağ Oluşturma, Gazi Üniversitesi İ.İ.B.F. Dergisi 8(1):65-78.

Özcan, S. & Taş, H. (2010). Kendi İşini Kurma ve Girişimcilik Ruhu. M. Öztel, ve H. Burgazoğlu (Dü.). içinde (s. 585-589). Kırklareli: Kırklareli Üniversitesi Rektörlüğü.

SYGM, (2018). Adem Projesi Uygulama Genelgesi Aile Çalışma Ve Sosyal Hizmetler Bakanlığı Sosyal Yardımlar Genel Müdürlüğü.

Şeşen, H., & Basım, H. N. (2012). Demografik Faktörler ve Kişiliğin Girişimcilik Niyetine Etkisi: Spor Bilimleri Alanında Öğrenim Gören Üniversite Öğrencileri Üzerine Bir Araştırma. Ege Akademik Bakış, (12):21-28

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FİNANSAL GELİŞMİŞLİK VE GELİR DAĞILIMI BAĞLAMINDA TÜRKİYE'NİN FİNANSAL KUZNETS EĞRİSİ

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Özet
Çalışmada gelir dağılımı ile finansal gelişme ilişkisinden yola çıkarak Finansal Kuznets Eğrisi hipotezinin ve klasik kuznets eğrisinin Türkiye ekonomisi için geçerliliğini sınamaktır. Bu amaçla ARDL sınır testi yaklaşımı tercih edilmektedir. Analizden elde edilen bulgulara göre Türkiye'de finansal Kuznets eğrisinin var olduğu ve gelir dağılımı ile finansal gelişmişlik seviyesi arasındaki ilişkinin ters U şeklinde olduğu sonucuna ulaşılmıştır. Yine elde edilen sonuçlara göre gelir dağılımı ile GSYİH değişkeni arasındaki ilişki ters U şeklinde olmayıp klasik kuznets eğrisi Türkiye'de geçersizdir. Özellikle Finansal Kuznets Eğrisi hipotezinin geçerli olduğu Türkiye ekonomisinde gelir dağılımında var olan adaletsizliğin ve eşitsizliğinin azaltılması amacına yönelik politikalar benimsenecekse ekonomik büyümeden ziyade önceliğin finansal gelişmenin arttırılmasının verilmesinin daha akılcı bir ekonomi politikası olacağı anlaşılmaktadır.
Anahtar Kelimeler: Gelir Dağılımı, Finansal Kuznets, ARDL Sınır Testi

TURKEY'S FINANCIAL KUZNETS CURVE IN CONTEXT OF FINANCIAL DEVELOPMENT AND INCOME DISTRIBUTION

Abstract
The aim of the study is to test the validity of the Financial Kuznets Curve hypothesis and the classical Kuznets curve for the Turkish economy based on the relationship between income distribution and financial development. For this purpose, ARDL limit test approach is preferred. According to the findings obtained from the analysis, it was concluded that there is a financial Kuznets curve in Turkey and the relationship between income distribution and financial development level is in an inverted U shape. In addition, according to the results obtained, the relationship between income distribution and GDP variable is not in an inverted U shape and the classical Kuznets curve is invalid in Turkey. If a policy to reduce income inequality is to be followed, especially in the Turkish economy, where the Financial Kuznets Curve hypothesis is valid, it is understood that it would be a more rational policy to increase financial development rather than economic growth in these countries.
Keywords: Income Distribution, Financial Kuznets, ARDL Bounds Test

Giriş

Ekonomi yönetiminde söz sahibi olanların temel görevlerinden biri gelir dağılımlarında meydana gelen uçurumları ortadan kaldırmaktır. Özellikle liberal politikaların da etkisiyle kalkınmanın itici güçlerinden birini de finansal gelişmeler oluşturmaktadır. Finansal gelişme temel olarak bankacılık ve hisse senedi piyasalarının yanında finansal aktiflere yatırım yapılabilen, aynı zamanda borçlanmak isteyenlere çeşitli fon ve kredilerin sağlandığı sektördür. Bu sektörde hem iç hem de dış kaynaklar yer almaktadır.

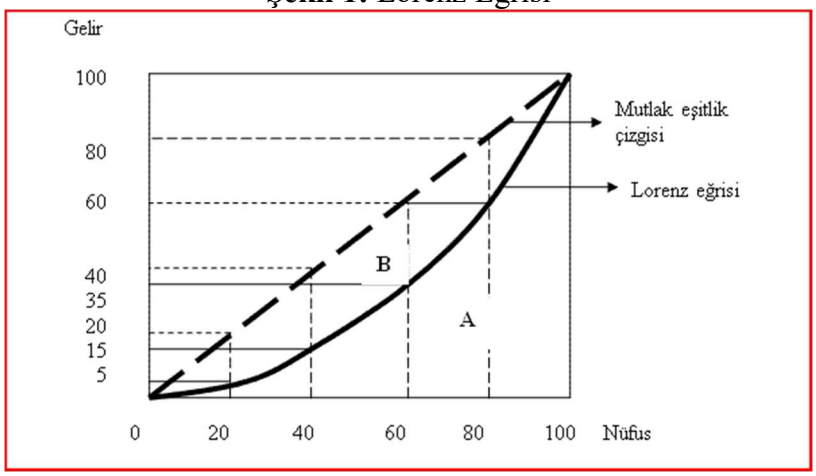
Finansal gelişme ile tasarruf sahipleri fonlarını daha etkin kullanmakta, böylece tasarruflar yatırımlara dönüştürülerek ekonomi daha iyi bir performans gösterebilmektedir
Türkiye'de kişisel gelir dağılımı konusundaki bilimsel çalışmaların betimleyici olmalarının temel nedeni konuyla alakalı sınırlı sayıda yapılan anketler ve dolayısıyla veri yetersizliğidir. Bundan dolayı Türkiye'de gelir dağılımının seyrine yönelik bilgiler oldukça sınırlıdır. Bu eksikliğin giderilmesi, gelir dağılımındaki seyrin ve bilhassa büyüme ve gelir dağılımı ilişkilerin bilinmesi ve buna dönük politikaların geliştirilmesi açısından önem taşımaktadır. Çalışmada Türkiye ekonomisi için finansal gelişim, ülkede kullandırılan toplam krediler ve doğrudan yabancı yatırımları ile gelir dağılımı arasındaki ilişkinin 1992-2019 yılları için analizi amaçlanmaktadır. Bunun yanında klasik ve finansal kuznets eğrilerinin geçerliliği büyüme ve finansal gelişim endeksi değişkenleri ve bu değişkenlerin kareleri ile analiz edilmektedir. Ulusal ve uluslararası literatürde finansal ve klasik kuznets eğrilerini aynı anda inceleyen çalışmaların yok denecek kadar az olması nedeniyle çalışmanın literatüre katkı sağlayacağı düşünülmektedir. Ayrıca kredi kullanımı ve doğrudan yabancı yatırımcı değişkenlerinin de analize eklenmesiyle çalışmanın özgünlüğünü arttıracağı beklenmektedir. Bu amaç doğrultusunda çalışmanın ilk aşamasında teorik çerçeve ele alınacak olup bir sonraki bölümde ulusal ve uluslararası literatüre yer verilecektir. Son bölümde ise ekonometrik analizle değişkenler arası ilişkiler analiz edilip tahminler raporlanacaktır.

1. Kuznets Hipotezi. Gelir Dağılımı Ölçüm Yöntemleri ve Türkiye'nin Gelir Dağılımındaki Gelişmeler

Simon Kuznets (1955), iktisadi büyüme ve kalkınmayla beraber gelir dağılımında önce bozulma meydana geleceğini fakat gelir artışı devam ettikçe gelir dağılımındaki adaletsizliğin azalacağını ileri sürmüştür. Kuznets'e göre gelişmekte olan ülkelerde gelir gelişmiş ülkelere göre daha dengesiz dağılım göstermektedir. Bunun sonucunda ekonomik kalkınmanın başlangıcında büyüyen gelir eşitsizliği kalkınma aşamasının ileri aşamalarını olumsuz yönde etkileyecektir (Kuznets, 1955: 1-15). Ters U şeklinde gösterilen bu eğri ilerleyen zamanlarda daha başka değişkenler arası ilişkilere de uyarlanmıştır. Panayotou (1993) tarafından öne sürülen ve literatürde çerveresel kuznets eğrisi olarak adlandırılan durumda kişi başına düşen gelir düzeyi ile çevre kirliliği göstergeleri arasındaki ilk önce doğru, sonra ise zıt yönlü ters-U şeklinde bir seyir izlemektedir. Greenwood ve Jovanovic (1990) ise finansal gelişme ile gelir eşitsizliği arasında benzer bir ilişki olacağını öner sürmüş ve bu ilişkiyi finansal Kuznets eğrisi olarak adlandırmıştır.
Ekonomik gelişmelerde finansal sistemlerin oynadığı rol yadsınamaz. Finansal piyasalarda ödünç alınabilir fonları borç alabilecek durumdaki ekonomik birimlerin söz konusu fonları tüketim ve yatırım harcamalarına yönlendirmeleri ekonomik ve finansal gelişme ve kalkınma üzerinde pozitif bir etki oluşturmaktadır. Finansal gelişme ve kalkınma beşeri ve fiziki birikimini arttırmak suretiyle ekonomik büyümeye katkı sağlamaktadır. Bu bağlamda ülkelerde finansal sistemin gelişmişlik seviyesi gelişime katkı sağlayacak politikaların uygulanması da önem taşımaktadır (Hepsağ, 2017: 135). Finansal gelişme ve kalkınma ile gelir eşitsizliği arasındaki teorik çerçeve Kuznets(1955) görüşleri çerçevesinde iki farklı hipotezle literatüre girmiştir. Bunlardan ilki Greenwood ve Jovanovic (1990) tarafından geliştirilen ters U Eğrisi ikincisi ise Galor ve Zeira (1993) tarafından geliştirilen doğrusal hipotezdir.
Gelir dağılımı eşitsizliğini ölçmek amacıyla 1912 yılında Corrado Gini tarafından geliştirilen Gini katsayısı Lorenz Eğrisinden faydalanmaktadır.

Max Lorenz tarafından geliştirilen Lorenz eğrisi, gelirin nüfusa dağılımındaki eşitsizliğinin grafiksel ifadesidir. Eğri, bir karenin köşegenini uç noktalarda keser. Hesaplamalar sonucu 0 ile 1 arasında bir değer alır ve bu değer eşitsizliğin arttığı anlamına gelir.

Şekil 1: Lorenz Eğrisi



Kaynak: Demir, 2020: Çevrim içi

Şekil 1'de dikey eksen gelirin birikimli paylarını, yatay eksen ise nüfusun birikimli paylarını (%) göstermektedir. Toplumu oluşturan gelirin tümü dikey eksende, geliri paylaşan nüfusun bütünü ise yatay eksende bulunmaktadır. Mutlak eşitlik kesik çizgili 45 derecelik doğru ile gösterilmekte olup doğru üzerindeki tüm noktalar nüfusun belli bir yüzdesi gelirin aynı yüzdesini almaktadır. Bu bağlamda kesikli çizgiden uzaklaşıldıkça gelir dağılımındaki eşitlik de artacaktır. Sol alttan başlayan ilk olarak yatay daha sonra dikey eksen boyunca devam eden ters L şeklindeki iki doğru parçası ise tam eşitsizliği ifade etmektedir. Özetle gini katsayısı 0 ise gelirin nüfusu oluşturanlar arasında mutlak eşitliğe göre dağıldığını gösterirken katsayının bir olması, milli gelirin yurttaşlar arasında tam eşitsiz olarak dağıldığını ifade etmektedir. Herhangi bir dağılım için, lorenz eğrisi birikimli dağılım fonksiyonu F(X) ya da olasılık yoğunluk fonksiyonu f(X) terimleriyle eşitlik (1)'deki gibi ifade edilebilmektedir (Dumlu ve Aydın,2008: 375).

$$\mathbf{L(F)} = \frac{\int_{-\infty}^{x(F)} \mathbf{xf(x)dx}}{\int_{-\infty}^{\infty} \mathbf{xf(x)dx}} = \frac{\int_{0}^{F} \mathbf{x(F')dF'}}{\int_{0}^{1} \mathbf{x(F')dF'}} \qquad (1)$$

Şekil 1 de Lorenz eğrisinde gini Katsayısı, Lorenz eğrisi ile köşegen arasında kalan alanın, tam eşitlik doğrusu altında kalan alana oranıdır. Tam eşitlik doğrusu ile lorenz eğrisi arasında kalan alan şekil 1 de B olarak gösterilmiştir. Lorenz eğrisi altında kalan alan ise A ile gösterilmiştir. Bu bağlamda gini katsayısı eşitlik (2)'deki gibi ifade edilmektedir.

Gini katsayısı=B / (B+A) (2)

Gini katsayısı 0,20 değerinden düşükse düşük eşitsizliği, 0.20-0.50 değerleri arasında olması orta düzeyde eşitsizliği, 0,50 değerinin üzerinde ise yüksek eşitsizliği ifade etmektedir.

Gelir dağılımını ölçme yöntemlerinden biri de yüzde payları yöntemidir. Bu yöntemde haneler %1'lik 100, %5'lik 20, %10'luk 10 ve %20'lik 5 şeklinde gruplandırılmak suretiyle grupların toplam gelirden elde ettikleri paylar kıyaslanır. Bu yöntemin yanında Pareto Katsayısı yöntemi de gelir dağılımı ölçümünde tercih edilmektedir. Pareto katsayısı yöntemi belli gelir seviyesiyle bu geliri elde edenlerin sayısı arasında belirli bir ilişki olduğu düşüncesine dayanmaktadır. Söz konusu katsayı, gelir seviyesi arttıkça bireylerin üst gelir grubuna yükselme olasılığının nasıl arttığını yaklaşık olarak gösteren bir ölçü olarak da yorumlanmaktadır (Kubar,2011:233). Pareto formülü eşitlik (3) teki gibi ifade edilmektedir.

$$N = \frac{A}{X^a} \qquad (3)$$

Eşitlik (3)'te N, geliri olan nüfusu, A parametreyi ve a ise yaklaşık değeri 1,5 olan diğer bir parametreyi ifade etmektedir. Gelir dağılımını ölçmek için kullanılan yoksulluk ölçütlerinden biri de kafa sayısı endeksidir. Kafa sayısı endeksi eşitlik (4)'deki gibi hesaplanmaktadır. (Göğül, 2012:42).

$$\text{Kafa Sayısı Endeksi} = Q/N \qquad (4)$$

Eşitlik (4)'de Q, yoksulluk sınırının altındaki toplam nüfusu ifade ederken N, toplam nüfusu ifade etmektedir. Oranın artması yoksulluğun arttığı anlamına gelmekte olup, oran yoksulluğu karşı uygulanan politikaların başarılı olup olmaması konusunda bilgi vermektedir., Atkinson Eşitsizlik Ölçüsü diğer gelir dağılımı ölçüm yöntemidir.
Türkiye'de her ne kadar milli gelir 10.000 doların üzerinde olsa da gelir dağılımının adaletsiz oluşu en temel problemdir. 1980 kararları sonrasında ihracat odaklı kalkınma stratejisi benimseyen Türkiye'de net ücret gelirinin iş gücü maliyetine oranı istihdam oranını belirleyen önemli bir faktördür. Söz konusu oranın düşük olması, diğer bir ifadeyle emek kesimine yapılan ödemelerin yüksek kamusal kesintilere uğraması nedeniyle ele geçen net tutarın düşüktür. 90'lı yıllarla birlikte meydana gelen sermaye hareketliliğindeki artış makroekonomik göstergelerdeki bozulmada önemli bir rol oynamıştır. Türkiye ekonomisi son yıllarda gelir dağılımı konusunda önemli aşamalar kaydetmesine rağmen, sorun tam olarak çözüme kavuşturulamamıştır. Bu durum Tablo 1'den izlenebilmektedir.

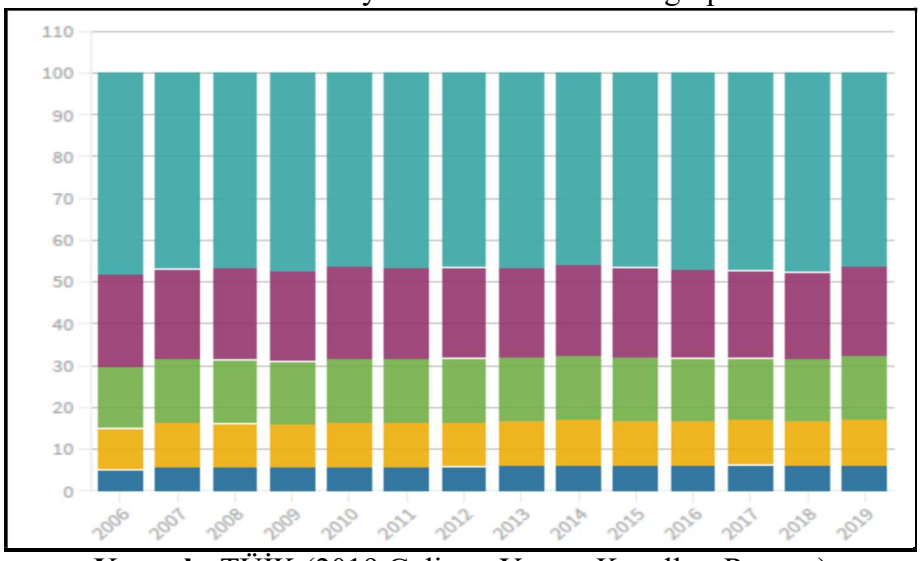
Tablo 1: Türkiye'nin Gini Katsayısı ve P80/P20 Oranı (2006-2019)

Tarih	Gini katsayısı	P80 / P20 Oranı
2006	0,428	9,6
2007	0,406	8,1
2008	0,405	8,1
2009	0,415	8,5
2010	0,402	7,9
2011	0,404	8,0
2012	0,402	8,0
2013	0,400	7,7
2014	0,391	7,4
2015	0,397	7,6
2016	0,404	7,7
2017	0,399	7,5
2018	0,408	7,6
2019	0,395	7,4

Kaynak: TÜİK (2019 Gelir ve Yaşam Koşulları Raporu)

Tablo 1'e göre görüldüğü gibi 13 yıl içinde gerek gini katsayısı gerekse P80/P20 oranında herhangi bir düzelme olmamıştır. 2006 yılında 0,428 olan gini katsayısı 2019 yılına gelindiğinde 0,395'e, P80/P20 oranı ise 9,6'dan 7,4'ya inmiştir. Diğer bir ifadeyle toplumun en zengin %20'sinin gelirinin en yoksul %20'sinin gelirine oranı şeklinde hesaplanan P80/P20 oranı 2,2 puan azalmıştır.

Grafik 1: Türkiye'de Yüzde 20'lik fert grupları

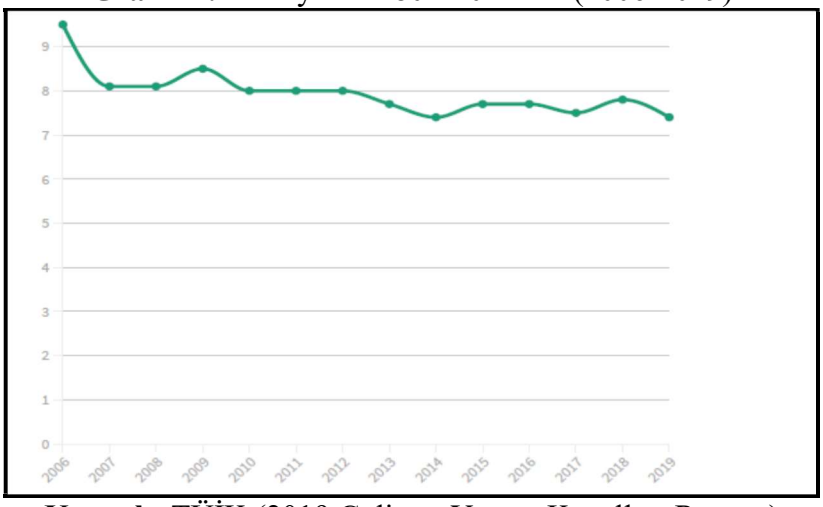


Kaynak: TÜİK (2019 Gelir ve Yaşam Koşulları Raporu)

Grafik 1'de en üstte yer alan bölüm son yüzde %20 'yi (en yüksek fert gelirini) ifade ederken en alttaki bölüm ise ilk %20'yi (en düşük fert gelirini) ifade etmektedir.

Grafik 1'e göre en yüksek gelirli %20'nin toplam gelirdeki payı, 2019 yılında bir önceki yılla karşılaştırıldığında 1,3 puan azalmış ve %46,3 olarak gerçekleşmiştir. En düşük gelirli %20'lik grubun payı da 0,1 puan artarak %6,2 şeklinde gerçekleşmiştir. Bu durum Grafik 2'de izlenebilmektedir.

Grafik 2: Türkiye'de P80/P20 Oranı (2006-2019)



Kaynak: TÜİK (2019 Gelir ve Yaşam Koşulları Raporu)

Grafik 2'deki dikkat çekici nokta 2006 yılına göre son yıllarda istikrarlı olmasa da belli oranda azalışın olmasıdır. Oranın küçülmesi gelir eşitsizliğinin azalması anlamına gelmektedir. TÜİK tarafından 2019 yılına kadar açıklanan bölgesel anlamda Gini katsayısı paylaşımı 2019 yılı itibariyle yerini P80/P20 oranına bırakmıştır. Bu durum Tablo 2'de izlenebilmektedir.

Tablo 2: Türkiye'de Bölgesel Gelir Dağılımı Durumu (2013-2019)

Yıllar	**En Düşük Gini Katsayılı İller ve Bölgeler**	**En Yüksek Gini Katsayılı İller ve Bölgeler**
2013	Doğu Karadeniz 0,315	Akdeniz Bölgesi 0.399
2014	Zonguldak, Karabük, Bartın 0,304	Erzurum, Erzincan, Bayburt 0.413
2015	Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir 0,308	Şanlıurfa, Diyarbakır 0,420
2016	Zonguldak, Karabük, Bartın 0,315	Adana, Mersin 0.414
2017	Erzurum, Erzincan, Bayburt 0,291	İstanbul 0.443
2018	Malatya, Elazığı, Bingöl 0,305	İstanbul 0.444
Yıllar	**P80/P20 Oranına Göre Geliri En Yüksek İl**	**P80/P20 Oranına Göre Geliri En Düşük İl**
2019	İstanbul 7,8	Zonguldak, Karabük, Bartın 4,2

Kaynak: TÜİK tarafından yazar tarafından derlenmiştir.

Tablo 2'ye göre Türkiye'de bölgeler ve iller arasında ciddi farklar olduğu gibi bu farklar yıl bazında da istikrarlı değildir. Gini katsayısı olarak raporlanan 2013-2018 yıllarına bakıldığında en düşük gini katsayılı illerin ortalaması 3, en yüksek gini katsayılı illerin de ortalaması 0,41 dir. 2019 yılını incelediğimizde İstanbul gelir dağılımı eşitsizliğinde 7,8'lik P80/P20 oranı ile geliri en yüksek il sıralamasında ilk sırada yer alırken Zonguldak, Karabük, Bartın 4,2'lik P80/P20 oranı ile gelir dağılımı en düşük iller sıralamasında son üçü paylaşmaktadır. P80/P20 oranı 4,2 olan Zonguldak, Karabük ve Bartın bölgesi, en düşük oranlı şehirler olarak karşımıza çıkmaktadır. Bunun anlamı bu üç şehrin oluşturduğu bölgede gelir eşitsizliğinin görece daha az olmasıdır.

2. Literatür

Chen (2003), Afrika, Asya ve Latin Amerika ülkelerinden seçtiği 43 ülke için Kuznets eğrisinin geçerliliğini analiz ettiği çalışmasında panel veri analizini kullanmış olup değişkenler arasındaki ilişkinin ters-U formunda olduğu sonucuna varmıştır. Ang (2008), Hindistan ekonomisi için finansal Kuznets Eğrisi'nin geçerliliğini 1951-2004 periyodu için analiz ettiği çalışmasında enflasyon, kişi başı GSYH, gini katsayısı ve dışa açıklık değişkenlerini tercih etmiştir. Ulaşılan sonuçlara göre yabancı ve yerli finansal sektör yatırımlarının gelir dağılımı adaletsizliğini arttırdığı anlaşılmıştır. Law ve Tan (2009), Malezya ekonomisi için finansal kuznets eğrisinin geçerliliğini 1980-2000 yılları için analiz ettikleri çalışmalarında ARDL sınır testi yaklaşımını kullanmışlardır. Finansal gelişmişlik, gini katsayısı, kişi başına GSMH, kurumsallaşma ve enflasyon değişkenlerinin analize dahil edildiği çalışmada ekonomik büyüme, artan kurumsallaşma ve azalan enflasyonun gelir dağılımı adaletsizliğini düşürdüğü anlaşılmıştır. Malinen (2012) büyüme ile gelir eşitsizliği arasındaki ilişkiyi incelediği çalışma sonucunda uzun dönemli bir denge ilişkisinin var olduğunu ve bu ilişkinin gelişmiş ülkelerde negatif olduğunu ileri sürmektedir. Hoi ve Hoi (2012), Vietnam ekonomisi için 2002-2008 yıllarını kapsayan analizlerinde gelir dağılımı üzerinde finansal gelişmişliğin etkisini incelemişlerdir. Panel veri ile yapılan analiz sonucunda finansal gelişmişliğin gelir dağılımındaki adaletsizliği azalttığı fakat iki değişken arasında ter U şeklinde bir ilişkinin var olmadığı anlaşılmıştır. Park ve Shin (2015), gelir eşitsizliği üzerinde finansal gelişmişliğin oynadığı rolü 162 gelişmekte olan Asya ülkesi ile 1960-2011 yılları için araştırmışlardır. Panel veri analizinin tercih edildiği çalışmada çalışmada gelir dağılımı ile finansal gelişmişlik ilişkisinin derecesi ve yönü ülkeden ülkeye değişiklik göstermiş olup analize konu tüm ülkelerde ilişkinin U-şeklinde olduğu ifade edilmektedir. Kanberoğlu ve Arvas (2014), Türkiye ekonomisinde gelir dağılımında finansal gelişmişliğin etkisini sınır testi yaklaşımı ile 1980-2012 dönemi için analiz ettikleri çalışmalarında ihracatın ithalatı karşılama oranı, enflasyon, özel sektör kredi kullanımı, GSYİH ve gini değişkenlerini kullanmışlardır. Ulaşılan sonuçlara göre özel sektör kredi kullanımı ve enflasyon değişkenleri gelir eşitsizliğini azaltırken ihracatın ithalatı karşılama oranı değişkeni gelir eşitsizliğini arttırmaktadır. Altunöz (2015) gelir ile finansal kalkınma arasındaki ilişki bağlamında Kuznets eğrisinin geçerliliğini Türkiye için 1991-2014 yılları için analiz ettiği çalışmasında kişi başı GSYİH, ticaret ve özel sektör tarafından kullanılan krediler değişkenlerinin gelir adaletsizliği ile mücadelede olumlu bir etkiye sahip olduğu sonucuna ulaşmıştır. Topuz ve Dağdemir (2016) Kuznets Eğrisi geçerliliğini 94 farklı ülke çin 1995-2011 yılları için analiz ettikleri çalışmalarında Kuznets eğrisinin geçerliliğine ulaşmışlardır. Söz konusu çalışma bulgularına göre Kuznets hipotezini desteklemektedir.

Düşük ve düşük-orta gelirli ülkeler ile üst-orta gelirli ülkelerde gelir eşitsizliği, ekonomik büyüme ile artarken; yüksek gelirli ülkelerde gelir eşitsizliği ekonomik büyüme ile azalmaktadır. Destek vd. (2017) Türkiye için Kuznets eğrisinin geçerliliğini analiz ettikleri çalışmalarında 1977-2013 yılları için enflasyon oranındaki ve kamu harcamalarındaki artışın gelir eşitsizliğini arttırdığı sonucuna ulaşılmıştır. Ayrıca milli gelirdeki artışın gelir dağılımını olumlu etkilediği anlaşılmıştır. Sonuç olarak incelenen dönemde Finansal Kuznets eğrisinin ters-U şeklinde olduğu görüşü desteklenmiştir. Hepsağ (2017) G7 ülkeleri için finansal Kuznets Eğrisi'nin geçerliliğini analiz ettiği çalışmasında ARDL sınır testi yöntemini kullanmıştır. Çalışma sonuçlarına göre İtalya ve Almanya ekonomileri için finansal Kuznets Eğrisi'nin geçeli olduğu, Kanada, İngiltere ve Amerika Birleşik Devletleri (ABD)'nde ise geçerli olmadığı anlaşılmıştır.

3.Kuznet Eğrisinin Türkiye İçin Analizi: Veri, Yöntem ve Metodoloji

Bu bölümde Türkiye Ekonomisi için Finansal Kuznets eğrisinin ters U şeklinde teoriye uygun olup olmadığı 1992-2019 yılları için analiz edilecektir. Analize dahil olan değişkenler tablo 3'te izlenebilmektedir.

Tablo 3: Değişkenler, Sembolleri ve Kaynakları

Sembol	Değişken	Kaynağı
logGİNİ	Gini Katsayısı	OECD ve Dünya Bankası
logGSYİH	Gayrisafi Yurtiçi Hasıla (Cari)	TÜİK ve Dünya Bankası
$(logGSHİY)^2$	Gayrisafi Yurtiçi Hasıla (Cari)karesi	TÜİK ve Dünya Bankası
logkredi	Toplam Kredi / GSYH	Bankalar Birliği ve TUİK
logFGE	Finansal Gelişme Endeksi	IMF
$(logFGE)^2$	Finansal Gelişme Endeksi karesi	IMF
logDYY	Doğrudan Yabancı Yatırımları /GSYİH	Ticaret Bakanlığı

Tablo 3'e göre gelir dağılımı değişkeni olarak gini katsayısı kullanılırken ekonomik gelişmişlik değişkenleri olarak cari fiyatlarla GSYİH (2013), ülkeye yapılan net girişleri gösteren doğrudan yabancı yatırımlarının GSYİH'ye oranı ve finansal kurumların ve piyasaların; derinlik, erişim ve etkinlik açısından ne kadar geliştiğini ölçen finansal gelişme endeksi kullanılmıştır. Kredi değişkeni olarak kullandırılan kamu ve özel sektör kredileri toplamı GSYİH'ye oranlanmıştır. Finansal Kuznets Eğrisi hipotezi özünde ters U şeklinde ve doğrusal olmayan şekilde bir ilişkiden hareket ettiği için FGE ve GSYİH değişkenlerinin kareleri de modelde yer almaktadır. Tüm değişkenler logaritmaları alınarak analize dahil edilmiş olup her biri yıllık değerlerdir. Ekonomik modellerin temel amacı değişkenler arasındaki uzun dönemli ilişkilerin araştırılmasıdır. Bu analizlerde en çok karşılaşılan sorunlardan biri değişkenler arasındaki sahte regresyondur. Bu bağlamda söz konusu sorunun olmaması için analize dahil olan değişkenlerin durağan olmaları, birim kök içermemeleri gerekmektedir. Bu durumun tespiti birim kök testleri ile gerçekleştirilmektedir. Analizde Philips-perron (PP) birim kök testi kullanılmaktadır. PP birim kök testini tercih edilmesinin nedeni literatürde çok sık tercih edilen Dickey-Fuller birim kök testinde hata terimlerinin istatistiksel olarak bağımsız olduklarını ve sabit varyansa sahip oldukları varsayılır. Phillips ve Perron (1988) Dickey-Fuller'ın (DF) hata terimleri ile ilgili olan bu varsayımı genişletmişlerdir (Altunöz, 2013 :187).

DF'de kullanılan regresyon denklemleri PP birim kök testinde de olduğu gibi kullanılmaktadır; Bununla birlikte otokorelasyon sorunu bir önceki terimin parametresinin (δ) τ istatistiğinde parametrik denilemeyecek düzeltme yapılarak ortadan kaldırmaktadır. Bu amaçla kurulan regresyon eşitlik (5)'de izlenebilmektedir.

$$\Delta Y_t = \beta' D_t + \pi Y_{t-1} + u_t \;\; ve \; u_t \sim I(0) \qquad (5)$$

PP birim kök testi sonuçları tablo 4'te izlenebilmektedir.

Tablo 4: Philips Perron Birim Kök Test Sonuçları

Seri	Philips Perron Birimkök Testi			
	Düzeyde		Birinci Farkı Alındığında	
	Trendsiz	Trendli	Trendsiz	Trendli
logGİNİ	-1.241(0)	-1.411 (0)	-6.412(1)*	-6.871(1)*
logGSYİH	-0.101(0)	-4.331(0)	-5.121(1)*	-5.931(1)*
$logGSYİH^2$	0,416(0)*	0,591(0)*	-	-
logkredi	-1.311(0)*	-1.431(0)*	-	-
logFGE	-4,910(0)*	-5,910(0)*	-	-
$logFGE^2$	-6,181(0)*	-6,718(0)*	-	-
logDYY	-0.451(0)	-1.972(0)	-6.312(1)*	-5.786(1)*

Not: $*$,$**$ ve $**$

$*$ $sırasıyla$ %1, %5 ve %10 $anlam$ $düzeyinde$ $durağanlığı$ $ifade$ $etmektedir$.

Tablo 4'e göre de görüldüğü toplam kredi ve finansal gelişmişlik endeksi değişkenleri düzeyde %1 anlam seviyesinde durağanken geri kalan tüm değişkenler birinci farkları alındığında trendli ve trendsiz %1 anlam seviyesinde durağan hale gelmiştir. Büyüme değişkeninin birinci durağanken karesi alındığında seviyede durağandır. Perron (1989) analizlerde yapısal kırılma durumlarında hatalı sonuçlar doğabileceğini dile getirmektedir. Zivot ve Andrews (1992) tarafından geliştirilen birim kök testi 3 farklı model tavsiye etmektedir. A modelinde serinin tek seferde kırılma olacağını varsaymakta ve sabit terim kukla değişken içermektedir. B modelinde ise trend fonksiyonunun eğiminde tek seferlik kırılma öngörülmekte ve eğim katsayısı kukla değişkeni kapsamaktadır. C modelinde ise hem sabit katsayı hem de eğitim katsayısı kukla değişken içerip ilk iki modeli birleştirmektedir. Söz konusu durum eşitlik (6), (7) ve (8) de görülmektedir (Zivot ve Andrews, 1992: 261).

Model A: $Y_t = \mu + B_t + \delta Y_{t-1} + \emptyset_1 DU(\lambda) + \sum_{i=1}^{k} \delta_i \Delta Y_{t-i} + \varepsilon_t$ (6)
ModelB: $Y_t = \mu + B_t + \delta Y_{t-1} + \emptyset_2 DT(\lambda) + \sum_{i=1}^{k} \delta_i \Delta Y_{t-i} + \varepsilon_t$ (7)
ModelC: $Y_t = \mu + B_t + \delta Y_{t-1} + \emptyset_1 DU(\lambda) + \emptyset_2 DT(\lambda) + \sum_{i=1}^{k} \delta_i \Delta Y_{t-i} + \varepsilon_t$ (8)

Modellerde kukla değişkenler DU ve DT ile ifade edilmektedir. DU, seviyede, DT ise eğimde kırılmayı ifade etmektedirler.

$$\boldsymbol{DU}(\lambda) = \begin{cases} 1, t > T_B \\ 0, \ t < T_B \end{cases} \qquad \boldsymbol{DT}(\lambda) = \begin{cases} t - T\lambda \ t > T_B \\ 0, \quad t < T_B \end{cases}$$

Burada, $t = 1,2, \ldots . T$ zamanı ifade ederken kırılma tarihi T_B ve kırılma noktasını $\lambda = \frac{T_B}{T}$ ifade etmektedir.
Birim kök test sonuçları tablo 5'de görülmektedir.

Tablo 5: Zivot - Andrews Birim Kök Sınama Sonuçları

Zivot-Andrews Birim Kök Testi							
		Model A		**Model B**		**Model C**	
-Seriler	K	t	TB	t	TB	t	TB
logGINI	1	-3,18**	2002: Q1	-3,01*	2001: Q3	-5,42**	2000: Q3
logGSYİH	0	-7,66	2000: Q3	-7.65	2001: Q2	-7,00	2001: Q2
logGSYİH^2	2	-7,67	2000: Q3	-7,91	2001: Q2	-7,21	2001: Q2
logkredi	1	-2,61	2001:Q1	-3,11	2001: Q2	-4,12	2001: Q2
logFGE	1	-6,99	2008:Q3	-7,90	2008:Q3	-8,11	2008:Q3
logFGE^2	2	-7,99	2008:Q3	-8,01	2008:Q3	-8,34	2008:Q3
logDYY	5	-8,94*	2008: Q2	-9,90	2007: Q3	-9,94	2008: Q2

Not: **ve * sırasıyla %5 ve %1 anlam seviyesini ifade etmektedir. Kritik seviyeler Model A için -5.19 ve -4.21; Model B:-5,25 ve -4.90; Model C: -6.60 ve 6.11'dir. Gecikme sayısı k ile ifade edilmektedir.

Tablo 5'teki zaman serilerinin yapısal kırılmaları Zivot- Andrews Birim Kök testi vasıtasıyla dikkate alınmıştır. Test sonuçlarına göre gini ve kredi değişkenleri üç model için de önem seviyelerinde sıfır hipotezi reddedilememiş ve bu sonuç GİNİ ve kredi değişkeninin tablodaki kırılma tarihleri ile birlikte durağan olmadığı anlamına gelmektedir. Diğer değişkenler içinse boş hipotez her bir model sonucuna göre reddedilmiş, bundan dolayı birinci dereceden bütünleşik olduğu sonucuna ulaşılmıştır.
Edilen sonuçlara göre bağımlı değişken 1. Farkta durağanken diğer analize konu olanların bazıları seviyede bazıları ise birinci farkta durağan hale gelmiştir. ARDL Sınır Testi Yaklaşımı seviye ve ilk dereceden durağanlığa sahip değişkenler için eş bütünleşme analizine olanak sağlamakta olup önemli kısıt bağımlı değişkenin seviyede durağan olmaması ve analize konu olan hiçbir değişkenin ikinci dereceden bütünleşik olmamasıdır (Pesaran vd., 2001). Elde edilen birim kök testi sonuçlarına göre ARDL yaklaşımının en uygun model olduğuna karar verilmiştir.
Sınır testi en küçük kareler (EKK) yöntemiyle kısıtlı hata düzeltme modeli tahminine dayanmaktadır. Sınır testi tahmin edilen model eşitlik (9) da izlenebilmektedir.

$$gini_t = \alpha_0 + \sum_{i=1}^{n} \alpha_1 gini_{t-1} + \sum_{i=0}^{n} \alpha_2 GSYİH_{t-1} + \sum_{i=0}^{n} \alpha_3 kredi_{t-1} + \sum_{i=0}^{n} \alpha_4 FGE_{t-1} + \sum_{i=0}^{n} \alpha_5 DYY_{t-1} + \beta_1 gini_{t-1} + \beta_2 GSYİH_{t-1} + \beta_3 kredi_{t-1} + \beta_4 FGE_{t-1} + \beta_5 DYY_{t-1} + \varepsilon_t \quad (9)$$

Eşitlik (9)'da delta değişkenlerin gecikmelerinin farkını ifade ederken n gecikme uzunluğunu ifade etmektedir. Analizde ardışık bağımlılığın test edilmesi için Breusch-Godfrey ve gecikme uzunluğu belirlemede Akaike Bilgi Kriteri (AIC) ve Schwarz Bilgi Kriteri (SIC) tercih edilmiştir. ARDL Sınır testi yaklaşımı eşitlik (9) kullanılarak boş hipotezin test edilmesi yolu ile gerçekleştirilmektedir. Bu bağlamda wald testi ile ede edilen F istatistiklerinin olması gerektiği gibi işlemesi için hata terimlerinde oto korelasyon olmamalıdır. Hipotezler aşağıdaki şekilde kurulmuştur.

$H_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$ (Gini ve bağımsız değişkenler arasında uzun dönemli ilişki yoktur)

$H_0 \neq \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq 0$ (Gini ve bağımsız değişkenler arasında uzun dönemli ilişki vardır)

Gecikme uzunluğunun tespitine ait sonuçlar 6 numaralı tabloda sunulmuştur.

Tablo 6: Sınır Testi için Gecikme Uzunluğunun Tespiti

m	AIC	SIC	$X^2(1)$BREUSCH − GODFREY	$X^2(4)$BREUSCH − GODFREY
1	5.76	6.53	12.12(0.000) **	16.511(0.010) **
2	5.78	6.58	11.31 (0.001) *	12.77(0.014) *
3	5.96	6.22	10.120(0.005)	14.51(0.024)
4	**5.18**	**6.09**	**10.21(0.071)**	**12.88(0.040)**
5	5.10	6.03	12.191 (0.010) *	12.31(0.0100) *
6	5.75	6.11	10.111(0.0144)	16.16(0.071)
7	5.80	6.50	15.221(0.112)	18.71(0.0243)
8	5.82	6.29	8.1119(0.5516)	10.07(0.8511)

Not:, * ve ** sırasıyla %1 ve %5 anlam seviyesini ifade etmektedir. Olasılık değerleri parantez içinde gösterilmiştir.

Schwartz ve Akaike bilgi kriterleri ile ulaşılan sonuçlara göre elde edilen değerlerin en küçük olduğu gecikme uzunluğu 5 tir. BREUSCH- GODFREY testiyle yapılan otokorlesyon testi sonuçlarına göre gecikme uzunluğu 5 olan değerde oto korelasyon problemi mevcuttur. Bu nedenle ikinci en küçük değer olan 4'te otokorelsayon sorunu olmamasından dolayı gecikme uzunluğu 4 olarak belirlenmiştir. Sınır testi analizlerinde bir sonraki aşama eş bütünleşme ilişkisinin varlığının analizidir. Bu amaçla F istatiği test sonucu F-istatistiği üst sınır değerinin üzerindeyse ise değişkenler arasında eş bütünleşme ilişkisinin varlığına ulaşılmış olur. Tersi durumda boş hipotez kabul edilir. Eğer elde edilen F değeri alt ve üst sınır değerlerinin arasında değer alırsa herhangi bir yorum yapılamamaktadır. F istatistiği sonuçları tablo 7'de izlenebilmektedir.

Tablo 7: F İstatistiği Testi Sonuçları (Wald Testi)

%10 Anlam Seviyesinde kritik Değerler			
k (bağımsız Değişken sayısı)	F İstatistiği	Alt sınır I(0)	Üst sınır (I)
k (bağımsız Değişken sayısı)	7,11	3,12	4,14

Tablo 7'de Wald testi sonuçlarına göre F istatistiğinin üst sınırın üzerinde olup değişkenler arasında uzun dönemli ilişkinin varlığı tespit edilmiştir. Sınır Sınaması sonuçları ve tahmin edilen uzun dönem ARDL modellerine ait sonuçlar Tablo 8'de izlenebilmektedir.

Tablo 8: Uzun Dönem ARDL Modellerine Ait Tahmin Sonuçları

Değişkenler	Katsayılar	t İstatistikleri
logFGE	0,077	10,976 *
$logFGE^2$	-0,010	- 11,801*
logGSYİH	12,689	8,312*
$logGSYİH^2$	-3,921	-0,809
logkredi	-0,091	-7,312*
logDYY	0,080	5,553*

Not: %1 anlamlılığı ifade etmektedir.

Tablo 8'de ulaşılan sonuçlara göre GSYİH karesi dışında tüm katsayılar %5 seviyesinde anlamlıdır. FGE ve FGE karesi değişkenleri %5 anlamlılık seviyesinde istatistiksel olarak anlamlıdır. Ayrıca FGE değişkeni pozitif değer almışken FGE değişkeninin karesi negatif değer almıştır. Bu sonuç Türkiye'de Finansal Kuznets Eğrisi hipotezinin geçerli olduğunu ortaya koymaktadır. Diğer bir ifadeyle finansal gelişme ile gelir dağılımı eşitsizliği arasında ters-U şeklinde bir ilişki mevcuttur. Türkiye ekonomisinde finansal gelişme artışına paralel olarak gelir dağılımındaki eşitsizlik artmakta, belli bir eşik değerinin ardından ise finansal gelişmedeki artış gelir dağılımındaki eşitsizliği azalmaktadır. Ayrıca Klasik Kuznets Eğrisi hipotezinin analizinde GSYİH değişkeninin %5 anlam düzeyinde istatistiksel olarak anlamlı olup GSYİH değişkeninin karesinin katsayısı anlamsızdır. Bu sonuç Türkiye'de ekonomik büyüme ile gelir dağılımı eşitsizliği arasında ters-U şeklindeki ilişkinin olmadığını göstermektedir. Ayrıca kredi kullanımı gelir dağılımı üzerinde olumlu bir etkiye sahipken doğrudan yabancı yatırımlarının gelir dağılımı adaletsizliğini arttırdığı anlaşılmaktadır.

Tablo 9: Uzun Dönem Tahminlerine Yönelik Tanısal Testler

Tanısal Testler				
$R^2 = 0{,}72$	F İstatistiği: 5,440(0,00)	Breusch − Godfrey LM: 0,34(0,09)	Ramsey Reset:1,88(0,01)	
Düzeltilmiş $R^2 = 0{,}70$	ARCH-LM: 2,34(0,10)	Jarque-Berra Normallik: 0,053(0,70)		

Tablo 9'daki Teşhis testleri incelendiğinde otokorelasyon sorunu Breusch-Godfrey LM Testi ile sınanmış olup herhangi bir oto korelasyon sorununa rastlanmamıştır. Ayrıca değişen varyans probleminin olmadığı ARCH LM Testi ile, model kurma sorununun olmadığı ise Ramsey Reset testi ile anlaşılmıştır. Ayrıca Jarque-Bera Normallik testi, hata teriminin normal dağılıma sahip olduğunu ifade etmektedir.

Kısa Dönem İlişkisi

Hata düzeltme modeli ile değişkenler arasındaki kısa dönemli ilişkilerin analiz için kullanılan model eşitlik (10)'da izlenebilmektedir.

$$\Delta gini_t = \alpha_0 + \sum_{i=1}^{n} \alpha_1 \Delta gini_{t-1} + \sum_{i=0}^{n} \alpha_2 \Delta GSYİH_{t-1} + \sum_{i=0}^{n} \alpha_3 \Delta kredi_{t-1} + \sum_{i=0}^{n} \alpha_4 \Delta FGE_{t-1} + \sum_{i=0}^{n} \alpha_5 \Delta DYY_{t-1} + \beta_1 gini_{t-1} + \beta_2 GSYİH_{t-1} + \beta_3 kredi_{t-1} + \beta_4 FGE_{t-1} + \beta_5 DYY_{t-1} + ECT_{t-1} + \varepsilon_t \quad (10)$$

Eşitlik (10)'da hata düzeltme terimi (ECT), uzun dönem ilişkisinden ulaşılan hata terimleri serisinin bir dönem gecikmeli değerini ifade etmektedir. Değerin negatif ve 0 ile 1 arasında olması beklenir. Kısa dönem tahmin sonuçları Tablo 10'da izlenebilmektedir.

Tablo 10: ARDL (4,1,0,1) Hata Düzeltme Modeli Sonuçları

Değikenler	**Katsayı**	**t İstatistiği**
logFGE	0.08	2.102(0.00)***
logFGE^2	-1.011	-2.49(0.02)
logGSYİH	10,.008	-2.610(0.00)***
logGSYİH^2	-1.121	3.111(0.00)***
logkredi	-1.221	2.032(0.60)*
logDYY	0.241	1.601(0.00)**
ECT	-1.09	-3.71(0.00)***
C	0.004	-0,0323(0,889)

Not: ***,** ve * sırasıyla %1, %5 ve %10 düzeyinde istatistiksel olarak anlamlılığı göstermektedir.

ECT (Hata düzeltme teriminin) (-1) ile (-2) değerleri arasında olması sürecin uzun dönemli denge değerleri çevresinde gittikçe azalan dalgalanmalarla dengeye ulaşıldığını ifade ederken hata düzeltme teriminin (-2) den küçük veya pozitif değer alması dengeden uzaklaşıldığını ifade eder (Eriçok ve Yılancı,2003: 90). Ulaşılan (-1.09) hata düzeltme terimi, kısa dönemde meydana gelecek dengesizliklerin uzun dönemde ortadan kalktığını ifade etmektedir. Kısa dönem tahminlerine yönelik tanısal testler tablo 11'de izlenebilmektedir.

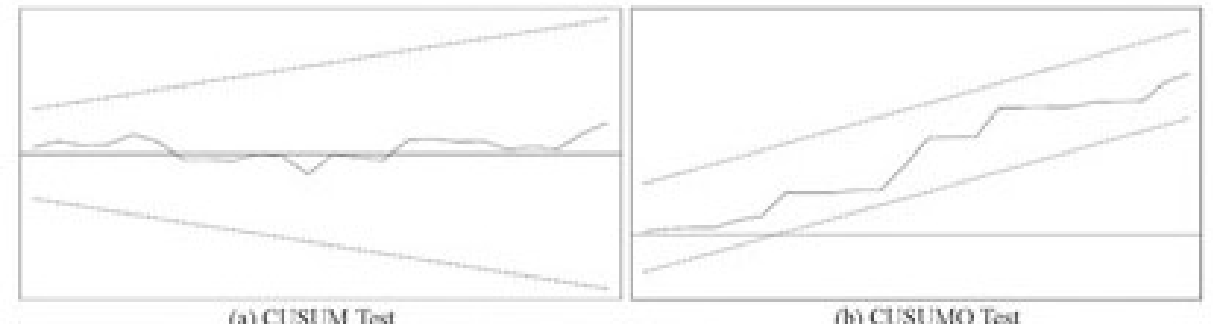
Tablo 11: Kısa Uzun Dönem Tahminlerine Yönelik Tanısal Testler

Tanısal Testler				
$R^2 = 0{,}74$	F İstatistiği: 5,610(0,00)	$\text{Breusch} - \text{Godfrey LM: } 0{,}34(0{,}09)$	Ramsey Reset:1,88(0,01)	
Düzeltilmiş $R^2 = 0{,}74$	ARCH-LM:2,39(0,10)	Jarque-Berra Normallik :0,05361(0,70)		

Tablo 11'deki Teşhis testleri incelendiğinde otokorelasyon sorunu Breusch-Godfrey LM Testi ile sınanmış olup herhangi bir oto korelasyon sorununa rastlanmamıştır. Ayrıca değişen varyans probleminin olmadığı ARCH LM Testi ile, model kurma sorununun olmadığı ise Ramsey Reset testi ile anlaşılmıştır. Ayrıca Jarque-Bera Normallik testi, hata teriminin normal dağılıma sahip olduğunu ifade etmektedir.

Brown vd. (1975) ekonometrik analizlerde hata terimine ulaşmak için analize dahil edilen uzun dönem katsayılarının istikrarlı olup olmadığını ölçmek amacıyla gerçekleştirilen Cusum ve CusumQ analizlerini gerçekleştirmişlerdir. Cusum ve CusumQ grafikleri şekil 2 de izlenebilmektedir.

Şekil2: Cusum ve CusumQ Grafikleri



Şekil 2'de Cusum (soldaki grafik) ve CusumQ (sağdaki grafik) kesik çizgiler arasında olup modelin istikrarlı olduğu anlaşılmaktadır.

Sonuç

Çalışmada Türkiye ekonomisi için finansal gelişme ile gelir dağılımı eşitsizliğinin ters-U şeklinde ortaya konulan ilişkinin varlığı analiz edilmektedir. Ekonometrik analiz sonuçlarına göre Türkiye'de Finansal Kuznets Eğrisi hipotezinin geçerli olduğu ve finansal gelişme ile gelir dağılımı eşitsizliği arasında ters-U şeklinde bir ilişkinin varlığına ulaşılmıştır. İlaveten analize eklenen kredi kullanımının gelir dağılımını arttırıcı, doğrudan sermaye yatırımlarının da gelir dağılımını bozucu etkiye sahip olduğu anlaşılmıştır. Çalışmada ayrıca klasik Kuznets Hipotezi de gini katsayısı-GSYİH değişkenleri ile analiz edilmiş olup Türkiye'de ters U şeklinde bir ilişkinin varlığına ulaşılamamıştır. Ekonometrik analizde ulaşılan bulguların ekonomik politikalarının planlanması ve hayata geçirilmesine katkı sağlaması bakımından önemli bulgular olduğu düşünülmektedir. Finansal Kuznets Eğrisi hipotezinin geçerli olduğu Türkiye ekonomisinde gelir adaletsizliği ve dağılımının azaltılmasına yönelik bir politika izlenecekse, finansal gelişmenin ekonomik büyümeden daha öncelikli tutulması ve finansal gelişmenin arttırılmasının daha akılcı bir politika olacağı anlaşılmaktadır.

Elde edilen sonuçlar bütün olarak değerlendirildiğinde Türkiye ekonomisi için finansal kalkınmanın, ekonomik kalkınmanın önemli unsurlarından biri olduğu anlaşılmaktadır. Finansal sistemin verimli ve etkin olduğu bir ülkede gelir dağılımı eşitsizliklerinin azalacağı ve ülkede yaşayanların refah düzeylerinde artış olası görünmektedir. Konuyla alakalı yapılacak ileriki çalışmalar için finansal piyasaların etkinliğini arttıracak finansal büyüklük, kurumsal kalite gibi değişkenlere ait optimal veri seti oluşumuyla daha sağlıklı tespitlere ulaşılacağı düşünülmektedir.

Kaynaklar

Altunöz U. (2013). Türkiye'de Enflasyon, Büyüme ve Finansal Derinleşme İlişkisinin Ampirik Analizi, Sütçüimam Üniversitesi İİBF dergisi sayı 2: 175-194.

Altunöz,U.(2015). Tüketim Fonksiyonu ve Türkiye İçin Gelir Tüketim İlişkisinin Ampirik Analizi, International Conference on Euroasian Economies, 871-875.

Ang, J.B. (2008). Finance and Inequality: The Case of India, Monash University, Department of Economics, Discussion Paper, No. 8, 1-25

Brown, R., L, James D. ve Jonathan M. E. (1975). Tech-niques for Testing the Constancy of Regression Relationships over Time, Journal of the Royal Statistical Society, 37(2), pp. 149-192.

Chen, B-L. (2003), "An inverted-U relationship between inequality and longrun growth", Economic Letters, 78(2), 205-212.

Demir, C. (2020). Lorenz Eğrisi ve Gelir Adaleti Analizi, (Çevrim içi), https://www.matematiksel.org/gelir-dagilimi-adaletsizligi/, Erişim:14.9.2020.

Destek, M. A., Okumuş, İ., & Manga, M. (2017). Türkiye'de finansal gelişim ve gelir dağılımı ilişkisi: Finansal kuznets eğrisi. Doğuş Üniversitesi Dergisi, 18(2), 153-165.

Dumlu, U. ve Aydın, Ö. ((2008). "Ekonometrik Modellerle Türkiye için 2006 Yılı Gini katsayısı Tahmini", Ege Akademik Bakış, 8 (1), 373-393

Galor, O. & J. Zeira (1993), "Income Distribution And Macroeconomics", The Review of Economic Studies, 60(1), 35–52

Göğül, P. K. (2012). Düşük Gelirli Bireylerin Gelir Dağılımı ve Yoksulluk Sorununa Yönelik Kamu Politikası Algısı: Diyarbakır Örneği, İstanbul Üniversitesi Sosyal Bilimler Enstitüsü, Yayımlanmamış Doktora Tezi.

Greenwood, J. & B. Jovanovic (1990), "Financial Development, Growth and The Distribution of Income", The Journal of Political Economy, 98 (5), 1076–1107.

Hepsağ, A. (2017). Finansal Kuznets Eğrisi Hipotezi: G-7 Ülkeleri Örneği. Sosyal Güvenlik Dergisi (Journal of Social Security). 7(2), 135-156.

Hoi, C. M., ve Hoi, L. Q. (2013). Financial Development andIncomeInequality in Vietnam: An Empirical Analysis. Bangladesh Journal of Pharmacology, 8(4), 361-364.

Kanberoğlu, Z., veArvas, M. A. (2014). Finansal Kalkınma ve Gelir Eşitsizliği: Türkiye Örneği, 1980-2012. Sosyoekonomi, 21(21).

Kubar, Y. (2011). Bir İktisat Politikası Amacı Olarak Gelir Dağılımı: Türkiye Örneği (1994–2007) Analizi. Kahramanmaraş Sütçü İmam Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 1 (2), 227-246.

Kuznets, S. (1955), "Economic Growth and Ineome Inequality", American Economic Review, 45-1, 1-28.

Law, S.H ve Tan, H.Y.B (2009). The Role of Financial Development on IncomeInequality in Malaysia, Journal of Economic Development 34(2), 153- 168.

Malinen T. (2012), "Estimating the long-run relationship between income inequality and economic development". Empirical Economics, forthcoming.

Panayotou, T. (1993), Empirical Tests and Policy Analysis of Environmental Degradation at Different Stages of Economic Development, ILO, Technology and Employment Programme, Geneva. (çevrim iç) https://www.ilo.org/public/libdoc/ilo/1993/93B09_31_engl.pdf , Erişim Tarihi:23.7.2020.

Park, D., veShin, K. (2015). Economic Growth, Financial Development, and Income Inequality. Asian Development Bank Economics Working Paper Series, (441).

Perron, P. (1989). "The Great Crash, the Oil Price Shock, and the Unit Root Hypothesis", Econometrica, 57(6), pp. 1361-1401.

Pesaran, M. H., Shin, Y. ve R. J. Smith (2001). "Bounds Testing Approaches to the Analysis of Level Relationships", Journal of Applied Econometrics, 16(3), 289-326.

Topuz,S.G. ve Dağdemir,Ö.(2016). Ekonomik Büyüme ve Gelir Eşitsizliği İlişkisi: Kuznets Ters-U Hipotezi'nin Geçerliliği, Eskişehir Osmangazi Üniversitesi İİBF Dergisi, 11(3),115-130.

Zivot, E. ve Andrews, D. (1992). Further Evidence on the Great Crash, the Oil-Price Shock, and the Unit-Root Hypothesis, Journal of Business-Economic Statistics, 10, 3, 251-270

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A STUDY ON HYACINTHELLA SCHUR (ASPARAGACEAE) GENUS DISTRIBUTED IN TURKEY

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Abstract
Hyacinthella Schur is a genus of bulbous plants belonging to Asparagaceae, subfam. Scilloideae, tribe Hyacintheae. Genus Hyacinthella is represented by 19 taxa from all over the World. These taxa are distributed Balkan Peninsula to Western Iran. Genus Hyacinthella were recorded 10 taxa including 9 species and one hybrid species to Flora of Turkey. It was later determined that the specimens belonging to the mentioned hybrid species were not hybrid and these specimens were new species. Then a new species have been described from Turkey. Nowadays, the total number of Hyacinthella species is going to rise to 11, 10 of which are endemic to the Turkey. Although the majority of the species are endemic many of which were distributed large areas in Turkey. In this study, some morphological and distributional data are discussed. Photographs and distribution maps of these species are also presented.
Keywords: Distribution, Endemic, Hyacinthella, Turkey

Introduction

Genus Hyacinthella was first identified to the science by Austrian pharmacist and botanist Philipp Johann Ferdinand Schur in 1856 (Stafleu & Cowan 1985). In the classification system based on morphology, while the genus Hyacinthella was in the Liliaceae family, firstly Hyacinthella was embodied to Hyacinthaceae, then it was evaluated in the Asparagaceae family with the result of molecular studies (APG III, 2009). Hyacinthella is represented with 17 species, 1 subspecies and 1 variety spreading in Balkan Peninsula across to Turkey, West Iran to Palestine (Speta 1998; Goaverts 2021). Turkey is the gene center of genus (Mathew 1987). Previously, revision studies were made on the genus Hyacinthella. In these studies, the morphology and chromosome features of the species belonging to the genus were emphasized. In these studies, the basic chromosome number of the genus was considered as x = 9. (Feinbrun,1961; Persson & Wendelbo1981; 1982).

Genus Hyacinthella were recorded 10 taxa including 9 species and 1 hybrid species (H. micrantha (Boiss.) Chouard × H. heldreichii (Boiss.) Chouard.) to Flora of Turkey (Persson & Wendelbo 1984). It was later determined that the specimens belonging to the mentioned hybrid species were not hybrid and these specimens were new species (H. lazulina K. Perss. & Jim. Perss.) (Persson & Persson 1992). Then a new species have been described from Turkey (H. venusta K. Perss.) (Persson 2000). Thus, the number of taxa belonging to the genus Hyacinthella in Turkey has reached 11 species, including 10 endemic species.

Genus Hyacinthella morphologically resembles genus Hyacinthus L., genus Muscari Mill. and genus Bellevalia Lapeyr. However, the genus Hyacinthella can be easily distinguished from these other genera in terms of flower, fruit and bulb morphologies. Also, the chromosomes of the Hyacinthella are smaller than the chromosomes of the other three mentioned genera (Persson & Wendelbo 1984).

The aim of this study was to show 11 (10 endemic) Hyacinthella species distributed in Turkey collected from different localities of Anatolia. It is also to show how the genus Hyacinthella differs from other genera are most likely to be confused in the field.

Material and Methods

The material of the study constitutes specimens and photographs belonging to the genus Hyacinthella distributed in Turkey, collected from field and photographed by author of the study between 2015-2021. The species were identified with Flora of Turkey and relevant literature (Persson & Wendelbo 1984; Persson & Persson 1992; Persson 2000) were examined under the stereo microscope and stored in VANF herbarium.

Results

The genus Hyacinthella got its name probably because of its similarity to the genus Hyacinthus. But it is easily distinguished from the genus Hyacinthus, as it has much smaller flowers and flower lobes in field. While While flower length of genus Hyacinthella varies between 3.5−9 mm, flower length of genus Hyacinthus varies between 20−30(−35) mm (Figure 1).

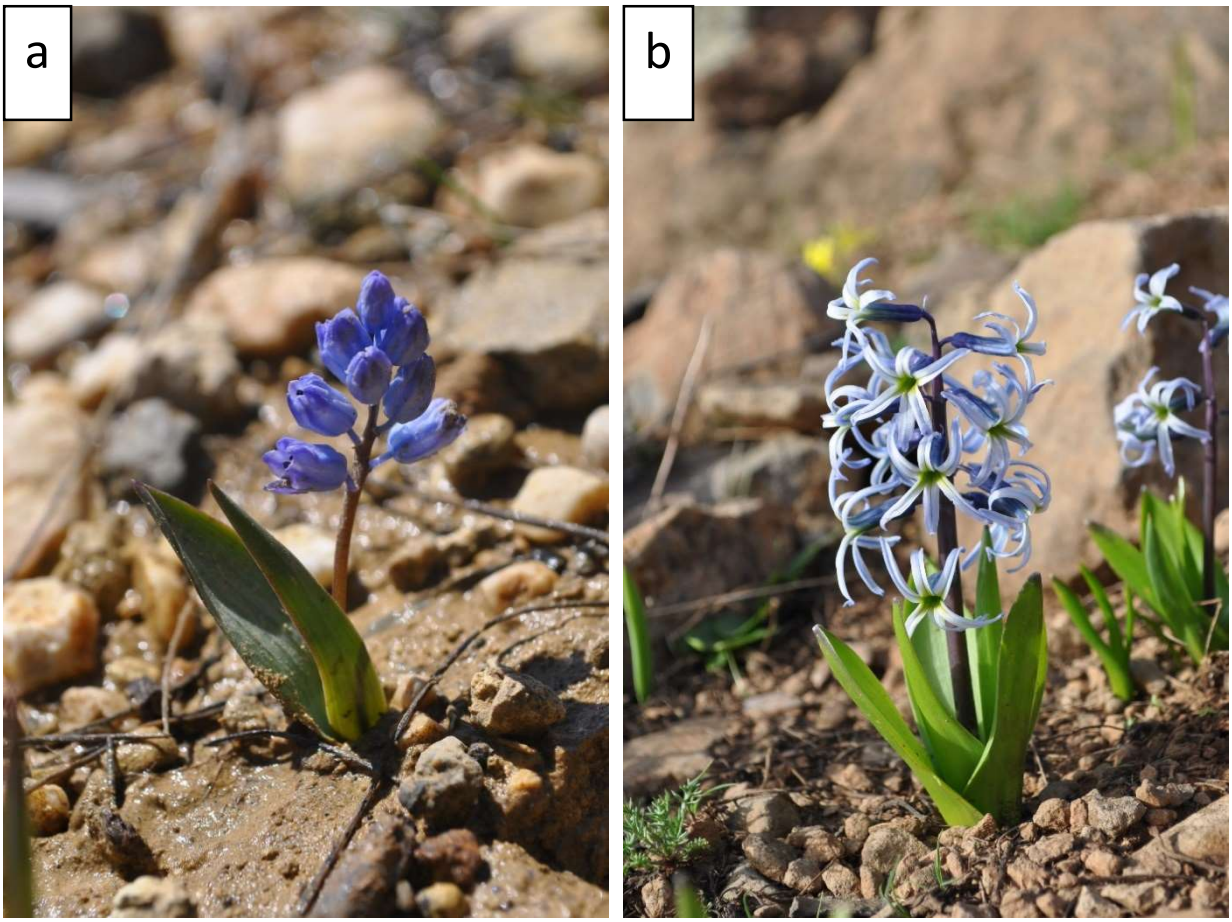


Figure 1. General habits of genus Hyacinthella and genus Hyacinthus; a. Hyacinthella venusta, b. Hyacinthus orientalis L. subsp. chionophilus Wendelbo.

The genus Hyacinthella is also morphologically similar to some members of the Muscari and Bellevalia genera (Figure 2).

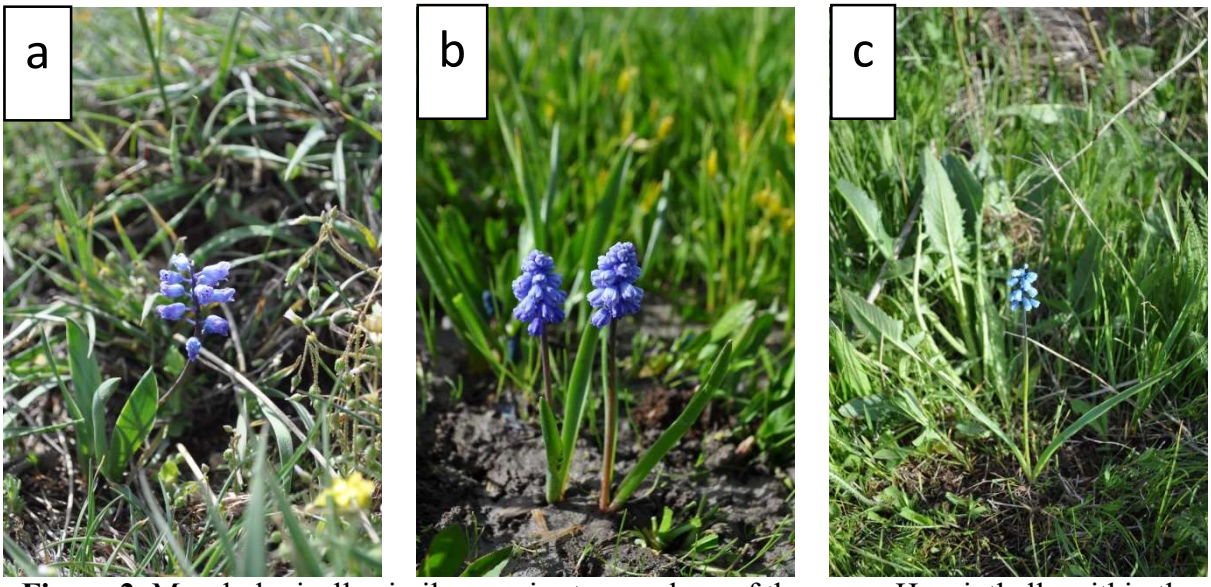


Figure 2. Morphologically similar species to members of the genus Hyacinthella within the genera Muscari and Bellevalia; a. Hyacinthella acutiloba K. Perss. & Wendelbo, b. Muscari coeleste Fomin, Muscari coeleste Fomin.

In order to distinguish these three genera in the field, it is necessary to dissect the flowers and look at the colors and arrangement of the anthers. In the flowers of the genus Hyacinthella, the anthers are black in color and are arranged in a single row. In the genus Muscari, the anthers are also black in color, but are arranged in two rows. In the genus Bellevalia, the anthers are yellow or purple in color and arranged in a single row (Figure 3). The fruits of the genus Hyacinthella are more spherical than the fruits of the genera similar to it (Figure 4). While the inner tunica of the bulbs of the genus Hyacinthella has white spots, this feature is not seen in similar genera (Figure 5).

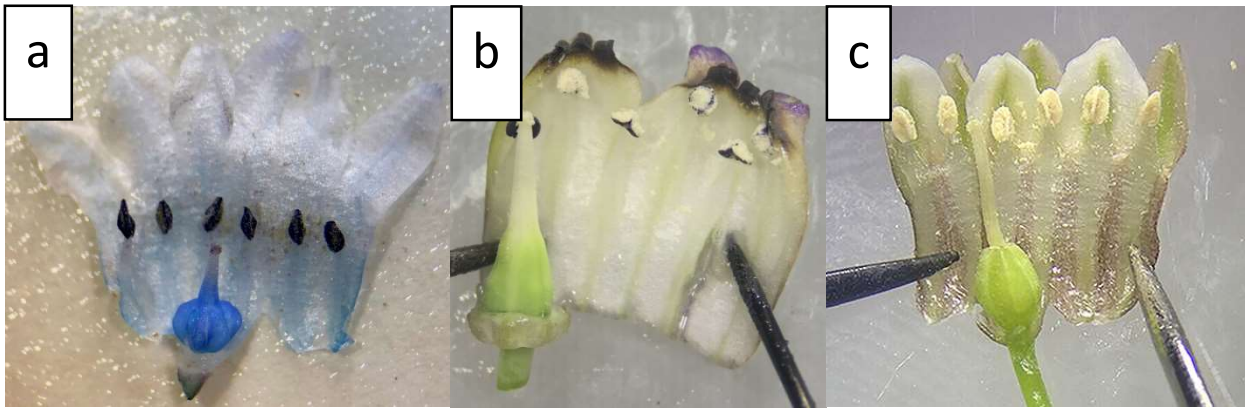


Figure 3: Disscted flowers of Hyacinthella, Muscari and Bellevalia genera. a. Hyacinthella b. Muscari, c. Bellevalia.

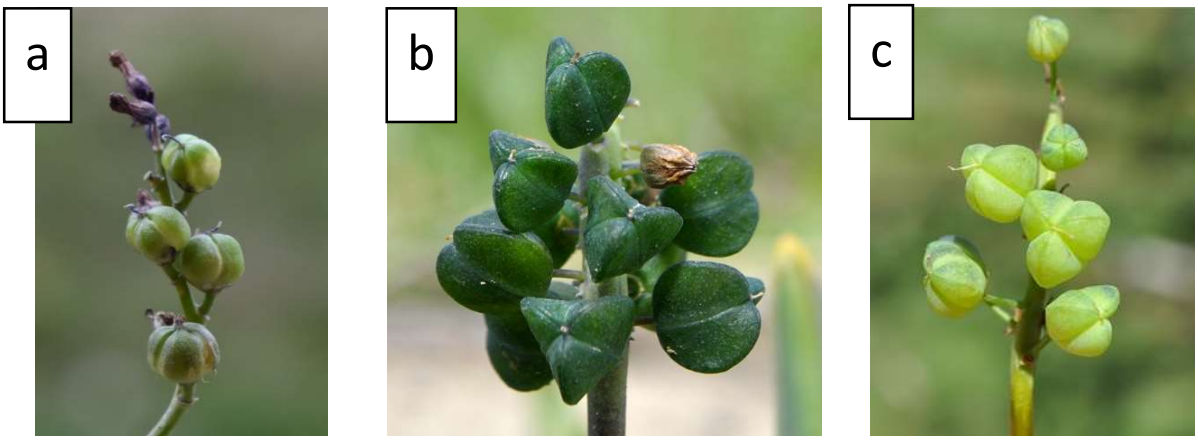


Figure 4. Fruits of genus Hyacinthella and similar genera; a. Hyacinthella, b. Muscari, c. Bellevalia.

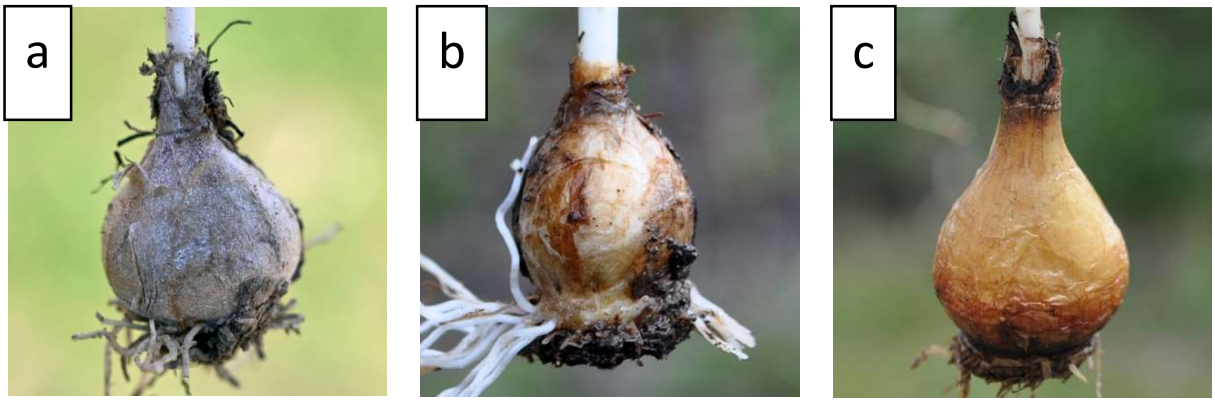


Figure 5. Inner tunicas of genus Hyacinthella and similar genera; a. Hyacinthella, b. Muscari, c. Bellevalia.

Species List of Hyacinthella Distrubuted in Turkey
1. Hyacinthella acutiloba K. Perss. & Wendelbo (Endemic) (Figure 6).
2. H. campanulata K. Perss. & Wendelbo (Endemic) (Figure 7).
3. H. glabrescens (Boiss.) K. Perss. & Wendelbo (Endemic) (Figure 8).
4. H. heldreichii (Boiss.) Chouard (Endemic) (Figure 9).
5. H. hispida (J. Gay) Chouard (Endemic) (Figure 10).
6. H. lazulina K. Perss. & Jim. Perss. (Endemic) (Figure 11).
7. H. lineata (Steud. Ex Schult. & Schult. F.) Chouard (Endemic) (Figure 12).
8. H. micrantha (Boiss.) Chouard (Endemic) (Figure 13).
9. H. nervosa (Berthol.) Chouard (Figure 14).
10. H. siirtensis B. Mathew (Endemic) (Figure 15).
11. H. venusta K. Perss (Endemic) (Figure 16).

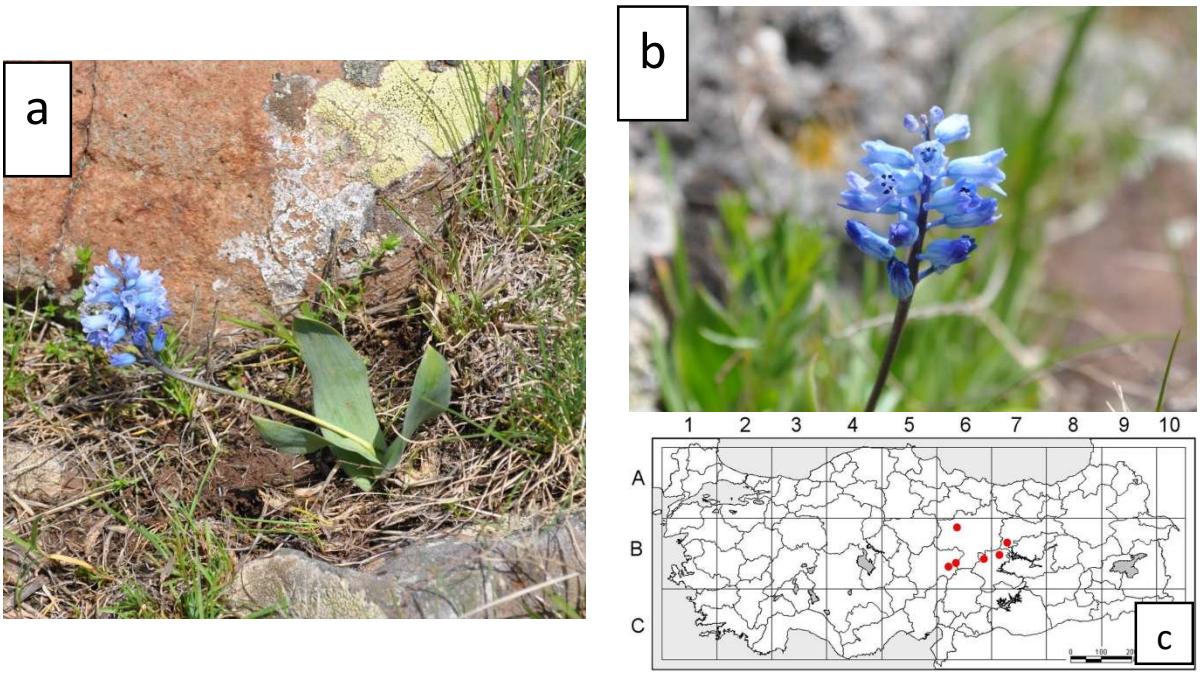


Figure 6. Hyacinthella acutiloba; a. habit, b. inflorescence, c. distribution map in Turkey.

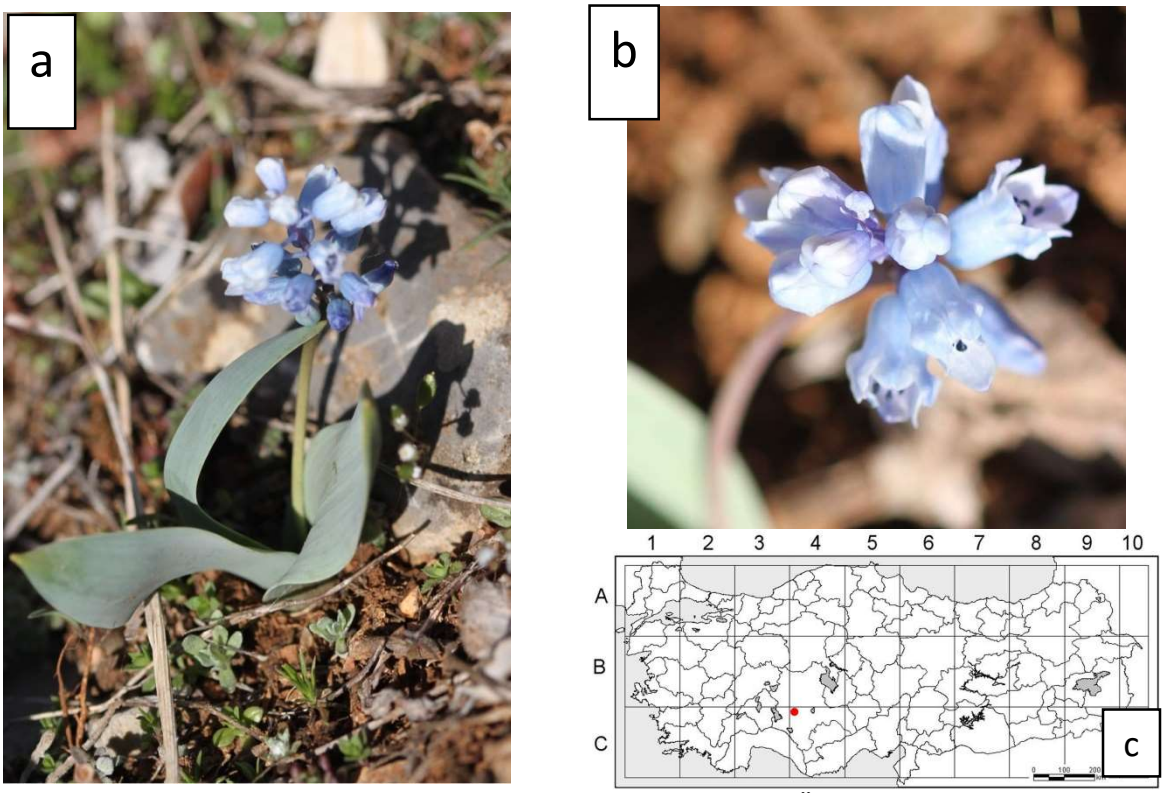


Figure 7. Hyacinthella campanulata; a. habit (Photo: Haydar ÖZTAŞ), b. inflorescence (Photo: Haydar ÖZTAŞ), c. distribution map in Turkey.

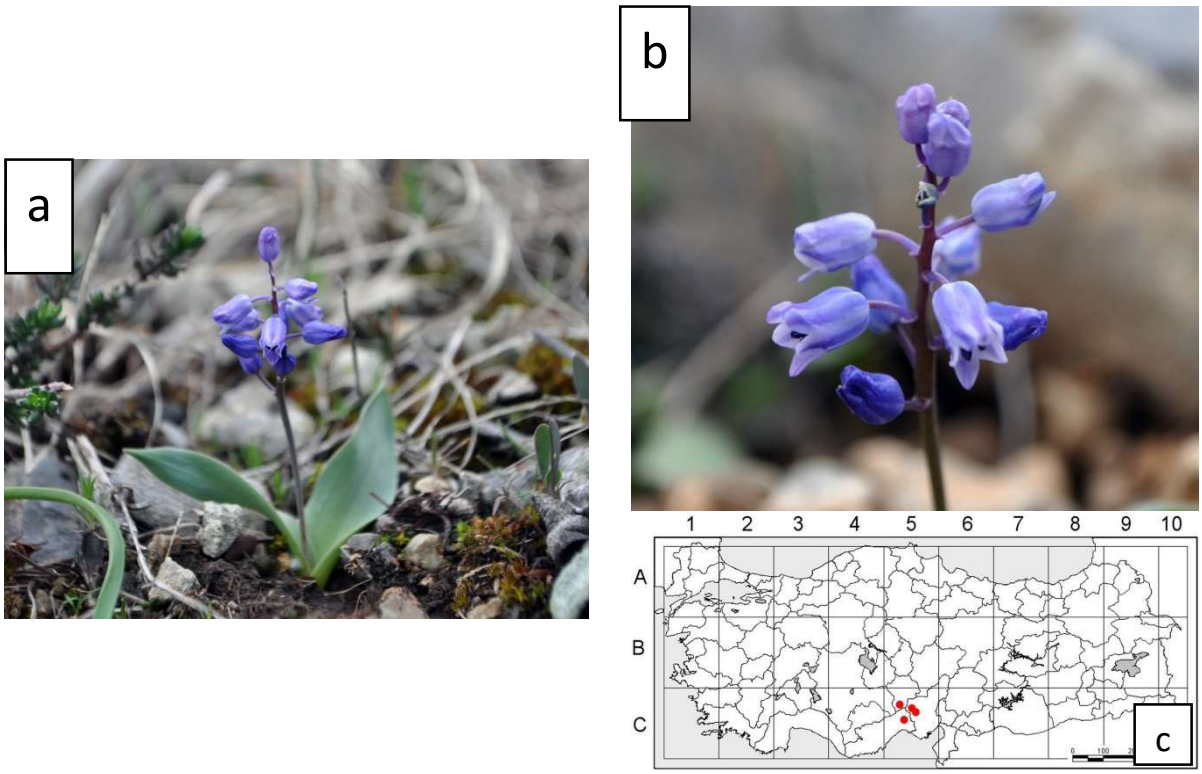


Figure 8. Hyacinthella glabrescens; a. habit, b. inflorescence, c. distribution map in Turkey.

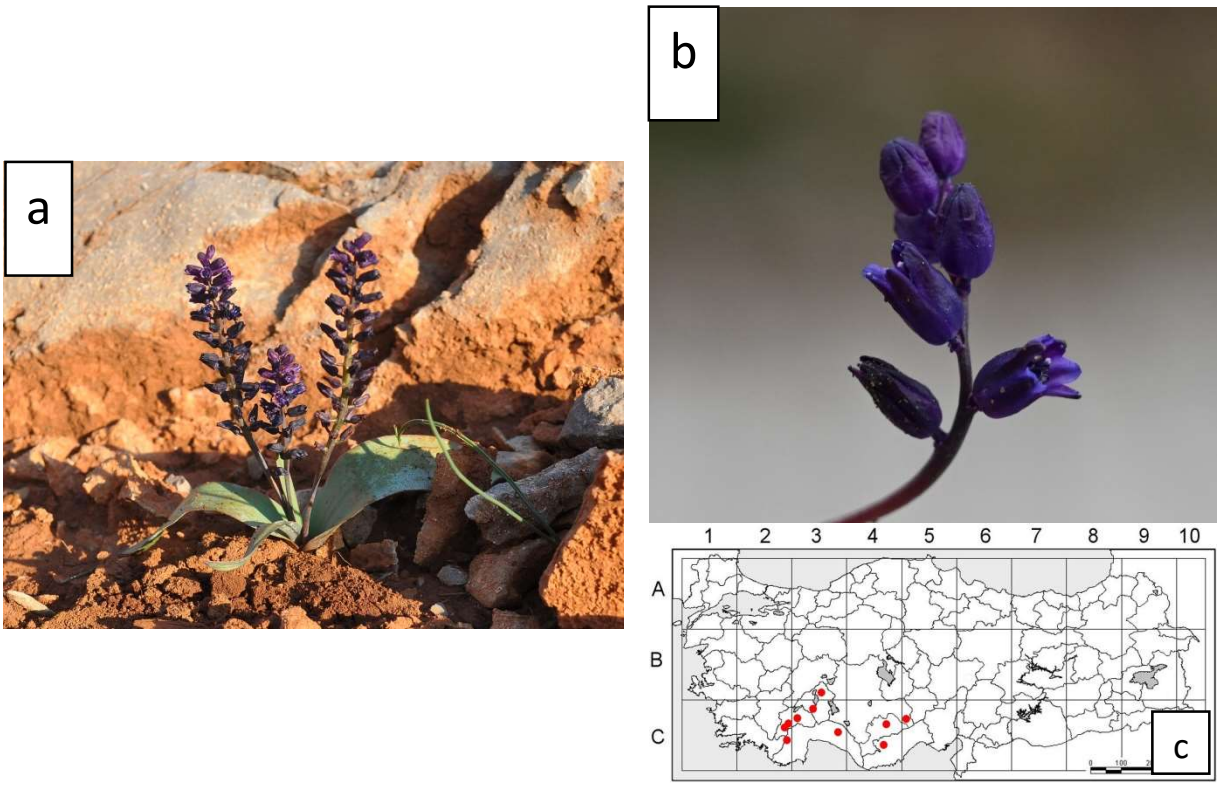


Figure 9. Hyacinthella heldreichii; a. habit, b. inflorescence, c. distribution map in Turkey.

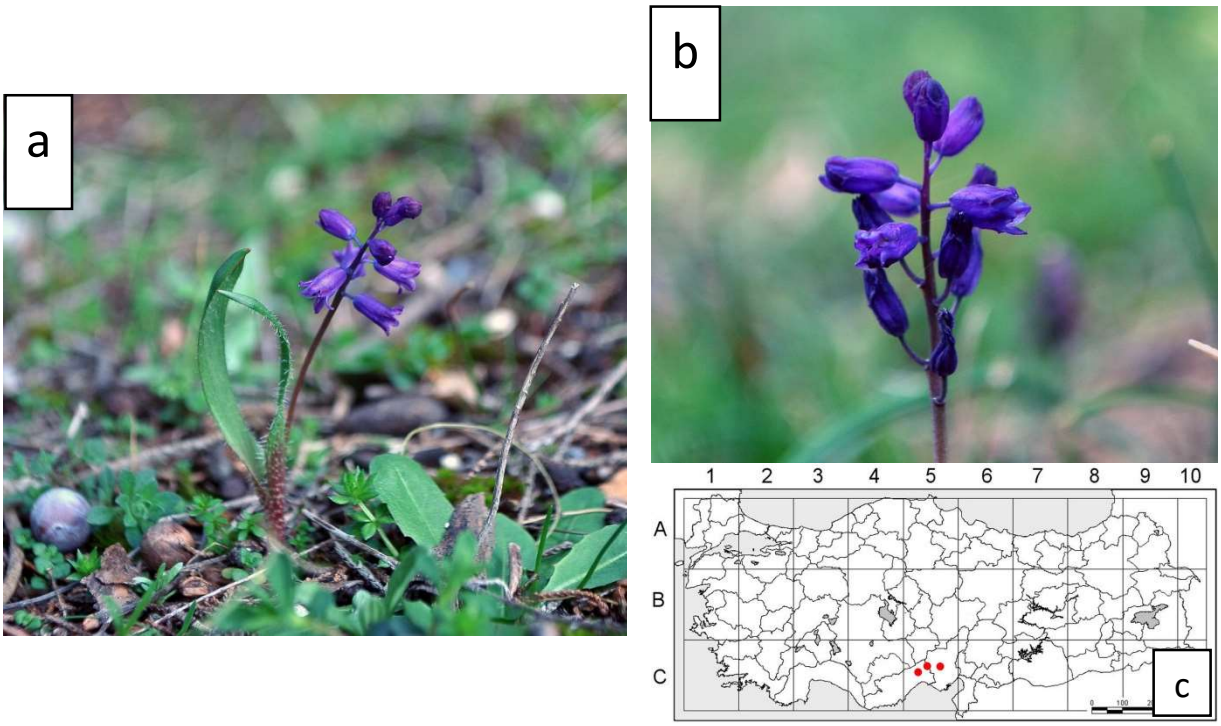


Figure 10. Hyacinthella hispida; a. habit, b. inflorescence, c. distribution map in Turkey.

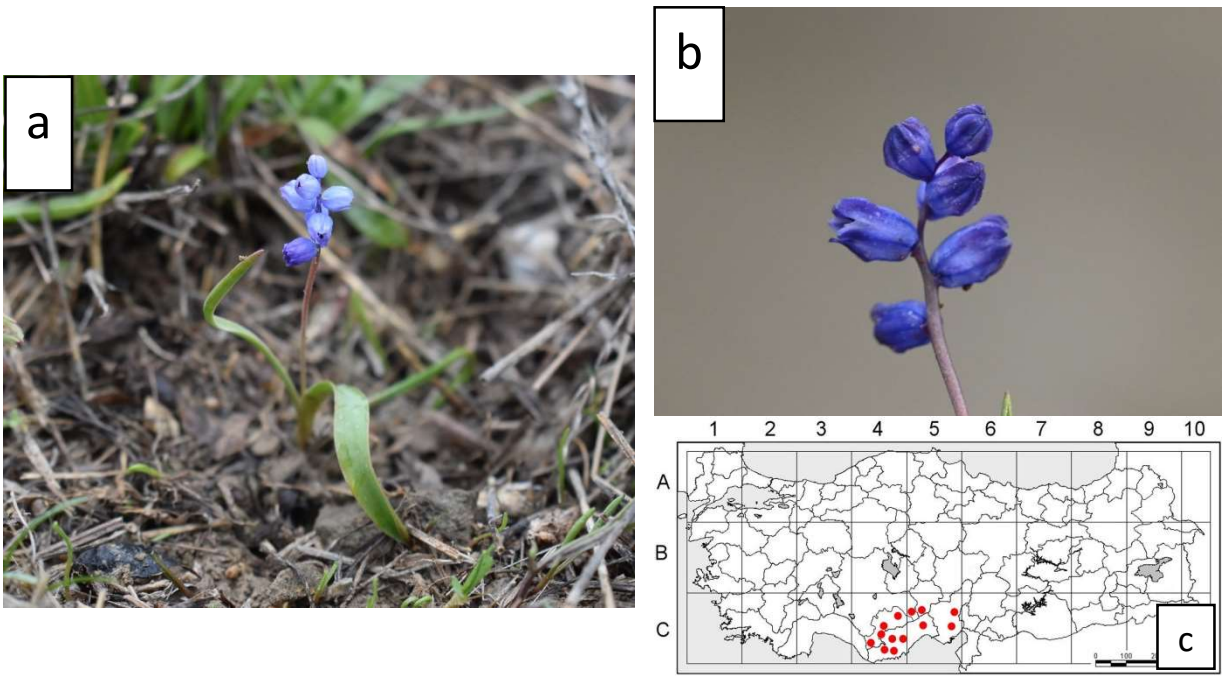


Figure 11. Hyacinthella lazulina; a. habit, b. inflorescence, c. distribution map in Turkey.

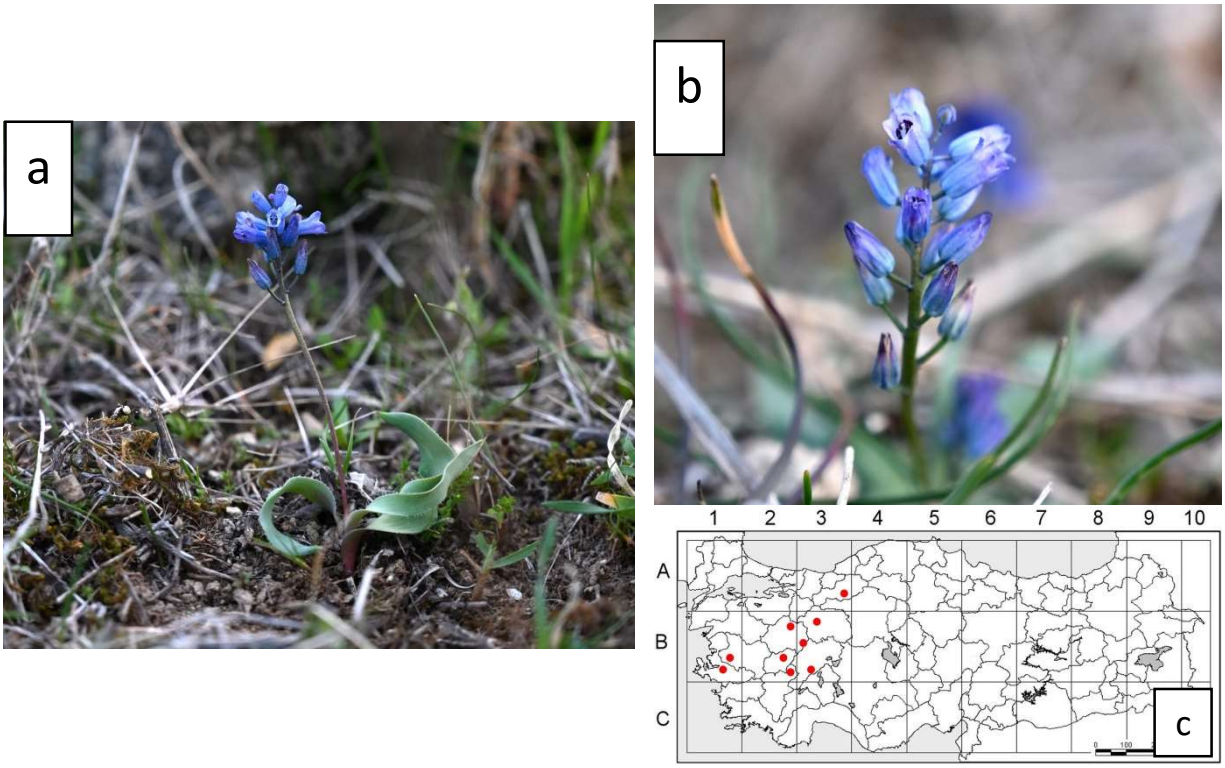


Figure 12. Hyacinthella lineata; a. habit, b. inflorescence, c. distribution map in Turkey.

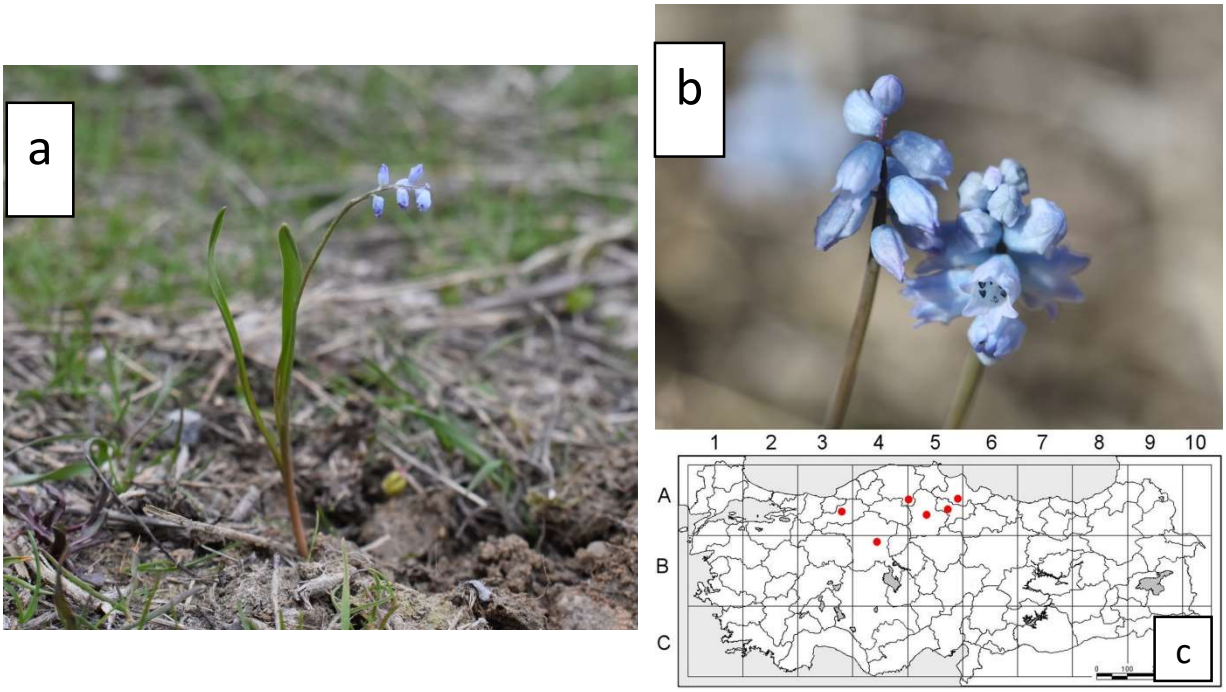


Figure 13. Hyacinthella micrantha; a. habit, b. inflorescence (Photo: Barış BANİ), c. distribution map in Turkey.

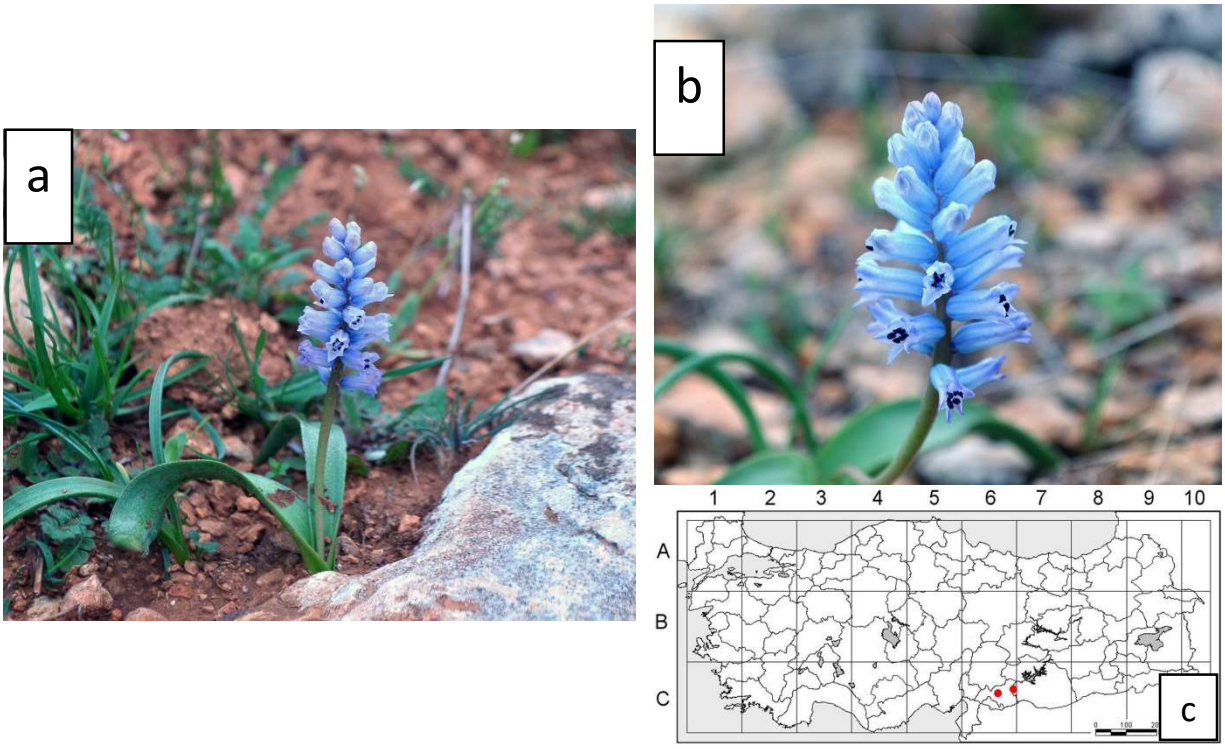


Figure 14. Hyacinthella nervosa; a. habit, b. inflorescence, c. distribution map in Turkey.

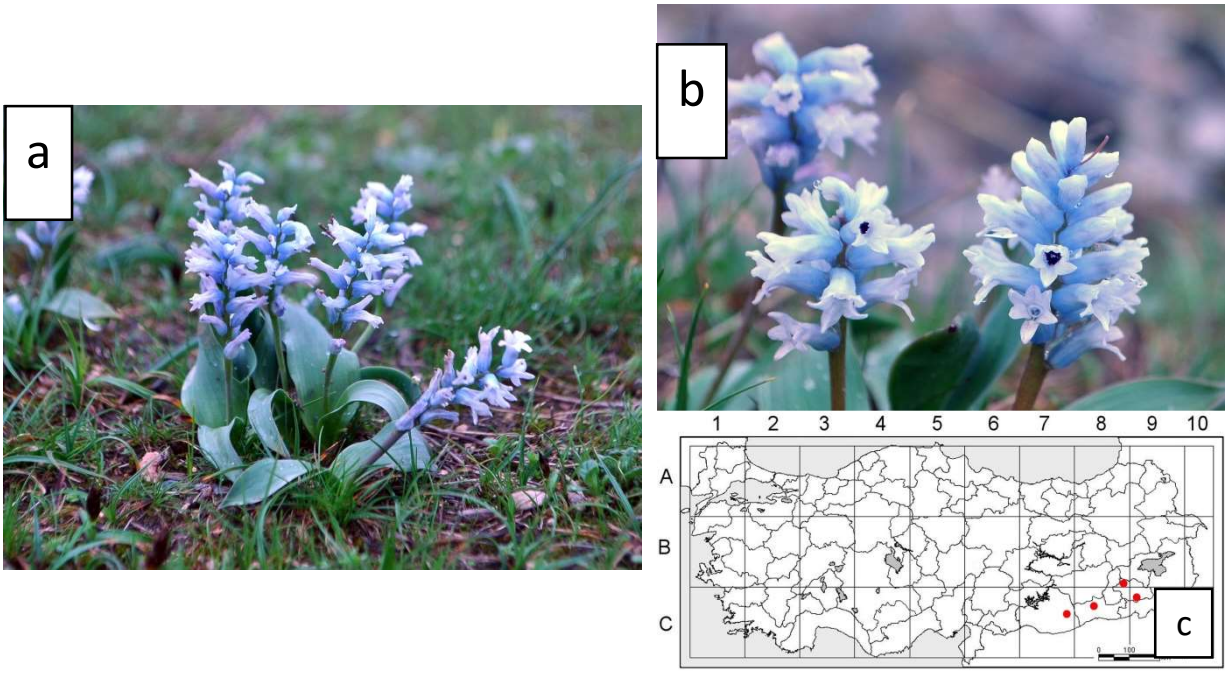


Figure 15. Hyacinthella siirtensis; a. habit, b. inflorescence, c. distribution map in Turkey.

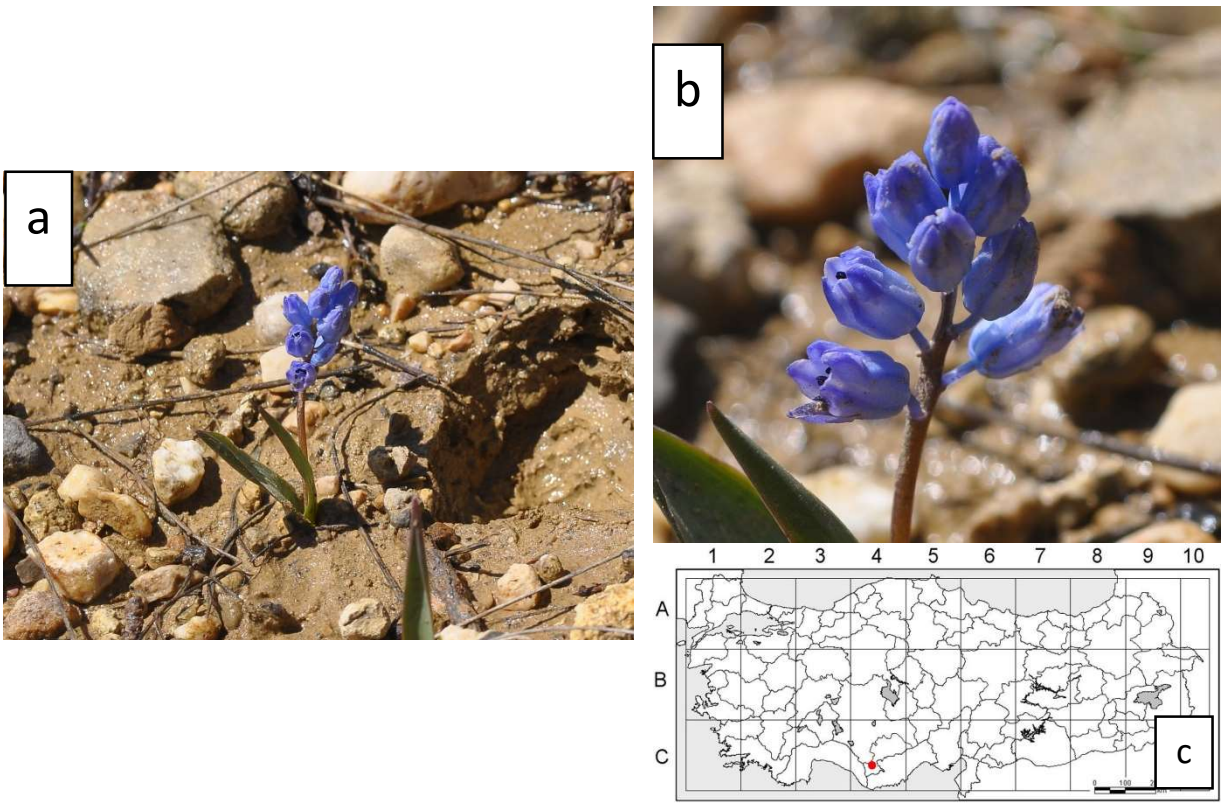


Figure 16. Hyacinthella venusta; a. habit, b. inflorescence, c. distribution map in Turkey.

Conclusion

These plant groups, informally called petaloid monocotyledons, have the potential to be used as ornamental plants. In addition, it is thought that adequate promotion of Hyacinthella and similar genera will contribute to Turkey's ecotourism potential.

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References

APG III., 2009. An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG III. Botanical Journal of the Linnean Society 161: 105–121. http://dx.doi.org/10.1111/j.1095-8339.2009.00996.x.

Feinbrun, N. 1961. Revision of the genus Hyacinthella Schur. Bull. Res. Counc. Israel 10: 324-347.

Govaerts, R., 2019. World checklist of Asparagaceae. http://apps.kew.org/wcsp/ Facilitated by the Royal Botanic Gardens, Kew. Accesion date: 02.01.2021.

Mathew, B., 1987. The Smaller Bulbs. London: B.T. Batsford, ISBN 978-0-7134-4922-8, pp. 101–103

Persson, K. & Wendelbo, P. 1981. Taxonomy and cytology of the genus Hyacinthella (Liliaceae-Scilloideae) with special reference to the species in S.W. Asia. - Part I. – Candollea 36: 513-41.

Persson, K. & Wendelbo, P. 1982. Taxonomy and cytology of the genus Hyacinthella (Liliaceae-Scilloideae) with special reference to the species in S.W. Asia. - Part II. - Candollea 37: 157-175.

Persson, K., Wendelbo, P., 1984. Hyacinthella Schur, In: Flora of Turkey and the East Aegean Islands (Editor: P. H. Davis). vol 8. Edinburgh University Press, Edinburgh. 274-279.

Persson, K., Persson, J., 1992. A new species and additional chromosome counts of Hyacinthella in Turkey. Nordic Journal of Botany 12(6): 615-620.

Persson, K., 2000. Two new bulbous species from the central Taurus Mountains of Turkey. The New Plantsman 7(4): 200-208.

Speta, F., 1998. Hyacinthaceae. In. The families and genera of vascular plants, monocotyledons. vol. 3 (Editor: K. Kubitzki). Springer, Berlin. 261-285.

Stafleu, F. A., Cowan R. S., 1985. Taxonomic Literature. A Selective Guide to Botanical Publications with Dates, Commentaries and Types, Volume 5. pp. 400. Utrecht, Netherlands.

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ROLE OF PLANT GROWTH REGULATORS IN THE ALTERNATE BEARING OF THE OLIVE TREE (Olea Europaea L.)

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ABSTRACT
Olive has a great importance in terms of human health that is cultivated in large areas in the world and in our country and has been a source of livelihood for millions of people. However, the irregula or alternate bearing of many fruit species including olive in a changing climate scenario is one of the biggest challenges for the sustainable productivity of the crop. Due to the alternate bearing, the product cannot be taken regularly every year and there are fluctuations in the yield over the years. This unfavorable situation is an economic problem that affects both the olive producers and the industry, causing price fluctuations between “On” and “Off” years, and ultimately negatively affects the country's economy. Many studies have been carried out to explain the alternate bearing mechanism in olives. Although it has been concluded that many factors are effective, the alternate bearing mechanism and the combined effects of some factors have not been fully explained. Plant growth regulators are the most important endogenous factors that can affect alternate bearing (especially flower bud stimulation and formation). Endogenous plant growth regulators are considered to be key factors controlling alternate bearing physiology. This review article will help understand plant growth regulators and the problem.
Keywords: Olive, Alternate bearing, Plant growth regulators

INTRODUCTION
Olive (Olea europaea L.) is an evergreen, woody perennial herb native to the Mediterranean basin. The olive fruit is commercially important for table consumption all over the world. World olive production areas are around 10 million hectares. Most of the olive production areas are in the Mediterranean countries. World olive production fluctuates over the years. It was 2,923 million tons in 2019/20 season. Important countries in olive production; Spain, Italy, Egypt, Greece, Turkey and Tunisia. Spain takes the first place among EU countries, followed by Greece and Italy. It is estimated that Spain's share in EU production in the 2019/2020 season is at the level of 55% (Figure 1).

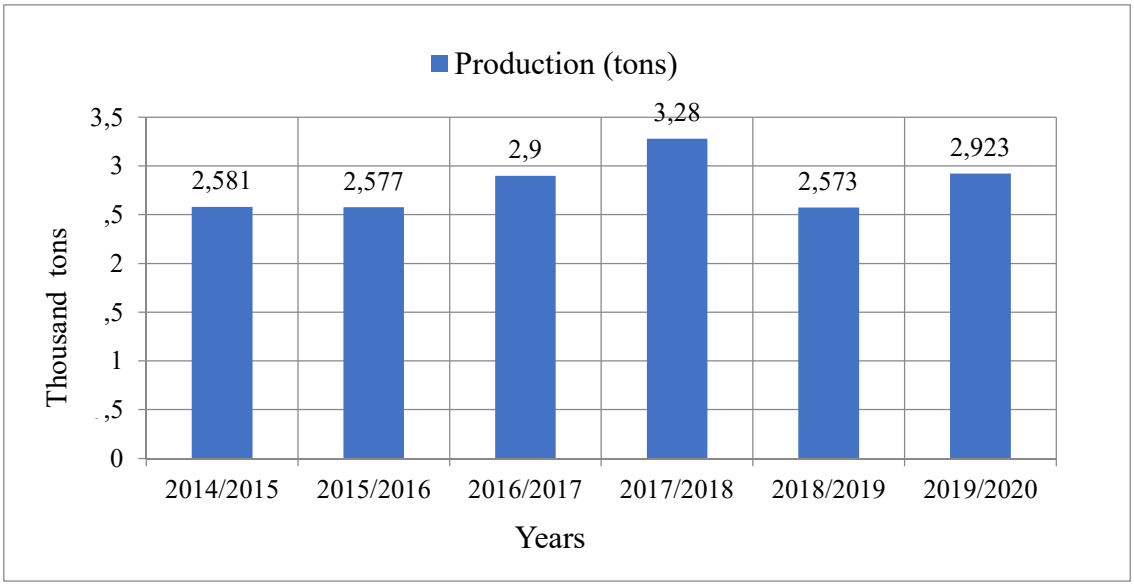


Figure 1. Annual production of table olives worldwide from 2014/2015 to 2019/2020 (in 1,000 metric tons) (Anonymous (2021)

Spain and Italy meet half of the world's olive oil production. These countries are followed by Tunisia, Greece, Turkey and Morocco. In 2019/20, Spain alone accounted for 55% of world production. When the world consumption data is examined, there is a consumption of approximately 3 million tons. When analyzed by years, it is observed that it is generally stable and has a fluctuation of approximately 3%. Production and consumption data by year and countries are given in figure 2.

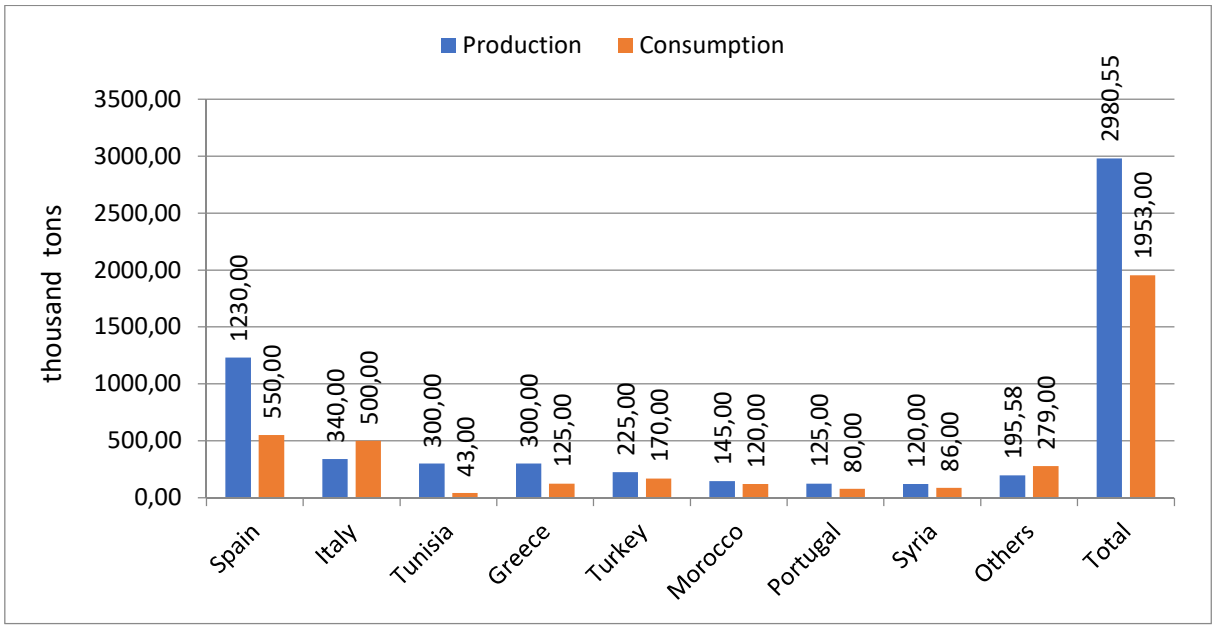


Figure 2. World Olive Oil Production/Consumption Data for 2019/20 (Anonymous (2021)

In recent years, the increase in interest in longevity in addition to healthy and balanced eating habits in the world, which is known for its benefits to human health due to its fatty acid composition as well as biochemical compounds such as fat and water soluble polyphenols and antioxidants, has increased the consumption of olive and olive oil. There are fluctuations in the amount of olive production in the world over the years. Alternate Bearing (AB) is one of the most important issues that cause these fluctuations in production. AB is an important problem seen in a total of 19 horticultural crops, mainly olive, pistachio, mango, pecan, apple and some citrus varieties. The term AB is a term used by gardeners to denote the production of a heavy fruit crop one year, followed by a light crop the next. AB is one of the most important problems encountered in olive cultivation. In the 'Off' year, a) Failure to produce the product will result in loss of income for the producer, b) The risk of not supplying the export and import markets with goods of the same quality continuously and the risk of losing the customer market or the inability to make any connections due to this risk c) The rise in consumer prices and while causing losses; In the 'On' year, reasons such as a) excess supply causing a decrease in price, b) insufficient storage and storage expenses, c) quality arise. This status negatively imapcts both the grower and the country's economy. Olives bloom on an annual tree with two inflorescences per node. flower bud induction occurs by July during endocarp sclerification (FernaÂndez-Escobar et al., 1992). Flower differentiation manifests itself in March (Hartmann, 1951) and flowering occurs in May (AlcalaÂ and Barranco, 1992). A large amount of abscission occurs in flowers and fruits shortly after flowering Lavee et al., 1983; Rallo and FernaÂndez-Escobar, 1985). Remaining fruits usually remain on the tree until harvest, which takes place in autumn and winter (FernaÂndez-Escobar et al., 1999). Furthermore, In addition, cultural and climatic factors such as pruning, abiotic and biotic stress factors can affect flower formation and contribute to alternate bearing (Lavee, 1985). However, the AB mechanism which is seen in many fruit trees, is not fully understood. In studies with alternate beraing in different fruit species, genetic factors, climatic and ecological conditions, nutrients, carbohydrates, cultural practices and plant growth regulators (PGR) all correlate with alternate bearing, but the extent of the effects of these factors is still unclear (Lavee, 1989; Ulger, 1997; Esmaeilpour and Khezri, 2006; Al-Shdiefat and Qrunfleh, 2008; Barranco et al., 2010; Okay et al., 2011; Kour et al., 2018; Gundesli et al., 2019; Gundesli et al., 2020). Especially among these factors, the relationship between plant growth regulators and AB is important. Hartmann (1973) measured both intrinsic inhibitors and promoters in different organs of olive. Ferguson (2006) stated that plant growth regulators have a triggering effect on the new shoot growth of olives and on the initiation of vegetative and flower buds. There are five groups of plant-growth-regulating compounds: auxin, gibberellin (GA), cytokinin, ethylene, and abscisic acid (ABA). For the most part, plants naturally contain hormones as well as synthetic substances that play an important role in plant physiology. Among them, auxins, gibberellins and cytokinins are known as growth promoters and others are known as growth inhibitors (Westwood, 1993; Davies, et al. 2004; Okay et al., 2011). Until now, Plant growth regulators have been used in some studies to prevent alternate baring in many different fruits, and positive results have been obtained. however, it did not abolish the periodicity completely. Plant growth regulators are the most important factors affecting the internal formation of various biochemical reactions and the subsequent plant growth and development. It is known that physiological events such as growth, development, differentiation, flower and fruit formation in plants are mostly regulated by plant growth Plant growth regulators.

Especially as a result of these chemical changes that occur during the year, it plays an important role in fruit bud casting. Detection of this chemical signal (beginning of the formation of signals), which is effective in flower, fruit bud and fruit drop, which is significantly affected by ecological, physiological and chemical factors, is of great importance in revealing the mechanism of alternate bearing. Domagalska et al., 2010
They have done a lot of research to understand why olive yields fruit in one year and gives little or no fruit the next year, and they investigated the factors that are effective in obtaining regular products every year. Many studies have revealed that internal plant growth regulators are especially effective in flower formation and fruit set. Therefore, in this study, the results of studies on alternate bearing and plant growth regulators in olive were evaluated.

Alternate bearing and Plant Growth Regulators Hypothesis

The alternate bearing control mechanism has high intrinsic signals for bud differentiation and high fruit set, as well as signals for low flower bud induction, differentiation or fruit set. Both endogenous and applied growth regulators have been shown to be such signals. Flowering time is greatly affected by major chemical components such as plant growth regulators. The level of plant growth regulators and some applications were made in order to eliminate alternate bearing in olive and regulate flower formation and fruit set in 'On' and 'Off' years.

Gibberellins

The gibberellins are a large family of chemicals based on the ent-gibberellane structure. It was isolated from Gibberella fujikuroi mushrooms for the first time in Japan, and it was noticed that this mushroom caused excessive height growth in rice (Kumlay Tamer Eryiğit, 2011). The first gibberellin discovered was gibberellic acid. The gibberellin hormone used in horticultural crops is mostly obtained from the Gibberella fungus by fermentation. There are now more than 100 species of gibberellins, and they are mainly harvested from a variety of organisms, from fungi to higher plants. More than 50 of this hormone have been found in plant seeds. However, GA_3 is the most widely used for commercial purposes. However, for commercial the most widely used is GA_3 (Westwood, 1993; Kumlay and Eryiğit, 2011). Gibberellins are mainly cultured in embryos, young leaves and roots. Gibberellins (GAs) have many functions in plants. these; can promote flowering, seed germination and stem elongation (increasing cell division and elongation), in leaf expansion and delays senescence (Fry and Street, 1980; Pharis et al., 1992; Gaspar et al., 1996; Kumlay Tamer Eryiğit, 2011). It can induce or delay the abscission of the cell wall and mature fruit or flowers, especially in terms of alternate bearing. GA_3 is one of the most important plant growth regulators used to increase fruit yield and reduce alternate bearing in olives. Flower induction in olive trees can be inhibited mainly by gibberellins, which originate from the fruit and are promoted by cytokinins, meaning control by a balance of hormones. Marcelle (1984) showed that the balance between endogenous GA levels and cytokinins is associated with flowering. Stutte and Martin (1986) reported that the olive pit can be a source of anti-flowering compounds and the fruit is a source of flower-promoting substances. Chaari-Rkhis et al (2006) said that gibberellin plays a role in regulating many physiological processes, including flower formation and shoot growth. When GA_3 was injected into olive trees, flowering was inhibited (Fernandez-Escobar and Benlloch, 1992) and this inhibitory effect varied with timing.

It has been stated that GA3 applications prevent pre-harvest spills, provide product increase in 'On' and 'Off' years and have a positive effect on fruit yield (Lavee et al., 1983; Rotundo and Gioffree, 1984). Pal and Ram (1978) stated in their study that the amount of GA in the exiles of the year 'On' is higher than the year 'Off'. Baker et al., (1981) stated in their study that GA applications to buds at rest prevented flower formation and differentiation. Shulman and Lavee (1980) demonstrated a progressive decrease in GA content during fruit formation and internal development, with GA levels very low at full black ripening. Ulger et al. (1999) stated that olive showed a higher amount of GA3 in the 'On' year than the 'None' year. Many studies show the physiological importance of GAs in olive, particularly in the control of flower formation (Stutte and Martin, 1986; Navarro et al., 1990; Rapoport et al., 1990; Feernandez-Escobar et al., 1992; Lavee and Haskal, 1993; Gaspar et al., 1996; Proietti and Tombesi, 1996; Ulger et al., 2004; Al-Shdiefat and Qrunfleh, 2008).

Abscisic acid (ABA)

ABA is considered an inhibitor because it maintains the dormant state of buds and seeds and slows cell elongation in seed maturation. It has been stated that ABA plays an important role inhibits shoot growth and is involved in regulating water loss from plants and in closing stomatal openings, controlling water and ion uptake by roots, and, together with other phytohormones, promoting defoliation and senescence. In seeds, ABA plays also a role in inhibiting early germination, promoting storage reserve synthesis, acquiring drying tolerance, cell division, suppressing reserve mobilization, and inducing dormancy. In many cases, they have an antagonistic relationship with gibberalins, while they act together with ethylene and jasmonic acid. It is found almost everywhere in plants and at all times. In short, ABA is involved in the signaling of many processes in plants. Abscisic acid (ABA) has a well-known role in bud dormancy. Flower development is controlled by environmental conditions and developmental regulations (Bewley and Black, 1994; Gaspar et al., 1996; Shalom et al., 2014; Gómez-Cadenas et al., 2015; Kour et al., 2018). Some researchers believe that (ABA) and ethylene are hormones that regulate a wide variety of plant processes and promote shedding of different plant organs. For this reason, studies have started, especially on alternate bearing, based on these thoughts. But studies are very few. Zeevaart (1978) reported that ABA has important effects on flower formation in different plant species. also showed that in the 'Off' year the free ABA levels in the flower buds increased gradually from September to October compared to the 'Open' year during the flower development period. Abu-Zahra and Al-Dmoor (2013) stated that in plant nodes, ABA was lower in spring and summer, which are the active periods of plants, and higher in autumn and winter in other passive periods. Lavee (1986) stated that while the ABA concentration in fruits increased continuously from fruit set to ripening, the ABA content in olive fruit decreased during ripening. The tree in the “Off” year produces more ABA (which promotes flower formation and initiation) than the trees in the “On” year (Saleh and Mostafa, 2008). Abscisic acid (ABA) and ethylene are hormones that regulate a wide range of plant processes and are thought to promote shedding of different plant organs (Reid 1985; Zhang and Zhang 2009). However, abscisic acid levels were found to be important in the bud and embryo developing in the yeast abscission in pistachios (Takeda and Crane 1980: Gundeşli et al., 2020a). Baktır et al. (2004) observed that the ratio between GA and ABA is important for the transition from vegetative growth to reproductive development. If bud ABA concentrations are greater than GA concentrations, flower buds are formed.

Conversely, if the GA concentrations were greater than the ABA concentrations, the bud remained vegetative. GA produced by the development of olive seeds could cause such an outcome. On the other hand, Ulger et al. (2004) emphasized that high levels of GA4, ABA and some cytokinins may have positive contributions on flower formation in some physiological periods in their study on olives.

Auxins

Auxins, one of the plant growth regulators, are the oldest hormones used in agriculture (Halloran and Kasım, 2002). They play an important role in cell expansion and growth, thus promoting cell elongation, tissue development and root formation. The most abundant auxin form is Indole-3-acetic acid (IAA). The most common auxins other than IAA are; indole butyric acid (IBA), naphthalene acetic acid (NAA), naphthoxy acetic acid (NOAA), phenoxy acetic acid (FOAA), 2,4-D, phenyl acetic acid (FAA), parachlorophenoxy acetic acid (4-CPA) and 2,4,5-trichlorophenoxy acetic acid (2,4,5-T) (Kumlay and Eryiğit, 2011). Endogenous plant growth regulators such as auxin play an important role in controlling developmental processes throughout a plant's life cycle Davies, 2010; Gundesli et al., 2020c). Controlling the abscission of leaves, flowers and fruits is of great importance in agriculture. Auxin is very important in preventing the shedding of fruits, especially in evergreen plants. Flowering time is greatly influenced by major chemical components such as plant growth regulators (Davis, 2009; Koenig et al., 2009; Domagalska et al., 2010). Flowering and casting appear to be closely related to the fruit development process and the inhibitory effect of developing fruit on vegetative growth. Higher levels of auxin-like substances and an inhibitor (similar to ABA) and lower levels of Gibberellin (GA3)-like substances are vital for a fluorogen affinity. There is an inverse relationship between the endogenous inhibitor level in the shoot and vegetative growth. Higher inhibitor content promotes flowering. Auxin group plant growth regulators are used for fruit thinning and reducing alternate bearing, especially in olive cultivation. In some studies, it has been stated that NAA applied after flowering regulates the amount of product. Hartmann (1973) emphasized that there was no difference in the auxin levels of olive buds at different stages of development, while Epstein (1981) showed that IAA levels at different stages were significantly higher in their leaves. In Lavee (1986) stated that auxin and cytokinin levels in different tissues of olive were significantly low during olive fruit set and development periods.. Also, They function in cell elongation, help break up remaining seeds and dormant buds, inhibit flower formation, and interact with auxin to prevent shedding of young fruit. Baktır et al. (2004). 'Off' year was found high in olive blooming period (May). Saleh and Mostafa, (2008), in their study on olive, showed that there was a sharp increase in IAA levels in November and December in olive lateral buds in the "Ten" year compared to the "Closed" year tree. stated that these levels were the same throughout September-March, but at the end of the resting period (January) IAA levels showed significant changes in the lateral buds.

Cytokinins

Cytokinins are important in plant physiology, especially unlike other hormones that occur during cell division, they are known to be responsible for regulating nucleic acids, apical dominance, stimulating bud formation, increasing seed germination, influencing the transport of nutrients and metabolites, inhibiting flower, fruit and leaf senescence and root formation.

Cell division in plant tissues is regulated by the combined action of auxins and cytokinins, each of which affects different stages of the cell. Stimulation of cell division (with auxins) and release of buds to rest or dormancy and also (in cuttings) they can induce incidental bud formation. They are also organic substances in the structure of quinine found in animals (Westwood, 1993). In the view of many researchers, cell growth, cell differentiation and organogenesis have been found to be controlled by an interaction between cytokinins and auxins in tissue and organ cultures (Fabijan et al., 1981; Gaspar et al., 1996; Kumlay and Eryiğit, 2011; Gundesli et al., 2020b). Henson and Wareing (1977) and (Zeevaart, 1978) concluded that there is a causal relationship between floral induction and cytokinin and further studies are needed. Hoad (1984) reported that the evidence for the relationship between endogenous cytokinins and flower formation in apples is sparse. Al-Shdiefat and QRunfleh (2008) also found that the cytokinin concentration in the lateral buds of olive trees in year 'On' was significantly higher than in trees in year 'Off' during the September-April period. Shulman and Lavee (1976) found that the cytokinin content in olive fruit increased with maturation. showed an increase. However, while these levels are statistically significant in winter, spring and summer, the levels are different in autumn. They found that the kinetin-like cytokinin produced detectable peaks in the "On" year in November. In a study by Abu-Zahra and Al-Dmoor (2013), Kinetin-like cytokinin levels in leaves, knuckles and shoot tips were higher in the “open” year than in the “off” year. Many other studies have shown significant effects of naphthalene acetic acid (NAA) (Rama and Pontikis 1990) and IBA (Brahadda et al. 2003; Rkhis et al., 2011). It affects in vitro root formation of olive plants.

Evaluation and Conclusion

As in many fruit species, Irregular or alternate bearing are also seen in olives. This irregular product taking is called periodicity or alternas. In periodicity, a lot of product is taken in one year, while the next year, either no product or very little product is taken. Olive fruit is commercially important all over the world because of its table consumption and its oil benefits for human health. However, olive production in the world has fluctuations in production from year to year, largely due to alternative bearing. During heavy crop years, the fruits are numerous but small and its table value is low. Shoot development and bud differentiation, which will yield the next year, are under pressure. The large amount of product ripens late and the harvest is done late. This situation has drawbacks for the country's economy, both for the producer and the consumer. Although many studies have determined the effects of many internal and external factors on periodicity, it is still unclear. As a result of previous studies examined, It is seen that many physiological events such as embryo formation, flower bud and development, bud fall, fruit set and growth are regulated by plant growth regulators and have important effects. In different tissues and different physiological periods, if the amounts of internal factors decrease to critical levels, they can cause changes in olive physiology and cause flower formation and drop.

Endogenous plant growth regulators are considered to be key factors controlling alternate bearing physiology. Among plant hormones, gibberalins, abscisic acid auxin and cytokinin are the most promising hormones in recent studies to prevent alternate bearing. Gibberellins ABA, Auxins and Cytokinins in tissues may be a key factor and regulator of flower development, inhibiting flower formation and alternate bearing.

If we take into account the periodicity and interrelationships of the internal factors (such as plant growth regulators) in plants and plan our practices in cultivation accordingly; It is predicted that we can prevent and reduce the periodicity effect, which is an important problem in olives. However, it appears that no established procedure has yet been proposed for pistachio growers and further research in this area is warranted.

References

Abu-Zahra, T., and Al-Dmoor, H. (2013). Seasonal Changes in Endogenous Plant Hormones and Alternate Bearing of Nabali Olive (Olea europea L.)Trees. Asian Journal of Plant Sciences, 12: 241-246.

Akillioglu, M., (1991). The use of plant growth regulators and the control of alternate bearing in olive. Olea, Vol. 21, No. 2.

Anonymous (2021). International Olive Council. access date and address; 15.11.2021. https://www.trade.gov.tr/

Baktır, I., Ulger, S., Kaynak, L. (2004). Seasonal Changes in Endogenous Plant Hormones and Alternate Bearing of Olive (Olea europea L.) Trees. HortScience: a publication of the American Society for Horticultural Science 39(5).

Bewley, J. Black, M. (1994). Seeds, physiology of development and germination. Plenum Press: New York 1994.

Brahadd., N., Abousalim, A., Walali Loudiyi., DE. (2003). Effcet du milieu de culture sur le microbouturage de olive (Olea europeae L.) cv. Picholine Marocaine. Biotechnologie, Agronomie, Société et Environnement 7: 177-182

Davis, S.J. (2009). Integrating hormones into the floral-transition pathway of Arabidopsis thaliana. Plant Cell Environment, 32: 1201–1210.

Davies P.J. (2010). The Plant Hormones: Their Nature, Occurrence and Functions. 3rd ed. New York, NY, USA: Kluwer Academic, pp. 2-6.

Domagalska, M. A., Sarnowska, E., Nagy, F., & Davis, S. J. (2010). Genetic Analyses of Interactions among Gibberellin, Abscisic Acid, and Brassinosteroids in the Control of Flowering Time in Arabidopsis thaliana. PLoS ONE, 5(11), e14012.

Epstein, E. (1981). Concentration of free and bound Indole-3-Acetic Acid (IAA) in leaves of fruit-bearing and barren olive and citrus. Plant Physiology., Vol. 67, No. 4.

Esmaeilpour, A, Khezri, M. (2006). Abscission of inflorescence buds as affected by genetic characteristics in some Iranian commercial pistachio cultivars. International Journal of Agriculture And Biology., 8(3): 360-362.

Ferguson, L., (2006). Trends in olive fruit handling previous to its industrial transformation. Grasas Y Aceites, 57: 9-15.

Fry, S.C. Street, H.E. (1980). Gibberellin-sensitive cultures. Plant Physiol. 65:472-477; 1980.

Gaspar, T., Kevers, C., Penel, C., Greppin, H., Reid, D. M., Thorpe, T. A. (1996). Plant hormones and plant growth regulators in plant tissue culture. In Vitro Cellular & Developmental Biology - Plant, 32(4), 272–289.

Gundesli, M.A., (2020a). Endogenous Gibberellins and Abscisic acid-metabolites: their role for flower bud abscission and embryo development in pistachio. Turkish Journal of Agriculture and Forestry. Cilt 44, Sayı 3, Sayfalar 290 – 300

Gundesli, M.A., Kafkas, S., Guney, M., Kafkas, N.E., (2020b). Identification of Endogenous Cytokinin-like compounds profile during different growth stages and their effects on flower bud abscission in Pistachio (Pistacia vera L.). Folia Horticulturae, 32(1): 1-15. DOI: 10.2478/fhort-2020-0003.

Gundesli, M.A., Kafkas, S., Guney, M., Kafkas, N.E., (2020c). Changes in Endogenous Auxin during flower bud abscission in Pistachio (Pistachio vera L.). Turkish Journal of Agriculture and Forestry, 44, (2020), 71-82.

Gómez-Cadenas, A., Vives, V., Zandalinas, S.I., Manzi, M., Sánchez-Pérez, A.M., Pérez-Clemente, R.M., Arbon V., (2015). Abscisic Acid: A Versatile Phytohormone in Plant Signaling and Beyond. Current Protein and Peptide Science, 2015, 16, 413-434 413

Hartmann, H.T., (1973). Chemicals to promote fruit abscission of olives. Acta Horticulturae., 34: 379-383.

Koenig, D., Bayer, E., Kang, J., Kuhlemeier, C., Sinha, N. (2009). Auxin patterns Solanum lycopersicum leaf morphogenesis. Development, 136(17), 2997–3006.

Kumlay, A.M., Eryigit, T., (2011). Growth And Development Regulators In Plants: Plant Hormones Iğdır Univ. Iğdır University Journal of the Institute of Science and Technology. 1(2): 47-56, 2011

Lavee, S., Ben-Tal, Y., Klein, I., Epstein, E. (1983). Regulation of Fruiting in Olives. Institute of Horticultur, Agricultural Research Organization (ARO), The Volcani Center, Israel, Pages: 222.

Lavee, S., (1985). Olea europea. In: CRC Handbook of Flowering, Halevy, A.H. (Ed.). CRC Press, Boca Raton, USA., ISBN-13: 9780849339110, pp: 423-434.

Pal, S., Ram, S. (1978). Endegenous gibberellins of mango shoot-tips and their significanca in flowering. Scientia Hırticultures. 9: 369-379.

Palese, A.M. and Crocker, S.J. (2002). Preliminary investigations of endogenous gibberellins in seeds of olive fruits. Acta Hortirculturea., 586: 525-528.

Pharis, R. P.; Ruichuan, Z.; Jiang, I. B. J., (1992). Differential efficacity of gibberellins in flowering and vegetative shoot growth, including heterosis and inherently rapid growth. In: Karssen, C.; Van Loon, L.; Vreugdenhil, D., ed. Progress in plant growth regulation. Dordrecht: Kluwer Academic Publishers; 1992:13-27.

Rkhıs, A.C., Maalej, M., Drira, N., Standardi, A. (2011). Micropropagation of olive tree Olea europaea L. 'Oueslati' Turkish Journal Agriculture Forestry 35 (2011) 403-412.

Saleh, M.S., and Mostafa, M.Q. (2008). Alternate bearing of the olive (Olea europaea L.) as related to endogenous hormonal content. Jordan Journal of Agricultural Sciences, 4(1): 12- 24.

Shulman, Y. and Lavee, S. (1976). Endogenous cytokinins in maturing Manzanillo olive fruits. Plant Physiology, 57: 490-492.

Stutte, G.W. and Martin, G. C., 1986. Effect of Killing the Seed on Return Bloom of Olive. Scientia Horticulturea, 29: 107 - 113

Rama, P., Pontikis, C.A, (1990). In vitro propagation of olive (Olea europaea L.) "Kalamon." Journal of Horticulture Science 65: 347-353.

Ulger, S., (1997). Determination of the effects of endogenous plant hormones on alternate-bearing and flower bud formation in olive. University of Akdeniz, Institute of Natural and Applied Sciences. Ph. D. Thesis.

Ulger S., Baktır., I., Kaynak, L. (1999). Determination of the effects of endogenous plant hormones on alternate bearing and flower bud formation. Turkish Journal Agriculture and Forestry 23(3): 519–523.

Ulger, S., Sonmez, S., Karkacier, M., Ertoy, N., Akdesir, O., Aksu, M. (2004). Determination of endogenous hormones, sugars and mineral nutrition levels during the induction, initiation and differentiation stage and their effects on flower formation in olive. Plant Growth Regulation 89–95, 2004.

Westwood, M.N., 1993. Hormones and Growth Regulators, Temperate Zone Pomology: Physiology and Culture, Timber Press Inc, Portland, Oregon, USA.

Chao, Y. Y. (2015). Alternate Bearing in Olive (Olea europaea L.). Powered by the California Digital Library University of California The Thesis of Master, 2015.

Zeevaart, J.A.D. (1978). Phytohormones and Flower Formation–In: Letham, Goodwin and Higgins (Eds.) Vol.2, Elsevier-1, North-Holland.

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THE THEORIES LAID BEHIND THE AFFECT OF CARBONHYRATES ON ALTERNATE BEARING OF THE OLIVE TREE (Olea europaea L.)

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Abstract
Alternate bearing, a common phenomenon that occurred in horticultural trees both evergreen and deciduous trees, is characterized by a tree with a high-yield crop one year ("On-year") and a low-yield or even no crop at the following year ("Off-year"). Although the exact reason for alternate bearing is not yet clear, several factors may influence the occurrence and severeness of it. Alternate bearing is more common in old productive trees (more than 10 years) compared to the young ones (about 3-5 years). The olive (*Olea europaea*) is among the trees with a high alternating bearing rate in fruit production. Environmental conditions besides activation and repression of endogenous metabolic pathways affect the degree of alternate bearing. Contrary to other fruit trees, alternate bearing in olive and pistachio follow a strange pattern which involves abscising the inflorescences instead of not forming them in Off-year. Competition for nutrients especially carbohydrates (CHO) among organs is one of the most likely theories for alternate bearing. The depletion of stored CHO during the On-year force inflorescences to be abscised. This paper was aimed to review the role of CHO reserves, as a cause or effect, in the alternate bearing of intensively cultivated olives and possible management practices of the challenge. The relationships between the bud abscission and CHO storage have been investigated by many studies in trees involved by alternate bearing. Carbohydrates involve in plants metabolisms ranging from the supply to the skeleton for amino acid and protein synthesis to the involvement in fruit quality and composition.
Keywords: Olive tree, *Olea europaea*, L, carbohydrates

Introduction

Today, with the increase in the consumption of synthetic foods along with sedentary living due to the growth of technology, attention to a healthy diet has become important and vital for all segments of society. As a result, increasing the yield and quality of fruits that can be used in a healthy diet has become a priority of scientific studies. The fruits of olive are delicious and can be useful for the human body with many benefits such as preventing osteoporosis, and cancers, reducing inflammation and arthritis, improving the digestive system, relieving allergic reactions, improving blood flow, protecting against heart disease, increasing the cognitive function, fighting with infections and lowering blood pressure. The olive (*Olea europaea* L.) is an evergreen plant belonging to Oleaceae family and has a long life which can be considered eternal, because when its roots are destroyed, it is revived by cuttings (Chehab et al., 2009). The olive tree is well adapted to Mediterranean and sub-Mediterranean climates. The best olive tree grows in areas with mild winters and hot, dry and long summers. Younger olive plants are less tolerant of cold and frost.

These trees can withstand temperatures of minus 9 degrees, which is minus 12 degrees for mature trees. Olive tree is considered as one of the most economically significant horticultural crops in the world. The olive fruit oil is used in food industry beside consumption of fresh fruit. The health and medical benefits of olives are mainly due to the presence of nutrients, minerals, vitamins and organic compounds such as iron, fiber, copper, vitamin E, and also phenolic compounds, oleic acid and various antioxidants and also essential fatty acids. The flavour, aroma and colour are the main indicators of fruit quality as well as pulp-stone ratio, fruit size, health related components content, flesh texture (Tombesi, 1993). The olive fruit oil also has protective effect against cardiovascular diseases and has pahramceutical applications (Turktas et al., 2013; Ghanbari Shendi, 2019).

Some of perennial fruit crops exhibit two multiannual reproductive strategies in their life cycles, a year with heavy fruit load ("ON"-year) following a year with low fruit load ("OFF"-year) which is known as alternate bearing (Goldschmidt, 2013; Sharma et al., 2015). Alternate bearing (AB) is a physiological phenomenon that occurs in a number of species of fruit trees and is more common in some species. Alternate bearing is one of the most significant challenges of orchardists problems and severely affects the fruit yield among some fruit tree species, such as olive (*Olea europaea* L.), pistachio (*Pistacia vera* L.), citrus species, apples, etc., (Monselise and Goldschmidt, 1982; Lavee, 2007; Yanik et al., 2013). Several fruit species other than olive have been reported to have an alternate bearing tendency including pistachio, apple, mango, citrus, pecan, etc. that significantly hamper the yielding. Various external and internal factors are responsible for this phenomenon. Alternate bearing is caused by the poor floral bud initiation in most of the fruit trees. More than a single factor is related to the alternate bearing phenomenon of these species; for example, gibberellins in apple (Luckwill, 1980), carbohydrate level in citrus, and pecan (Schaffer et al., 1985; Priestley, 1977). Like other fruit species, high and regular yielding is a prerequisite for olive producers. All the cultivars in olive show the tendency of alternate bearing that is a major problem to get regular yield in each growing season. This fluctuation in yield between ON and OFF-years causes severe economic problems both for producers and consumers (Rodrigues and Correia, 2009). The olive producers do regular orchard management in both ON and OFF-years, but they get lower or no yield and thus no income in an OFF-year, resulting in higher prices for the consumers.

In olive trees, the floral induction generally begins in July; however, the initiation of floral buds for next bearing year occurs in November. It has been reported that some hormones and phenolic compounds extracted from the seeds and leaves of bearing trees prevent the formation of flower buds in olive. It is reported that yield loss in OFF-years varies between 5 to 30 t/ha indicating a serious problem for the olive industry (Lavee, 2007). The severity of AB leading to yield loss depends on factors including the genetic and physiological status of cultivars, as well as environmental conditions. Some agricultural practices also may decrease the severity of AB (Ben-Gal et al., 2011). It has been proposed that the competition between fruits and vegetative organs for carbohydrate storage besides flower-site and endogenous plant growth hormones may the factors influencing AB (Monselise and Goldschmidt, 1982). The transition of juvenile period to the adult stage of the vegetative phase following the reproductive phase is controlled by a complex genetic network (Huijser and Schmid, 2011). Having knowledge from the regulating mechanisms underlying these transitions may be the vital step to reveal the main factors controlling AB (Yanik et al., 2013).

Carbohydrates

Olive contains a large diversity of endogenous carbohydrates (glucose, sucrose, fructose, mannitol and RFO). Some of carbohydrate (CHO) products may be involved in the tolerance to biotic and abiotic stress (Chartzoulakis, 2005; Lawlor and Cornic, 2002). It is reported that the metabolism of CHO in olive during abiotic stresses such as osmotic stress, low temperature and salinity change. During abiotic stress, the accumulation of the sugar alcohol such as mannitol in olive trees (Tattini et al., 1996) and sorbitol in apple and peach trees (Wang and Stutte, 1992; Lo Bianco et al., 2000) may facilitate osmotic adjustment. The composition of CHO in olive leaves is complex. Glucose, mannitol, sucrose and fructose are the primary photosynthetic products in the leaves of olive tree. Among CHO reported in olive mature leaves, the glucose is the most abundant one (Flora and Madore, 1993). Carbohydrates and nitrogen reserves play significant role in the initiation of flower bud in fruit plants. The accumulation CHO may possibly lead the synthesis and function of the compounds accountable for flowering (Bajpai and Bajpai, 2021).

Previous studies on several species proved that the variation in the concentration of CHO in the leaves of bearing trees (ON-year) and non-bearing trees (OFF-year) are outstanding. In the beginning of the season, the amount of sugars and starch are reported much higher at the in ON-year than OFF-year (Fahmi, 1958). The competition between vegetative and reproductive organs may probably cause the reduction in the production of CHO in new branches of olive during the on-year (competition with growing fruits during summer) leading to produce a fewer number of flowers. The strong growth in the off-year again allows large amounts of flower to be initiated the next year (Monselise and Goldschmidt, 1982). The changes of CHO levels in the leaf and fruit tissues of olive have been previously investigated (Donaire er al., 1975; Wodner el al., 1988; Drossopoulos and Niavis, 1988; Ulger eta l., 2004).

Despite the seasonal fluctuations in the metabolism and concentrations of CHO in olive tree, the importance of CHO reserves in reproductive development is not clear (Priestley, 1977; Drossopoulos and Niavis 1988; Conde et al., 2008). However, the changes in the CHO reserves between "ON" and "OFF" years reported in various species suggest an association between CHO metabolization and biennial bearing (Barranco et al., 2010). The heavy fruit load on olive trees may cause the depletion of CHO reserves in some organs of the tree. Consequently, during a high- yield fruit production in bearing year, the formation of floral bud may be inhibited due to scare reserve of CHO. The hormonal control, carbon and mineral balance control and flowering site limitation are the tree major regulatory mechanism suggested by Goldschmidt (2005) which may be involved in the induction of AB. The variation in tree's CHO budget is often suggested as a key factor triggering AB (Monselise and Goldschmidt, 1982; Oliveira and Priestley, 1988).

The accumulation of CHO reserves in most tree species supports the future metabolic needs both within and between annual cycles (Kozlowski, 1992). The reproductive phase consumes the CHO reserves from previous year and depleting CHO reserves during maturation of the new vegetative growth may be restriction factor for fruit growth and development (Berman and DeJong, 2003; Spann et al., 2008). Therefore, a heavy yield depletes tree reserve leading to regulation of competition for reserves between current shoots and fruits which develop simultaneously. The sink capacity of many fruits limits the vegetative growth, reducing the length of the new shoots by translocation of reserves to reproductive organs (Kour et al., 2018).

The decrease in the length of new shoots cause the reduction in the number of nodes and the area of leaves which results in the decrease of potential sites for flower initiation which are the source for next bearing season (Suarez and Rallo, 1989). The inflorescence behaves as a unit of fruitfulness, where the competition for reserves among the developing fruits seems to be the main factor in regulating final crop (Cuevas et al., 1995). Thus, lower formation of inflorescences in bearing year due to the lack of reserves, the yield will be lower in following year (Kour et al., 2018).

Studies that directly debate the relationships between CHO reserves and reproductive growth and development are limited and yet the effect of CHO reserves on AB is discusable. According to Stutte and Martin (1986) study, CHO reserves may not be accountable for flower initiation in olive. Similarly, Ulger et al. (2004) also found no significant differences in the levels of sugar between "ON" and "Off" year trees during floral initiation and differentiation. Contrary, De la Rosa et al. (2000) reported that starch accumulates in inflorescences during winter and is reduced at bud break. Lavee (2007) also hypothetically debated the contribution of the carbon budget in AB in olives, but data were insufficient to support clear conclusions. However, a correlation between "On" and "Off" years with primer metabolites such as carbonhydrates (Seyyednejad et al., 2001) and polyamines (Pritsa and Vogiatzis, 2004) were reported in previous studies. Bustan et al., (2011) reported translocations of CHO in intensively cultivated oil olive trees during the annual cycle of "ON" and "Off" year trees and concluded that CHO reserves involves as a underlying factor for controlling the reproductive or vegetative development and AB in studied olive trees. Based on their findings, the storage of CHO in different organs differed and Leaves, branches and bark accumulated significant CHO levels while the accumulation of CHO in roots were lower. Nejad and Niroomand (2007) presented two hypotheses for possible role of CHO in AB of olive. The speed of manitol translocation from leaves to fruit decrease in "OFF" year trees leading to accumulation of manitol in "OFF" leaves and the disorder in the transformation of glucose to fructose and manitol in "OFF" year trees. Although, the possible role of CHO in the AB phenomenon have been investigated in many other fruit species such as citrus, jojoba, avocado, pistachio and etc. there is not a clear result on the exact involvement of CHO in biannual bearing in fruit species.

Conclusions

Researchers offer different theories about the effect of carbohydrates on alternative bearing in olive tree. Based on majority of studies, carbohydrates levels are significantly different in the "ON" and "OFF" leaves of olive trees. The presence of a large number of fruits may leads to the depletion of the carbohydrate reserves in the tree. The changes in the levels of carbohydrate reserves are often suggested as a main factor triggering alternate bearing. The competition between shoots and fruits developing simultaneously in a year for resources is widely assumed as the regulation factor for alternate bearing in many species. However, some researchers suggested that the status of carbohydrate reserves in the olive trees is mainly involved in survival rather than reflecting the alternate bearing tendencies. The depletion of carbohydrate and nitrogen reserves may affect the formation of crops in the following year. The straightforward hypothesis maybe that lack of sufficient carbon reserves at the end of a heavy crop year prevents normal reproductive development in the following year. Alternatively, the content of carbohydrate reserves is an outcome but not the cause of alternate bearing in olives.

Consequently, it is important to investigate molecular regulation of carbohydrate metabolism pathways to get more knowledge on the exact role of carbohydrate reserves on alternate bearing. Having more and clear information on relationships between carbohydrates and alternate bearing may help to consider forecasting and prevention applications to overcome this challenge in olive orchards.

References

Bajpai, Y., and Bajpai, A. (2021). Alternate Bearing in Fruit Crops, eScientia Letters, Vol9 (February 2021).

Barranco D, Fernández-Escobar R, Rallo L. 2010. Olive Growing. In 1st English Edition of the 5th revised and enlarged edition of "El Cultivo del Olivo. Mundi-Prensa - Junta de Andalucía (Madrid, Spain): Mundi-Prensa - Junta de Andalucía - Australian Olive Association (Rural Industries Research and Development Corporation; RIRDC).

Ben-Gal, A., Dag, A., Basheer, L., Yermiyahu, U., Zipori, I., & Kerem, Z. (2011). The influence of bearing cycles on olive oil quality response to irrigation. Journal of agricultural and food chemistry, 59(21), 11667-11675.

Berman, M. E., and DeJong, T. M. (2003). Seasonal patterns of vegetative growth and competition with reproductive sinks in peach (*Prunus persica*). The Journal of Horticultural Science and Biotechnology, 78(3): 303-309.

Bustan A, Avni A, Lavee S, Zipori I, Yeselson Y, Schaffer AA, Riov J, Dag A. (2011). Role of carbohydrate reserves in yield production of intensively cultivated oil olive (Olea europaea L.) trees. Tree Physiol. 31(5): 519-30.

Chartzoulakis, K.S. (2005). Salinity and olive: growth, salt tolerance, photosynthesis and yield. Agric. Water Manage. 78(1-2): 108-121.

Chehab, H., Mechri, B., Mariem, F.B., Hammami, M., Ben Elhadj, S., Braham, M., (2009). Effect of different irrigation regimes on carbohydrate partitioning in leaves and wood of two table olive cultivars (*Olea europaea* L. cv. Meski and Picholine). Agricultural Water Management, Elsevier, vol. 96(2): 293-298.

Conde C, Delrot S, Geros H. (2008). Physiological, biochemical and molecular changes occurring during olive development and ripening. J Plant Physiol. 165(15): 1545-62.

Cuevas, J., Rapoport, H. F., & Rallo, L. (1995). Relationships among reproductive processes and fruitlet abscission in 'Arbequina' olive. Advances in Horticultural Science, 92-96.

Donaire J.P., Sanchez A.J., Lopez-Gorge J., Recalde L., (1975). Metabolic changes in fruit and leaf during ripening in the olive. Phytochemistry. 14: 1167-1169.

Drossopoulos, J.B. and Niavis, C.A. (1988). Seasonal changes of the metabolites in the leaves, bark and xylem tissues of olive trees (*Olea europaea* L.) II. Carbohydrates. Annu. Bot. 62:321-327.

Fahmi, I. (1958). Changes in carbohydrate and nitrogen content in ''Souri'' olive leaves in relation to alternate bearing. Proc. Am. Soc. Hortic. Sci. 78: 252-256.

Flora, Linda L., and Monica A. Madore. (1993). Stachyose and Mannitol Transport in Olive (Olea Europaea L.). Planta, 189(4): 484-490.

Ghanbari Shendi, E. (2019). Olive Oil: Nutraceutical and Pharmaceutical Food. International Journal of Medical Reviews, 6(1): 28-30.

Goldschmidt, E.E. (2005). Regulatory aspects of alternate bearing in fruit trees. Italus Hortus, 12: 11-17.

Goldschmidt, E. E. (2013). The evolution of fruit tree productivity: a review. Economic botany, 67(1): 51-62.

Huijser, P., & Schmid, M. (2011). The control of developmental phase transitions in plants. Development, 138(19), 4117-4129.

Kour, D., Bakshi, P., Wali, V. K., Sharma, N., Sharma, A., & Iqbal, M. (2018). Alternate bearing in olive-a review. Int. J. Curr. Microbiol. Appl. Sci, 7, 2281-2297.

Kozlowski, T. T. (1992). Carbohydrate sources and sinks in woody plants. The botanical review, 58(2), 107-222.

Lavee, S.H. (1996). World olive encycltipedia. International olive oil council. 61-106.

Lavee, S., Rallo, L., Rapoport, H. F., & Troncoso, A. (1996). The floral biology of the olive: effect of flower number, type and distribution on fruitset. Scientia horticulturae, 66(3-4): 149-158.

Lavee, S. (2007). Biennial bearing in olive (*Olea europaea*). In Annales Ser His Nat (Vol. 17, pp. 101-112).

Lawlor, D.H., Cornic, G., (2002). Photosynthetic carbon assimilation and associated metabolism in relation to water deficits in higher plants. Plant Cell Environ. 25, 275-294.

Lo Bianco, R., Rieger, M., Shi-Jean, S.S. (2000). Effect of drought on sorbitol and sucrose metabolism in sinks and sources of peach. Physiol. Plant. 108, 71-78.

Luckwill, L. C. (1980). Hea Presidential Address, 1979: Hormones And The Productivity Of Fruit Trees. Scientific Horticulture, 31, 60-68.

Monselise, S. P., & Goldschmidt, E. E. (1982). Alternate bearing in fruit trees. Horticultural reviews, 4(1), 128-173.

Nejad, M.S., and Niroomand, A. (2007). Carbohydrate content and its roles in alternate bearing in olive. Pakistan journal of biological sciences: PJBS, 10(16): 2744-2747.

Oliveira, C.M. and Priestley C.E. (1988). Carbohydrate reserves in deciduous fruit trees. Horticultural Review, 10: 403-430.

Priestley, C. A. (1977). The annual turnover of resources in young olive trees. Journal of Horticultural Science, 52(1), 105-112.

Pritsa, T. S., and D. G. Vogiatzis, 2004: Seasonal changes in polyamines content of vegetative and reproductive olive organs in relation to floral initiation, anthesis, and fruit development. Aust. J. Agric. Res. 55, 1039-1046.

Rodrigues, M.A. and Correia, C.M. 2009. O ciclo bienal da oliveria. In M.A. Rodrigues e C.M. Correia (Eds.). Manual da Safra e contra Safra do Olival. Inst. Pol. Braganea. pp. 17- 20.

Schaffer, A. A. (1985). Fruit set and carbohydrate sttus in alternate and nonalterate bearing citrus cultivars. J. Amer. Soc. Hort. Sci., 110, 574-578.

Seyyednejad, M., Ebrahimzadeh, H., Talaie, A. (2001). Carbohydrate content in olive zard c.v. and alternate bearing pattern. International Sugar Journal 103(1226): 84-87.

Sharma, N., Singh, S.K., Singh, N.K., Srivastav, M., Singh, B.P., Mahato, A.K., Singh, J.P., (2015). Differential gene expression studies: a possible way to understand bearing habit in fruit crops. Transcriptomics:Open Access 3(110): 10-12.

Spann, T. M., Beede, R. H., & DeJong, T. M. (2008). Seasonal carbohydrate storage and mobilization in bearing and non-bearing pistachio (*Pistacia vera*) trees. Tree Physiology, 28(2), 207-213.

Suarez, M. P., & Rallo, L. (1989). Seasonal distribution of dry matter within the olive fruitbearing limb. Seasonal distribution of dry matter within the olive fruitbearing limb, 1000-1005.

Tattini, M., Gucci, R., Romani, A., Baldi, A., Everaro, J.D. (1996). Changes in non-structural carbohydrates in olive leaves (Olea europaea) during root zone salinity stress. Physiol. Plant. 98, 117-124.

Tombesi, A. (1993). Olive fruit growth and metabolism. In II International Symposium on Olive Growing. Acta Hortic. 356: 225-232.

Turktas, M., Inal, B., Okay, S., Erkilic, E.G., Dundar, E., et al. (2013) Nutrition Metabolism Plays an Important Role in the Alternate Bearing of the Olive Tree (*Olea europaea* L.). PLoS ONE 8(3): e59876.

Ulger, S., Sonmez, S., Karkacier, M., Ertoy, N., Akdesir, O., and Aksu, M. (2004). Determination of endogenous hormones, sugars and mineral nutrition levels during the induction, initiation and differentiation stage and their effects on flower formation in olive. Plant Growth Regulation, 42(1): 89-95.

Wang, Z., Stutte, G.W. (1992). The role of carbohydrates in active osmotic adjustment in apple under water stress. J. Am. Soc. Hort. Sci. 117(5): 816-823.

Wodner M., Lavee S., Epstein E., (1988). Identification and seasonal changes of glucose, fructose and mannitol in relation to oil accumulation during fruit development in Olea europaea L., Scientia Horticulturae, 36: 47-54.

Yanik, H., Turktas, M., Dundar, E., Hernandez, P., Dorado, G., & Unver, T. (2013). Genome-wide identification of alternate bearing-associated microRNAs (miRNAs) in olive (*Olea europaea* L.). BMC plant biology, 13(1), 1-22.

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A STUDY ON MORINGA OLEIFERA LEAF PRODUCTION; NURDAGI CASE

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Abstract
In parallel with the increasing world population, the demand for natural and healthy food is increasing day by day. This situation requires increasing the amount of agricultural products on the one hand, and ensuring that the foodstuffs produced and offered for human consumption are safe and of high quality. It is known that this demand will be met with adequate and balanced consumption of animal and vegetable protein sources. It can be thought that with the diversification and development of potential human and animal nutrition resources, the cost of plant and animal products will decrease and higher quality living standards can be achieved. One of these natural resources is Moringa oleifera. This plant, which has many uses from health to food, has just started to be grown in Turkey. In this study, we tried to observe the cultivation of this plant in Nurdağı and its development over time according to plant height.
Keywords: Moringa oleifera, plant, growth

Introduction

Man's acquaintance with the properties of plants and the use of different organs for various purposes is as much as human history. Since the beginning of humanity, humans have benefited from plants as a source of food and healing. One of the reasons why the use of plants has such a long history is due to the beliefs of people living in different lands (Omidbaigi, 2005). In the last century, thanks to the increase in the world's population and developing technology, various products for the chemical synthesis of components that are nutritional and pharmaceutical raw materials have been developed and presented to people's consumption. However, with the emergence of the irreversible negative side effects of these products in the human body and the damage they cause to nature, the idea of healthy life and the tendency to return to natural products gained momentum. Thus, food, health, etc. Demand for natural products has increased in areas (OkumuŞ & SoltanbeİGİ).

Moringa oleifera is a deciduous, sparsely branching and fast-growing, thin and soft-branched tree, resembling legumes from afar, sparsely leafy and elegant. The trunk diameter of the tree, which is usually 5-10 m tall, is 20-40 cm. It grows up to 15 meters in length. The trunk is usually straight, rarely weakly developed. The tree, which reaches a height of 1.5-2 m before branching, can sometimes reach up to 3 m (Foidl et al., 2001). The branches extending to all sides grow dispersedly and its habitus is in the form of an umbrella (Paliwal et al., 2011).

Moringa oleifera is the most well-known and most common species of the Moringaceae family, which has an impressive usage area around the world with its high nutritional values. A common vegetable herb in many Asian and Southeast Asian countries, Moringa oleifera has many compounds with good health benefits, including antioxidant and anticancer properties. Almost all parts of this tree have been used in indigenous medicine in South Asia for many ailments. Historically, traditional healers have used different parts of Moringa oleifera in the treatment of skin diseases, respiratory diseases, ear and dental infections, hypertension, diabetes, cancer treatment, and water therapy, promoting its use as a food-intensive nutrient source (Ercan et al., 2021).

Material & Method

Experimental procedures were started in June, when the depth of 5 cm underground reached 20 ºC. 1 kg (2812 units) Moringa oleifera (PKM1 variety) seeds were soaked in water-filled containers to prepare for germination and kept for 2 days until planting. Since the seeds are lighter than water, they were mixed in the container every 6 hours to ensure homogeneous contact with water. At the end of this period, the planting process was started in the previously prepared soil. Since irrigation will be done with the drip irrigation system, the drip pipes were placed properly and pre-irrigation was carried out for soil conditioning. Sowing was done by hand in slightly moist soil with 15 cm spacing and 30 cm spacing between the rows, coming to the drip tube outlets. Seeds were sown to a depth of 2-3 cm and covered with moist soil. Life water irrigation was applied until the seeds were saturated with water (2 hours). After the first sowing, the seeds continued to be irrigated with a drip irrigation system for 2 hours every day. Irrigation was done between 8:00 am and 10:00 am.

Conclusion

The first germination took place on the 16th day and germination continued until the 24th day. Average germination time was determined as 20 days. It was observed that 2067 of the seeds germinated. Accordingly, the germination rate was recorded as 74%. Among these seedlings, a sample was selected by marking 100 randomly (Approximately 5%) among the seedlings, and the measurements after this stage were made from this sample. Data on plant growth are shown in Table 1.

Table 1. Moringa oleifera plant growth and dry leaf weight

Duration (weeks)	Average length (cm)
1*	3.5
2	11.2
3	19.1
4	31.5
5	44.3
6	64.4
7	82.1
8	117.1
9	146.9
10	181.4
11	223.7
12**	282.8

* Germination period
** Flowering period
*** Calculated for 1 tree

References

Ercan, K., Gecesefa, O. F., Taysi, M. E., Ali Ali, O. A., & Taysi, S. (2021). Moringa Oleifera: A Review of Its Occurrence, Pharmacological Importance and Oxidative Stress. Mini Reviews in Medicinal Chemistry, 21(3), 380-396.

Foidl, N., Makkar, H. P. S., & Becker, K. (2001). The potential of Moringa oleifera for agricultural and industrial uses. What development potential for Moringa products, 20.

OkumuŞ, N., & SoltanbeİGİ, A. Moringa Ağacı (Moringa oleifera Lam.): Biyolojik Özellikleri, Kültürü ve Tıbbi Faydaları. Bağbahçe Bilim Dergisi, 8(2), 56-75.

Omidbaigi, R. (2005). Production and processing of medicinal plants. Beh-Nashr: Mashhad, 210-225.

Paliwal, R., Sharma, V., & Pracheta, J. (2011). A review on horse radish tree (Moringa oleifera): A multipurpose tree with high economic and commercial importance. Asian J. Biotechnol, 3(4), 317-328.

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MORINGA OLEIFERA ANTIOXIDANT CAPACITY; A REVIEW

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Abstract
All cells in the human body are constantly exposed to prooxidants from endogenous and exogenous sources. To prevent the damage they cause, endogenous antioxidants are found in serum, erythrocytes, and other tissues, as well as dietary exogenous antioxidants. Many plants are known for their medicinal effects such as antioxidant, anti-inflammatory, antiviral and antibacterial in terms of the components they contain. One of them, Moringa oleifera, is from the Moringaceae family and is seen as the most known and most common species of this family. In this study, we focused on the antioxidant capacity of moringa oleifera.
Keywords: Antioxidant, oxidative stress, moringa oleifera

Introduction
The antioxidant system consists of molecules such as glutathione, vitamins A, C and E, melatonin and various antioxidant enzymes (Ercan et al., 2021). If the antioxidant defense system is weakened in humans, oxidative stress occurs at the cellular level. This triggers inflammatory, adaptive, harmful and reparative processes. Thus, it damages cells and tissues (Poljšak & Fink, 2014). Antioxidant defense systems in the human body are very important in neutralizing oxidative stress damage (Ziech et al., 2010). Moringa oleifera plant is the most widely used species of the Moringaceae family, which has a worldwide medical use with its high nutritional value (Luqman et al., 2012). Healers, who have used traditional methods since the past, have used the Moringa oleifera plant in skin and respiratory diseases, ear and dental infections, hypertension, cancer treatment and diabetes, and promoted its use as a food-intensive nutrient source (Ercan et al., 2021).

Body
Traditional medicine, which is still actively practiced, has become an indispensable part of many societies. Although Western medicine has come to the fore in terms of health services, many drugs have been developed with the use of plants containing biologically active substances. The biological activities of many plant species have not been adequately studied yet. Moringa oleifera emerges as a plant with great potential in traditional medicine. Moringa oleifera is used for the treatment of hyperglycemia, inflammation, bacterial/viral infections and cancer. Moringa oleifera contains a large amount of antioxidants and biologically active compounds (Tiloke et al., 2018).

Moringa oleifera, which is native to India and widely used in many tropical and subtropical countries, has many compounds beneficial for health as well as antioxidant properties (Al-Asmari et al., 2015). All parts of this plant have been used in traditional medicine for many diseases and ailments, including the treatment of inflammation, gastrointestinal, hematological, cardiovascular and hepatorenal disorders as well as some infectious diseases (Ercan et al., 2021).

Many studies have been conducted on Moringa oleifera leaves as they have natural antioxidants such as ascorbic acid, flavonoids, phenolic compounds and carotenoids (Sinha et al., 2011). There are many phytochemicals in the plant Moringa oleifera and they have a great influence on biological activity (Ercan et al., 2021). The leaves of the Moringa oleifera plant are a valuable nutritional supplement because they contain a large amount of essential amino acids, iron, calcium, potassium, phosphorus, copper, vitamins A, B1, B3, B5, B12, C and E, and plenty of protein (Ercan et al., 2021). As a result of the analysis on the leaves of the Moringa oleifera plant, the presence of a total of 35 elements, 14 macro and 21 micro, was found. Studies on this herb have indicated that all concentrations are within the recommended daily allowable limits and are sufficient to meet the nutritional needs of all healthy people. Other studies have also stated that dietary intake of moringa leaf powder can provide essential nutrients needed by human metabolism (Ercan et al., 2021).

Moringa oleifera plant contains very strong antioxidant substances (Sadek et al., 2017). This is because the plant's structure contains natural antioxidant compounds such as vitamin A, vitamin C, vitamin E, as well as high amounts of phenolics, carotenoids and flavonoids. Paikra et al. investigated the antioxidant properties of the leaves and roots of the Moringa oleifera plant and revealed that it has strong antioxidant and radical scavenging activity (Paikra et al., 2017). The reason for this is the presence of antioxidants in the plant. Studies have shown that dry and fresh leaf extracts of Moringa oleifera plant show antioxidant activity and play an important role in coping with oxidative stress (Sreelatha & Padma, 2009).

Table 1. Total antioxidant values of Moringa oleifera leaf (Charoensin, 2014; Saleem et al., 2020; Sreelatha & Padma, 2009; Verma et al., 2009; Wu et al., 2020; Xu et al., 2019)

	Sreelatha and Padma	Verma et al.	Charoensin	Pakade et al.	Saleem et al.	Xu et al.	Wu etal.
Total carotenoids (mg/g)	92.38 ± 0.11						
Total phenolic content (mg/g)		336.95±5.28	216.45±4.64[a] 100.12±3.70[c]	127.9 ±0.29	91.37 ± 1.07[a] 71.19 ± 0.907[b]		31.7 ± 2.4
Total flavonoid content (mg/g)			65.38±2.37[a] 40.14±3.31[c]	125.3 ±0.28	65.7 ± 2.88[a] 53.28 ± 1.27[b]	192.36 ± 2.96	34.5 ± 3.6
Total antioxidant (%)		89.35±3.12					

a-Methanol
b- Aqua
c- Dichloromethane

Conclusion

According to the results in Table 1, it is noticed that the MO leaf has high antioxidant components. Results vary according to solvent variability and the region in which the plant is grown. It is seen that phenolic and flavonoid components are extracted more in the extraction with methanol. Due to its high antioxidant content, MO is thought to have many different potential uses as a natural therapeutic agent.

References

Al-Asmari, A. K., Albalawi, S. M., Athar, M. T., Khan, A. Q., Al-Shahrani, H., & Islam, M. (2015). Moringa oleifera as an Anti-Cancer Agent against Breast and Colorectal Cancer Cell Lines. PloS one, 10(8), e0135814. https://doi.org/10.1371/journal.pone.0135814

Charoensin, S. (2014). Antioxidant and anticancer activities of Moringa oleifera leaves. Journal of Medicinal Plants Research, 8(7), 318-325.

Ercan, K., Gecesefa, O. F., Taysi, M. E., Ali Ali, O. A., & Taysi, S. (2021). Moringa Oleifera: A Review of Its Occurrence, Pharmacological Importance and Oxidative Stress. Mini Reviews in Medicinal Chemistry, 21(3), 380-396.

Luqman, S., Srivastava, S., Kumar, R., Maurya, A. K., & Chanda, D. (2012). Experimental assessment of Moringa oleifera leaf and fruit for its antistress, antioxidant, and scavenging potential using in vitro and in vivo assays. Evidence-Based Complementary Alternative Medicine, 2012.

Paikra, B. K., Dhongade, H. K. J., & Gidwani, B. (2017). Phytochemistry and Pharmacology of Moringa oleifera Lam. J Pharmacopuncture, 20(3), 194-200. https://doi.org/10.3831/KPI.2017.20.022

Poljšak, B., & Fink, R. (2014). The protective role of antioxidants in the defence against ROS/RNS-mediated environmental pollution. Oxidative medicine cellular longevity, 2014.

Sadek, K. M., Abouzed, T. K., Abouelkhair, R., & Nasr, S. (2017). The chemo-prophylactic efficacy of an ethanol Moringa oleifera leaf extract against hepatocellular carcinoma in rats. Pharm Biol, 55(1), 1458-1466. https://doi.org/10.1080/13880209.2017.1306713

Saleem, A., Saleem, M., & Akhtar, M. F. (2020). Antioxidant, anti-inflammatory and antiarthritic potential of Moringa oleifera Lam: An ethnomedicinal plant of Moringaceae family. South African Journal of Botany, 128, 246-256.

Sinha, M., Das, D. K., Bhattacharjee, S., Majumdar, S., & Dey, S. (2011). Leaf extract of Moringa oleifera prevents ionizing radiation-induced oxidative stress in mice. J Med Food, 14(10), 1167-1172. https://doi.org/10.1089/jmf.2010.1506

Sreelatha, S., & Padma, P. R. (2009). Antioxidant activity and total phenolic content of Moringa oleifera leaves in two stages of maturity. Plant Foods Hum Nutr, 64(4), 303-311. https://doi.org/10.1007/s11130-009-0141-0

Tiloke, C., Anand, K., Gengan, R. M., & Chuturgoon, A. A. (2018). Moringa oleifera and their phytonanoparticles: Potential antiproliferative agents against cancer. Biomedicine & Pharmacotherapy, 108, 457-466.

Verma, A. R., Vijayakumar, M., Mathela, C. S., & Rao, C. V. (2009). In vitro and in vivo antioxidant properties of different fractions of Moringa oleifera leaves. Food and Chemical Toxicology, 47(9), 2196-2201.

Wu, L., Li, L., Chen, S., Wang, L., & Lin, X. (2020). Deep eutectic solvent-based ultrasonic-assisted extraction of phenolic compounds from Moringa oleifera L. leaves: Optimization, comparison and antioxidant activity. Separation and Purification Technology, 247, 117014. https://doi.org/https://doi.org/10.1016/j.seppur.2020.117014

Xu, Y.-B., Chen, G.-L., & Guo, M.-Q. (2019). Antioxidant and Anti-Inflammatory Activities of the Crude Extracts of Moringa oleifera from Kenya and Their Correlations with Flavonoids. Antioxidants, 8(8). https://doi.org/10.3390/antiox8080296

Ziech, D., Franco, R., Georgakilas, A. G., Georgakila, S., Malamou-Mitsi, V., Schoneveld, O., Pappa, A., & Panayiotidis, M. I. (2010). The role of reactive oxygen species and oxidative stress in environmental carcinogenesis and biomarker development. Chem Biol Interact, 188(2), 334-339. https://doi.org/10.1016/j.cbi.2010.07.010

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TRANSCRIPTOME AN GENOMIC ANALYSIS OF WALNUT (JUGLANS regia L.)

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Abstract
Walnut is a of the best admirable and high commercial value hard-shell trees kind in southwestern China, and its products, which are eatable, owner spiritual and cultural significance. To figure out the molecular mechanism fundamental to the walnut genome, used RNA sequencing was to produce transcriptomic. Until today, most studies centered on its genetic variation and the nutritional worth and chemical compounds of its fruits and other tissues. Because of the most endeavor neccesaryed to sequence eukaryotic, just limited plant genomes were exactly sequenced prior to 2014. Thenceforward, but, genomic knowledge for a wide number of non-model plants have become present, by a majority owing to speedy alters with sequencing technology. With the development of molecular tools, the number of transcriptomic and genomic studies has increased and the walnut genome has been tried to be clarified. Transcriptomic and genomic data for the varieties in walnut. Until now their exploration in excess of two decades prior, animal RNAs be possessed of appeared as significant promoters of biological operations. Latelya big in size of RNAs have also been described in higher plants. The aim of this review is to compile transcriptome and genomic studies of species and cultivars using the chloroplast genome, gene domains, their descriptions, grading and known regulative tasks in diverse improving facts, stress reply and transcriptomic information from RNA-Seq in walnut.
Keywords: RNA-Seq, transcriptome, genomik, walnut

Introduction

Walnut (Juglans regia L.) is botanically included in the Dicotyledonae class, the Juglandales team, the Juglandaceae family and the Juglans genus. Among the genus Juglans, 21 walnut species are known with high quality and superior characteristics (Karimi et al. 2010; Vischi et al. 2017). Among these species, Juglans regia L, which has superior fruit quality, is also defined as Anatolian walnut, Persian walnut and English walnut (Şen, 1986). The trees of Juglans regia L. have single hairy leaves arranged opposite each other and have an aromatic scent (Anonim, 2015) and it can be grown in almost every part of our country except in places with extreme ecological characteristics (Sütyemez, 2000). Juglans regia is just species in Dioscaryon and very broadly area planted Juglans species, is grown along the temperate and semiarid areas in the world for eatable fruits (McGranahan and Leslie 1991;).

Juglans regia L. is one of the earliest trees with fruit consumable by humans and based on history 7000 BC (Dreher et al. 1996). Walnut cultivation programs aim to consist of fertile scion varieties with disease reluctance and supereminence fruits, alongside rootstocks robust to environmental conditions (Bernard et al. 2018). Juglans regia is a big deciduous tree by a flat surface shell and by turn constructed leaves. Juglans regia L is a diploid species (2n = 2x = 32) with an forecasted genome bigness of 1315 Mbp (bigness (1C DNA) = 657.80 Mbp) (Sarikhani Khorami et al. 2018). It has been determined that it protects the immune system and prevents cancer due to its high antioxidant content (Jahanbani ve ark. 2016a,; Milind ve Deepa 2011).

With the acceleration of developments in plant breeding, food outturn was also positively affected and played an role important for human nutrition (Tester and Langridge 2010). There is also this reduced variability in agricultural crops around the world and contributed to genetic makeup against different stresses condition (Keneni et al. 2012). It is therefore significant to recognize the effects of advanced plant growing on hereditary variations. At the same time, the skillful command of this genetic variation will provide valuable assistance to producers. In walnut production, different stresses condition (such as drought, salt and spring frosts) negatively affect walnut yield in many regions (Cochard et al., 2002; Lotfi et al., 2009a, b; Khodadadi et al., 2016; Jinagool et al., 2018; Knipfer et al., 2018; Liu et al., 2019). An of the best significant environmental factors that cut of walnut productivity in different arid conditions areas where walnuts are grown is thirst (Aleta et al., 2009; Vahdati et al., 2009; Famula et al., 2019). Additionally, increased drought due to global climate change increases strong drought situations in Juglans-growing areas (Lotfi et al., 2010; Karimi et al., 2010). Drought, particularly in the course of the growing period, may seriously affect walnut improvement and become one of the most important factors restricted product (Vahdati et al., 2009; Liu et al., 2019). Another important factor affecting the yield in walnuts is that dichogamy is very common. The fact that male and female flowers open and become active at different times is a factor that negatively affects pollination-fertilization success and reduces yield (Sütyemez, 2014).

Walnut has been studied a lot all over the world because it is a valuable plant in terms of both economic value and nutrition. With the rapidly developing technology, traditional breeding studies have begun to give way to molecular breeding studies. The latest technologies used in breeding studies in plants using biotechnological methods: next NGS methods, bioinformatics, high-throughput sequencing and GWAS, MAS, GS, and CRISPR- Cas9 it includes genome editing with the system. We explain the application of molecular reproduction and biotechnological methods used in walnut reproduction.

Walnut Genome Sequencing

The developed of high-throughput sequencing tools caused a swift recovery in the area of genomics. Recently, over eight hundred full chloroplast genome sequenced in plant genomes, and genomic, knowledge, is present in the NCBI organelle genome gene bank. (Daniell et al. 2016). The heredity knowledge increased from all chloroplast genome sequences has advanced our mentality of plant biology, variety, phylogenetic and evolutionary development. Additionally, not only sequence change but also structural changes are important between and within plant species have been disclosed by chloroplast genome sequences (Daniell et al. 2016; Hu et al. 2016, 2017b).

The knowledge acquired from the chloroplast genome has been particularly precious for comprehension, plant confirmation to heavy environmental circumstances, supporting the reproduction of in common concerned species (Daniell et al. 2016).
The size of the chloroplast genome of the juglans is 160,367 bp in length and the Guanine-Cytosine content is 36.11%. Of all 137 identified genes, 86 included protein-coding, 3 pseudogenes and 40 tRNA and 8 rRNA genes. Furthermore, the outcomes of this analysis indicated that had twelve protein-coding genes (Liu et al. 2012). Fourteen tRNA and all eight rRNA genes amplified in the turn inside out repetition (IR) areas (Hu et al. 2016). As a result of the study of the relationship of walnut chloroplast with 11 chloroplast-genome of a different species and a genus, it has been shown that walnut is closely related to Fagaceae family and Populus genus (Hu et al. 2016). Lately, the chloroplast genomes of five walnut, inclusive J. regia, J. sigillata, J. cathayensis, J. hopeiensis, and J. mandshurica, were sequenced to appraise the constructional models of their all chloroplast genomes, to explore possible SSRs and their to define their associated with kinship similarity (Hu et al. 2017b) A assembling of de novo and reference-based assembly method were utilized to re-establish every species chloroplast genome. Thereafter, genome annotation and analysis were make utilizing the web software DOGMA, (Wyman et al 2004) and genomic sequences were examined utilizing MISA program to define potency SSRs. (Hu et al. 2017b). Associated with kinship similarity supports two previously recorded walnut species, inclusive Juglans/Dioscaryon and Cardiocaryon. (Hu et al. 2017a, b). Another research, the wholl chloroplast genomes and two nuclear DNA areas (the inner transcribed space and UBQ of ten acting taxon of walnut were utilizing in phylogenetic examination of the walnut (Dong et al. 2017). The outcomes of study disclosed that entire ten chloroplast genomes owned one hundred twelve matchless genes, inclusive seventy eight protein coding, thirty trRNA and four rRNA genes. Additionally, base upon two nuclear DNA areas, Juglans might be categorized in tri branches; Juglans, Cardiocaryon and Rhysocaryon. The developed most character walnut genome assembly (cv. Chandler v2.0) will obtainment precious genom assotiation with tools for heredity and whole genome examination in walnut genetic development tools (Neale et al. 2015). Genome data of plants are characteristically admixture of the 2 different haplotypes to consist of in a heterozygous diploid plants. İn order to overcome question. Zhu et al. (2019) produced a genome assembly by hybridization of different species of Juglans microcarpa and J. regia cv Serr, utilizing BioNano and PacBio tools. Because of the very different across J. microcarpa and J. regia, row reads for every species assembled apart, producing too class genome assemblies from a entirely staged gamete/haplotype from every belonging parent species (Arab et al. 2018). Sampling walnut trees originating from taking advantage of the abilities of next-generation sequencing (NGS) may supply novel understanding in the rate of genetic change between the juglans genome. The availability goal to discover the inhabitant construction and genom association with changing of an Iranian collecting of Juglans regia L. and define loci fundamental the change nut and kernel-assocated with features utilizing the novel Axiom J. Regia 700K SNP genotyping order. We genotyped 95 walnut genotypes from eight Iranian regions with different climates. Most of the identified SNPs (323,273, 53.03%) get into the "Poly High Definition" polymorphism class, which contains high quality patterns. Genetic structure evaluation, utilizing different opinions, separated the Iranian walnut panel in 4 main groups, mirroring their local chambering. We watched very genetic changes against the entire of in populations (HO = 0.34 and HE = 0.38).

The whole grade of genetic altering between populations was medium (FST = 0.07). resulting, we applied a genome-wide association examinated (GWAS), defining fifty five SNPs important related to nut and kernel-connected caracters. In outcomes, by fulfilling the novel Axiom Chandler 700K SNP sequence we fulfill novel undiscovered genetic variation and determined important marker-trait associations for nut-association features in Juglans regia at will be beneficial for coming growing programs in Iran and another country. Mu et al. (2020), researchers, well-solved phylogenies of the Juglandaceae are rebuilded relyed upon both the core RAD-Seq and the chloroplast genome set. Our outcome assistance the Juglandoideae topology of (Hicoreae, (Platycaryeae, Juglandeae)) the tribal grade. Our outcome assistance the Juglandoideae topology of (Hicoreae, (Platycaryeae, Juglandeae)) at the multiple grade. İnto Juglandeae, an incompatible location of Pterocarya was defined across nuclear and plastid genome set, and a lot possible topology (nuclear), (Juglans, (Pterocarya, Cyclocarya)), was debated depend upon proof from molecular examination and fossil, registry.

Functional Genomics: Transcriptomics

Obtaining the walnut transcriptome data, creation of cDNA libraries allowed the development of molecular markers such as EST-SSR. Obtained ESTs allow the use of molecular markers and are used in the development of transcriptomes. Different genomic methods are utilized to analyze transcriptome change during improvement or as a reply to different stress condition. The first structure of walnut ESTs at Juglans regia from germ layer examples by Muir et al. (2004) was connected to the NCBI genbank (https://www.ncbi.nlm.nih. gov). Other research, functional genomic examines to defined the genes related interplays across the walnut root and the nematode were done at UC Davis. In this study, at the initial foot, 13,559 ESTs were created by data cDNA libraries procuration from Pratylenchus vulnus and sick and healthy juglans (J. hindsii × J. regia) leaves and roots (Britton et al. 2007) and then, identified and validated nematode and walnut genes related with the contamination analysis of gene expression (Britton et al. 2007). Result, functional analysis of nematode genes was completed utilizing RNA interference in vitro and Medicago root analysis (Britton et al. 2009). The outcomes of gene expression showed that the most rely was defined in the leaves than in the roots of plants vaccinate with P. vulnus.

Zhang et al. (2010) attained a whole of 5025 walnut ESTs with the NCBI genebank and throughout by the SSR Hunter programme, were utilized to examine SSR markers. Later, all of a hundred twenty three SSR markers were obtained from the necessary SSR- attaining unigenes. The yield of nominee markers was investigated by 7 DNA consubstantiations gathered from diverse walnut participations. Outcomes showed that 41 SSR markers with loud polymorphic multiplication yields could be utilized for coming genetic studies in walnut. In the diverse examination, 5213 EST data of Juglans regia in NCBI were utilized for the progress of walnut EST-SSR primers, and two hundred seven microsatellites were attained from the EST data (Feng et al. 2011) Additionally, forty polymorphic EST-SSR primers were improved by Zhao et al. (2015) in walnut. Latterly a few transcriptome studies have been applied in walnut which contained expression of the transcription factor gene JrCBFcovered in cold reluctance mechanisms (Xu et al. 2014). Besides, expression of a great family of NBSLRR reluctance genes in J. regia contained in plant-germ coactions (Chakraborty et al. 2016) and transcriptome analysis of buds, leaves, female and male flowers in J. regia was utilized to determine novel EST-SSR primers (Dang et al. 2016).

Further, Li et al. (2017) applied a comparison transcriptome study of genes inclusive in anthocyanin biosynthesis in leaf and peel color alter in red and green J. regia. Sadat-Hosseini et al. (2020), Transcriptome facilitate can simplify to rising up efficiency and qualification of Juglans regia. The search created 240,179,782 reads from eleven walnut leaves by cDNA libraries. Eventually, Evidential- Gene was acknowledged as an ideal fitter for the de novo assembly of the leaf transcriptome in Juglans. Between in total 183,191 transcripts which were composed with evidential Gene, there were 109,413 transcripts ability of protein-producing (59.72%) and 104,926 were realized as ORFs (57.27%). De novo transcriptomes in Juglans leaves may be advanced for the forward investigating in functional genomics and genetic examination of walnuts. Ullah et al. (2021) In plants, the fundamental helix-loop-helix (bHLH) transcription factors act important roles in varied biological processes. Wholl genome and systematic examination of bHLH proteins has been good managed in Arabidopsis (AtbHLH). But, there are unpublished of bHLH family genes that have been functionally described in Juglans regia.

We determined a totally 189 bHLH genes in J. regia, which are collected in 18 subdivision of a group.. Researchers defined a total of 42 pairs of orthologous bHLH genes across J. regia and P. trichocarpa, when just 29 orthologous gene across J. regia and O. europaea, then 25 linear gene were existed in 3 species J. regia, O. europaea and P. trichocarpa. Moreover, JrbHLHs had diverse stated designs across proliferation and propagation achieved by asexual means tissues relying on the transcriptome expression of female-male flowers, leaves, and hulls. Particularly, not only transcriptome information but also qRTPCR evaluation indicated that 2 JrbHLH genes (JrbHLH3-5 and JrbHLH13-13) were very symbolized in female and male flowers when one JrbHLH gene (JrbHLH13-4) was very expressed in leaves. Whole genome identity, gene construction, degrees of kinship and expression study of the JrbHL **Yan et al. (2019),** PAL is the initial enzyme in the phenylpropanoid pathway that acting a serious role in plant, improvement and conformation, however there happened few records of the PAL gene in widespread walnut. There, we record whole-genome research of J. regia PAL genes and examination their phylogeny, duplication, miRNA, and transcriptional evidence. All of 12 PAL genes were determined in the prevalent walnut and grouped in 2 subfamilies relyed on phylogenetic analysis. These prevalent walnut PALs are delivered on 8 distinct pseudo-chromosomes. 7 of the 12 PALs were especially determined in J. regia, and 5 PAL genes were determined to be nearly related with the woody plant Populus trichocarpa. Also, the expression models of 4 PAL genes indicated that they had upper expression in female and male flowers. Research supply utilizing data for forward investigations in the function of PAL genes in prevalent juglans Feng et al. (2021). Walnut anthracnose reasoned with Colletotrichum gloeosporioides (Penz.) Penz. and Sacc. is a significant walnut breeding question in China. Though the lncRNAs are significant in plant disturbance reluctance, the molecular mechanisms of fundamental reluctance to C. gloeosporioides in juglans stand deficiently appeared. The anthracnose-resistant F26 fruits from the B26 plant and the anthracnose-sensible F423 fruits from the 4–23 plant of walnut were utilized as the experiment equipments. Particularly, we implemented a made by comparison transcriptome investigation of F26 and F423 fruit bracts to define distinctly expressed LncRNAs (DELs) at 5 in different time zones.

Bioinformatic investigation indicates that the goal genes of upregulated lncRNAs were strengthened in immune-assotiation continuum along with the contamination of C. gloeosporioides, such as actuation of the natural immune reply, defending rely on to bacterium, discordant action and immune system operate, and prospered in plant hormone sign transduction, phenylpropanoid biosynthesis and another pathway. 124 acknowledged target genes were identified for 96 hub incRNAs, including 10 prevalent resistance genes. Expression of five incRNAs and five target sites were validated by qrt-PCR in agreement with RNA-seq content. The outcomes of this research supply the relied on for forward beneficial description of lncRNAs concerning the C. gloeosporioides resistance of walnut nut bracts. Trouern-Trend et al. (2020) Structural and functional genome annotations were amplified by the BRAKER2 program of six Juglans species of the Juglandaceae family and an outgroup. These high quality annotations were used in Juglans and to identify relationships between Juglans and selected Eurosid strains. We determine remerkable conjuctions in some gene families in J. hindsii, containing disease reluctance-associated WAK, CrRLK1L, and furder contained in stress rely. Results, we approved an ancient all-genome copy that occur in joint ancestor of Juglandaceae utilizing site succesion made by comparison examination.

Results

Since the exploration of heritability for agronomic features in 1972, the yield of walnut genetic improvement has continued to improve over a long period of time. Molecular markers enabled the creation of the first genetic maps between 1994 and 2001 and contributed to the creation of the genomic walnut genome in 2016. New varieties and new applications, including the Chandler walnut variety introduced in 1979, have resulted in a steady increase in world walnut production since 2008. Technological advances have allowed to resolve a number of problems regarding taxonomic sorting and genetic variation associated with the global Juglans species.

In terms of climate altered and global cognizance, walnut cultivation will require efforts to develop novel materials tailored to regional ecological situations and tolerant to now and future pests and diseases, to continue breeding and standart. Continuous improvement of plant breeding techniques is essential to make our food production system more efficient, sustainable and resilient. One of the most important of these techniques is the examination and clarification of the genetic structure of the plant in terms of transcriptome and genomics. It can provide a theoretical basis for the functional study and further construction of walnut regulation networks in walnuts and higher plants. Transcriptomic and genomic studies will help to understand the breeding studies and molecular studies on walnuts in the future as well as today. Additionally genetic development, crop management can be maintainable advanced and done very efficient, particularly concerning the ideas of water, nutrition, soil, physiology, and defense. Finally, increasing world crop production and consumption, rapid increase in genetic information and use will lead to good developments for walnuts, in light of novel investments in different breeding programs and widening international research collaboration.

Reference

Aletà N, Vilanova A, Díaz R, Voltas J. 2009. Genetic variation for carbon isotope composition in Juglans regia L.: relationships with growth, phenology and climate of origin. Annals of Forest Science 66, 413.

Amiri R, Vahdati K, and Mohsenipoor S .2010. Correlations between some horticultural traits in walnut. HortScience 45:1690–1694.

Annu Rep North Nut Grow Assoc 101:56–69.

Anonim. 2015. https://tr.wikipedia.org/wiki/Ceviz.

Arab, M.M., Marrano, A., Abdollahi-Arpanahi, R., Leslie, C.A. Cheng, H., Neale, D.B. and Vahdati, K. 2020, Combining phenotype, genotype, and environment to uncover genetic components underlying water use efficiency in Persian walnut. Journal of Experimental Botany, 71,3, 1107–1127.

Arzani K, Mansouri-Ardakan H, Vezvaei A. 2008. Morphological variation among Persian walnut (Juglans regia) genotypes from central Iran. N Z J Crop Hortic Sci 36(3):159–168.

Bernard A, Lheureux F, Dirlewanger E. 2018. Walnut: past and future of genetic improvement. Tree Genet Genomes 14(1):1–28.

Britton M, Leslie C, McGranahan G, Dandekar A. 2007. Analysis of genes expressed in nematode-infected walnut plants. Unpublished raw data.

Britton MT, Leslie CA, McGranahan GH. 2009. Functional genomic analysis of walnut-nematode interactions. Walnut Research Reports Database.

Chakraborty S. 2016. YeATSAM analysis of the chloroplast genome of walnut reveals several putative un-annotated genes and misannotation of the trans-spliced rps12 gene in other organisms. Preprint bioRxiv 094441.

Cochard H, Coll L, Le Roux X, Améglio T. 2002. Unraveling the effects of plant hydraulics on stomatal closure during water stress in walnut. Plant Physiology 128, 282–290.

Dang M, Zhang T, Hu Y, Zhou H, Woeste K, Zhao P. 2016. De Novo assembly and characterization of bud, leaf and flowers Transcriptome from Juglans Regia L. for the identification and characterization of new EST-SSRs. Forests 7(10):247–263.

Daniell H, Lin CS, Yu M et al (2016) Chloroplast genomes: diversity, evolution, and applications in genetic engineering. Genome Biol 17(1):134.

Dong W, Xu C, Li W, Xie X, Lu Y, Liu Y, Jin X, Suo Z. 2017. Phylogenetic resolution in Juglans based on complete chloroplast genomes and nuclear DNA sequences. Front Plant Sci 8:1148.

Dreher ML, Maher CV, Kearney P.1996. The traditional and emerging role of nuts in healthful diets. Nutr Rev 54(8):241–245

Famula RA, Richards JH, Famula TR, Neale DB. 2019. Association genetics of carbon isotope discrimination and leaf morphology in a breeding population of Juglans regia L. Tree Genetics & Genomes 15, 6.

Feng, S., Fang, H., Liu, X., Dong, Y., Wang, Q.,and Yang. K.Q. 2021. Genome-wide identification an characterization of long non-coding RNA conferring resistance to Colletotrichum gloeosporioides in walnut (Juglans regia). BMC Genomics, 22:15, 3-17.

Feng, X. Yuan, X., Sun, Y., Hu, Y., Zulfiqar, S., Ouyang, X., Dang, H. Zhou, M. Woeste, K., Zhao, P. 2018. Resources for studies of iron walnut (Juglans sigillata) gene expression, genetic diversity, and evolutionTree Genetics & Genomes, 14: 51

Hu Y,Woeste KE, DangM, Zhou T, Feng X, Zhao G, Liu Z, Li Z, Zhao P. 2016. The complete chloroplast genome of common walnut (Juglans regia). Mitochondrial DNA Part B 1(1):189–190.

Hu Y,Woeste KE, Zhao P. 2017. Completion of the chloroplast genomes of five Chinese Juglans and their contribution to chloroplast phylogeny. Front Plant Sci 7:1955.

Jahanbani R, Ghaffari SM, Salami M, Vahdati K, Sepehri H, Sarvestani NN, Sheibani N, Moosavi-Movahedi AA. 2016. Antioxidant and anticancer activities of walnut (Juglans regia L.) protein hydrolysates using different proteases. Plant Foods Hum Nutr 71(4):402–409.

Jinagool W, Lamacque L, Delmas M, Delzon S, Cochard H, Herbette S. 2018. Is there variability for xylem vulnerability to cavitation in walnut tree cultivars and species (Juglans spp)? HortScience 53, 132–7.

Karimi HR, Kafkas S. 2011. Genetic relationships among Pistacia species studied by SAMPL markers. Plant Syst Evol 297:207–212

Karimi R, Ershadi A, Vahdati K, Woeste K. 2010. Molecular characterization of Persian walnut populations in Iran with microsatellite markers. Hortscience 45:1403–1406.

Karimi, R., Ershadi, A, and Vahdati K. 2010. Molecular characterization of Persian walnut populations in Iran with microsatellite markers. HortScience 45:1403–1406.

Keneni G, Bekele E, Imtiaz M, Dagne K. 2012. Genetic vulnerability of modern crop cultivars: causes, mechanism and remedies. Int J Plant Res 2(3):69–79.

Khodadadi F, Tohidfar M, Mohayeji M, Dandekar AM, Leslie CA, Kluepfel DA, Butterfield T, Vahdati K. 2016. Induction of polyphenol oxidase in walnut and its relationship to the pathogenic response to bacterial blight. Journal of the American Society for Horticultural Science 141, 119–124.

Knipfer T, Barrios-Masias FH, Cuneo IF, Bouda M, Albuquerque CP, Brodersen CR, Kluepfel DA, McElrone AJ. 2018. Variations in xylem embolism susceptibility under drought between intact saplings of three walnut species. Tree Physiology 38, 1180–1192.

Liu B, Liang J, Tang G, Wang X, Liu F, Zhao D. 2019. Drought stress affects on growth, water use efficiency, gas exchange and chlorophyll fluorescence of Juglans rootstocks. Scientia Horticulturae 250, 230–235.

Liu C, Shi L, Zhu Y 2012. CpGAVAS, an integrated web server for the annotation, visualization, analysis, and GenBank submission of completely sequenced chloroplast genome sequences. BMC Genomics 13(1):715.

Lotfi N, Vahdati K, Hassani D, Kholdebarin B, Amiri R. 2009a. Peroxidase, guaiacol peroxidase and ascorbate peroxidase activity accumulation in leaves and roots of walnut trees in response to drought stress. Acta Horticulturae 861, 309–316.

Lotfi N, Vahdati K, Kholdebarin B, Amiri R. 2010. Soluble sugars and proline accumulation play a role as effective indices for drought tolerant screening in Persian walnut (Juglans regia L) during germination. Fruits 65, 97–112.

Lotfi N, Vahdati K, Kholdebarin B, Ashrafi EN. 2009b. Germination, mineral composition, and ion uptake in walnut under salinity conditions. HortScience 44, 1352–1357.

Maguire LS, O'Sullivan SM, Galvin K. 2004. Fatty acid profile, tocopherol, squalene and phytosterol content of walnuts, almonds, peanuts, hazelnuts and the macadamia nut. Int J Food Sci Nutr 55(3):171–178.

McGranahan GH, Leslie CA. 1991.Walnuts (Juglans). Acta Hortic 290:905–951.

Molnar T.J, Zaurov D.E, Capik J.M.2011. Persian walnut (Juglans regia L.) in Central Asia.Annu Rep North Nut Grow Assoc 101:56–69.

Molnar TJ, Zaurov DE, Capik JM. 2011. Persian walnut (Juglans regia L.) in Central Asia.

Mua, X.-Y., Tonga, L., Sunc, M., Zhua, Y-X., Wenb,J., Lind, Q.-W. and Liu, B. 2020. Phylogeny and divergence time estimation of the walnut family (Juglandaceae) based on nuclear RAD-Seq and chloroplast genome data. Molecular Phylogenetics and Evolution 147, 106802.

Muir R, Baek J, Leslie A, 2004. Analysis of genes expressed in walnut seed coat tissue. Unpublished raw data.

Neale D, Martínez-García PJ, Crepeau MW, 2015. Application of marker breeding in the walnut improvement program. Walnut Res Rep.

Pollegioni P, Woeste K, Chiocchini F.2017. Rethinking the history of common walnut (Juglans regia L.) in Europe: its origins and human interactions. PLoS One 12(3):0172541.

Sadat-Hosseini M, Bakhtiarizadeh M.R, Boroomand, N., Tohidfar, M., andVahdati, K .2020. Combining independent de novo assemblies to optimize leaf transcriptome of Persian walnut. PLoS ONE 15(4): e0232005.

Sarikhani Khorami S, Arzani K, Karimzadeh G. 2018. Genome size; a novel predictor of nut weight and nut size of walnut trees. HortScience 53(3):275–282.

Sütyemez et al. 2014. Ceviz yetiştiriciliği.

Sütyemez. M. 2000. Kahramanmaraş'ta ceviz yetiştiriciliği. Fen ve Mühendislik Derg. 3 (2): 69-74.

Şen, S.M. 1986. Ceviz yetiştiriciliği. Ondokuzmayıs Üniversitesi Ziraat Fakültesi Yayınları, Eser Matbaası, Samsun, 229-232.

Tester M, Langridge P. 2010. Breeding technologies to increase crop production in a changing world. Science 327(5967):818–822.

Trouern-Trend, A. J.,, Falk, T.,, Zaman, S., Caballero, M.,. Neale, D.B Langley, C.H. Abhaya Dandekar, M. Stevens, K.A. and Wegrzyn, J.L.. 2020 . Comparative genomics of six Juglans species reveals diseaseassociate gene family contractions. The Plant Journal, 102, 410–423.

Ullah, I., Hou, N., Yan, F., Khan, H., Bai, X., Ullah, S., Yue, M., and Zhao, P. 2020. JrbHLH Gene Family: Genome-Wide Identification and Transcriptional Expression in Persian Walnut (Juglans regia L.). Pol. J. Environ. Stud. Vol. 30, No. 2, 1831-1839

Vahdati K, Bayat S, Ebrahimzadeh H. 2008. Effect of exogenous ABA on somatic embryo maturation and germination in Persian walnut (Juglans regia L.). Plant Cell Tissue Organ Cult 93(2):163–171.

Vahdati K, Lotfi N, Kholdebarin B, Hassani D, Amiri R, Mozaffari MR, Leslie C. 2009. Screening for drought-tolerant genotypesof Persian walnuts (Juglans regia L.) during seed germination. HortScience 44, 1815–9.

Vahdati, K,and Rezaee, R. 2014. Behavior of some early mature and dwarf persian walnut trees in Iran. Acta Hortic 1050:189–196.

Vischi M, Chiabà C, Raranciuc S. 2017. Genetic diversity of walnut (Juglans regia L.) in the Eastern Italian Alps. Forests 8(3):81.

Xu L, Chen X, Zhang LS. 2014. Molecular cloning and expression analysis of the transcription factor gene JrCBF from Juglans regia L. Acta Hortic 1050:41–47.

Yan, F.,, Li, H.,and Zhao. P.,2019. Genome-Wide Identification and Transcriptional Expression of the PAL Gene Family in Common Walnut (Juglans Regia L.). Genes, 10, 46;

Zhang R, Zhu A, Wang X. 2010. Development of Juglans regia SSR markers by data mining of the EST database. Plant Mol Biol Report 28(4):646–653.

ZhangMY, Xu Y, Xiang K,Wang XL. 2014. Review of walnut breeding research at the Shandong Institute of Pomology. Acta Hortic 1050: 55–60.

Zhao P, Zhang T, Zhou HJ. 2015. Identification, development, and application of 40 polymorphic EST-SSR markers for common walnut (Juglans regia L.). NCBI, EST (unpublished raw data).

Zhu, T., Wang, L., You, F.M. 2019. Sequencing a Juglans regia 9 J.microcarpa hybrid yields high-quality genome assemblies of parental species. Hortic. Res. 6, 1–16.

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IDENTIFICATION OF HOUSEKEEPING GENES IN PLANTS

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Abstract
Most common attempt with qRT-PCR standardization is the practice of housekeeping genes, however the utilize of improper housekeeping genes can reason important deflection and misconstructions of data, eventually causing indefinite, in fact, incorrect conclusions. An optimal housekeeping gene must hold the expression in stable grade under diverse situations and can't be affected by experimental measurable valuesUnfortunately, no certain worldwide housekeeping gene does not determine plants and animals. Many former studies right chosen the conventional reference genes participating fundamental cellular process, main metabolism and cell construction continuity. But, the reals have evidenced that these reference genes do not every time indicate ideally decided expression in reply to a different of circumstances. steady reference genes are promptly demanded to define for acquisition correct, trustworthy and high sensitive gene expression analysis datum. Gene expression examination mirrors the measuring the amount in mRNA transcription grades of chosen genes and supplies a new understanding of the gene's role in marking transduction, metabolic arrangement and organizing systems. qRT-PCR has happened much wide sprite practice to define the grade of gene expression and confirm the consequences of high-throughput sequence investigates and RNA-seqs, because of its velocity, be private, sensibility and reproducibility. Depending on a conventional system for examining the steady of species in plant cultivation, it describes evalutes of gene expression steady from change (ANOVA) and linear recession Gene expression views of a goal gene may supply clew against the realization of its biologic process. But, the correctness of quantitative real time-PCR is seriously influenced by very varieties status including the quality and quantity of mRNA patterns, RT of mRNA, amplification activity of primers, the genotype of the examples, diverse materials, and improving stages, abiotic and biotic conditions, etc. İn this review, we will explain reference genes and their selection in plants.
Keywords: Gene expression, reference genes, qRT-PCR

Introduction

Housekeeping genes are characteristically creative genes essential for the continuous fundamental cellular tusks necessary for the presence of a cell, irrespective of its certain role in the tissue or organism. Therefore, they are found in whole cells of a living being beneath regular and physiological situations, regardless of tissue style, improvement phase, cell period case, or exterior marking (Curina et al., 2017). Even though texture and organs of multicellular the systems have diverse phenotypic typicals, they have resembla gene groups.

These phenotypic distinctions in textures and organs appear with tissue-distinctive organizing of the statement profiles of concerned genes. Gene expressions in tissues and organs are applied by diverse analysis processes like Northern Blot, In situ Hybridization, Quantitative Real-Time Polymerase Chain Reaction (RT-qPCR) and Microarray technology. Between this analysis procedure utilization in quantitative gene expression analysis, RT-qPCR is the broadest utilization method from this point of view determining the aimed mRNA of a gene with top delicate, amplification of the goal region and quantitative specification stage with a only tool (Moein et al., 2017)

They win scientific importance in 2 paths. On the other hand, they symbolize the least set of genes essential to maintain life. On the one hand, reference genes are broadly utilized as interior checks for investigational resources. The credibility of any relative RT-PCR investigation can be advanced with bearing an immutable internal control (Housekeeping gene) in the analysis to right for sample-to-sample changes in RT-PCR activity and faults in pattern quantification (Yang et al. 2014). The most widespread use for qRT-PCR standardization is the practice of housekeeping genes, however, the use of unsuitable reference genes can end with important deflections and misreading of data, the conclusion is uncertain, actually incorrect result. The most favorable Housekeeping gene should be keeping expression at a constant grade below diverse circumstances and should not be influenced by research parameters (Keertan, et. al. 2004; Kulchesk, et. al. 2010).But, varied records existent between species situation that the expressions of reference genes can change relying on diverse exterior agents. (Greer, et al.,2010; Liu, et. al., 2012; Duhoux and Délye,2013). The choice of appropriate reference genes to standardize the expression grade is a compelling mission and necessary broad examination to obtain a correct outcome (Wang et al., 2015).

On account of investigating the molecular mechanism and utilizing genetic sources in reproductive activity, it is essential to determine applicant genes liable for peripheral tolerance and to examine their expression models on the stress (Kramer, 2010). MicroRNAs (miRNAs) are small non-coding RNAs with one strands average of 21 nucleotides (nt) in length that act on important organizing actions involved in response and improvement of procedures under different stress conditions in plants (Chen, 2009; Yan; Yan-Du, et. al., 2008). Gene expression analysis by RT-qPCR is widely used in many areas of plant biological research, including response to different stress conditions. Comparison with traditional ways, quantitative real time-PCR is handier in gene expression analysis for its certainty, producibility, and superior susceptibility in determining transcripts with minimum duplicates (Gachon et al. 2004; Remans et al. 2014). Aspect its countless benefits, this technique necessary suitable normalization procedures to provide tried and expressive gene expression evaluation. Between a few tactics noticed, it is best popular to utilize appropriate reference genes for gene expression standardization. An optimal reference gene must be stationarily transcribed in various empirical conditions (Dheda et al. 2005). Owing to its typically of being fast and cheap in the investigation of the genome and transcriptome of biological systems, High-throughput, genome re-sequencing, transcriptome analysis (RNA-seq), genome sequencing and DNA–protein interactions (ChIP-sequencing)has become an often utilized biological technic (Stone and Storchova, 2015).

Genomic and Biochemical Structure of Housekeeping Genes

Housekeeping genes expressed in whole tissues and/or organs; it has a distinc genomic organization from the targeted gene sequence (Goldman, 2001). In addition, these genes; It also plays a role in cellular metabolic events such as DNA synthesis, protein synthesis and transcription (Farre et al., 2007). Unlike other genes, housekeeping genes do not have TATA and CAAT boxes in their promoter regions, instead they contain GC-rich sequences in their promoter regions (Goldman, 2001). While GC sequences located in the promoter regions are responsible for initiation of transcription, like the TATA box, It enables transcription factors that recognize GC sequences such as Sp1 to bind to their promoter regions. In addition, in studies conducted in organisms with different genomic organizations, it has been found that reference genes have short and long intron and exon regions, repeat sequences scattered throughout the genome, low-conserved promoter regions, and show less affinity for histone proteins (Farre et al., 2007).

Reference genes are widely utilized in quantitative analyzes (Tilli et al., 2016). Reference genes usually used in studies; glycealdehyde-3-phosphate dehydrogenase (GAPDH), Beta actin (β-Actin), TATA binding proteins (TBP), hypoxanthine-guanidine phosphoribosyl transferase (HPRT), tubulins, cyclophilin (CyP), albumin, 18S rRNA and 28S rRNA are reported. It has been revealed that the expression levels of the housekeeping gene different according to the species, tissue type, developmental period of the organism, disease and infection status. E.g; Although GAPDH has been recorded as the best stable gene in some studies; this Housekeeping genes has been shown to be significantly affected by external and internal factors. Due to the high expression levels of ribosomal RNAs, which is one of the housekeeping gene widely utilized in RT-qPCR analysis, in most cell types, they are not recommended to be ustilized as reference genes in some gene expression analyzes (Kozera and Rapacz, 2013). It shows that the utilizing of a one reference gene for standardization in the results of the obtained datum will cause erroneous interpretation of the study results (Vandesompele et al., 2002). Because; It is proposed to define and use 2 or more reference genes in the next study (Bustin et al., 2009).

Determined of Housekeepıng Genes

Quantitative real-time polymerase chain reaction (qRT-PCR) technology is an involution technique, which during PCR can observation the amplification procedure of target DNA and it can so be quantitative (Bustin, 2002; Ferdous et al. 2015). Relative quantification is the best frequently utilized quantitative method, in which data is normalized by interior inspect genes. Recently, with the increase of biotechnological developments and transcriptome studies, studies on the determination of reference genes in model and non-model plants have increased. Among these studies, Stability study by qRT-PCR was performed by Brunner et al.(2003) to determine the reference genes and examine their expression in 10 Poplar genera. Rested on a conventional technique for investigating the steady of diversities in plant breeding, it determines evaluate of gene expression steady from research of alteration (ANOVA) and linear regression. Researchers determined that the possible, interior check genes varied thoroughly in their expression steady on the distinct tissues, improving phases and environmental status examined. Outcomes rest on that quantitative collations of candidate housekeeping genes are an significant section of RT-PCR studies that search to exactly apprise change in gene expression.

The procedure we used simplify quantitative and visual assesment of gene expression steady choice of a perfect housekeeping gene for a dedicated set of experimental circumstances must include possible findings of biologically important various in gene expression that are very little to be disclosed by less exact techniques, or while very changeable housekeeping genes are unawares utilized in RT-PCR tests.

Nicot et al. (2005), The investigation of gene expression be necessary susceptible, exact, and repetitive evaluations for susceptible mRNA sequences. RT-PCR is currently the most delicate method for determining mRNA. To refrain prejudice, RT-PCR mentions on one or a few interior genes, which must not surge in the course of the process. there, the non-organizing of 7 reference genes and cytoplasmic ribosomal protein L2) on biotic (late blight) and abiotic stresses (cold and salt stress) was set on potato plants utilization geNorm programme. Obtained outcomes from the 3 investigational situations demonstrated that ef1a was at best steady between the 7 tried reference genes. The expression of other reference genes trials was diverse on stress. In harmony, a research of the changing of expression of hsp20.2, indicate to be confused in late blight stress, was carried out. Li et al. (2012), produced and assessed the expression of eight nominee reference genes utilize quantitative real-time reverse transcriptase-polymerase chain reactions. The expression of these nominee housekeeping genes was examined in a varied set of 20 materials inclusive of diverse E. songoricum plant material indicated to plural ecological strains. GeNorm examination showed that expression was steady distinct across the housekeeping genes in the dissimilar experimental conditions, but the two best suitable housekeeping genes were enough for standardization in most circumstances. EsEF and Esα-TUB were enough for diverse stress circumstances, EsEF and EsACT were appropriate for samples of changing germination phases, and EsGAPDHand EsUBQ were the most steady between plural adult tissue material. The Es18S gene was improper as a housekeeping gene in our examination. İn adding, the expression grade of the drought-stress-depend transcription factor EsDREB2 the using of E. songoricum housekeeping genes and showed that no only gene was enough for standardization on its only. Chen et al. (2010), to select stable housekeeping genes for the right regulation of experimental diversities in RT-PCR outcomes in transgene expression analysis, especially in relation to the effect of transgene on steady of interior reference gene expression in transgenic plants, we main a safe strategy to determine the ideal reference genes from a series of candidates by combinational statistical investigation of their real-time PCR amplification productivity, gene expression steady, and transgene impacts. To identify the root pathways of the transgenic Eucommia ulmoides Oliver plant that overexpresses the IPPI or FPPS1 genes associated with isoprenoid biosynthesis, the researchers used two candidate gene selection methods, ACT α and EF1 α, from 10 candidate housekeeping genes as the correct reference genes. Sinha et al. (2015), in order to define steady reference genes as housekeeping gene for expression testing in the conditions salt and heat stress in pigeonpea, the relative expression change for 10 extensively utilized reference genes was examined in stem, leaves and root, tissues of Asha(ICPL87119), an important pigeonpea kind. in the conditions of heat stress, UBC, HSP90, and GAPDH were determined to be the best steady housekeeping genes. Under conditions of salinity stress, GAPDH found by UBC and HSP90 were defined to be the best steady housekeeping genes.

Later, the above-mentioned genes were confirmed utilizing qRT-PCR based upon gene expression study of two comprehensive stress-sensitive genes named uspA and uspB. these two genes varied according to the interior check and thus confirmed the selection also validation of interior check in such experiments. Sun et al. (2015), researchers determined dependable housekeeping genes for gene expression analysis in Gossypium raimondii. 5 diverse software devices were used to examine the qRT-PCR data methodically of 12 refernce genes. SAD and TUA11 indicated comparatively steady expression levels in all samples (i.e. buds, leaves, sepals and shoots). We after that restricted our studies to every plant part and determined tissue-special housekeeping genes. Our outcomes indicated TUA11, EF1 and TUB6 a, EF1 a, GAPC 2, MZA, and EF1 a, MZA and GAPC 2, TUA11 and SAD, MZA and UBQ were, dependable housekeeping genes in leaves, shoots, buds, and sepals, respectively. Ma et al. (2016), Seven candidate housekeeping genes in the tea plant (Camellia sinensis (L.) Kuntze cv. Yingshuang) were chosen and their expression steady in conditions diverse abiotic stresses were examined utilizing geNorm, NormFinder, and BestKeeper technique. outcomes recommended that TUA 1 has the best steady expression in condition damage stresses, accordingly 3 techniques of study. For drought condition, 18S rRNA, and GAPDH were the best steady genes. İn drought condition, 18S rRNA, and GAPDH were the best steady genes. İn cold stresses, for Al and NaCl treatment, GAPDH and TUA 1 genes may be the other alternatives. outcomess can supply an idea for recognitation of the ideal housekeeping genes for tea plants sub diverse procedures. Almas and Kamrodi,. (2018) researchers study the expression steadibilt of 8 frequently used reference genes in rice leaves subject to 4 types of severe metals (Zn, Cu, Cd and Pb). The expression steadybility of these genes was defined utilizing BestKeeper, geNorm, RefFinder, and NormFinder algorithms. The outcomes indicated that UBQ10 and UBC were the best steadyble housekeeping genes between all the tried examples. Researchers evaluted the expression shapes of the severe metal-accusable gene Oryza sativa OsMT2b utilizing the two best steadyble and minimum steadyble housekepping genes in whole examples. The notional expression of OsMT2b diverse very accordingly the diverse housekeeping genes. Results may be helpful for coming examination inclusive the quantification of consistent gene expression grades in rice plants. Joseph et al. (2018) this study unifieded the elaborations of one hundred twenty genes enterprised for standardization on relative expression studies in sixteenı different plants. Plant species included in this study; Arabidopsis thaliana, tobacco (Nicotiana benthamiana and N. tabacum), cotton (Gossypium hirsutum), soybean (Glycine max), grape (Vitis vinifera), tomato (Solanum lycopersicum), cotton (Gossypium hirsutum), wheat (Triticum aestivum), potato (Solanum tuberosum), sugarcane (Saccharum sp.), blueberry (Vaccinium corymbosum), carrot (Daucus carota), cucumber (Cucumis sativus), coffee (Coffea Arabica), kiwi (Actinidia deliciosa) and rice (Oryza sativa). The list includes different models of plants, for example monocot and dicot. Researchers have classed on a plant basis the reference genes that have been utility for expression exeminations in some or whole of the 4 diverse situations like abiotic stress, various organs and tissues, developmental stages and biotic stress, studied untill date. This review presented qua a handbook in the housekeeping gene hunt during gene expression studies. Zhang et al.(2019), study apprised the gene expression steadybility of 10 housekeeping genes mostly utilized in Arabidopsis thaliana for their relevance quantitative real time-PCR study in Tripterygium wilfordii Hook.f.

The orthologous sequences of these 10 genes were defined from T. wilfordii transcriptomic information. 5 programm containing ΔCt, GeNorm, RefFinder BestKeeper, and NormFinder, were used to evaluted the gene expression steadibility of these assumed reference genes in diverse plant tissues and disting stress situations. The outcomes defined ACTINT7 and TBP as the most aproppriate reference genes between all materials. The gene expressions of TwHMGR and of TwDXR were examinated to confirm the aproppriate of the housekeeping genes. To brightening secondary metabolite biosynthesis pathway the conformation study validated the aproppriate of ACTINT7 and TBP as top housekeeping genes forin T. wilfordii. In summary, this research defined the best appropriate and dependable housekeeping genes for coming quantitative real time-PCR-based examinate in T. wilfordii. Chen et al. (2021), expression levels in luffa plants subjected to diverse abiotic stresses [i.e., heat, drought, cold, salt, H2O2, and abscisic acid (ABA) were investigated with quantitative real time-PCR utilizing seven housekeeping genes. The steady of the housekeeping gene expression grades was confirmed utilizing the geNorm, NormFinder, BestKeeper, and RefFinder algorithms. The steady of the housekeeping gene expression grades was confirmed utilizing the geNorm, NormFinder, BestKeeper, and RefFinder algorithms. Results showed that EF-1α was the best steady expressed and appropriate housekiping gene all and for the heat, cold, and ABA procedures. İn addition to, UBQ expression was steadly maintaning the salt procedure, whereas TUB was determined as a appropriate housekeeping gene for H2O2 and drought procedure. The credibility of the choosen housekeeping genes was confirm by investigating the expression of Cu/Zn- SOD gene in luffa. These outcomes will be assisted in more right quantization of gene expression grades in luffa

Resuls

Gene expression analysis methods are widely used in various molecular studies. To attain trustworthy outcomes in mRNA expression analyzes of the goal gene; It is necessary to normalize with housekeeping genes whose expressions are stable in the face of variables such as initial differences between samples, experimental errors caused by the amount of RNA and cDNA amount. Because; in studies conducted to quantitatively determine the expression level of goal genes in varied tissues and cell types, the best suitable stable housekeeping genes to be utilized as a housekeeping should be correctly selected first. In addition, taking reference from previous pilot studies for the housekeeping genes to be selected will increase the relative accuracy of gene expression analyzes. Although there are many housekeeping genes previously determined and widely used; Along with the studies, it has been revealed that the expression levels of reference genes vary according to the species, tissue type, developmental period of the organism, disease and infection status. Because; reference genes need to be selected and evaluated in accordance with the study design. One or more reference genes suitable for the study are selected using various statistical approaches. The housekeeping genes s determined by these approach methods are normalized by proportioning the expression level of the targeted gene. This will increase the reliability of the data obtained from the study. As a result; The more stable the expression level of reference genes to be utilized in studies, the more reliable the quantitative analysis of the expression level of the goal gene future be.

Referance

Almas, D. E. and Kamrodia, A. R. 2018. Validation of Appropriate Reference Genes for Real-Time Quantitative PCR Gene Expression Analysis in Rice Plants Exposed to Metal Stresses. Russian Journal of Plant Physiology, 65, 6, 890–897.

Brunner, A.M. Yakovlev, I. A. and Strauss, S.H. 2004. Validating internal controls for quantitative plant gene expression studies. BMC Plant Biology, 4:14.

Bustin S.A, Benes, V., Garson J.A., Hellemans, J., Hug-gett, J., Kubista, M., Mueller, R.T., Pfaffl, M.W., Shipley, G.L., Vandesompele, J., Wittwer, C.T. 2009. The MIQE Guidelines: Minimum information for publication of quantitive real-time PCR experiments. Clin Chem, 55(4): 611-22.

Bustin, S. 2002. Quantification of mRNA using real-time reverse transcription PCR (RT-PCR): Trends and problems. J. Mol. Endocrinol., 29, 23–39.

Chen, M., Wang, B., Li, Y., Zeng, M., Liu, J., Ye, X., Zhu, H.,and Wen, Q. 2021. Reference gene selection for qRT-PCR analyses of luffa (Luffa cylindrica) plants under abiotic stress conditions. Scientific Reports 11:3161.

Chen, R., Gyokusen, M., Nakazawa, Y. and Gyokusen, K. 2010. Selection of Housekeeping Genes for Transgene Expression Analysis in Eucommia ulmoides Oliver Using Real-Time RT-PCR. Hindawi Publishing Corporation Journal of Botany, 230961, 7.

Chen, X. 2009. Small RNAs and their roles in plant development. Annu. Rev. Cell. Dev. Biol. 25, 21–44.

Curina, A., Termanini, A., Barozzi, I., Prosperini, E., Simonatto, M., Polletti, S., Silvola, A., Soldi, M., Austenaa, L., Bonaldi, T., Ghisletti, S. and Nato, G. 2017 High constitutive activity of a broad panel of housekeeping and tissue-specific cis-regulatory elements depends on a subset of ETS proteins. J. Phys D: Appl Phys, 31(4):399-412.

Dheda, K., Huggett, J.F., Chang, J.S., Kim, L.U., Bustin, S.A., Johnson, M.A., Rook, G.A., and Zumla, A. 2005. The implications of using an inappropriate reference gene for real-time reverse transcription PCR data normalization, Anal. Biochem. 344,

Duhoux, A.,and Délye, C. 2013. Reference genes to study herbicide stress response in Lolium sp.up-regulation of P450 genes in plants resistant to acetolactate-synthase inhibitors. PLoSONE 8:e63576..

Eisenberg, L. 2014. Human housekeeping genes, revisited. Trends in Gen. 30(3):119-20.

Farre D, Bellora N, Mularoni L, Messeguer X, Alba M.M. 2007. Housekeeping genes tend to Show reduced upstream sequence conservation. Genome Bio, 8(7): RI40.

Ferdous, J.; Li, Y.; Reid, N.; Langridge, P.; Shi, B.-J. Tricker, P.J. 2015. Identification of reference genes for quantitative expression analysis of microRNAs and mRNAs in barley under various stress conditions. PLoS ONE, 10, e0118503.

Gachon, C., Mingam, A., and Charrier, B., 2004. Real-time PCR: what relevance to plant studies? J. Exp. Bot., , vol. 55, pp. 1445–1454.

Goldman M. 2001. Housekeeping Gene. Brenner S. Miller JH. eds. In: Encyclopedia of Genetics. Academic Press. 978.

Greer, S., Honeywell, R., Geletu, M., Arulanandam, R.,and Raptis, L. 2010. Housekeeping genes;expression levels may change with density of cultured cells. J. Immunol. Methods 355, 76–79..

Joseph, J.T. Poolakkalody N. J. and Shah, J. M 2018. Plant reference genes for development and stress response studies J Biosci 43, 1, 173–187.

Keertan, D.; Huggett, J.F.; Bustin, S.A.; Johnson, M.A.; Graham, R.; Alimuddin, Z. 2004. Validation of housekeeping genes for normalizing RNA expression in real-time PCR. Biotechniques, 37, 112–119.

Kozera B, Rapacz M. 2013. Reference genes in real-time PCR. J Appl Genetics, 54(4): 391-406.

Krämer, U., 2010. Metal hyperaccumulation in plants, Annu. Rev. Plant Biol. 61,. 517–534.

Kulcheski, F.R.; Nepomuceno, A.L.; Abdelnoor, R.V.; Margis, R. 2010. The use of microRNAs as reference genes for quantitative PCR in soybean. Anal. Biochem., 406, 185–92.

Liu,C.,Wu,G.,Huang,X.,Liu,S.,andCong,B.(2012).Validation of housekeeping genes for gene expression studies in an ice alga Chlamydomonas during freezing acclimation. Extremophiles 16, 419–425.d.

Maa, Q. P. Haob, S. Chena, X. and Li, X. H. 2016. Validation of Reliability for Reference Genes Under Various Abiotic Stresses in Tea Plant. Russian Journal of Plant Physiology, 63, 3, 423–432.

Moein, S., Javanmard S. H., Abedi, M., Izadpanahi, M, H. and Gheisar, Y. 2017. Identification of Appropriate Housekeeping Genes for Gene Expression Analysis in Long-term Hypoxia-treated Kidney Cells. Adv Biomed Res., 22;6:15.

Remans, T., Keunen, E., Bex, G.J., Smeets, K., Vangronsveld, J., and Cuypers, A. 2014. Reliable gene expression analysis by reverse transcription-quantitative PCR: reporting and minimizing the uncertainty in data accuracy, Plant Cell, 26, 3829–3837.

Sinha, P., Saxena, R.K., Singh, V.K.,.Krishnamurthy L and Varshney, R. K. 2015. Selection and Validation of Housekeeping Genes as Reference for Gene Expression Studies in Pigeonpea (Cajanus cajan) unde rHeat and Salt Stress Conditions. Frontiers in Plant Science. 6, |1071.

Stone, J.D. and Storchova, H. 2015. The application of RNA-seq to the comprehensive analysis of plant mitochondrial transcriptomes. Mol. Genet. Genom.290, 1–9.

Sun, R., He , Q., Zhang, B. And Wang, Q. 2015. Selection and validation of reliable reference genes in Gossypium raimondii. Biotechnol Lett. 37:1483–1493.

Tilli, T.M, Castro, C.S, Tuszynski, J.A, Carels, N. 2016. A stra-tegy to identify housekeeping genes suitable for analysis in breast cancer diseases. BMC Genomics, 17(1): 639.

Vandesompele J, De Preter K, Pattyn F, Poppe B, Van Roy N, De Paepe A, Speleman F. 2002. Accurate normalization of real-time quantitative RT-PCR data by geometric averaging of multiple internal control genes. Genome Biol 3(7): 1-12.

Wang,Y.,Zhao,Y.,Li,J.,Liu,H.,Ernst,C.W.,Liu,X. 2015..Evaluation of housekeeping genes for normalizing real-time quantitative PCR assays in pig skeletal muscle at multiple developmental stages. *Gene* 565, 235–241.

Yan-Du, L. Qin-Hua, G.; Xiao-Yuan, C.; Song, Q. 2008. Roles of microRNA in plant defense and virus offense interaction. Plant. Cell. Rep. 27, 1571–1579.

Yang, Q. Yin ,J.,Li, G.,Qi, L.,Yang, F. and Wang,R. 2014. Reference gene selection for qRT-PCR in Caraganakorshinskii Kom. Under different stress conditions. Mol. Biol.Rep. 41, 2325–2334

Zhang, J., Zhu, C-s., · Huo, Y-b., Zhang, B., Ma, Z-q., · Feng, J-t., · Zhang, X. 2019. Validation of suitable reference genes for quantitative gene expression analysis in Tripterygium wilfordii. Molecular Biology Reports, 46:4161–4174.

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Özet
Bu çalışma, Türkiye'de pamuk üretiminin en fazla yapıldığı GAP bölgesi illerinden Diyarbakır ekolojik koşullarında Azerbaycan menşeili 6 adet pamuk (Gossypium hirsutum L.) çeşitlerinin lif kalite özellikleri yönünden incelemek, tekstil sektörü yönünden önemini irdelemek amacı ile yapılmıştır. Azerbaycan menşeili Gence-110, Gence-114, Gence-132, Gence-160, Gence-182 ve Gence-2 pamuk çeşitleri ile GAP bölgesinde üretimi oldukça fazla olan BA-440, Gloria ve MAY-455 standart pamuk çeşitleri materyal olarak kullanılmıştır. Deneme, tesadüf blokları deneme desenine göre 3 tekerrürlü olarak, 2020 yılında yürütülmüştür. Deneme parseli 12 m uzunlukta ve 4 sıralı olarak yapılandırılmıştır. Çalışmada lif inceliği (mic), lif uzunluğu (mm), lif kopma dayanıklığı (g/tex), lif üniformitesi indeksi (%), kısa lif oranı (%) ve iplik olabilirlik indeksi (SCI) özellikleri incelenmiş, genotip özellik ilişkileri irdelenmiştir. Çalışma kapsamında her özellik için elde edilen veriler, JMP 5.0 istatistik paket programı ile analiz edilmiş; sonuçlar, F testi ile değerlendirilmiş; ortalamalar, EGF testi uyarınca gruplandırılmıştır. İncelenen tüm özellikler yönünden genotipler arasındaki farklılıkların istatistiki olarak önemli olduğu saptanmıştır. Lif inceliği yönünden Gence-114, Gence-132, Gence-160, Gence-182 ve Gloria genotipleri; lif mukavemeti yönünden Gence-160, Gence-182 ve Gloria genotipleri, lif uzunluğu, kısa lif oranı yönünden, lif üniformite indeksi ve lif olabilirlik indeksi özellikleri yönünden, Gence-132 genotipi en iyi lif kalite özelliklerine sahip grupta yer almıştır. Tüm lif özellikleri dikkate alındığında Gence-132 genotipinin uygun olduğundan, üretilmesi tavsiye edilmektedir.
Anahtar Kelimeler: Pamuk, Lif Kalite, Azerbaycan, Genotip, Adaptasyon

INVESTIGATION OF FIBER QUALITY TRAITS OF SOME COTTON VARIETIES ORIGINATING FROM AZERBAIJAN

ABSTRACT
This study was carried out in order to examine the fiber quality traits of 6 Azerbaijan origin cotton (Gossypium hirsutum L.) cultivars in Diyarbakır ecological conditions, one of the provinces of the GAP region where cotton production is most common in Turkey, and to examine their importance in terms of the textile industry. Azerbaijan-origin Gence-110, Gence-114, Gence-132, Gence-160, Gence-182 and Gence-2 cotton varieties and BA-440, Gloria and MAY-455 standard cotton varieties, which are produced in the GAP region, were used as materials. The experiment was carried out in 3 replications in 2020 according to the randomized blocks design. The trial plot is 12 m long and has 4 rows.

In the study, fiber fineness (mic), fiber length (mm), fiber strength (g/tex), fiber uniformity index (%), short fiber ratio (%) and spinning congistency index (SCI) properties were examined and genotype property relationships were examined. The data obtained for each feature within the scope of the study were analyzed with the JMP 5.0 statistical package program; the results were evaluated with the F test; means are grouped according to the EGF test. It was determined that the differences between genotypes were statistically significant in terms of all the traits examined. In terms of fiber fineness, Gence-114, Gence-132, Gence-160, Gence-182 and Gloria genotypes were in the group with the best fiber quality traits. In terms of fiber strength, Gence-160, Gence-182 and Gloria genotypes were in the group with the best fiber quality traits. In terms of fiber length, short fiber index, fiber uniformity index and spinning congistency index properties, Gence-132 genotype took place in the group with the best fiber quality traits. Considering all fiber properties, Gence-132 genotype is recommended to be produced because it is suitable.

Keywords: Cotton, Fiber Quality, Azerbaijan, Genotype, Adaptation

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DEHORNING METHODS IN CALVES

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ABSTRACT
In this study; To guide veterinarians by evaluating the dehorning methods with current information in calves and it is aimed to raise the awareness of growers on the importance and benefits of the subject. Three techniques are used for dehorning in the calves. These; thermal dehorning, surgical dehorning and caustic paste application. The most common method used as the Thermal Dehorning technique is the cauterization process. For this purpose; It is applied to the horn base for 15-60 seconds with cautery heated above 600 °C. So; The destruction and tissue damage from dermal and epidermal layers to subcutaneous tissue is protected by dressing and regeneration is provided. In surgical hornless technique; The generative tissue containing the horn buds is removed together with the skin. Thirdly, in caustic cake application technique; The destruction of the generative tissue with strong alkalizing drugs such as calcium hydroxide or sodium hydroxide is based on. The thermal Hornless technique is less costly and application time than surgical hornless technique. Therefore, it is more preferred. But; the Surgical Dehorning technique causes less stress and pain in calves as a more positive advantage in terms of health. The dehorning process with caustic cake; It is both practical and practical in as little as 35 seconds. Moreover, it is an important advantage that it causes less pain. All three techniques must be done under the control of a physician, prevention of contamination and complications after application it is one of the most important factors to minimize economic losses.
For this reason, dehorning practices are not allowed to be applied by breeders or empiricists, young calves in 2-4 weeks of rotation, under the control of a veterinarian, by following the rules of asepsis and antisepsis, it is the surgical procedure that requires the necessary care and care after the application.
Keywords: Dehorning, Methods, Calve

BUZAĞILARDA BOYNUZ KÖRELTME YÖNTEMLERİ

ÖZET
Bu çalışmada; Buzağılarda boynuz köreltme yöntemlerinin güncel bilgilerle değerlendirilerek veteriner hekimlere rehber olmak ve yetiştiricilerin konunun önemi ve yararları hakkında bilinçlenmesi amaçlanmıştır. Buzağılarda boynuzsuzlaştırma işlemi için üç teknik kullanılmaktadır. Bunlar; termal boynuzsuzlaştırma, cerrahi boynuzsuzlaştırma ve kostik pasta uygulamasıdır. Termal Boynuzsuzlaştırma tekniği olarak başvurulan en yaygın yöntem koetrizasyon işlemidir. Bu amaçla; 600 ^{0}C üzerinde ısıtılmış koter ile boynuz tabanına 15-60 saniye süreyle uygulanır. Böylece; dermal ve epidermal tabakalardan deri altı dokusuna kadar ilerleyen yıkımlanma ve doku hasarı pansumanla korunur ve rejenerasyon sağlanır.

Cerrahi boynuzsuzlaştırma tekniğinde; boynuz tomurcuklarını ihtiva eden jeneratif doku deri ile birlikte çıkarılır. Üçüncü olarak Kostik pasta uygulama tekniğinde ise; kalsiyum hidroksit veya sodyum hidroksit gibi güçlü bir alkalizan ilaçlarla jeneratif dokunun yıkımlanması esas alınmıştır. Termal Boynuzsuzlaştırma tekniği, Cerrahi boynuzsuzlaştırma tekniğine göre maliyeti ve uygulama süresinin daha azdır. Bu yüzden de daha çok tercih edilmektedir. Ancak; Cerrahi boynuzsuzlaştırma tekniği buzağılarda daha az strese ve ağrıya neden olması sağlık yönünden çok daha olumlu bir avantaj olarak karşımıza çıkar. Kostik pasta ile boynuz köreltme işlemi ise; hem uygulaması pratiktir hem de işlem 35 saniye gibi kısa sürede yapılır. Üstelik daha az ağrıya neden olması da önemli bir avantajdır. Her üç teknik mutlaka hekim kontrolünde yapılması, uygulama sonrası kontaminasyon ve komplikasyonların önlenmesi ekonomik kayıpları minimize etmek için en önemli unsurlardandır.
Bu nedenle boynuz köreltme uygulamalarının yetiştirici veya ampiriklerce uygulanmasına imkân verilmeden, 2-4 haftalık dönmede genç buzağılarda, veteriner hekim kontrolünde, asepsi ve antisepsi kurallarına riayet edilerek, uygulama sonrası gerekli bakım ve özen yapılması gerekli cerrahi işlemdir.
Anahtar Kelimeler: Boynuz köreltme, Yöntem, Buzağı

INTRODUCTION

Dehorning is frequently applied in today's modern livestock enterprises for reasons such as keeping the animal safer, decreasing the quality of the carcass as a result of possible injuries, less area covered in the feeding area, reducing the risk of injury to other animals and showing less aggressive behavior (1-5).
Dehorning process is an application that should be done considering the economic contributions it will bring to the business. Antler blunting is a method that creates stress on cattle, and it can cause more stress in adult cattle and especially in older cattle than in young ones, and the effect of this may be longer. The larger the diameter of the horn in cattle, the larger the treated area will be, the longer the wound will heal, and this will create a long-term healing process in the animal and will cause more stress in the animal. For all these reasons, performing the dehorning process in cattle as early as possible not only makes it easier for the breeder, but also has great benefits in terms of affecting the animal less (5-10).
Dehorning is done more easily and successfully in small calves. On the other hand, cutting the horns of old animals with developed horns is more difficult and risky (10).

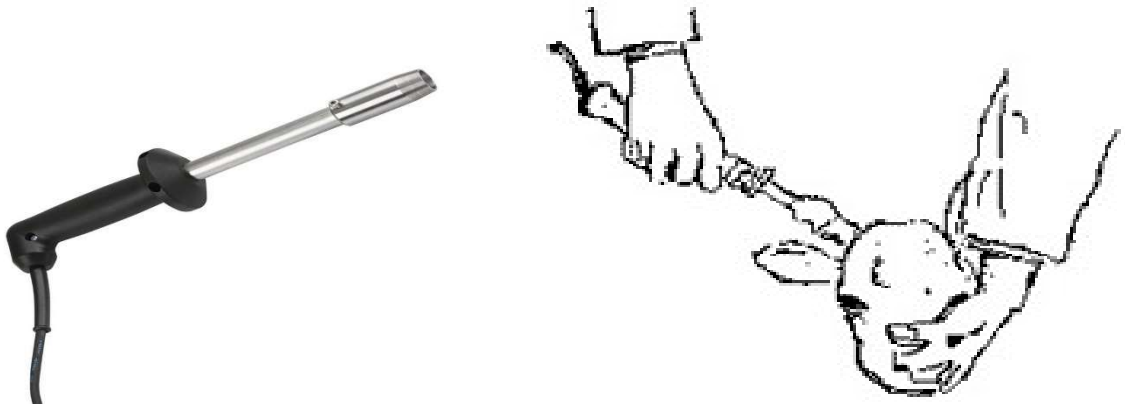
DEHORNING OF CALVES

In dehorning calves; Several different methods are used, including thermal dehorning, surgical dehorning, and caustic paste application.

Thermal Dehorning

Most commonly used for dehorning method horn with cautery heated above 600°C 15 sec to the base cauterization applied for method. For this purpose, electric (220 V) or battery powered (12 V) horns are used. This method can be applied to calves aged 1-2 months. Electric horn duller destroys horn producing tissue by burning horn heads it does. The animal is restrained and horned with cautery and it is rotated by pressing firmly on the button. However, it should not overflow. About 15-60 seconds later, the etched horn button is removed by shoveling with the tip of the tool. Branded horn button seeing a copper-colored ring around it is a sign that the application was successful.

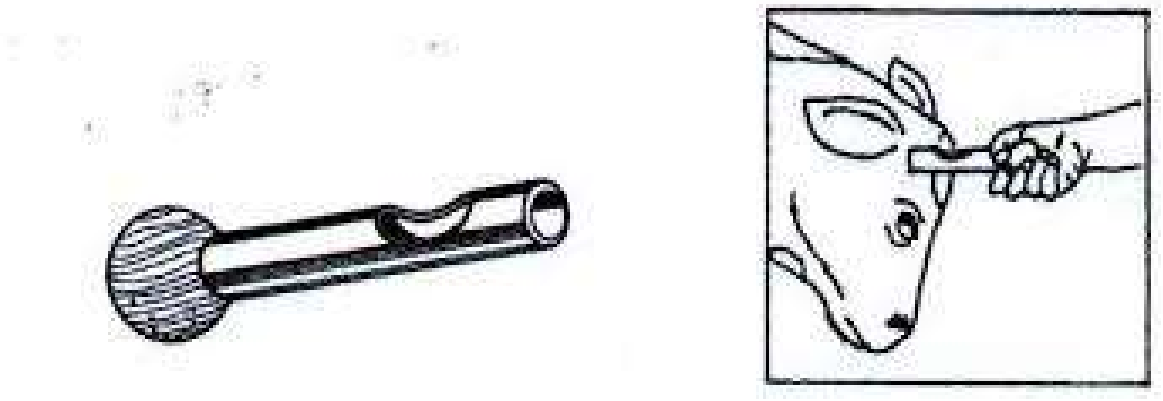
Otherwise tool 10 after another second is pressed, it should be checked whether the operation is completed or not. Later on the same application is made to the other horn, and the dehorning process is completed (10-11).



Thermal dehorning and application

Surgical Dehorning

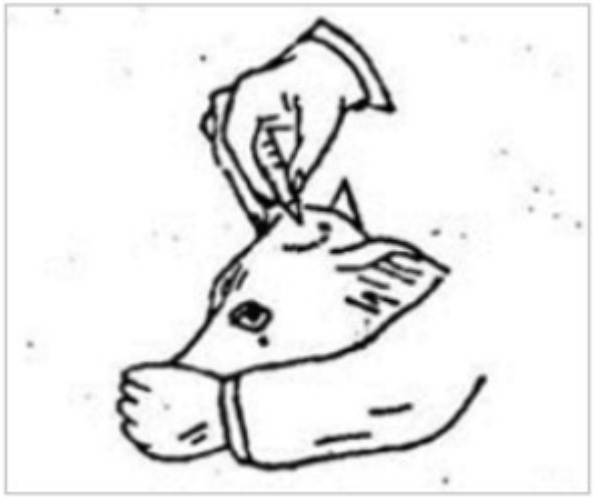
In calves aged 10 to 45 days, the generative tissue containing the horn buds is removed together with the skin. Horn tube is used for this method and the diameter of the tube to be used is 6-12 mm from the diameter of the horn button. should be more. Horn tube of suitable diameter width is placed over the horn button and is pressed firmly onto the skin surrounding the horn button. By pressing and rotating the tube, the skin then the horn button is removed by pushing the end of the tube to the other side while tilting the head of the tube. Bleeding of the vessel feeding the horn it is stopped by tightening with forceps (1, 10).



Horn tube and its use

Chemical Dehorning

Horn blisters under the skin of the head in calves aged one to two weeks after birth this operation can be applied when (buttons) begin to be felt by hand. For the blunting process, the calf is held firmly by an assistant and moved and the hair around the horn button is cut with a pair of scissors horn buttons are well exposed. Then around the horn button vaseline is applied to prevent the chemicals to be used from flowing towards the skin and eyes is done. Chemicals to be used; specially prepared for this application, they are round chalk-shaped sticks of calcium or sodium hydroxide. After the end of the caustic sticks are slightly dipped in water, the horn it was driven in circular motions by pressing on the button. horn button When the top turns white and then the signs of bleeding are seen, the procedure is terminated completed (approximately 30 sec) (1, 12).



Dehorning with caustic paste

REFERENCES

1. Yakan S., Duzguner V. & Aksoy O. 2018. Effects of flunixin meglumine on oxidant and antioxidant system after disbudding with caustic paste in calves. Acta Scientiae Veterinariae. 46: 1-9.

2. Yanmaz L.E., Kaya M., Dogan E., Okumus Z. & Kaynar O. 2015. Assessment of the pain level depends on the disbudding techniques and analgesic drug administration in calves. Harran University Journal of the Faculty of Veterinary Medicine. 4(1): 22-26.

3. Gottardo F., Nalon E., Contiero B., Normando S., Dalvit P. & Cozzi G. 2011. The dehorning of dairy calves: Practices and opinions of 639 farmers. Journal of Dairy Science. 94: 5724-5734.

4. Stafford K.J. & Mellor D.J. 2004. Dehorning and disbudding distress and its allevation in calves. The Veterinary Journal. 169: 337-349.

5. Heinrich A., Duffield T.F., Lissemore K.D., Squires E.J. & Millman S.T. 2009. The impact of meloxicam on postsurgical stress associated with cautery dehorning. Jornal of Dairy Science. 92: 540-547.

6. Stilwell G., Lima M.S., Carvalho R.C. & Broom D.M. 2012. Effects of hot-iron disbudding, using region anesthesia with and without carprofen, on cortisol an behaviorur of calves. Reserch in Veterinary Science. 92: 338-341.

7. Kupezynski R., Budny A., Spitalniak K. & Traez E. 2014. Dehorning of calves-methods of pain and stress alleviationReviewed. Annals of Animal Science. 14: 231-243.

8. Neely C.D., Thomson D.U., Kerry C.A. & Reinhardt C.D. 2014. Effects of three dehorning techniques on behavior and wound healing in feedlot cattle. Journal of Animal Science. 92(5): 2225-2229.

9. Grondahl-Nielsen C., Simonsen H.B., Lund J.D. & Hesselholt H. 1999. Behavioural, endocrine and cardiac responses in young calves undergoing dehorning without and with use of sedation and analgesia. The Veterinary Journal. 158(1):1-3.

10. Tumer S. Sığırlarda boynuzsuzlaştırma. 2004. Çiftçi Broşürü. 1-5.

11. Petrie N.J., Mellor D.J., Stafford K.J., Bruce R.A. & Ward R.N. 1995. Cortisol responses of calves to two methods of disbudding used with orwithout local anaesthetic. New Zealand Veterinary Journal. 44, 9-14.

12. Vickers K.J., Niel L., Kiehlbauch L.M. & Weary D.M. 2005. Calf response to caustic paste and hot-iron dehorning using sedation with and without local anesthetic. Journal Dairy Science. 88: 1454-1459.

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FURNACE DUST: A FACILE RAW MATERIAL FOR THE GENERATION OF THIRD HARMONIC GENERATION AND OPTICAL LIMITING APPLICATIONS

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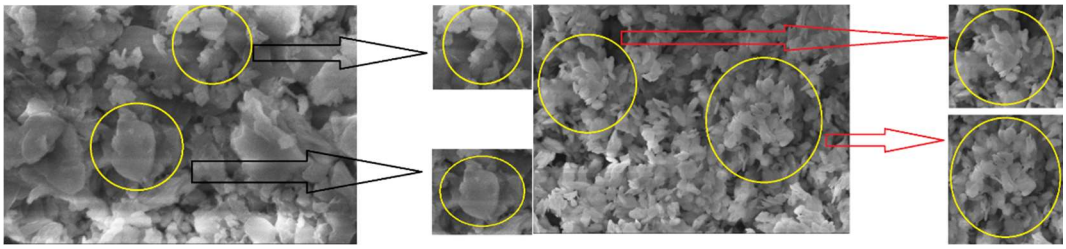
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Abstract
Furnace dust collected from iron and steel manufacturing industries was employed as the raw material for the synthesis of Zinc oxide nanoparticles (ZnO NPs). The suitability of the as-synthesized nanoparticles in optical device fabrications was confirmed through various characterization analyses post refining of the raw material followed by annealing. Crystallinity of the ZnO NPs was validated through XRD analysis and other parameters such as grain size were also acquired. Linear optical analysis revealed that the title material is transparent in the visible region without any strong absorption which is one of the key properties an optical material. Nominal difference in surface morphologies was observed between ground and unground ZnO NPs through SEM analysis. The third order nonlinear optical property of ZnO NPs was examined by Z-Scan analysis which established that the material is self- defocusing in nature. The optical limiting analysis suggested that ZnO nanoparticles actively limit the laser radiation, hence protecting human eye from retinal damage and optical sensors from high intensity lasers. The experimental data thus highlighted the proficiency of ZnO NPs as a prospective candidate for optical limiting applications.



Keywords: Furnace dust, Nanoparticles and Non-linear optical materials

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DEVELOPMENT OF POTENT ANTICANCER AGENTS CONTAINING INDOLE NUCLEUS USING MOLECULAR HYBRIDISATION

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ABSTRACT
Cancer is the second leading cause of death killing over nine million people every year and the incidences are likely to increase by 50% in the coming decades.Among the current target for chemotherapy, alongside DNA, tubulin represents one of the targets. Microtubules are cytoskeletal filaments in cells composed of two proteins α and β-tubulin which are involved in many cellular functions such as formation of meiotic and mitotic spindle, cell motility, cell shape and transport of proteins and organelles.Existing tubulin inhibitors, either from natural or synthetic sources, produce associated sub-optimal clinical problems like high secondary toxicity on non-cancerous cells, peripheral neurotoxicity, low bioavailability, poor solubility and complex synthetic and isolation procedures. Molecular hybridization has emerged as a promising strategy, involves a combination of two or more pharmacophores of bioactive scaffolds to generate a single molecular architecture with improved biological profile (increased specificity, better patient compliance, and lower side effects along with reduction in chemo-resistance). Recent developments revealed that indole containing compounds are potent colchichine binding site inhibitors i.e phenstatin, isocombrestatins, 3-formyl-2-phenylindoles, heterocombretastatins, diarylindoles, 2-aroylindoles, arylthioindoles etc. site inhibitors etc. Based on that new indole hybrid molecules were designed, synthesized, characterized and docked with Discovery Studio Software which revealed significant higher binding affinity in comparison to standard with identical binding sites and all designed compounds are analyzed for drug likeness by Swiss ADME web service and most of them found to be suitable for oral administration.
Keywords: Cancer, Tubulin Inhibitors, Molecular hybridization, Indole, Docking

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PHYTOREMEDIATION OF ARSENIC BY NUTRIENT FILM TECHNIQUE

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ABSTRACT
Water pollution is one of the most serious environmental concerns, owing to overpopulation, urbanization, industry, and illiteracy. Heavy metals contaminate the air, land, and water. In recent years, there has been a lot of interest in aquatic macrophytes as possible candidates for pollution remediation or even as bio indicators for heavy metals in aquatic settings. Because metals are difficult to decompose, they are usually eliminated during cleaning. On the other hand, this energy-intensive approach might be prohibitively costly. Traditional cleaning procedures are expensive, intrusive, and dangerous. Phytoremediation is a low-cost, non-invasive, and safe alternative. There has lately been a lot of interest in developing technology to remove dangerous trace metals from soil and wastewater that is both cost-effective and environmentally friendly. Non-essential metals such as Cd and as can be collected by plants and utilized to remove harmful elements from the environment. In the present study Syngonium podophyllum species was used as a bio agent for remediation of Arsenic from the waste water. Hydroponics being an emerging technology, Nutrient film technique was adopted in the research work. The research was carried out for 25 days with the arsenic concentration from 5 mg/lit to 25 mg/lit and when observed nutrient film technique showed 89.68% for 5mg/lit while 72.81% for 25mg/lit. In Phytoremediation after treatment of waste water the biomass disposal is big challenge. Thus the researcher has adopted to produce Biogas from the remaining phytomass. When compared with control setup the biogas produced was good in quality of CO2 (%) and CH4 (%). Thus, Phytoremediation technology and use of remaining phytomass together can be the best ecofriendly and cost effective technology.
Keywords: Pollution, Phytoremediation, hydroponics, Nutrient film technique, Phytomass, Biogas

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EXPLORING THE BIOCHEMICAL PROFILE AND MICROBIOLOGICAL ASPECTS OF SWEET PRESERVED HAREER (TERMINALEA CHEBULA)

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Abstract
World Health Organization noted that almost 80% of world inhabitants in all rising nations have faith in the traditional methods of medicine for their prime healthcare requirements at major levels. Amongst the medicinal plants, Hareer is the most valuable plant in the Ayurvedic system of medicines. Hareer has been widely used for the cure of the diseases like cancer, cardiovascular diseases, leprosy, ulcers, paralysis, arthritis, gout, tumors, gastrointestinal ailments, piles, ascites, enlargement of spleen, liver, colitis, and worms etc. The present study was investigated to explore the biochemical profile and microbiological aspects of sweet preserved Hareer (Terminalia chebula). Fruit samples processed with their different brand named S0, S1, S2, S3, S4, and S5 were purchased from five towns named as T1, T2, T3, T4, and T5. The samples were evaluated for their biochemical and microbial analyses. The results explicated that biochemical profile i.e. pH, Moisture, Ash, Acidity, Vitamin C, Total Soluble Solids (TSS), Color, Alcohol Soluble Extractive Value, and Water Soluble Extractive Value ranges from 4.3-8.45, 21-41%, 0.43-3.4%, 0.04-0.92%, 8.52-20.58%, 57-70%, ("L" 40.5-31.65, "a" 9.51-13.62, "b" 9.5- 12.1), 39-66.3%, 42.6-67.4% respectively. The hareer samples were also evaluated for their microbial load with special reference to Total Plate Count (TPC), Salmonella, and E.coli. Total plate count was range from 4.42×10^6- 10.5×10^6, and Salmonella and E.coli both were observed absent. Highly significant results were obtained through statistically analyses ($P<0.01$).
Keywords: Carrot, Bioactive Moieties; Health Perspectives

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MİKRODENETLEYİCİLERİN SU BİLİMLERİNDE UYGULAMA VE İZLEME SİSTEMLERİNE ÖRNEK ÇALIŞMA: FONKSİYONLU TERMOMETRE

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ÖZET
Bu çalışmada akuakültür izleme ve kontrol sistemlerinin, su ürünleri / su bilimleri mühendisleri tarafından, mikrodenetleyici tabanlı olarak geliştirilen bir örneği incelenmiştir.
Fiziksel, kimyasal, biyokimyasal ve biyolojik olayların tamamını etkileyen yegâne fiziksel değer sıcaklıktır. Sıcaklığın doğru bir şekilde ölçümü ve takibi özellikle fen bilimlerinde büyük bir öneme sahiptir. Sucul organizmalar çevrelerinde su sıcaklıklarından doğrudan etkilendiklerinden, su ortamı sıcaklığı, bu tür organizmalar için beslenme, üreme, göç vb. olaylar için öngörülebilir ve belirlenebilir bir faktör olarak ortaya çıkmaktadır.
Genel olarak problemi tespit eden uzmanın çözüm üretmesi gerektiğinden, her alan uzmanı kendi çözümünü üretmelidir. Mikrodenetleyiciler ve gömülü sistemler; yazılım, fizik, matematik konularında temel eğitim almış her mühendis için kendi alanında tasarım ve geliştirme yapabileceği bir platform oluşturmaktadır. Mühendislerin asıl görevi sorunu tespit edip çözüm üretmek olduğundan, oldukça geniş ve esnek kullanım alanına sahip mikrodenetleyiciler de çözümün bir parçasını oluşturmaktadır. Belli bir algoritma çerçevesinde girdilerini işleyip, bu girdilerle kontrol ya da sadece ekrana sonuçları yazdıran, gerektiğinde uzaktan erişime imkân veren, personel kaynaklı ölçüm hatası olmayan, sürekli yapılması imkânsız olan görevleri basit ve hassas bir şekilde yapabilen sistemler mikrodenetleyicilerle rahatlıkla gerçekleştirilebilmektedir.
Ayrıca bu şekilde çalışan sistem, bulaşı önlemek açısından su sıcaklığını okumak için bir termometrenin okumadan sonra diğer bir ortama geçmeden dezenfekte edilmesi işlemini veya ayrı termometre kullanımını gereksiz hale getirmektedir. Ölçüm için beklenmeden doğrudan ekrandaki sayısal değer okunabilmektedir. Ölçüm yapan kişiden kaynaklı ölçüm hatalarının önüne geçtiği gibi, ortamda herhangi bir zamandaki sıcaklık düşüşlerini (en düşük sıcaklık), sıcaklık yükselmelerini (en yüksek sıcaklık) ve ortalama sıcaklık değerlerini de başka bir işleme gerek kalmadan göstermektedir. Sistem bu haliyle yeterli kararlılıkta çalışmakta ve yeterli doğrulukta ölçüm yapabilmektedir.
Çalışmamızda; Dallas firması tarafından üretilmiş, hassas sıcaklık sensörü DS18B20, Atmel firmasınca üretilmiş, mikrodenetleyici ATMEGA328P-PU 8-Bit 20MHz, 2 satır-16 karakter (2x16) LCD ekran, kullanılmıştır. İleride yapılacak geliştirmelere açık bir sistemdir.
Anahtar Kelimeler: Su Bilimleri, Su Ürünleri, sıcaklık ölçümü, mikrodenetleyiciler, DS18B20

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A CASE STUDY OF APPLICATION OF MICROCONTROLLERS IN AQUATIC SCIENCES AND MONITORING SYSTEMS: FUNCTIONAL THERMOMETER

ABSTRACT

In this study, an example of aquaculture monitoring and control systems developed by aquaculture / aquatic sciences engineers on a microcontroller basis was examined.

The only physical value that affects all physical, chemical, biochemical and biological events is temperature. Especially in science, accurate measurement and monitoring of temperature has one of great importance. Since aquatic organisms are directly affected by the water temperatures in their environment, the aquatic environment temperature has a significant impact on nutrition, reproduction, migration, etc. for such organisms emerges as a predictable and determinable factor for events.

In general, the expert who identified the problem should produce a solution; each field expert should produce their own solution. Microcontrollers and embedded systems; It creates a platform for every engineer who has received basic education in software, physics and mathematics, where they can design and develop in their own field. The main task of engineers is to identify the problem and produce a solution, microcontrollers with a very wide and flexible usage area and also a part of the solution. Systems that process their inputs within a certain algorithm, control with these inputs or simply print the results on the screen, allow remote access when necessary, there was no personnel-related measurement errors, and ability perform tasks that are impossible to do continuously, can be easily carried out with microcontrollers.

In addition, the system that works in this way makes it unnecessary to disinfect a thermometer without going to another environment after reading, or to use a separate thermometer to read the water temperature in order to prevent contamination. The temperature measurement can be read directly from the display as digitally without waiting. It not only prevents measurement errors caused by the person making the measurement, but also shows temperature drops (lowest temperature), temperature rises (highest temperature) and average temperature values at any time in the environment without the need for any other process. The system was worked with adequate stability and has ability of measure with sufficient accuracy, in current state.

In our study; Sensitive temperature sensor DS18B20 manufactured by Dallas Semiconductor Company, microcontroller ATMEGA328P-PU 8-Bit 20MHz by Atmel Company produced, and a Generic 2 line-16 characters (2x16) LCD screen were used. It is a system open to future developments.

Keywords: Aquatic science, fisheries, temperature measurement, microcontrollers, DS18B20

GİRİŞ

Sıcaklık, bir maddenin ısıl durumunu belirten ve ısı geçişine neden olan etken olarak tanımlanabilir. Bir maddenin ortalama hıza sahip herhangi bir molekülünün kinetik enerjisiyle doğru orantılı olan büyüklüğüdür. Enerji değildir. Kütleye bağlı değildir. Skaler bir büyüklüktür. Sıcaklığı ölçerken, dokunma duyumuzun öznel yargısını ortadan kaldırmak için nesnel bir ölçüm aleti olan termometre kullanılır. Uzunluk, hacim, basınç, elektrik direnci, potansiyel fark, renk değişimi ve yüzeylerin ışınım şiddetleri gibi termometrik özelliklerden yararlanılarak değişik sıcaklık ölçer veya termometreler yapılmıştır. Termometreler sıcaklığı belli standartlarla kıyaslayarak ölçer.

Celsius ölçeğinde; 760 Torr (1.01325 bar) basınçta, suyun kaynama (100°C) ve donma (0°C) noktaları referans alınmıştır. Suyun donma ve kaynama noktaları 32°F - 212°F, 180 bölüme ayrılmış Fahrenheit (°F) sıcaklık birimi de kullanılmaktadır. Kelvin (°K) ve Rankin (°Ra) ise mutlak sıcaklık birimleridir [5], [6], [28], [34].

Sıcaklık Ölçümü ve Önemi

Doğadaki canlı ve cansız bütün etkinlikler enerji ile madde arasında bir etkileşim içerir. Fiziksel, kimyasal, biyokimyasal ve biyolojik olayların tamamını etkileyen yegâne fiziksel büyüklük, sıcaklıktır. Rüzgârın esmesi, yağmurun yağması, akıntılar, suyun doğal çevrimi, toprağın ayrışması ve oluşumu, hayatın devamı, canlıların beslenme, büyüme ve üreme davranışları sıcaklığa bağlıdır. Sıcaklık; İklimsel Faktör ve Abiyotik Faktör olarak Ekolojik faktörler içinde en üst sıralarda yer alır. Atmosferdeki hava hareketlerinden, iklimsel değişimlerin oluşmasından ve mevsimlerin belirlenmesinden birinci derecede sorumlu önemli bir ekolojik faktördür. Bu nedenle, canlıların yaşamında ve yeryüzündeki dağılışlarında etkin bir role sahiptir. Kontrol, gözlem, takip, tahmin, güvenlik ve enerji verimliliği gibi nedenlerden dolayı sıcaklık ölçümü yapılmalıdır. Yaşam ortamları da sıcaklık ölçümünün uygulama alanlarıdır. Sıcaklık ölçümü sadece cansız ve mekanik sistemleri değil aynı zamanda canlıları da ilgilendirir. Canlılar da enerji kullanmak, üretmek ve dönüştürmek zorundadır. [5], [6], [15], [17], [22], [23], [34].

Atmosfer, dünya ile uzay arasında yalıtım sağlarken güneş enerjisinin ulaşmasına da izin verir. Sera gazları olarak tanımlanan karbon içerikli gazlar bu yalıtımın artışına sebep olur. Böylece dünyadan uzaya taşınması gereken ısı enerjisi dünyada kalır ve ısı bütçesini yükselterek, sıcaklığın da artışına sebep olur. Küresel ısınmanın takibi için de sıcaklık ölçümleri ve veri kaydı büyük önem taşımaktadır [15], [17], [22], [23], [29].

Su canlılarının tercih ettikleri sıcaklık aralıkları vardır. Yaşamın güçlükle sürdürebildiği elverişsiz faktörlere de Sınırlayıcı Faktörler denir. Bu faktörlerden en önemlisi sıcaklıktır. Balıklar için en uygun sıcaklık aralığında birey sayısı en yüksektir. Su ortamı, sıcaklığa göre farklı bölgelere ayrılır. Sıcaklık nedeniyle yoğunluğu değişen su kütlelerinde yaz ve kış mevsimlerinde tabakalaşma, ilkbahar ve sonbaharda karışım meydana gelmektedir. Karışım, besleyici elementlerin taşınmasına ve bu elementlerden faydalanan planktonun artışına dolayısıyla genel olarak üretimin artışına sebep olmaktadır. Besleyici elementlerin artışına bağlı olarak üretim de artış gösterir. Birincil üretimi etkileyen faktörler ışık ve sıcaklıktır. Fotosentez için ışık en önemli faktör olmakla birlikte, belli bir dereceye kadar olan sıcaklık artışına paralel olarak fotosentezin hızlandığı gözlenmiştir. [15], [17], [22], [23],[33].

Deniz, göl ve akarsular gibi açık sistemlerde, sıcaklık artışı gazların çözünürlüğünü olumsuz etkilemektedir. Sıcaklık artışıyla çözünmüş oksijen miktarı düşmektedir. Günümüzde özellikle Marmara Denizi'nde meydana gelen olumsuz durum, yüksek miktarda besleyici elementlerin bulunduğu ortam sıcaklığının artmasıyla aşırı çoğalan planktonun stres nedeniyle fazla miktarda müsilaj salgılamasıdır. Besleyici elementler, gün geçtikçe artan, kontrolsüz bir şekilde deşarj edilen atık sulardan gelmektedir. Sıcaklık ölçümü ve takibi ile müsilaj tahminleri de yapılabilmektedir [13], [15], [17], [20], [22], [23], [29], [33].

Su sıcaklığı diğer su kalitesi unsurları (örneğin çözünmüş oksijen değeri gibi) hakkında bize bilgi vermektedir. Derin göllerde ve denizlerde sıcaklık dağılımı balık hareketliliği hakkında bilgi vermekte, avcılık operasyonları ve tahminleri belirlenebilmektedir. Sıcaklık tabakalarının durumu, termoklin seviyesi belirlenmekte, alınan örneklerin bulunduğu sıcaklıkla birlikte değerlendirilmesi yapılmaktadır.

Örneğin pH ölçümünde sıcaklık değeri alınmazsa doğru sonuca ulaşmak mümkün olmamaktadır. Sıcaklığın doğru bir şekilde ölçümü diğer bilimlerde olduğu gibi "Su Bilimlerinde" ve "Akuakültür"de de büyük bir öneme sahiptir. Oseanolojik araştırmalarda en çok yapılan ölçüm sıcaklık ölçümüdür. Sucul organizmalar için su sıcaklığı; beslenme, üreme, göç vb. olaylar için öngörülebilir ve belirlenebilir bir faktördür. Sıcaklık takibi ile üreme dönemlerinin tahmini yapılabilmektedir [15], [17], [22], [23].

Su Bilimleri / Su Ürünleri Mühendisliği

Multidisipliner bir mühendislik olan su bilimleri/su ürünleri mühendisleri: özellikle protein olmak üzere beslenmedeki ihtiyacı karşılamak için; balık, kabuklu, bitki gibi sucul organizmaların belirlemesi, korunması, sürdürülebilir yöntemlerle avlaması, üretimi ve işlenmesi çalışmalarında bulunur. Temel branş ve mühendislik dersleri yanında; bilişim teknolojileri, meteoroloji, gemicilik, seyir, mekanizasyon, gıda güvenliği, kalite kontrol, hukuk, ekonomi, ilk yardım ve sualtı tekniği vs. gibi çok farklı disiplinlere ait dersler eğitim öğretimin içinde yer almaktadır [18].

Mikrodenetleyiciler

Bir mikrodenetleyici (MCU- µCU) üç ana bölümden oluşur. Bunlar: mikroişlemci (CPU), bellek (ROM – RAM – EEPROM), arabirimler (Giriş-Çıkış). Zamanlayıcı, Sayaç ve kesintiler gibi çoklu fonksiyonel bloklardan oluşan bir yarı iletken IC (tümleşik devre) yongasıdır. Esasen, tek bir paket içinde tüm çevre birimlerine sahip küçük bir bilgisayardır. Mikrodenetleyiciler bilgisayar, cep telefonu, saat, otomobil sektörü, beyaz eşya gibi birçok elektronik cihazda kullanılırlar. Mikrodenetleyiciler çok çeşitli sistem ve cihazlarda kullanılmaktadır. Örneğin, Ölçüm ve Kontrol Sistemleri, Otomotiv, Endüstriyel Robotlar, 3 Boyutlu Yazıcılar, Ev aletleri (çamaşır, bulaşık makineleri, klimalar, alarm ve güvenlik sistemleri, akıllı ev sistemleri) gibi çeşitli sistemleri kontrol eden birçok mikro denetleyiciye vardır. [1], [2], [3], [7], [9], [10], [11], [24], [25], [30], [32].

Tüm mikrodenetleyiciler, G/Ç çevre birimlerini kullanarak veri gönderip alırlar ve bu verileri belirlenen görevlerini yerine getirmek için çalışırlar. Rutin ve tekrarlı işlemlerin yapılmasını sağlarlar. Günümüzde mikrodenetleyiciler; Su ürünleri / Su bilimleri, akuakültür konuları içerisinde yer bulmakta ve üzerinde çok sayıda bilimsel çalışma yapılmaktadır.

Mikrodenetleyici tabanlı akuakültür uygulamalarına birkaç örnek vermek gerekirse; Mekong Delta'sında Akuakültür İçin Nesnelerin İnterneti Tabanlı Su Kalitesi İzleme Sistemi Tasarımı ve Geliştirilmesi [8], Kapalıdevre Akuakültür Sistemlerinde Mikrodenetleyiciler [14], Mikrodenetleyici Tabanlı Balıkçılık Su Kalitesi İzleme Sistemi. [16], Nesnelerin İnterneti Tabanlı Akıllı Balık Yetiştiriciliği Akuakültür İzleme Sistemi [19], Nesnelerin İnterneti Tabanlı Akuakültür İzleme Sistemi [26], Balık Yetiştiriciliği İçin Nesnelerin İnterneti Tabanlı Akıllı İzleme Sistemi [27], Akuakültür İzleme Sistemi İçin Su Kalitesi Parametre Yönergeleri ve Mikrodenetleyici Seçimi. [31], Mobil Cihaz Kullanarak Nesnelerin İnterneti ve gerçek zamanlı sistem tabanlı karides yetiştiriciliğinin akıllı kalite kontrolü. [35].

Mühendisler ve Mikrodenetleyiciler

Temel mühendislik eğitimi içinde yer alan, fizik, matematik ve bilgisayar dersleri mikrodenetleyici programlama ve mikrodenetleyici ile çözüm üretme aşamasında yeterli gelmektedir [1], [2], [3], [7], [9], [10], [11], [21], [24], [25], [30], [32].

Mikrodenetleyiciler eğitimde, prototip üretiminde ve yeni cihaz tasarımında yaygın olarak kullanılmaktadır [1], [2], [3], [7], [9], [10], [11], [24], [25], [30], [32].
Çevre elemanları yerleştirilmiş kullanıma hazır halde sunulan mikrodenetleyici artık ilköğretim dersleri içerisinde yer bulmaktadır.
Modüler yapısı ve eklentilerinin (modül ve kalkanların) yaygın olarak bulunması mikrodenetleyicilerle cihaz geliştirmeyi ve tasarım yapmayı oldukça kolaylaştırmıştır [1], [2], [3], [7], [9], [10], [11], [21], [24], [25], [30], [32].

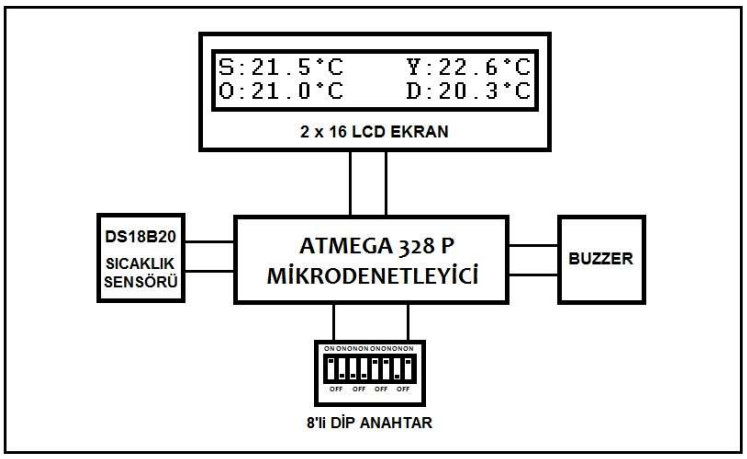
Programlama ve Tasarım
Lisans eğitimlerinin çoğunda ve özellikle mühendislik eğitimlerinde öğretilen bilgisayar programlama dillerinden; Python, C, C++, hatta BASIC dillerinde mikrodenetleyici programlamak mümkündür [1], [2], [3], [7], [9], [10], [11], [21], [24], [25], [30], [32].
Problem çözme ve algoritma bilgisine hâkim mühendisler, ihtiyaçlara göre çözüm üretecek şekilde mikrodenetleyici programlayabilir, yaygın olarak piyasada bulunan eklentileriyle (modül ve kalkan) tasarım yapabilirler [1], [2], [3], [7], [9], [10], [11], [21], [24], [25], [30], [32].

MATERYAL VE METOD

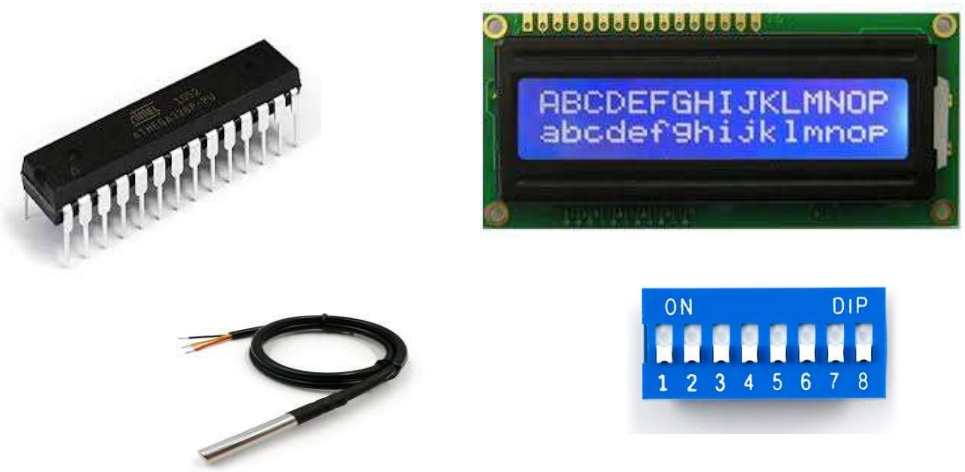
Fonksiyonlu Termometre Özellikleri
Su Bilimleri'nde mikrodenetleyici kullanımına örnek olarak tasarladığımız "Fonksiyonlu Termometre" öncelikle su sıcaklığı ölçme amacıyla geliştirilmiş olup, su geçirmez sıcaklık sensörü içeren probu sayesinde çoğu ortamın sıcaklığını ölçmek için kullanılabilir.

Çalışma Prensibi ve Tasarımı:
Dijital sıcaklık sensörü (DS 18B20) ile alınan sıcaklık bilgisi mikrodenetleyiciye (Atmega328P) iletilerek burada amaca göre işlenmektedir. İşlenen veri, 2 satır 16 karakterlik LCD ekrana yansıtılmaktadır [4], [10], [12], [32].

Ön tanımlı sıcaklık aralığını belirlemek için 8'li dip anahtar kullanılmıştır. Bu şekilde mikrodenetleyici programının değiştirilmesine gerek kalmadan sıcaklık aralığı ayarlanabilmektedir.



Şekil 1- Fonksiyonlu Termometre Blok Şeması



Şekil 2 - Atmega328P Mikrodenetleyici, 2x16 LCD Ekran, DS18B20 Sıcaklık Sensörü (Su geçirmez kılıf içerisinde) ve Dip Anahtar [4], [12].



Şekil 3- Fonksiyonlu Termometre.

Kullanım Amacı ve Önemi

- Anlık Sıcaklık,
- En Yüksek Sıcaklık ve En Düşük Sıcaklık,
- Trend Göstergeleri,
- Ortalama Sıcaklık (24 saatlik günlük ortama değer alındıktan sonra sıfırlanmakta ve yeni günün ortalamasını almaktadır.) değerlerini göstermektedir.

Sıcaklık Limit Aşım Uyarıları

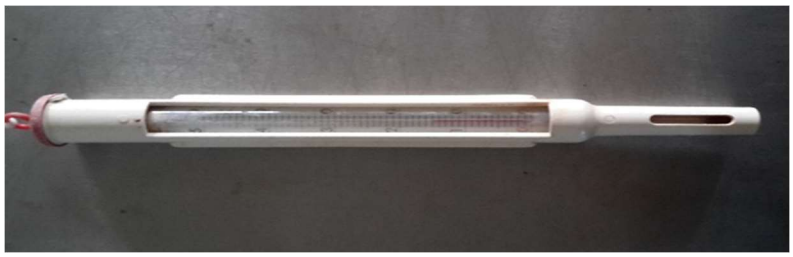
Ayrıca belirlenen sıcaklık aralığı aşıldığında; düşük sıcaklık veya yüksek sıcaklık uyarıları vermektedir. Cihaz belirlenen değerin aşılması halinde göstergede sessiz uyarı, 1°C'lık artıştan sonra ise sesli ve ışıklı uyarı vermektedir. Sesli uyarı gerektiğinde küçük bir anahtar ile iptal edilmekte ancak sessiz uyarı kapatılmamaktadır.



Şekil 4- Fonksiyonlu Termometre'nin kullanım örnekleri.

SONUÇ

Yapılan ölçümlerin standart olması için aynı tip termometreler kullanılmalıdır. Farklı termometrelerin farklı sıcaklık aralıklarında tolerans ve hataları da farlılık göstermektedir. Bu yüzden ölçüm yapılan ortama uygun termometre seçilmeli ve aynı tip termometrelerle ölçümler tekrarlanmalıdır. Ölçüm sırasında, ölçüm yapan kişilerde; bakış açısı ve görme kusurları nedeniyle ölçüm hataları meydana gelebilmektedir. Standart sonuç almak için ölçümlerin de mümkünse aynı kişilerce yapılması sonuçların standart olmasını sağlayacaktır. Dijital termometreler, bu hataları ortadan kaldırmakta, ölçümlerin hassas ve standart olmasını sağlamaktadırlar [6], [17], [23], [34].



Şekil 5- Cam Termometre.

Cam Termometrenin Dezavantajları

Genleşme prensibiyle çalışan cam termometrelerin tepki süreleri nispeten uzundur. Bu yüzden ölçüm yapılırken, sıcaklık değişiminin durduğu noktaya kadar beklenmelidir. Farklı noktaların sıcaklıkları ölçülürken geçen zaman nedeniyle, fiziksel şartların değişmesi ve ölçüm sonuçlarının hatalı çıkması söz konusu olabilmektedir.

Ölçüm periyotları da ölçüm yapan personeli zorlamaktadır. Örneğin 15 farklı ortamın sıcaklık değerinin alınması gerektiğinde, her ölçümün yaklaşık 5dk olduğunu düşünürsek saatte en fazla 12 ölçüm yapılabilmektedir. Ayrıca ölçümlerin 24 saatte 1 saat aralıklarla yapılması istense, bu gerçekte mümkün olamayacak bir sonuç doğurmaktadır.
Ölçüm yapılan ortamda bulunan; ilaç ve kimyasal madde kalıntıları, mikroorganizmalar ve çeşitli kirletici maddeler, ölçüm sırasında termometreye bulaşarak diğer ortama taşınır. Bulaşmanın (kontaminasyon) önlenmesi amacıyla her ölçümden sonra termometreyi temizlemek ve dezenfekte etmek gerekir. Temizlik/dezenfeksiyon işlemlerinde aksaklık olduğunda akuakültürde canlı sağlığı tehlikeye girer ve hastalıklar baş gösterir. Ancak her ölçümde bu işlemin yapılması da ciddi anlamda zaman ve emek ister.

Fonksiyonlu Termometrenin Avantajları
Sürekli ölçüm halinde olup, göstergede anlık sıcaklık hemen okunabilmektedir. Böylece sıcaklık ölçümü için termometre sıcaklığının dengeye gelmesini beklemeye gerek kalmamaktadır. Sıcaklık ölçüm hızlı bir şekilde gerçekleştirilmektedir. Göstergede anlık sıcaklık yanında, en yüksek ve en düşük sıcaklıklar da görülmektedir. Tmaks. ve Tmin. değerlerini vererek, ölçüm anından önceki sıcaklık değişimi hakkında önemli bilgiler vermektedir. 24 saatte bir sıfırlanan ortalama sıcaklık değeri, günlük ortalama sıcaklığı vermektedir. Belirlenen alt ve üst sınırın aşılması halinde uyarı vererek ciddi bir sorun çıkmadan önce personeli bilgilendirmektedir.
- Kullanılan sıcaklık sensörü sayesinde hassas ve tekrarlanabilir ölçüm yapmaktadır.
- Personelden kaynaklı ölçüm hataları sayısal gösterge sayesinde ortadan kalkmaktadır.
- Düşük maliyetli olması nedeniyle, ölçüm yapılacak her noktaya birer adet “Fonksiyonel Termometre” yerleştirilebilir.
- Her ortama ayrı ayrı yerleştirilecek “Fonksiyonlu Termometre” ile ortamdan ortama bulaşma riski sıfırlanmakta, temizlik-arındırma-dezenfeksiyon işlemlerine gerek kalmamaktadır.
- Sıcaklık değerleri doğrudan ekrandan okunduğu için ortamla temasa gerek kalmadığı için, insandan-ortama, ortamdan-insana bulaş riski de sıfırlanmaktadır.
- Ölçüm için beklemeye gerek kalmadığından ölçüm ortamında kalma süresi kısaldığı için personel arasında (insandan insana) bulaş riski de azaltılmaktadır.
- Cihaz ölçüm ortamında sabitlendiği için, cam termometrelerde görülen taşıma ve ölçüm sırasında zarar görme riski de ortadan kaldırılmaktadır.
- Mikrodenetleyici tabanlı sistem olması sayesinde program değiştirilerek her türlü gelişmeye açık durumdadır. Örneğin: günlük yerine saatlik ortalama istenirse programdan rahatlıkla değiştirmek mümkün olacaktır.
- Sıcaklık limit uyarıları ortamdan daha uzağa taşınabilir ya da ısıtma/soğutma sistemlerine entegre edilebilir.
Sonuç olarak; tüm bu avantajları nedeniyle uygulama alanının genişleyeceğini düşündüğümüz Fonksiyonlu Termometre’nin düşük maliyetli ve mikrodenetleyici tabanlı yapısıyla esnek ve gelişmeye açık olarak su bilimlerinde yerini alacağına inanıyoruz.

KAYNAKLAR:

[1] Altınbaşak, O., (2008) Mikrodenetleyiciler ve PIC Programlama ALTAŞ Yayıncılık ve Elektronik Tic. Ltd. Şti. ISBN: 978-975-8834-17-7 335p.

[2] Altınbaşak, O., (2009) Pic Basic Pro ile PIC Programlama ALTAŞ Yayıncılık ve Elektronik Tic. Ltd. Şti. ISBN: 978-975-8834-21-1 304p.

[3] Atbaş, H., (2009) Microchip Pic Mikro C Beti Bilişim Teknolojileri Ltd. Şti. ISBN: 978-9944-5821-1-7 424p.

[4] ATmega328P- Microchip Technology "ATmega328P 8-bit AVR Microcontroller with 32K Bytes In-System Programmable Flash DATASHEET". Erişim: 15. Temmuz.2021. https://ww1.microchip.com/downloads/en/DeviceDoc/Atmel-7810-Automotive-Microcontrollers-ATmega328P_Datasheet.pdf

[5] Aytaş, I., (1985) Tıp Öncesi ve Biyoloji Öğrencileri İçin FİZİK Atatürk Üniversitesi Yayınları No: 619 Temel Bilimler ve Yabancı Diller Y.Ok. Yayınları No:1 Ders Kitapları Serisi No:1 Erzurum – 1985 383p.

[6] Childs, P.R.N., (2001) Practical Temperature Measurement Butterworth Heineman (Yalçın, C., Çev.) ISBN: 07506 – 5080x (9780750650809) 328p.

[7] Çiçek, S., (20093) CCS C ile PIC Programlama ALTAŞ Yayıncılık ve Elektronik Tic.Ltd.Şti. ISBN: 978-975-8834-20-4 586p.

[8] Danh, L., Dung, V., Q., D., V., M., Danh, T., H., and Ngon., N., C., (2020) Design and Deployment of an IoT-Based Water Quality Monitoring System for Aquaculture in Mekong Delta. International Journal of Mechanical Engineering and Robotics Research Vol. 9, No. 8., 1170-1175.

[9] Dayanık, A., Altınbaş, C. (2006) PIC Programlama Teknikleri ve PIC 16F877A ALTAŞ Yayıncılık ve Elektronik Tic. Ltd. Şti. ISBN: 978-975-8834-14-2 550p.

[10] Delebe, E. (2016) Projelerle Arduino KODLAB Yayın Dağıtım Yazılım ve Eğitim Hizmetleri San. Ve Tic. Ltd. Şti. ISBN: 978-605-520-51-7 488p.

[11] Doğan, I., (2007) MikroBASIC ile PIC Mikrokontrolör Öğreniyorum Bileşim Yayınları 258 Teknik 82-8.01.67 ISBN: 978-975-271-182-2 182p.

[12] DS18B20 One Wire (Parasite-Power) Digital Thermometer "DS18B20 Programmable Resolution 1-Wire Digital Thermometer". Erişim: 15. Temmuz.2021. https://datasheets.maximintegrated.com/en/ds/DS18B20.pdf

[13] Eren, Z., (2021). The Relationship of Harmful Algae Bloom and Mucilage Outbreak
in the Sea of Marmara, Journal of Environmental and Natural Studies, Volume, 3, Issue2, Pages:182-192. DOI: 10.53472/jenas.985310

[14] Fowler, P., Baird, D., Bucklin, R., Yerlan, S., Watson, C. & Chapman, F., (1994). Microcontrollers in Recirculating Aquaculture Systems. EES-326, a series of the Florida Energy Extension Service, a series of the Florida Energy Extension Service, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences,

[15] Geldiay, R., Kocataş, A., (2012). Deniz Biyolojisi. Dora Basım Yayın Dağıtım Ltd.Şti. 8. Baskı, 2012 Bursa. 540p. ISBN: 978-605-4485-41-3

[16] Harahap, D., A., Nainggolan, C., Wibowo., B., (2020). Monitoring System of Fisheries Water Quality Based on Microcontroller. International Journal of Advanced Engineering Research and Science (IJAERS), Vol-7, Issue-7, 407-418.

[17] I. Fondriest Environmental, "Water Temperature - Environmental Measurement Systems," Erişim: 15. Temmuz.2021. http://www.fondriest.com. pp. 51–53, 2014

[18] İÜ., İstanbul Üniversitesi "Eğitim ve program yeterlilikleri" Erişim: 15.Temmuz.2021. https://subilimleri.istanbul.edu.tr/tr/content/ogrenci/egitim-ve-program-yeterlilikleri

[19] Karim1, S., Hussain, I., Hussain. A., Hassan, K., and Iqbal, S., (2021). IoT Based Smart Fish Farming Aquaculture Monitoring System. International Journal on Emerging Technologies 12(2): 45-53.

[20] Kavzoğlu, T., Çölkesen, İ., Sefercik, U.G. Ve Öztürk, M.Y. (2021). Marmara Denizi'ndeki Müsilaj Oluşumlarının Çok Zamanlı Optik ve Termal Uydu Görüntülerinden Makine Öğrenme Algoritması ile Tespiti ve Analizi. Harita Dergisi, 166, 1-9.

[21] Kilmen, E., (2011) Programlamaya Giriş. Dikeyeksen Yayın Dağıtım, Yazılım ve Eğitim Hizmetleri San. ve Tic. Ltd. Şti. İstanbul. 425p. ISBN: 978-605-87588-2-7

[22] Kocataş, A., (2012). EKOLOJİ Çevre Biyolojisi. Dora Basım Yayın Dağıtım Ltd.Şti.12. Baskı, 2012 Bursa. 597p. ISBN: 978-605-4485-42-0

[23] Kocataş, A., (2012). GENEL OSEANOLOJİ Deniz Bilimlerine Giriş. Dora Basım Yayın Dağıtım Ltd.Şti. 10. Baskı, 2012 Bursa. 374p. ISBN: 978-605-4485-40-6

[24] Koç, S., Dal, M.A., (2013) Mikro C ile ARM Programlama ALTAŞ Yayıncılık ve Elektronik Tic. Ltd. Şti. ISBN: 978-975-8834-31-0 356p.

[25] Köksal, N.E., (2006) Microchip Pic MikroBASIC Beti Bilişim Teknolojileri Ltd. Şti. ISBN: 978-9944-5821-0-7 376p.

[26] Nasir, O. A., Gaurav, & Mumtazah, S., (2020). IOT-Based Monitoring of Aquaculture System. MATTER: International Journal of Science and Technology, 6(1), 113-137.

[27] Ramya, A., Rohini, R., Ravi., S., (2019). IOT Based Smart Monitoring System for Fish Farming. International Journal of Engineering and Advanced Technology (IJEAT) ISSN: 2249 – 8958, Volume-8 Issue-6S, 420-424.

[28] Richards, Sears, Wehr, Zemansky, (2004) (Domaniç, F., Erdik, E., Zengin, N. Çev.) Modern Üniversite Fiziği Cilt:1 Problemleri (Mekanik, Isı ve Termodinamik Problemleri) Çağlayan Kitabevi 2004 492pp., ISBN: 9789754360608

[29] Salihoğlu, B., Öztürk, B. (Ed.) 2021. İklim Değişikliği ve Türkiye Denizleri Üzerine Etkileri. Türk Deniz Araştırmaları Vakfı (TÜDAV) Yayın no: 60, İstanbul, 266s.

[30] Şahin, H., Şahin, K., (2012) MicroBASIC ile PIC Programlama ALTAŞ Yayıncılık ve Elektronik Tic. Ltd. Şti. ISBN: 978-975-8834-28-0 248p.

[31] Srinivasa Akhil V, Sai Ajay V, Lakshmi Deepthi V, P.Saipriya., (2018). Water Quality Parameter Guidelines and the Selection of Microcontroller for the Monitoring of Aquaculture System: A Review. International Journal of Recent Technology and Engineering (IJRTE) ISSN: 2277-3878, Volume-7 Issue-4, 118-122

[32] Taşbaşı, G.M., (2010). İleri C Programlama. ALTAŞ Yayıncılık ve Elektronik Tic. Ltd. Şti. 552p. ISBN: 978-975-8834-01-3.

[33] Terbıyık Kurt, T., Polat, S.,Uysal, Z., & Ak Örek, Y. (2020). Türk Boğazlar Sistemi'nde Mesozooplankton Biyokütlesinin İlkbahar ve Sonbahar Mevsimlerindeki Alansal ve Vertikal Dağılımı. Acta Aquatica Turcica, 16(2), 189-201. https://doi.org/10.22392/actaquatr.623804

[34] Üçünü, K. (2020). Teknik Fizik Termodinamik Isı Transferi Akışkanlar Mekaniği. Karadeniz Teknik Üniversitesi Orman Endüstri Mühendisliği Bölümü Trabzon-2020

[35] Yuda Irawan, Hendry Fonda, Eka Sabna, Anita Febriani.,(2021). Intelligent Quality Control of Shrimp Aquaculture Based On Real-Time System and IoT Using Mobile Device International Journal of Engineering Trends and Technology, 69(4),49-56.

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NANOREMEDIATION TECHNOLOGIES: SUSTAINABLE & EFFICIENT REMEDIATION PATHWAYS TOWARDS SDG #6

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Abstract
Sustainable Development Goal 6 (SDG #6) is about "clean water and sanitation for all". It is one of 17 Sustainable Development Goals established by the United Nations General Assembly in 2015, the official wording is: "Ensure availability and sustainable management of water and sanitation for all". No thanks to the existence of COVID-19 pandemic, it has grossly caused great harm to the urban poor living in the slums with no or little access to adequate clean water. The health practitioners have directly confirmed the importance of sanitation, hygiene and unrestricted access to clean water in order to prevent diseases. One of the major pressing issues currently affecting society is the inadequate state-of-the-art and operative pathways to address the environmental degradation, therefore there is need for sustainable technology in this regard. Nanoremediation is a viable technology capable of tackling environmental contamination, especially dealing with recalcitrant contaminants**.** Nanotechnology is suitable in environmental technology for the protection of our environment with following benefits: prevention or treatment of pollution; cleanup of long-term environmental issues such as accumulated hazardous waste sites. Such environmental cleanup includes removal of heavy metals and other toxic contaminants from the environment and the strategy is known as remediation.

Remediation of toxic pollutants can be accomplished via traditional pathways (such as physical, chemical & biological remediation technologies). The important of these traditional techniques for environmental remediation have been acknowledged, however, there is no single technique that can achieve remediation in total. Therefore, there is a call to strategically develop efficient nanotechnology-based alternative pathways using nanomaterials or nanomaterial-composites for total decontamination of these recalcitrant contaminants from the environment. Therefore, in this work we provide a meticulous recent advances and future outlooks of nanoremediation technologies for efficient and cost-effective environmental decontamination towards SDG #6.

Keywords: Nanoscience, Nanotechnology, Remediation, Environmental Pollutants, Pollution, SDG #6

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DARCY-FORCHHEIMER MHD MIXED CONVECTION FLOW DUE TO A STRETCHABLE SURFACE EMBEDDED IN A POROUS MEDIUM WITH CATTANEO-CHRISTOV DOUBLE DIFFUSION

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ABSTRACT
This investigation concentrates on Cattaneo–Christov double diffusion model for the flow of viscoelastic (second-grade) nanofluid induced by stretchable surface with heat transfer phenomena. Cattaneo–Christov double diffusion theory is incorporated in the modeling of temperature and concentration diffusions with thermal and solutal relaxation variables, respectively. Aspects of heat transfer are scrutinized through heat generation and absorption. Brownian motion and thermophoresis are both incorporated in the nanofluid theory. Using the appropriate similarity functions, we converted non-linear dimensional equations of momentum, energy, and concentration into non-linear dimensionless systems by including the appropriate variables. The impact of sundry parameters on the viscoelastic (second-grade) nanofluid flow is depicted using a Homotopy approach that effectively calculates non-linear systems. Graphical results of the velocity field, temperature field, and concentration field are described and studied subject to various dimensionless parameters. Comparison with known results for Cattaneo–Christov double diffusion model is found an excelent agreement. The linear velocity upsurges with enhancing $K, \lambda_1, N, h < 0$, and declines with $\lambda, Ha, Fr, h > 0$, and the temperature rises due to cumulative of Ec, N_b, N_t, γ_1, and fall due to the growth of Pr , and the concertation moves up with N_t, γ_2, and diminutions due to Sc, and N_b. Moreover, it is noted that thermal and solutal distributions of viscoelastic (second-grade) nanofluid are decreased by enhancing the magnitude of (thermal, solutal) times, respectively.
Keywords: Homotopy approach, Darcy- Forchheimer**,** Cattaneo–Christov double diffusion, mixed convection, heat generation/absorption

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BENZIMIDAZOLE-PYRAZOLINE HYBRIDS AS ANTI-DIABETIC AGENTS

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Abstract
Due to their potential in the field of medicinal chemistry, the derivatives of benzimidazole and pyrazoline have been extensively studied. In the following research project, both these heterocyclic moieties have been hybridized in the same molecule. In a multistep reaction, a series of 2-((3,5-diaryl-4,5-dihydro-1H-pyrazol-1-yl) methyl)-1H-benzo[d]imidazole derivatives (5a-i) were synthesized. The first step includes the synthesis of chalcones that were prepared by the coupling reaction of benzaldehyde and some acetophenones in alkaline conditions followed by the cyclization of chalcones with hydrazine monohydrate that led to the synthesis of pyrazoline derivatives. The coupling of these derivatives with 2-chloromethyl-1H-benimidazole finally gave the new series of desired hybrid molecules. The spectral analyses (^{1}H-NMR and ^{13}C-NMR) were used for structure elucidation of these derivatives. Their potential as anti-diabetic agent was determined by screening these derivatives for their inhibitory activity against α-glucosidase and by molecular docking their SAR was established. Among these derivatives, compound 5d have the highest inhibition activity with IC50 value of 50.06µM in comparison to the acrobase (reference drug) that had IC50 = 58.8µM.
Keywords: Anti-diabetic activity, pyrazoline-benzimidazole hybdids, α-glucosidase inhibition activity

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SYNTHESIS, CHARACTERIZATION AND BIOLOGICAL ACTIVITY OF FLUOROQUINOLONE DERIVATIVES

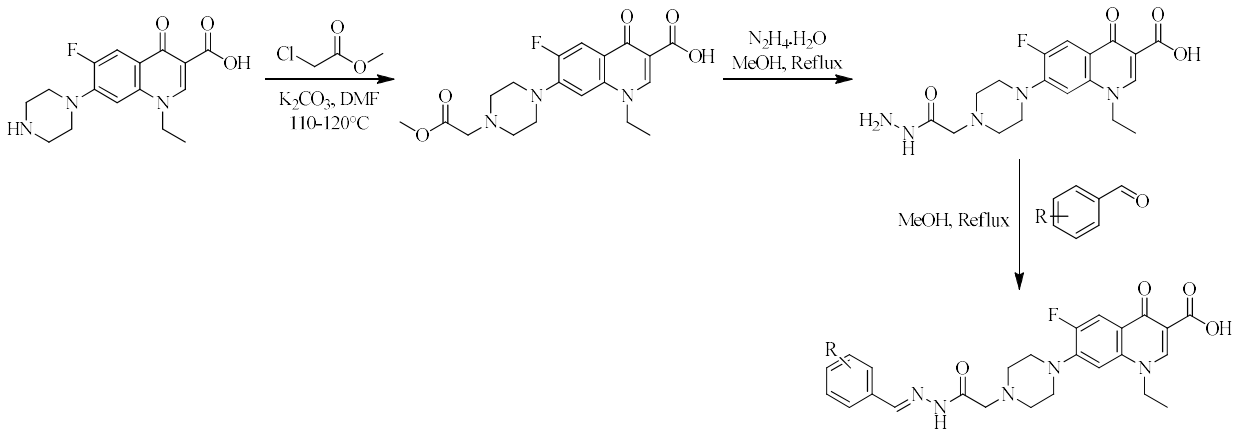
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ABSTRACT

The drug resistance phenomenon has reached dangerously high levels leading to the ineffectiveness of drugs against common diseases. There will be a constant need to develop new drug candidates which can overcome drug resistance in microbes. In view of this, fluoroquinolone derivatives having antimicrobial properties were synthesized and evaluated for their antibacterial as well as antifungal activity. Acetohydrazide-based fluoroquinolone derivatives were synthesized through a series of reactions. Norfloxacin was utilized as a readily available starting material and reacted with methyl-2-chloroacetate in the presence of dimethylformamide (DMF) as a solvent and K_2CO_3 as a suitable base to give N-alkylated product which was further reacted with hydrazine hydrate in methanol under reflux to give respective acetohydrazide. This was followed by a reaction of acetohydrazide-based norfloxacin derivative with aldehydes to give a series of target compounds in good to high yields (57-82%). Antimicrobial activity of the synthesized compounds was performed via well diffusion method against six bacterial (Bacillus cereus, Staphylococcus aureus, Salmonella enterica, Escherichia coli, Pseudomonas aeruginosa, and Aeromonas hydrophila) and two fungal strands (Fusarium avenaceum and Fusarium bubigeum). Cefixime was utilized as a positive control and zone of inhibition (mm) was calculated to determine antimicrobial activity. A number of flouroquinolone derivatives were active against microbes among which compounds 4e, 4f, 4g, 4h and 4i showed promising activity against S. aures.



Keywords: Fluoroquinolone, drug resistance, antimicrobial

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DEVELOPMENT AND EVALUATİON OF MULTİ PARTİCULATE SYSTEMS (MUPS) OF TOPİRAMATE FOR TASTE MASKİNG

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ABSTRACT

Introduction

Multi Particulate Systems (MUPS) are the most preferred dosage forms considering their ease of administration and consistency in manufacturing. Topiramate, indicated for schizophrenia, has a very bitter taste. Considering the indication of topiramate a MUPS dosage form is developed to mask the bitter taste and also to improve the method of administration like sprinkle capsules[1] [2]Aim of this study was to develop a MUPS dosage form for taste masking of topiramate.

Methodology

Inert sugar spheres were coated with Topiramate using fluid bed processor[3] using povidone as binder. The drug loaded pellets were taste masked with cellulose acetate. Povidone was used as a binder and pore former. Topiramate taste masked pellets were lubricated with talc and filled in capsules. Developed taste masked capsules were evaluated for drug content and dissolution in various media by HPLC. Taste masking evaluation was done in 10 human volunteers with a score card of 1-5.

Results Drug content of all batches of MUPS were within the range of 95-105%. Dissolution profile of the taste masked topiramate capsules was comparable with Innovator (Topamax, from Janssen Cilag) product in all the three medias evaluated (0.1N HCL, 4.5 Acetate buffer, 6.8 phosphate buffer). All the volunteers recorded not less than 4 score for the taste masked pellets in comparison marketed formulation.

[1] Ergun GA, Miskovitz PF. 1992;7 (2):58-63. Dysphagia. Aging and the esophagus: common pathologic conditions and their effect upon swallowing in the geriatric population.
[2] Hirano I, Kahrilas PJ., 2011 Jun;9(6):470-4. Epub 2011 Feb 12. Clin Gastroenterol Hepatol. A 78-year-old man with difficulty swallowing
[3] Hadyah Faleh Alotaibia, Samar Elsamaligy, Gamal M.Mahrous, Mohsen A.Bayomi, Hanaa Abdelmonem Mahmoud., 2019 March; 27(3) 354-362 Saudi Pharmaceutical Journal, Design of taste masked enteric orodispersible tablets of diclofenac sodium by applying fluid bed coating technology

Comparative Multimedia Dissolution profile of Topiramate Capsules 25 mg (Test) with Topamax® (Topiramate) capsules 25 mg

-Media - 0.1N HCL, Acetate Buffer pH 4.5 and Phosphate Buffer pH6.8
-Volume - 900 ml
-Apparatus - Apparatus I (Basket) at 100 rpm.

0.1N HCL. Apparatus I (Basket) 900 mL 100 rpm				
Time (mins)	**Reference**		**Test**	
	Average	%RSD	Average	%RSD
10	22	10.53	22	57.27
15	40	7.65	40	20.0
20	53	4.62	63	9.57
30	77	2.08	91	2.68
45	94	5.84	102	0.98
60	100	2.37	102	0.98

pH 4.5 AB. Apparatus I (Basket) 900 mL 100 rpm				
Time (mins)	**Reference**		**Test**	
	Average	**%RSD**	**Average**	**%RSD**
10	13	28.37	14	56.70
15	29	18.98	30	26.94
20	43	10.77	46	19.92
30	66	7.41	74	9.96
45	92	2.97	95	1.61
60	96	2.15	100	2.00

pH 6.8 PB. Apparatus I (Basket) 900 mL 100 rpm				
Time (mins)	Reference		Test	
	Average	%RSD	Average	%RSD
10	19	21.42	9	57.02
15	32	10.95	22	27.27
20	52	6.66	40	20.00
30	78	3.08	68	9.57
45	91	2.16	94	2.68
60	98	1.29	102	0.98

Comparative Multimedia Dissolution profile of Topiramate Capsules 15 mg (Test) with Topamax® (Topiramate) capsules 15 mg

0.1N HCL. Apparatus I (Basket) 900 mL 100 rpm				
Time (mins)	Reference		Test	
	Average	%RSD	Average	%RSD
10	18	19.14	22	2.62
15	34	11.11	42	2.38
20	49	11.36	51	2.84
30	72	5.83	80	2.86
45	91	3.72	98	1.77
60	97	1.55	99	2.92

pH 4.5 AB. Apparatus I (Basket) 900 mL 100 rpm				
Time (mins)	Reference		Test	
	Average	%RSD	Average	%RSD
10	10	16.43	7	86.77
15	21	10.18	19	60.55
20	35	7.10	34	35.29
30	68	2.46	67	14.19
45	91	1.65	94	3.84
60	99	2.45	102	1.70

pH 6.8 PB. Apparatus I (Basket) 900 mL 100 rpm				
Time (mins)	Reference		Test	
	Average	%RSD	Average	%RSD
10	21	8.20	21	7.27
15	47	3.13	38	11.87
20	61	0.85	59	6.11
30	85	1.49	87	2.89
45	95	2.07	103	1.12
60	103	2.01	105	1.45

Conclusion

Cellulose Acetate polymer is a suitable taste masking polymer and MUPS technology is a suitable alternative for taste masking of bitter drugs, especially for patients with schizophrenia, where method of administration is important considering the condition of patient

Keywords: Taste masking, MUPS, Topiramate, Fluid Bed processor

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KINETIC STUDY FOR THE ADSORPTION OF METHYL GREEN ON ACTIVATED CARBON FROM OLIVE WASTE WOOD

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ABSTRACT
The use of biomass waste has been extensively explored as an alternative to costly methods of producing activated carbon. In this work, we performed the adsorption of Methyl green (MG) on activated carbon prepared from Olive waste wood. The study focus on the elimination of a cationic dye, Methyl Green, by the material previously synthesized as a function of the different process parameters that affect the performance of this process, as well as contact time, pH of the solution and mass of adsorbent. Langmuir and Freundlich adsorption models were employed to provide a description of the equilibrium isotherm Furthermore, the pseudo-first-order and pseudo-second-order kinetic models were conducted to investigate the mechanism of dye adsorption by the obtained adsorbent. The results show that the adsorption of MG follows the pseudo-second-order model kinetics. Also, the adsorption process was spontaneous and correlated with Langumir model. The thermodynamic studies indicated that the adsorption of Murexide occurs in a spontaneous and exothermic process. The regeneration process of the exhausted adsorbent was studied to assess the economic and operational feasibility. According to the obtained findings; it is proposed that the activated carbon prepared from Olive waste wood retains a high potential for Methyl green removal and is suitable for repetitive usage.
Keywords: Biomass waste, Activated carbon, Adsorption, Methyl green, regeneration

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THE ELECTRONIC STRUCTURE, MAGNETISM AND THERMODYNAMIC IN HALF-HEUSLER ALLOYS KCrZ (Z=S, Se, Te)

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Abstract
The structural, electronic, magnetic and thermodynamic properties of cubic structure KCrZ (Z=S, Se, Te) ternary compounds were investigated using first principles calculations based on the full-potential linearized augmented plane wave method (FP-LAPW) based on density function theory (DFT). The generalized gradient approximation (GGA) is used to treat the exchange correlation potential and modified Becke-Johnson exchange potential (GGA+mBJ) for improving the band gap.

The present investigation indicated that KCrZ (Z=S, Se, Te) compounds have their lowest energies in the ferromagnetic state. Furthermore, the electronic structure results showed that the compounds KCrZ (Z=S, Se, Te) exhibit a half-metallic character and a spin polarization of P=100% at the Fermi-level. The total magnetic moment is large about $5\mu_B$ and follows the modified S-P rule $M_t = (Z_t - 8)\mu_B$. The energy gap for the spin down is 3.14, 2,81 and 3,79 eV for KCrZ and KCrTe respectively. The studied density of states reveals that Cr-d states is dominated compared to those of K and Z atom. The thermodynamic properties are predicted by the quasi-harmonic model of Debye in the pressure range from 0 to 10 GPa and temperature from 0 to 700 K, our study gave us a general idea of temperature effect and pressure on certain macroscopic parameters such as the volume, the modulus of compressibility B heat capacities Cr and Cp, expansion coefficient thermal α and entropy S.
Keywords: half-Heusler alloys, half-metal, spintronic, ab-initio

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YAĞLAMA GRESLERİNİN DÜŞÜK SICAKLIK AKIŞKANLIK ÖZELLİKLERİ VE AKMA NOKTASI KATKININ GRES AKIŞKANLIĞI ÜZERİNE ETKİSİ

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ÖZET
Endüstriyel makinalarda gresler merkezi bir sistem üzerinden dişlilere uygulandığında özellikle düşük sıcaklıklarda iyi akışkanlık-pompalanabilme özelliğine sahip olması istenir. Gresin yapısını oluşturan baz yağ, kalınlaştırıcı (sabun) ve diğer performans katkı maddeleri doğrudan gresi akışkanlığını dolayısı ile pompalanabilme performansını etkilemektedir.
Bu çalışmada NLGI numarası 2 sınıfına giren farklı sabun yapısındaki greslerin DIN 51805 (Yağlayıcı Greslerin Akış Basıncının Saptanması; Kesternich Tekniği) metoduna göre düşük sıcaklıktaki pompalanabilme özelliği analiz edilmiştir. Kalsiyum sabunlu, kalsiyum-lityum sabunlu, lityum sabunlu, lityum kompleks sabunlu, kalsiyum-sülfonat sabunlu, kalsiyum-sülfonat kompleks sabunlu, poli-üre sabunlu ve sabun içermeyen gres yağlayıcılarının düşük sıcaklık akışkanlık performansları ölçülmüştür. Ölçümler -20°C'de 15 dakika sıcaklık bekleme dengesinde ve ölçümler arası basınç artış miktarı 25 kPa olacak şekilde yapılmıştır. Gresler üzerinde yapılan ölçümler sonucunda -20°C'de en düşük akma basıncı kalsiyum sabunlu greslerde ölçülmüştür. Diğer yandan -20°C'de en yüksek akma basıncı sabun içermeyen silika gresinde gözlemlenmiştir. Ayrıca kompleks olmayan sabun greslerinin kompleks yapıdaki gres türlerinden daha iyi düşük sıcaklık akış performansına sahip oldukları saptanmıştır.
Çalışmanın ikinci kısmında ise akma noktası katığının greslerin düşük sıcaklıktaki pompalanabilme performansına olan etkisi incelenmiştir. Bu amaç için %0,5, %1, %2 ve %3 oranlarında akma noktası katığı (PPD) seçilen 5 farklı sabun yapısındaki greslere uygulanmış ve -20°C'de akma basıncı ölçümleri yapılmıştır. Yapılan çalışma sonucunda akma noktası katığının greslerin düşük sıcaklık akma performanslarını (pompalanabilirlik) olumsuz yönde etkilediği tespit edilmiştir. Akma noktası katığının yapmış olduğu bu etki greslerin akma basıncına sabun yapısına bağlı olarak farklılık gösterdiği gözlemlenmiştir.
Anahtar Kelimeler: Gres, Kesternich Tekniği, DIN 51805, Akma Basıncı, Akışkanlık, Pompalanabilirlik

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LOW TEMPERATURE FLUIDITY PROPERTIES OF LUBRICATING GREASES AND THE EFFECT OF POUR POINT ADDITIVE ON GREASE FLUIDITY

ABSTRACT

In industrial machines, when lubricating greases are applied to gears through a central system, it is desirable to have good fluidity-pumpability properties, especially at low temperatures. The grease structure consists of the base oil, thickener (soap) and other performance additives that directly affect the fluidity and the pumpability performance of the grease.

In this study, the low temperature pumpability of different soap structure greases which are classified as NLGI number 2 was analyzed according to DIN 51805 (Determination of Flow Pressure of Lubricant Greases; Kesternich Technique). Low temperature fluidity performances of grease lubricants with calcium soap, calcium-lithium soap, lithium soap, lithium complex soap, calcium-sulfonate soap, calcium-sulfonate complex soap, polyurea soap and soap-free grease were measured. The measurement temperature was -20°C and the waiting period at that temperature for equilibrium was adjusted 15 minutes. Also 25 kPa pressure difference between measurements was applied as experimental condition. It was determined that the calcium soap greases have the lowest flow pressure as a result of the measurements made on the greases at -20°C. On the other hand, the highest flow pressure at -20°C was observed in soap-free silica grease. In addition to this, simple soap greases had better low temperature flow performance than their complex forms.

In the second part of the study, the effect of pour point additive on low temperature flow performance of greases was investigated. For this purpose, 0.5%, 1%, 2% and 3% of pour point additives (PPD) were applied to 5 different soap greases and flow pressure measurements were made at -20°C with same conditions as first part of study. As a result of the study, it was determined that the low temperature fluidity performance (pumpability) of greases was affected negatively with the pour point additive. The PPD addition was differ depending on the soap structure.

Keywords: Grease, Kesternich Technique, DIN 51805, Flow Pressure, Fluidity, Pumpability

1. INTRODUCTION

1.1. Lubricating Grease

The primary use of lubricating oils is that to minimize the friction and wear between the moving parts in the systems. In addition to the main purpose of use, lubricants should have more features such as removing the heat generated during movement from the system on the surfaces where they are used, preventing the formation of corrosion between the surfaces, and removing the possible abrasions from the system [1,2]. Lubricants can be formed in liquid, semi-solid or solid.

Lubricating greases can be example for semi-solid lubricants. Lubricating greases defines as their physical form or thickener type. Actually, lubricating grease can be defined as ‘A lubricant that is a solid to semi-fluid dispersion of a thickening agent (thickener) in a liquid. A lubricating grease may be formulated with additives that impart special properties such as resistance to oxidation or wear’ in NLGI Grease Glossary 2015 [3]. In addition to this definition, The Society of Automotive Engineers describes lubricating greases as ‘Thickeners added to lubricating oils to acquire the properties of a pseudoplastic solid capable of providing a local and stationary source of lubrication’ [4].

Generally, in systems with rolling bearings, lubricating greases are used to meet the long and good operating time of the moving slewing ring contacts. Moreover, lubricating greases minimizes the effect of friction and wear at applied moving surfaces thereby avoids becoming unusable equipment. Since lubricating greases have a semi-solid physical form, it prevents the pollutants formed due to wear or friction in the system or coming from outside from adversely affecting the operation of the system [5]. Greases are the lubricant of choice for mechanical friction or dynamic systems in hard-to-reach places [6].

1.2. Grease Composition

In lubricating greases product formulations and production processes are developed depending on factors such as operating temperature, speed, time, mechanical requirements, and environmental factors of the system in which they are used [7]. Lubricating greases are made up from two phases and three components: base oil (base fluid), thickener (grease soap) and some performance additives [8]. Generally, grease is composed of around 2 to 15% thickener, 80 to 90% base oil and additives as seen in Figure 1.1. Additives are used to improve performance features of lubricants. These additives perform to prevent friction, wear, rust, corrosion, oxidation and adhesion acts between moving surfaces. In addition to this, these stated effects occur same as in lubricants when they are added in grease formulation. Also, these chemicals can dissolve in base oil medium [9].

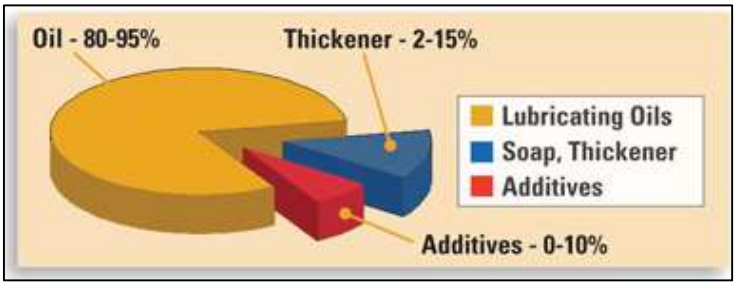


Figure 1.1. The Percent of Grease Components [10]

Base fluid is the liquid phase of grease and the solid phase is comprised by soap molecules which are formed from attraction between soap agents. The base oil selection is important for grease working temperature. If grease used at high temperature conditions, high viscosity base oil should be preferred. On the other hand, low viscosity base oil has to be chosen in grease formulation when grease applied on low temperatures. Certainly, mineral, or synthetic base oils are used to produce lubricating greases. Mineral base oils compose of a lot of saturated hydrocarbons that prevent the grease from flowing easily. The interaction of base oils with the thickener of the grease affects the operating performance of the lubricating grease.

The component that directly affects the semi-solid physical form of lubricating greases and adds its essential characteristic to the grease is the thickener. It has a significant effect on factors such as the shear stability, rheological properties, friction coefficient and lubricating film thickness of the grease, which ensure its long-term usage on moving parts in systems [11].

Thickeners are generally divided into two main group; metallic soap and non-soap type thickeners (Figure 1.2). Metallic soap thickeners can be classified into four groups: alkali metals (such as sodium, lithium), alkaline earth metals (such as calcium, barium), aluminum metal and heavy metals (such as lead and zinc).

In addition, all soap types have simple and complex soap structures. Complex soaps are formed either by adding a complex agent to the simple soap or by binding the same-another metallic salt with the main soap structure. Complex soapy lubricating greases have superior performance characteristics compared to simple soapy ones. They are more preferred in terms of determining performance features such as high temperature resistance, wear and dropping point [12].

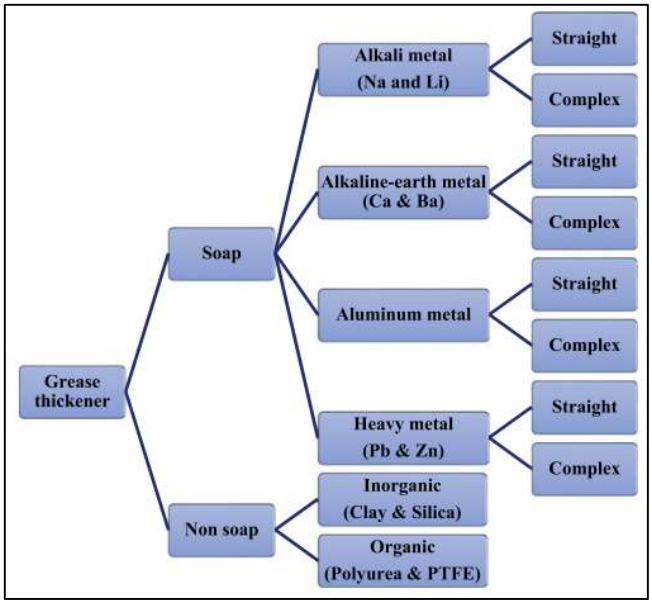


Figure 1.2. Different Grease Thickeners [13]

Metallic soaps thickeners are formed as a result of the saponification reaction of fatty acids ($C_nH2_{n+1}COOH$) with metal salts. Calcium and lithium metallic salts can be given as examples of the most preferred metallic salts in the production of simple soap greases in terms of their performance and price features.

On the other hand, non-soap thickeners in other words soap-free greases are produced with such a polymeric or inorganic thickener. Greases containing silica and bentonite-base thickeners are examples of inorganic soap-free greases. Poly urea and Polytetrafluoroethylene (PTFE) greases are example of non-soap polymeric greases.

1.3. Grease Structure

Bond structure of lubricating greases is formed between base oil and thickener. The base oil creates a structure within the thickener by the interaction of Van der Waals and capillary force. Hydrogen bonding or dipole-dipole bond interaction, including ionic and Van der Waals force, is seen between the thickener molecules. In addition to this, ionic bonding attraction generates between carboxyl molecules (COOH) with negative charge and metal ions with positive charge. The effectiveness of the bond strengths varies according to the rotation of the fiber structures in the thickening soap to each other [5].

The structure between the molecular bonds in the structure of a metallic soap, which has been shown schematically considering the said attraction forces, is shown in Figure 1.3.

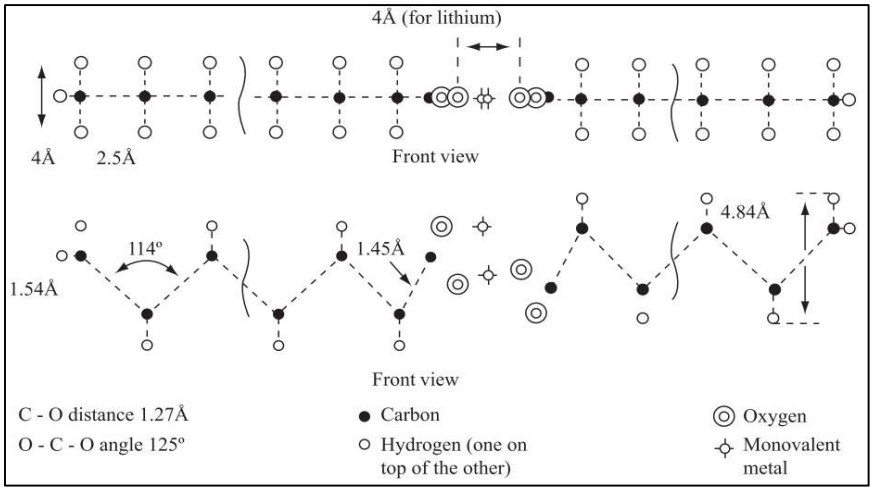


Figure 1.3. The Structure of Metal Soap Arrangements [14]

The length of fibre in soap thickeners observed about 1-100 microns and the ratio of length/diameter of fibre is about 10-100. Actually, the consistency of greases is directly proportional with this ratio [14].

Lubricating grease is at least two-phase structures with a three-dimensional matrix structure of soap fibers dissolved in a liquid lubricant. The distribution of the soap fibers and the matrix structure determine the characteristic structure of the lubricating greases. The fiber structure in the soap varies according to the thickener soap type. In addition, soap-free greases have a different fiber structure compared to others [15]. Thanks to electron microscopy and scanning electron microscopy (SEM), the matrix structures of the fibers of thickening soaps were observed in more detail. The fiber structures of greases with different soap structures are shown by electron microscopy in Figure 1.4 and Figure 1.5.

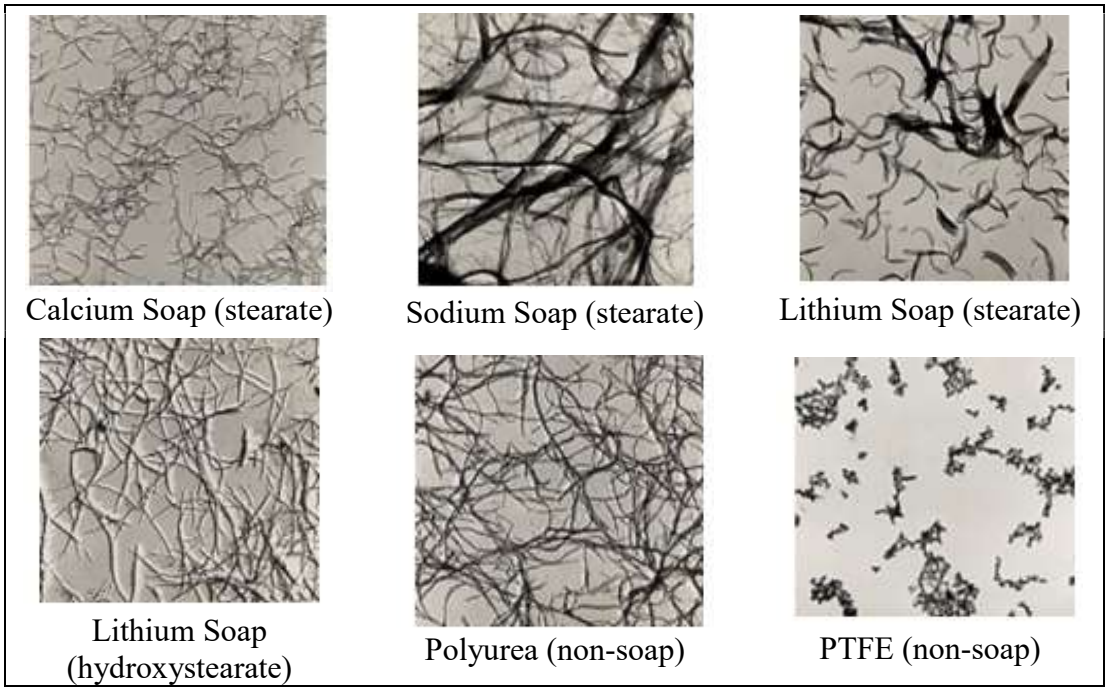


Figure 1.4. Electron microscope screens of different grease-soaps-1 [16]

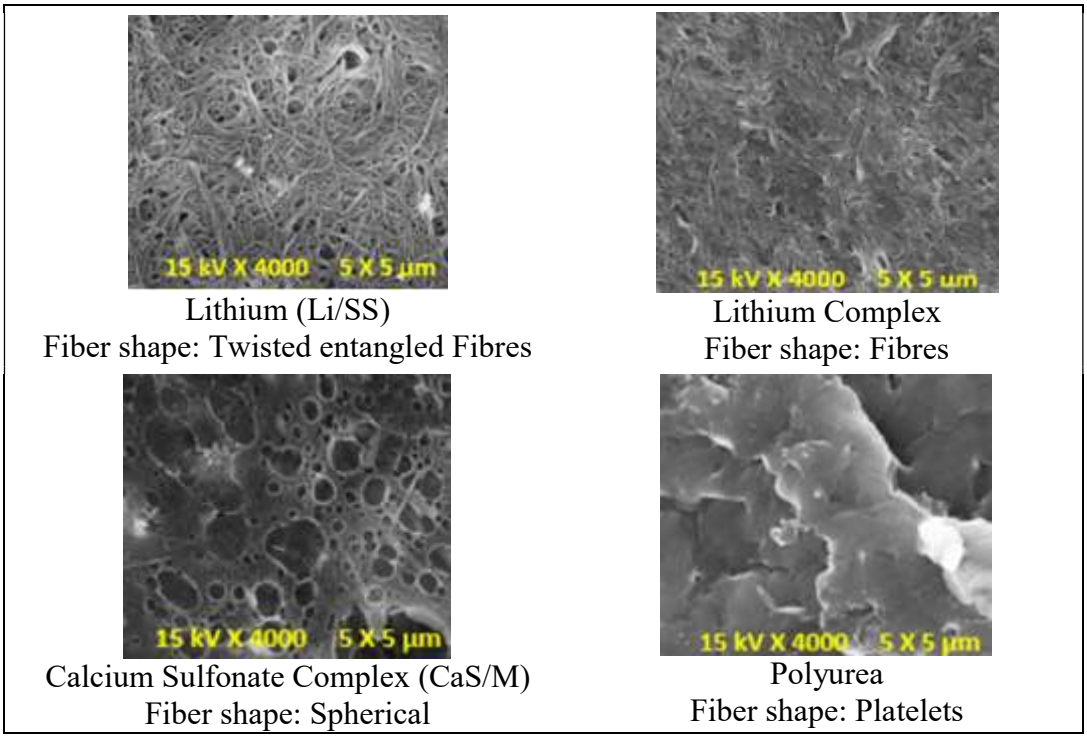


Figure 1.5. Electron microscope screens of different grease-soaps-2 [17]

When looking at figures of soap fiber screens from electron microscope, the grease soap thickeners arrange with different fiber types. For example, lithium soaps with stearate combined with twisted entangled fibre bonding, lithium complex soaps include fibre and polyurea-non soaps have platelets fibre.

In addition to the different soap structure, the variety of the base oil used also plays a role in determining the shape of the fibers. In Salomonssonet et.al., study it was observed that the soap fiber structures of the lubricating greases produced with the use of paraffinic and naphthalic base oil were different, and as a result of the study, it was seen that the soap fibers formed with paraffinic base oil had a more regular structure compared to the soap fibers made with the use of naphthalic base oil [18]. The contact points of fibers can destroy at low shear speeds, and also at high speeds fibers breakdown in terms of height, width, or length.

1.4. Grease Flow

Grease flow is a complex phenomenon determined by many factors. The most important factor is temperature. As the temperature decreases a grease will have poorer mobility. Other factors include thickener type and amount, base oil properties and other mobility improvers [19].

The thickeners of the lubricating greases directly affect the flow type of the greases in the system and the resistance to the flow (pumpability resistance), together with forming the consistency of the product. The flow regime varies according to the mechanical properties of the system in which a lubricant is used. Especially in central lubrication systems with a long flow system, having the desired flow regime of the lubricating grease is an important factor for the system to operate at the desired performance.

In such systems, lubricating greases that have a smooth flow (pumpability) regime without leaving any clogging or residue are preferred [20].
Lubricating greases are defined as viscoelastic materials in terms of flowing features that are changed with thickener types and added amount in grease formulation. Moreover, elasticity is matter to avoid grease leaks from applying parts. The fluidity of greases is important for efficiency and pumpability ability of lubricating greases.
The selection of the base fluid used to make the grease has a large impact on the low temperature properties. The base oil accounts for 80 to 90% of a typical grease. Therefore, its properties strongly influence grease flow. High viscosity base oils result in lower mobility greases; however, in machinery operation these greases provide better lubricity through increased film thickness [8].
In the winters as the temperature decreases, the paraffin crystals grow creating a crystalline net which begins to trap the molecules of liquid hydrocarbon until the oil cannot flow [21]. Certain pour points depressants are effective at disrupting these wax crystal structures and can improve flow at low temperature. Mobility improvers are generally low pour point, low viscosity oils or solvents. These can include synthetic esters and polyalphaolefins [8].
Yeong et. al., investigated how the flow regime of mineral base oil-based lithium grease was changed by increasing the thickener concentration in their study. As a result of the study, it was determined the point where the rheological structure of the grease transitioned from viscous to elastic structure with the use of 5% thickener [22].
Linda Salomonsson et.al., studied that the flow properties of paraffinic and naphthenic base oil-based lithium greases between -40°C and +60°C by flow pressure testing. it was found that the naphthenic based lithium grease, which has the lowest aromatic component ratio, has better pumpability at lower temperatures than the one containing more aromatic components [18].
Daniel M. Vargo et. al., conducted research on how calcium sulfonate and lithium complex greases affect the flow pressure, both at ambient temperature and at -1°C, as a result of the addition of different polymer additives at various rates. The flow measurements were applied with Lincoln ventmeter. As a result of study, the flow properties of lithium complex grease were not changed with addition polymers. However, calcium sulfonate grease was affected negatively [8].

2. EXPERIMENTAL STUDY AND RESULTS

2.1. Experimental Study

2.1.1. Materials

A - Lubricating Greases

In this study, to observe the flow properties of greases ten different soap structure type greases (classified as NLGI number 2) were used. Calcium, calcium complex, calcium sulfonate, calcium sulfonate complex, lithium, lithium complex, lithium calcium, lithium calcium complex soap greases and free-soap greases (poly urea, bentonite and silica grease) were selected to measure flow pressure at low temperature.

B- Pour Point Depressant (PPD)

In order to observe the effect of pour point additive on the flow pressure of lubricating greases, poly alkyl methacrylate (PAMA) based PPD additive was used.

2.1.2. Testing Methods

A-Penetration Test

The penetration measurement was made according to ASTM D 217 to determine the worked penetration of the greases at 25°C by using a Herzog branded penetrometer. Before penetration measurement, the grease was worked at 60 strokes by using a mechanical grease worker, and then the consistency of greases was measured with using cone penetrometer. The NLGI class of greases was determined with penetration measurement [23].

B- Flow Pressure Test

Flow pressure measurements of the lubricating greases were made in accordance with the DIN 51805 method with using MINITEST-FFK equipment. The pressure value required for the lubricating grease to flow at the specified temperature is found with this measurement. The measurement was made by applying pressure to the grease in the nozzle with the selected pressure increase amount at certain time intervals. The pressure value at which the grease exits the nozzle gives the pressure value required for the grease to flow at the operating temperature. This pressure means the optimum amount of pressure needed for grease fluidity at that temperature. The higher the pressure value found as a result of the flow pressure measurement made with this method, this value shows that the grease can hardly flow (pump) [24].

2.2. Results and Discussion

This study consists of two parts. The first part was concerned about that the results of flow pressure measurements of lubricating greases which had different soap types. The effect of pour point addition on flow pressure of lubricating greases was determined in the second part. Firstly, penetration measurements of the greases used in the study were made at room temperature (at 25°C). ASTM D 217 method was used to measure penetration number of the selected greases. In addition, base oil viscosity values at 40°C were obtained from the product data sheets of the greases. All penetration measurement results were given in Table 2.1 together with the grease base oil viscosities.

Table 2.1. Technical Data of Selected Greases

Grease Sample ID	NLGI#	Thickener Type	Base Oil Viscosity (40°C, cSt)	Worked Penetration, (25°C, 60 strokes)
C-I	2	Calcium	150	274
C-II	2	Calcium	150	274
C-III	2	Calcium	150	289
CS	2	Calcium Sulfonate	460	279
CX	2	Calcium Complex	59	295
CSX-I	2	Calcium Sulfonate Complex	150	274
CSX-II	2	Calcium Sulfonate Complex	150	280
P	2	Poly urea	200	283
S	2	Silica	150	278
B	2	Bentonite	150	268
L-I	2	Lithium	100	290
L-II	2	Lithium	150	280
L-III	2	Lithium	150	285
L-IV	2	Lithium	150	280
LC-I	2	Lithium Calcium	150	265
LC-II	2	Lithium Calcium	150	289
LCX	2	Lithium Calcium Complex	1130	274
LX-I	2	Lithium Complex	150	294
LX-II	2	Lithium Complex	150	285
LX-III	2	Lithium Complex	460	290

According to Table 2.1, three calcium soap grease were selected for this study. All of them had same base oil viscosity and almost close worked penetration results to each other. One calcium sulfonate grease (CS) was selected in 460 cSt viscosity and 279 worked penetration. Two calcium sulfonate complex greases with same base oil viscosity value and almost worked penetration result. Three different types of non-soap greases were used in this study, these are polyurea (P), bentonite (B) and silica(S) soap greases. Although the polyurea grease(P) had a higher base oil viscosity than the silica (S) one, the processed penetration value was measured lower. There were four lithium greases for study. Except of L-I grease, the base oil viscosity of lithium greases was about 150 cSt and also, the result of worked penetration of these was measured nearly 280. Although LX-I and LX-II were in same base oil viscosity, penetrations of greases were measured different, 294 and 285 in order.

2.2.1. Results of Flow Pressure Measurement

The flow pressures of all type of greases were measured at -20°C according to DIN 51508 test method. The measured flow pressure results of all greases were shown in Figure 2.1 graphically from lower flow pressure to higher flow pressure.

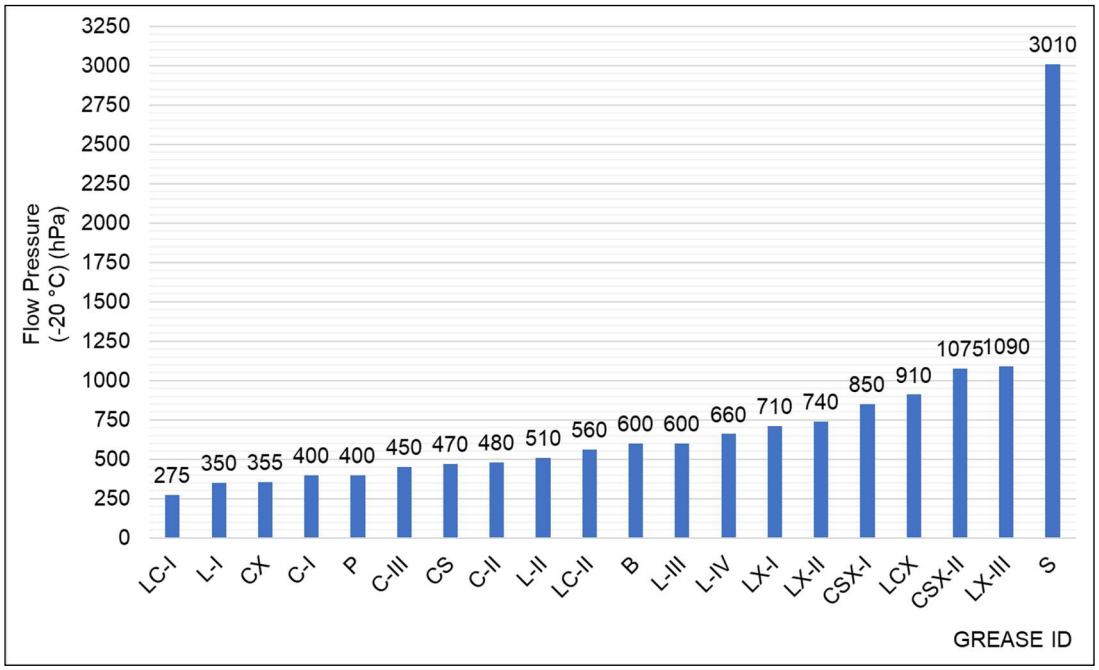


Figure 2.1. Flow Pressure Results of All Greases

The flow pressure of the silica based polymeric soap grease (S) was found to be 3010 hPa at the highest value when the above flow pressure measurement results graph was examined. Considering the increasing inclined flow pressure values, the flow pressure values of complex greases except calcium complex soapy grease (CX) were higher than simple greases in the measuring value range of 710-1090 hPa. In addition, the flow pressure measurement results of greases with the same soap structure, such as lithium greases (L-I, L-II, L-III, L-IV), except L-I lithium soap grease, the flow pressures of lithium soap greases L-II, L-III, L-IV were almost equal. The flow pressure measurement results of the soap types were evaluated in more detail with the base oil viscosity values and the processed penetration value in later parts of study.

The flow pressure results of calcium soap base greases were given in Table 2.2.

Table 2.2. The Flow Pressure Results of Calcium Soap Greases at -20°C

Grease Sample ID	NLGI#	Soap Type	Base Oil Viscosity (40°C, cSt)	Worked Penetration, (25°C, 60 strokes)	Flow Pressure (-20°C, hPa)
C-I	2	Calcium	150	274	400
C-II	2	Calcium	150	274	480
C-III	2	Calcium	150	289	450
CX	2	Calcium Complex	59	295	355

According to flow pressure results in Table 2.2, it has been observed that the flow pressure values of calcium greases were found between 400 to 480 hPa. Although CX had complex soap structure, the flow pressure of calcium complex grease had lower base oil viscosity than simple calcium soaps, the flow pressure of CX was measured 355 hPa that was lower than others.

Table 2.3. The Flow Pressure Results of Lithium Soap Greases at -20°C

Grease Sample ID	NLGI#	Soap Type	Base Oil Viscosity (40°C, cSt)	Worked Penetration, (25°C, 60 strokes)	Flow Pressure (-20°C, hPa)
L-I	2	Lithium	100	290	350
L-II	2	Lithium	150	280	510
L-III	2	Lithium	150	285	600
L-IV	2	Lithium	150	280	660

The flow pressure results of lithium soap greases were shown in Table 2.3. According to flow pressure measurement L-I grease gave the lowest flow pressure value with a result of 350hPa, and the highest value was determined by L-IV with a result of 660 hPa. Among the fourlithium base grease L-I has also lowest base oil viscosity and highest penetration number. Besides this L-IV grease includes MoS_2 solid friction modifier additive. Also, while L-II grease includes EP additives L-III grease has not.

Table 2.4. The Flow Pressure Results of Lithium Calcium Soap Greases at -20°C

Grease Sample ID	NLGI#	Soap Type	Base Oil Viscosity (40°C, cSt)	Worked Penetration, (25°C, 60 strokes)	Flow Pressure (-20°C, hPa)
LC-I	2	Lithium Calcium	150	265	275
LC-II	2	Lithium Calcium	150	289	560
LCX	2	Lithium Calcium Complex	1130	274	910

As seen from Table 2.4, the flow pressure values of LC-I and LC-II lithium calcium soap greases were measured very different from each other, although they had the same base oil viscosity value.

The low temperature flow pressure of the LC-I grease compared to the LC-II was measured lower. Although LC-I grease is more viscous than LC-II, it has better pumpability performance because it contains synthetic base oil. The flow pressure of lithium calcium complex grease (LCX; 910 hPa) was even higher than simple lithium soap greases LC-I and LC-II.

Table 2.5. The Flow Pressure Results of Lithium Complex Soap Grease at -20°C

Grease Sample ID	NLGI#	Soap Type	Base Oil Viscosity (40°C, cSt)	Worked Penetration, (25°C,60 strokes)	Flow Pressure (-20°C, hPa)
LX-I	2	Lithium Complex	150	294	710
LX-II	2	Lithium Complex	150	285	740
LX-III	2	Lithium Complex	460	290	1090

Lithium complex soap greases had higher low temperature pressure flow than lithium soap greases as shown in Table 2.5. The highest result was LX-III with 1090 hPa and the LX-I product was lowest value with 710 hPa.
The flow pressure measurement results for the P, B and S products in our soap-free grease product group are given in Table 2.6.

Table 2.6. The Flow Pressure Results of Soap-Free Grease at -20°C

Grease Sample ID	NLGI#	Soap Type	Base Oil Viscosity (40°C, cSt)	Worked Penetration, (25°C,60 strokes)	Flow Pressure (-20°C, hPa)
P	2	Poly-urea	200	283	400
B	2	Bentonite	150	268	600
S	2	Silica	150	278	3010

All of three are non-soap greases, but the flow pressures of them were measured differ from each other. Although grease P had higher base oil viscosity than other ones, the worked penetration of them were measured completely reverse. Actually, S had highest flow pressure in all greases. Because, the silica grease structure is stickier than other chosen non-soap greases.
The flow pressure results of calcium sulfonate lubricating greases were tabled in Table 2.7. There was only one calcium sulfonate grease used to measure flow pressure. Although CSX-I and CSX-II calcium sulfonate complex soap greases have the same base oil viscosity and penetration values close to each other, the flow pressure value of CSX-II was measured higher. Since the manufacturers of these greases are different, it is thought that the difference between the flow pressures may be due to the production parameters.

Table 2.7. The Flow Pressure Results of Calcium Sulfonate Soap Grease at -20°C

Grease Sample ID	NLGI#	Soap Type	Base Oil Viscosity (40°C, cSt)	Worked Penetration, (25°C,60 strokes)	Flow Pressure (-20°C, hPa)
CS	2	Calcium Sulfonate	460	279	470
CSX-I	2	Calcium Sulfonate Complex	150	274	850
CSX-II	2	Calcium Sulfonate Complex	150	280	1075

1.1.1. The Flow Pressure Results After PPD Addition

In the second part of the study, C-I, L-III, LX-III, LCX, CS and CSX-II soaps were selected among the lubricating greases for which flow pressure measurements were made at -20°C in the first part, and 0.5%, 1%, 2% and 3% were applied on them. By adding the pour point depressant additive (PPD), the flow pressures of the greases of PPD were measured at -20°C and under the same measurement conditions as the first section.

Table 2.8. The Flow Pressure Results of C-I with PPD at -20°C

Soap Type: Calcium;	
Base Oil Viscosity: 150 cSt;	
Worked Penetration, (25°C,60 Strokes): 274	
PPD %	**Flow Pressure (-20°C, hPa)**
0	400
0.5	400
1	450
2	400
3	425

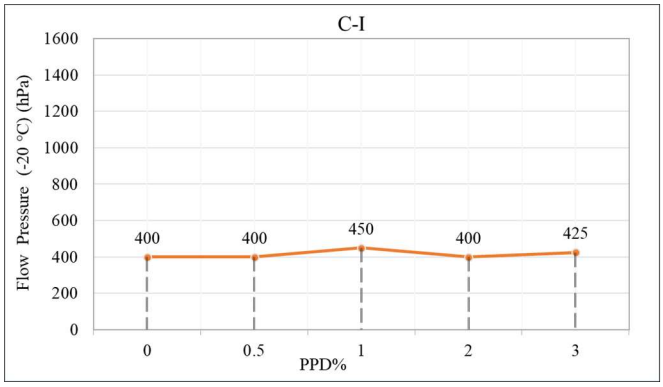


Figure 2.2. The Flow Pressure Graph of C-I with PPD

The results of the study after PPD addition with calcium soap C-I grease are given in Table 2.8. The flow pressure value at -20°C without additive was measured as 400 hPa, no significant change was observed in the flow pressure value of the grease with increasing PPD addition rate. The change curve is presented with the graph in Figure 2.2.

Table 2.9. The Flow Pressure Results of L-III with PPD at -20°C

Soap Type: Lithium;	
Base Oil Viscosity:150 cSt;	
Worked Penetration, (25°C,60 Strokes): 285	
PPD%	**Flow Pressure (-20°C, hPa)**
0	600
0.5	600
1	700
2	975
3	1025

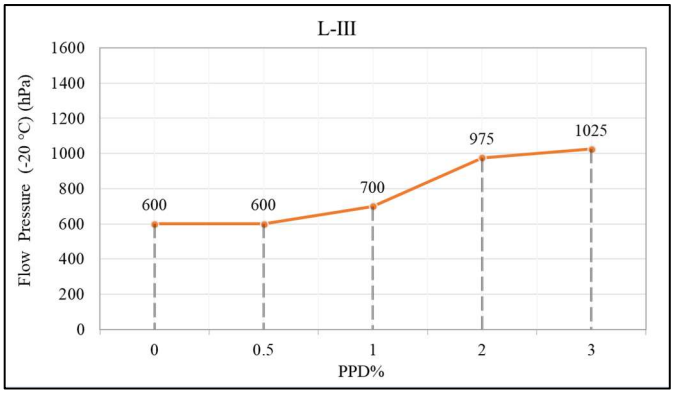


Figure 2.3. The Flow Pressure Graph of L-III with PPD

Flow pressure measurements made after PPD addition to L-III grease are given in Table 2.9 with varying PPD addition ratio. While the flow pressure value of L-III grease without adding PPD was measured as 600 hPa, the flow pressure value increased with increasing PPD addition rate. While no significant change was observed until 1% PPD addition rates, flow pressure increased up 1025 hPa at 3% addition with addition of PPD. The curve of the increase in the measured flow pressure values is given in Figure 2.3.

Table 2.10. The Flow Pressure Results of LX-III with PPD At -20°C

Soap Type: Lithium Complex;	
Base Oil Viscosity: 460 cSt;	
Worked Penetration, (25°C,60 Strokes): 290	
PPD%	**Flow Pressure (-20°C, hPa)**
0	1090
0.5	1250
1	1225
2	1325
3	1300

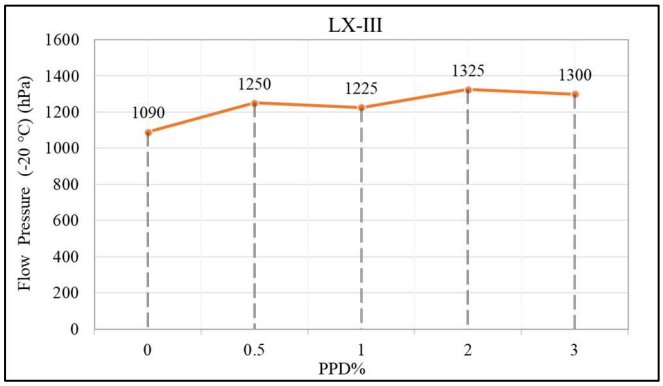


Figure 2.4. The Flow Pressure Graph of LX- III with PPD

LX-III grease was chosen among the lithium complex greases for this part of the study, it is the lithium complex grease with the highest base oil viscosity. The flow pressure value of the grease at -20°C was measured as 1090 hPa without PPD added, and the flow pressure values showed an increasing regime with increasing PPD addition rates. Flow pressure measurement values were given in Table 2.10 and the increase curve is given in the graph in Figure 2.4.

Table 2.11. The flow pressure results of LCX with PPD at -20°C

Soap Type: Lithium Calcium Complex;	
Base Oil Viscosity: 150 cSt;	
Worked Penetration, (25°C,60 Strokes): 274	
PPD%	**Flow Pressure (-20°C, hPa)**
0	910
0.5	1150
1	1300
2	1415
3	1525

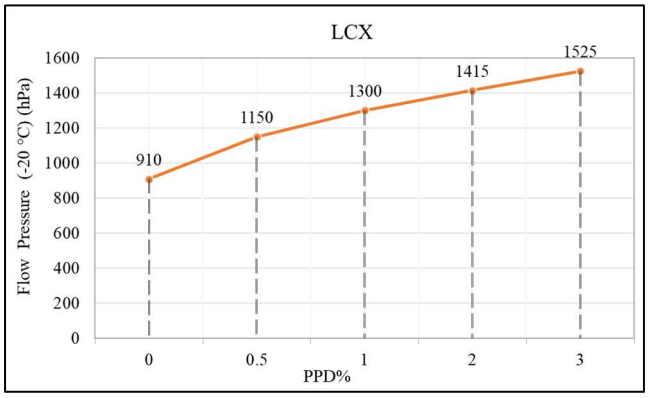


Figure 2.5. The Flow Pressure Graph of LCX with PPD

The measured flow pressure values of lithium calcium complex soap grease (LCX) after adding PPD are listed in Table 2.11. The flow pressure showed a near-linear increase slope with 0.5% to 3% PPD addition rate. It was predicted that as a result of the addition of PPD higher than 3%, it will have a negative effect on the flowing performance of the grease.

Table 2.12. The Flow Pressure Results of CS with PPD at -20°C

Soap Type: Calcium Sulfonate;	
Base Oil Viscosity: 150 cSt;	
Worked Penetration, (25°C,60 Strokes): 279	
PPD%	**Flow Pressure (-20°C, hPa)**
0	470
0.5	800
1	825
2	775
3	425

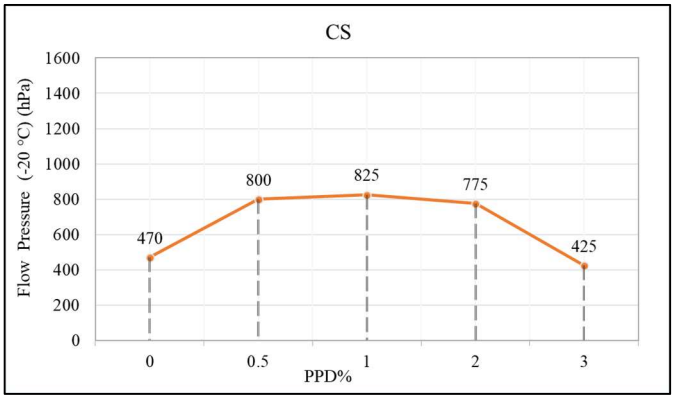


Figure 2.6. The Flow Pressure Graph of CS with PPD

Flow pressure measurement results are given in Table 2.12 as a result of adding pour point depressant additive of calcium sulfonate soap grease (CS). While the flow pressure value of CS grease was 470 hPa without PPD added, the flow pressure value increased with the addition of 0.5%, 1% and 2% PPD compared to this. In addition, with the addition of 3%, the flow pressure was measured lower. In this result obtained with the addition of 3% PPD, it is predicted that the flow performance of the grease will be better as a result of working with the specified PPD addition percentage and more.

Table 2.13. The Flow Pressure Results of CSX-II with PPD at -20°C

Soap Type: Calcium Sulfonate Complex;	
Base Oil Viscosity: 150 cSt;	
Worked Penetration, (25°C,60 Strokes): 280	
PPD%	**Flow Pressure (-20°C, hPa)**
0	1075
0.5	1125
1	1475
2	1450
3	1200

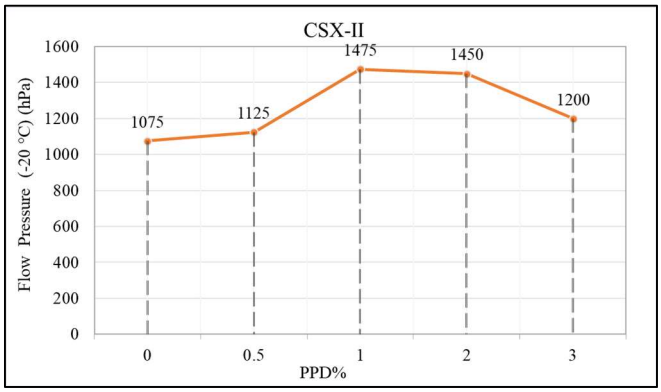


Figure 2.6. The Flow Pressure Graph of CSX-II with PPD

CSX-II's own flow pressure value is measured as 1075 hPa. When compared with this value with increasing PPD addition rate, it was determined that the flow pressure value showed an increasing regime. When the flow pressure change graph in Figure 2.6 is examined, the highest flow pressure measurement value was found as a result of adding 1% PPD. While the flow pressure of CSX-II grease showed an increasing regime from 0.5% to 2% PPD addition amount, it was measured lower than the previous one with 3% PPD addition. Similar to CS grease, adding more than 3% PPD to CSX-II grease will reduce the flow pressure value. Thus, it was estimated that the CSX-II grease could be pumped more easily.

3. CONCLUSION

In this study, low temperature flow pressure performances of NLGI number 2 class different soap structure greases were analyzed according to DIN 51805 Kesternich Technique method. As a result of the study, it was determined that the greases differ in their flow pressure values according to the grease structure, base oil and additive content. Among the tested greases, calcium, lithium calcium (with synthetic base oil), polyurea-based and calcium sulfonate soap greases were found to have low flow pressure values. Lithium soap greases, lithium calcium (with mineral base oil), bentonite-based, lithium calcium complex, calcium sulfonate complex, lithium complex soap greases and silica-based greases gave higher low temperature flow pressure value, respectively.

As a result of the measurements, it has been seen that the viscosity of the base oil has a direct effect on the flow pressure value and therefore on the pumpability of the product. Greases of the same NLGI grade with a high viscosity base oil have higher flow pressures. In addition, the flow pressure of greases containing synthetic base oil with low flow point value was found to be lower than greases containing mineral base oil.

As a result of the study, it was determined that the thickeners in the grease structure affect the flow pressure values, as stated in the literature. It has been observed that metal soap thickener types have lower flow pressure values than soap-free silica-based grease. It is thought that this is due to the fact that the silica grease structure is stickier and therefore the surface handling is high.

On the other hand, polyurea grease that does not contain metal soap differed and it was observed that it had a low flow pressure value. This may be due to the fact that the polyurea grease consists of a flat structure in fiber.

In addition, different flow pressure values were obtained according to the metal soap content of the thickeners containing metal soap. Another finding is that the low temperature flow pressure performances of complex structures have poor low temperature properties than simple soap structures.

As a result of the studies, it was determined that the additives used in the greases also affect the low temperature flow pressure value. It has been observed that the PAMA-based polymer used as PPD has a negative effect on low temperature flow pressure performance in greases containing calcium, lithium, lithium complex and lithium calcium complex metal soap. On the other hand, it has been observed that calcium sulfonate and calcium sulfonate complex greases have a positive effect after a certain concentration. In addition, it has been observed that solid lubricants such as MoS_2 and graphite, which are used to increase the lubrication performance in greases, also affect the flow pressure value.

In summary, it has been observed that the pumpability properties of greases depend on more than one factor. While choosing the grease to be used in central systems, soap and base oil type, base oil viscosity and other grease components (performance additives) should be selected considering pumpability as well as other performances of the grease.

REFERENCES

1. Dorinson A., Ludema K.C. , Mechanics and Chemistry in Lubrication. Amsterdam: Elsevier; 1985.

2. Jones M.H., Scott D., Industrial Tribology. Amsterdam: Elsevier; 1983. 515 p.

3. Moon M., Turner D., Tuszynski B., Technical - Grease Glossary NLGI GREASE GLOSSARY 2015 . https://www.nlgi.org/glossary/g/

4. SAE MOBILUS Automotive Lubricating Greases . Fuels and Lubricants TC 3 Driveline and Chassis Lubrication . https://saemobilus.sae.org/content/J310_202005/

5. Lugt PM. A review on grease lubrication in rolling bearings. Tribology Transactions. 2009;52(4):470–80.

6. J. E. Martín-Alfonso, C. Valencia, M. C. Sánchez, J. M. Franco, and C. Gallegos Industrial & Engineering Chemistry Research 2009 48 (8), 4136-4144

7. Hamnelid L. Introduction to Rheology of Lubricating Grease Publication. ELGI Rheology Book Publication . 2011;1–17. h

8. Vargo DM, Devore DA, Lipowski BM. The Effect of Polymer Additives on Grease Flow Properties Daniel M. Vargo, David A. DeVore and Brian M. Lipowski Functional Products Inc. Macedonia, Ohio, U.S.A. :1–15.

9. Larson BK, Mroczek W, DeVore D. Benefits of polymer additives in grease. NLGI Spokesman. 2010;73(7):17–25.

10. EP Editorial Staff, Certification Matters, Part I: The Fundamentals Of Lubrication. Efficient Plant. 2011.

11. Shariq Ahmad Bhat, M.S. Charoo, Effect of additives on the tribological properties of various greases-A review. Materials Today: Proceedings . 2019;18:4416–20.

12. Perez JM, Wain Fick K. Lubricants and Lubrication. Mang T, Dresel W, editors. WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim; 2007.

13. Bruce R.W. , Automotive tribology. Handbook of Lubrication and Tribology, Volume II: Theory and Design, Second Edition. 2012. 59-1-59–8 p.

14. Lugt PM. Grease Composition and Properties, Grease Lubrication in Rolling Bearings. 2012. p. 23–69.

15. Donahue C.J., Lubricating grease: A chemical primer. Journal of Chemical Education. 2006;83(6):862–9.

16. Kyodo Yushi Co. L. Classification and Characteristics of Grease | Basic Knowledge About Grease . https://www.kyodoyushi.co.jp/english/knowledge/grease/category/

17. Cyriac F, Lugt PM, Bosman R, Padberg CJ, Venner CH. Effect of Thickener Particle Geometry and Concentration on the Grease EHL Film Thickness at Medium Speeds. Tribology Letters. 2016;61(2):1–13.

18. Salomonsson L, Stang G, Zhmud B. Oil/thickener interactions and rheology of lubricating greases. Tribology Transactions. 2007;50(3):302–9.

19. Vroom GB. Lubricating Grease. Journal of the American Society for Naval Engineers. 1925;37(3):551–9.

20. Paszkowski M. Some Aspects of Grease Flow in Lubrication Systems and Friction Nodes. Tribology - Fundamentals and Advancements. 2013;

21. Prasad A, Kulkarni K, Kulkarni AD, Chaudhari PL, Bandpatte SC. Pour Point Depressant of Crude Oil. International Journal of Chemical Engineering Research. 2019;11(2):81–90.

22. Yeong SK, Luckham PF, Tadros TF. Steady flow and viscoelastic properties of lubricating grease containing various thickener concentrations. Journal of Colloid and Interface Science. 2004;274(1):285–93.

23. ASTM D217-21, Standard Test Methods for Cone Penetration of Lubricating Grease . West Conshohocken, PA; 2021. Available from: www.astm.org

24. Normung IDI für. DIN 51805-2, Testing of lubricants - Determination of flow pressure of lubricating greases according to Kesternich method - Part 2: Automatic method . 2021. Available from: https://www.din.de/en/about-standards.

CONSTRUCTION OF NOVEL VAN DER WAALS HETEROSTRUCTURES FROM TWO-DIMENSIONAL TIN-CHALCOGENIDES: A FIRST-PRINCIPLES STUDY

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ABSTRACT
The capability of the van der Waals (vdW) Heterostructures (HTSs) to tailor the physical properties of two-dimensional (2D) materials has driven remarkable interest of researchers in recent years. Motivated by the intriguing features of vdW HTSs, we constructed different types of vdW HTSs α-polytype and δ-polytype of single-layered SnS and SnSe. Using the first-principles approaches based on density functional theory (DFT), the physical properties of these vdW HTSs have been comprehensively investigated. Our investigations of the physical properties of the constructed HTSs cover the study of the structural parameters, formations and binding energies, electronic structures, electron density mappings, and optical properties. Investigations of the electronic charge densities show that the comprising single-layers are stacked mainly by the vdW interactions. The vdW couplings between the comprising single-layers have been observed for interlayer separation as large as ~7 Å. Our investigations of the electronic structures showed them as type-II(staggered) semiconductors of indirect bandgap nature. Moreover, they exhibited interesting optical properties that may find interesting technological applications. Our study indicated the construction of vdW heterostructures as an effective route to tailor the physical properties of 2D materials for any desired application.
Keywords: vdW Heterostructures; binding energy, formations energy, band structures, optical properties, DFT

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EFFECT OF THERMAL RADIATION AND CHEMICAL REACTION ON MHD FLOW OF BLOOD IN STRETCHING PERMEABLE VESSEL

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Abstract
In this paper theoretical analysis of blood flow in the presence of thermal radiation and chemical reaction under the influence of time dependent magnetic field intensity has been studied. The unsteady non linear partial differential equations of blood flow considers time dependent stretching velocity, the energy equation also accounts time dependent temperature of vessel wall and concentration equation includes time dependent blood concentration. The governing non linear partial differential equations of motion, energy and concentration are converted into ordinary differential equations using similarity transformations solved numerically by applying ode45. MATLAB code is used to analyze theoretical facts. The effect of physical parameters viz., permeability parameter, unsteadiness parameter, Prandtl number, Hartmann number, thermal radiation parameter, chemical reaction parameter and Schmidt number on flow variables viz., velocity of blood flow in vessel, temperature and concentration of blood has been analyzed and discussed graphically. From the simulation study the following important results are obtained: velocity of blood flow increases with both increment of permeability and unsteadiness parameter. Temperature of the blood increases in vessel wall as Prandtl number and Hartmann number increases. Concentration of the blood decreases as time dependent chemical reaction parameter and Schmidt number increases.
Keywords: Stretching velocity, similarity transformations, time dependent magnetic field intensity, thermal radiation, chemical reaction

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INVESTIGATION OF HORIZONTALLY CURVED MEMBERS USED IN STEEL STRUCTURES

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Abstract
Horizontally curved steel members are commonly used in commercial, industrial buildings and bridges due to both aesthetic appeal and high functionality properties. In addition, they are preferred in structures with large spans such as modern amphitheaters, stadiums, curved roof beams, canopy, transportation and pedestrian bridges since curved members have aesthetic appeal when compared to straight members. However, there are some challenges in the design and analysis of curved members when compared to straight counterparts. Horizontally curved members are subjected to not only bending moment but also torsional moment under gravitational loads. Therefore, for such members, it is essential to consider internal bending moment, and twisting moment as well as transverse shear. For the stability of these members, hollow structural sections are generally selected because of high capability of resisting torsional moment. Furthermore, safe and economical design of such members requires a rational procedure for determining the displacements, internal bending moment and torsional moment as well as transverse shear force under live and dead loading. In this study, internal forces, moments and displacements of horizontally curved member under transverse load were first identified. Curved members consisted of rectangular hollow sections with different radius were considered for evaluation of the developed expressions. The commercial finite element program ANSYS was used to conduct the numerical analyses. Analysis results show that expressions were accurate in determining the response quantities of horizontally curved members.
Keywords: Horizontally curved member, Torsional stiffness, Hollow structural sections, Internal forces, Transverse displacement

1. INTRODUCTION

Horizontally curved steel members are commonly used in commercial, industrial buildings and bridges due to both aesthetic appeal and high functionality properties. As shown in Figure 1, these features make horizontally curved members an attractive choice for both architects and designers (Dowswell, 2018).




Figure 1. Horizontally curved member applications (Dowswell, 2018)

Horizontally curved members are preferred in structures with large spans such as modern amphitheaters, stadiums, curved roof beams, canopy, transportation and pedestrian bridges since they have aesthetic appeal when compared to straight members. However, there are some challenges in the design and analysis of curved members when compared to straight counterparts since bending and torsional moments occur simultaneously due to curvature effect (Lee, Davidson, Choi and Kang, 2017; Chamorro-Varilla and Aristizabal-Ochoa, 2016). One of the earliest studies on curved members was conducted by St. Venant (1843) and linear elastic behavior of isolated curved members was investigated. In the following years, comprehensive studies to develop theory of these members were performed by many researchers (Vlasov, 1961; Dabrowski, 1968; Heins, 1975). Meanwhile, since 1960s practical use of curved members in the construction of horizontally curved bridges has been seen started in many countries such as United States and Japan (Ziemian R.D., 2010). Design documents were also developed for horizontally curved bridges considering comprehensive research projects conducted by different research teams. One of the first documents that is Guide Specifications for Horizontally Curved Highway Bridges was provided by AASHTO (1980). The guide provides different shapes such as I- and Box sections used in horizontally curved bridges. Another early design document that addresses curved bridge design is the Japanese Guidelines for the Design of Horizontally Curved Girder Bridges which was developed by Hanshin Expressway Public Corporation (1988). Later, extensive research on horizontally curved girder bridges led to many important changes in these documents.

In this study, behavior of horizontally curved members was explored in the large span structures such as modern amphitheaters and colosseum. As shown in Figure 2, seat arrangements are in the circular form and seats for audience are supported with horizontally curved members. These members are subjected to both bending moment and torsional moment under gravitational loads. Therefore, for such members, it is essential to consider internal bending moment, and twisting moment as well as transverse shear. To pursuant this aim, developed stress resultants and displacement expressions were first presented for the isolated horizontally curved member. Curved members in a modern amphitheater were then selected for the numerical study. For the evaluation of the developed expressions, rectangular hollow sections with different radii were considered due to high torsional capacity.

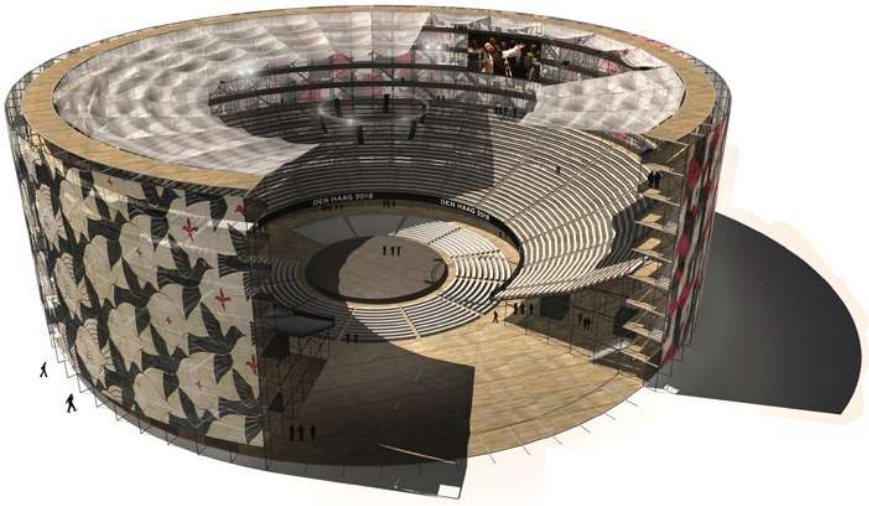


Figure 2. Horizontally curved member applications (https://www.archdaily.com/27165/modern-colosseum-cepezed-architects?ad_medium=gallery)

2. INTERNAL FORCES, MOMENTS AND DISPLACEMENTS IN HORIZONTALLY CURVED MEMBERS

The response of the isolated horizontally curved member has been identified considering Vlasov's curved beam differential equations (Vlasov, 1961). As shown in Figure 3, a horizontally curved member is subjected to not only bending moment but also torsional moment under gravitational loads. Therefore, for such members, it is essential to consider internal bending moment, and torsional moment as well as transverse shear.

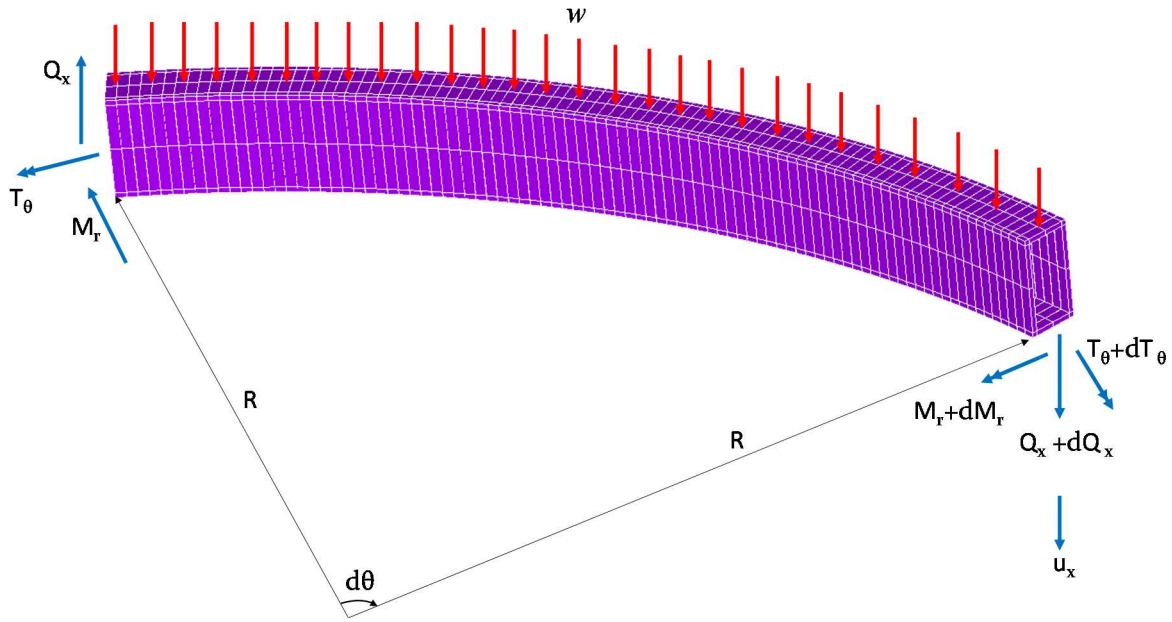


Figure 3. Curved member and sign conventions

Considering differential equations of equilibrium and appropriate boundary conditions, bending moment, torsional moment and transverse shear variations around the circumferential direction were developed as follows (Zeybek and Seçer, 2020):

$$M_r(\theta) = wR^2\left[\theta_0(\sin\theta + \cot\theta_0\cos\theta) - 1\right] \quad (1)$$

$$T_\theta(\theta) = wR^2\left[\theta_0(\cot\theta_0\sin\theta - \cos\theta + 1) - \theta\right] \quad (2)$$

$$Q_x(\theta) = -wR(\theta - \theta_0) \quad (3)$$

where $M_r(\theta)$ = bending moment about a radial axis; $T_\theta(\theta)$ = torsional moment; $Q_x(\theta)$ = shear forces in the transverse direction; w = distributed load (force per unit length) in the transverse direction; R = radius of the curved member, θ_0 = the circumferential angle in radians subtended by the half span of the curved member and θ = circumferential coordinate.

Considering the global force-deformation relationships, the transverse displacement for closed cross-section was expressed as follows:

$$u_x(\theta) = \frac{wR^4}{4EI_rGJ\sin(\theta_0)^2}\left\{\begin{array}{l} EI_r\left[\theta^2(\cos 2\theta_0 - 1) + 2\theta_0(\theta + \theta_0 - \theta\cos 2\theta_0) + 3\theta_0(-\sin\theta + \sin(\theta - 2\theta_0) + \sin 2\theta_0)\right] \\ +GJ\theta_0\left(2\theta_0 - \sin\theta + \sin(\theta - 2\theta_0) + \sin 2\theta_0\right) \\ +(EI_r + GJ)\theta_0\left[(\theta - 2\theta_0)\cos\theta - \theta\cos\theta(\theta - 2\theta_0)\right] \end{array}\right\} \quad (4)$$

where I_r = bending moment of inertia about radial axis; u_x = displacements in the vertical direction; J = uniform torsion constant; E = modulus of elasticity and G = shear modulus.

It should be noted that the transverse displacements of the curved member arise due to bending and twisting of the curved member.

3. NUMERICAL STUDY

Numerical analyses employing finite element method were performed to assess stress resultants and displacements for horizontally curved members in a modern amphitheater. Seats of the stadium were placed over simply supported horizontally curved beams as shown in Figure 4 and these members were analysed separately. Since main radial beams were assumed to be placed with 60° intervals, only one portion was considered for analysis as shown in Figure 5. Seats of the modern amphitheater consists of six curved members with different radius (R = 10 m, 12 m, 14 m, 16 m, 18 m and 20 m). The same load value of 10 kN/m was applied to the all curved members. A finite element program ANSYS was used for the finite element analysis. The modulus of elasticity of steel (E) and the Poisson's ratio (ν) were considered as 200 GPa and 0.3, respectively. For the assessment, a rectangular hollow section (RHS) with dimensions 250 mm × 500 mm and wall thickness 15 mm was selected for all curved members since hollow sections have high capability of resisting torsional moment.

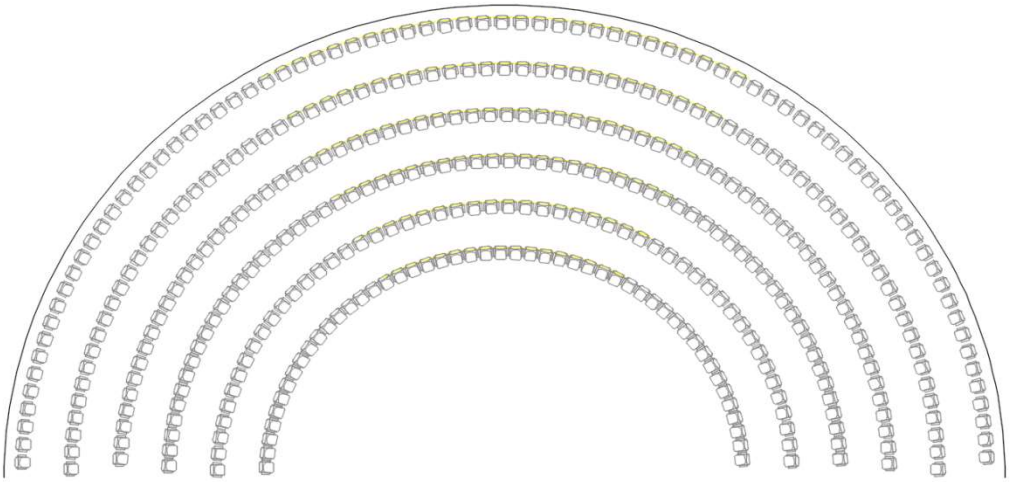


Figure 4. General view of the modern amphitheater seating arrangements

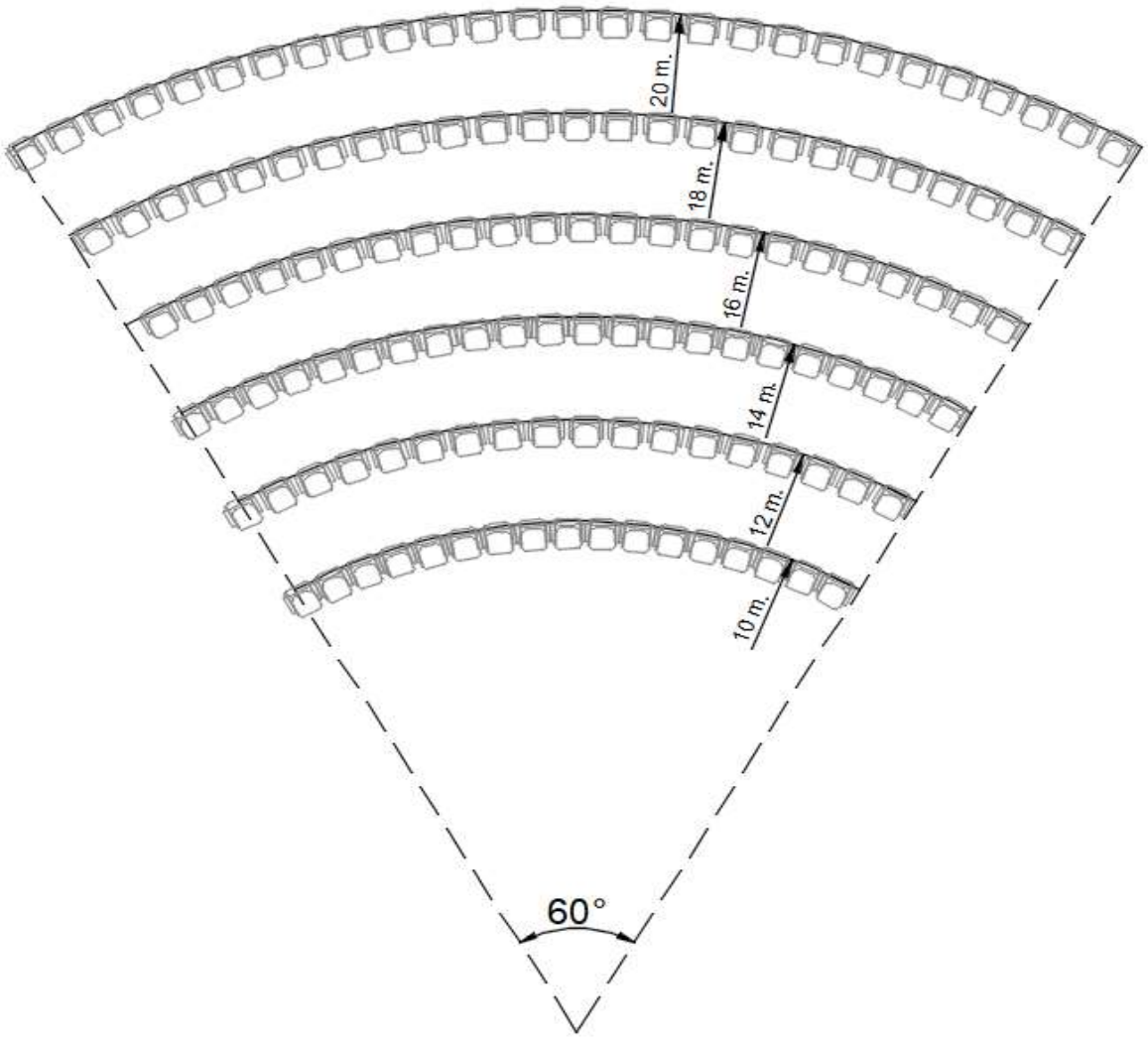


Figure 5. Curved members in-between main radial beams of the modern amphitheater

Variations in bending moment (M_r), torsional moment (T_θ), transverse shear force (Q_x) and transverse displacement (u_x) for 6 different horizontally curved members were shown in Figure 6-9 respectively, together with the developed expressions.

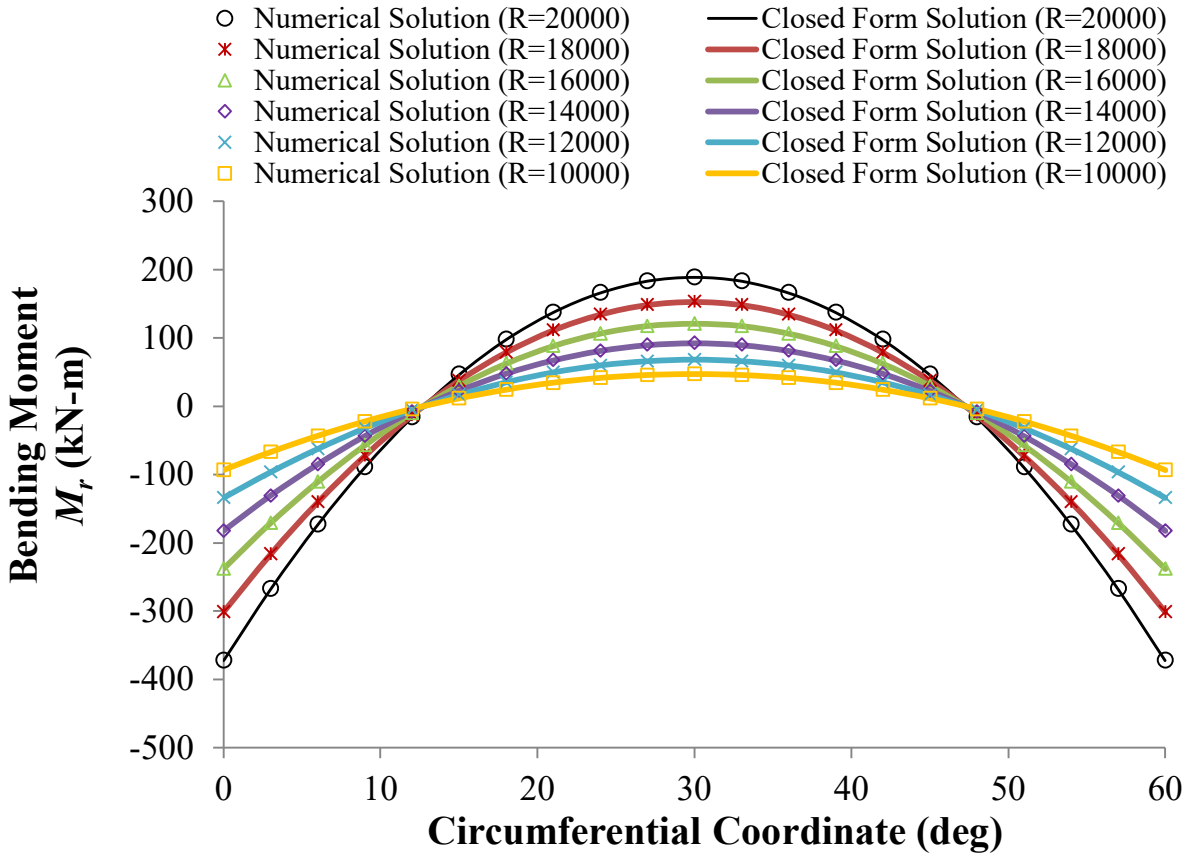


Figure 6. Comparison of developed bending moment (M_r) expression with FE predictions

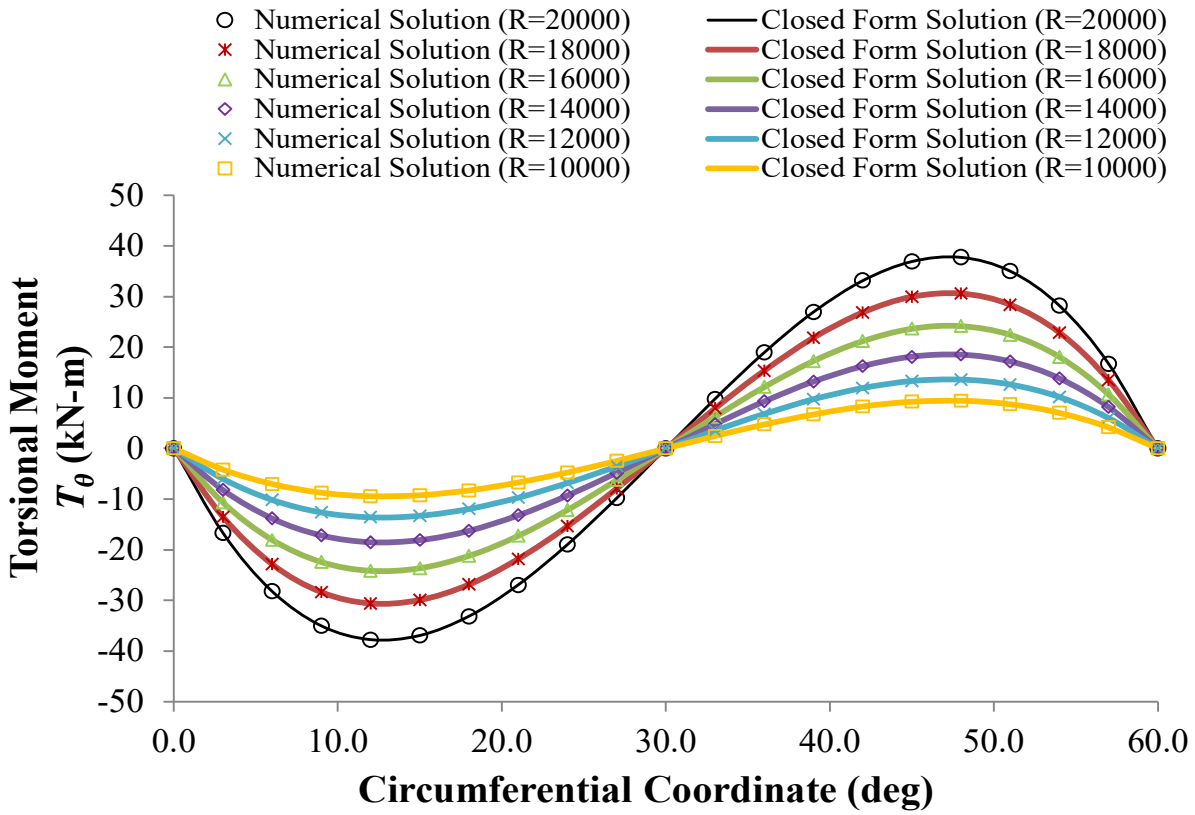


Figure 7. Comparison of developed torsional moment (T_θ) expression with FE predictions

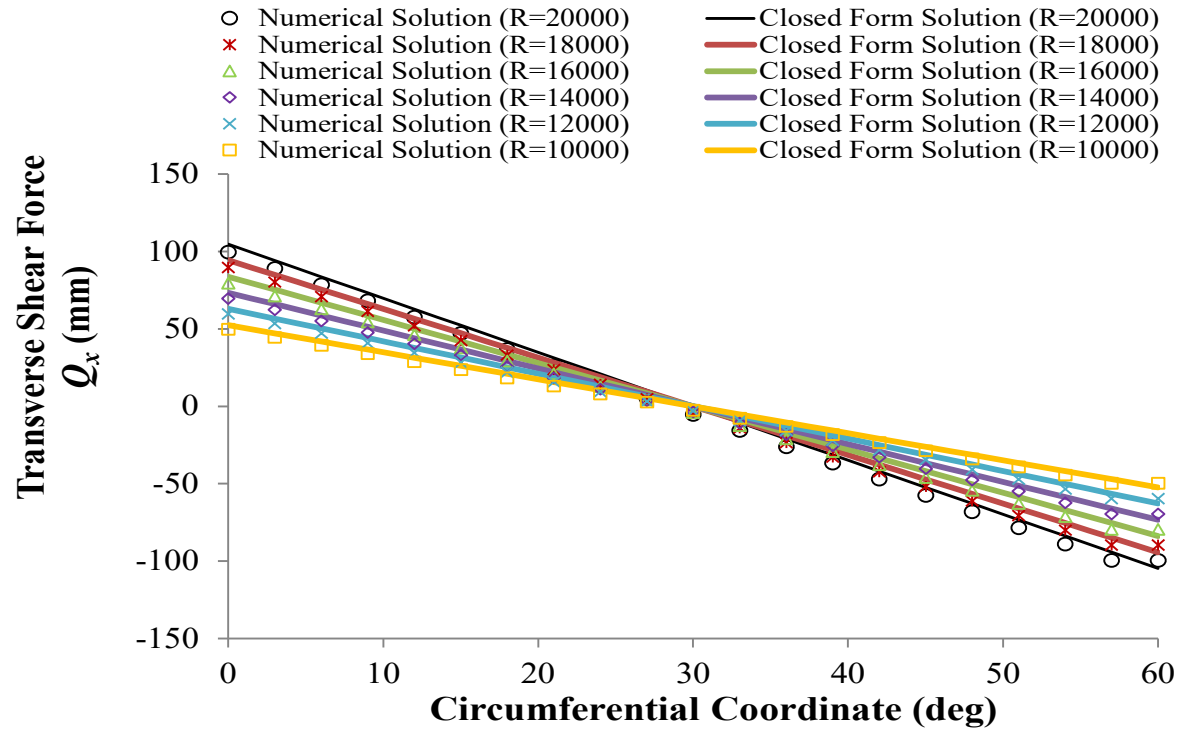


Figure 8. Comparison of developed transverse shear force (Q_x) expression with FE predictions

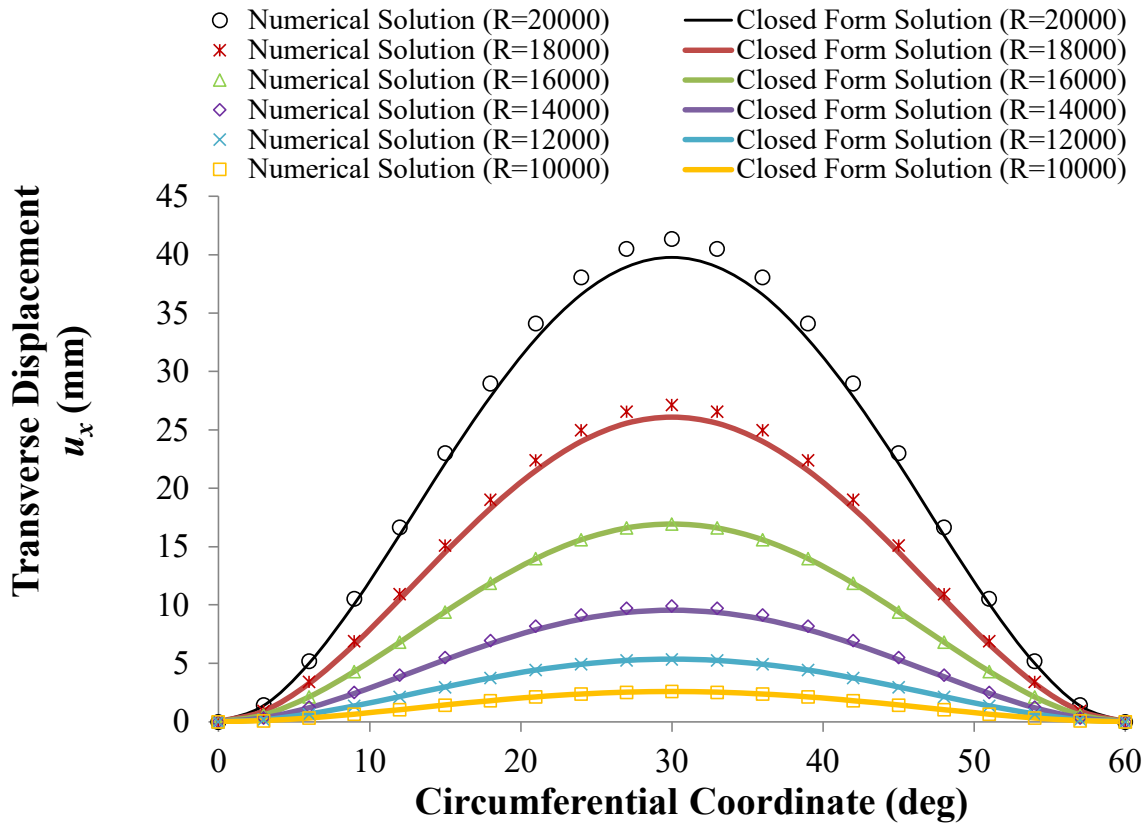


Figure 9. Comparison of developed transverse displacement (u_x) expression with FE predictions

The comparisons show that the above equations provide acceptable solutions for a horizontally curved member. As seen in the Figures 6-9, response quantities of the horizontally curved member increase when radius of the member increases. The highest internal force, moment and displacement values were observed in the outermost curved member.

4. CONCLUSIONS

This study investigates response of horizontally curved members in a modern amphitheater. It was observed that horizontally curved members are subjected to not only bending moment but also torsional moment under gravitational loads. Therefore, for such members, it is essential to consider internal bending moment, and twisting moment as well as transverse shear. In the study, stress resultants and transverse displacement expressions for horizontally curved members were presented. For the evaluation of these response quantities, horizontally curved members consisted of rectangular hollow sections with six different radii were considered in the numerical part. Analysis results show that expressions were accurate in determining the response quantities of horizontally curved members.

REFERENCES

AASHTO, Guide Specifications for Horizontally Curved Highway Bridges, American Association of State Highway and Transportation Officials, Washington, D.C., 1980, 1–111.

ANSYS, (2010) Version 12.1 On-Line User's manual.

Chamorro-Varilla, E., & Aristizabal-Ochoa, J.D. (2016). Analysis of a Horizontally Curved Long-Span Beam on Two Nonlinear Elastic Supports, Journal of Bridge Engineering, Vol. 21 Issue 5.

https://doi.org/10.1061/(ASCE)BE.1943-5592.0000848

Dabrowski, R, (1968). Curved Thin-walled Girders (Translated from the German), Cement and Concrete Association, London.

Dowswell, B. (2018). Design Guide 33: Curved Member Design, American Institute of Steel Construction.

Hanshin Expressway Public Corporation. (1988). Guidelines for the design of horizontally curved girder bridges (draft), Osaka, Japan.

Heins, C.P., (1975). Bending and torsional design in structural members. Lexington Books, Lexington, Massachusetts.

Lee, K., Davidson, J.S., Choi, J., & Kang, Y. (2017). Ultimate strength of horizontally curved steel I-girders with equal end moments, Engineering Structures, Vol. 153, Pg. 17-31, ISSN 0141-0296.

https://doi.org/10.1016/j.engstruct.2017.09.047.

Saint-Venant, B. (1843). Memoire sur le calcul de la resistance et de la flexion des peicessolides a simple ou a double courbure, en pregnant simultanement en consideration les divers efforts auxquelsellespeuvent entre soumisesdans touts les sens.'' Compts-Rendus, 27, l'Academic des sciences de Paris, 1020–1031. (in French).

Vlasov, V.Z., (1961). Thin-walled elastic beams, National Science Foundation, Washington, D.C.

Zeybek, Ö., & Seçer, M. (2020). A design approach for the ring girder in elevated steel silos, Thin-Walled Structures, Vol. 157, 107002.

https://doi.org/10.1016/j.tws.2020.107002.

Ziemian, Z.D., (2010). Guide to Stability Design Criteria for Metal Structures, Sixth Edition, Chapter 9: Horizontally Curved Steel Girders, John Wiley & Sons, Inc.

https://doi.org/10.1002/9780470549087.ch9.

https://www.archdaily.com/27165/modern-colosseum-cepezed-architects?ad_medium=gallery

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ELECTRIC MOBILITY IN INDIA: PROSPECTS AND CHALLENGES

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Abstract
The ongoing onus upon the environment continues due to enormous and unplanned industrialisation. The transport sector is one of the major areas leading to the environmental concerns. New and primarily different paths are evolving to offer clean and economic mobility services. Mobility and energy are the two parallel pillars in the journey towards viable transformations. Sustainable, affordable and inclusive approach has been recommended as a solution by the World Economic Forum while adopting smart mobility. Various studies and reports are conducted world-wide suggesting ways to implement Electric Vehicles on road, air or water. The proposed models of Electric Vehicles adoption provide positive impacts for environment, energy and mobility systems and create value for industries and society. India's potential to generate a shared, electric, and connected mobility system is capable of major benefits domestically as well as globally. Thus, Government of India is looking to promote electric mobility as one of the key solutions to reduce carbon emission through her policies. The need is switching to the Electric Mobility in passenger vehicles, beyond privately-owned vehicles. The time calls for radical reworking of energy sources for the transport. The present paper is an attempt to highlight the developments in the Indian system with regard to adoption of Electric Vehicles. The paper aims to explore the international Guidelines in brief and at last proposes suggestions for electric mobility. The study shall be doctrinal, using the secondary data.
Keywords: Electric Mobility, India, Future, Vehicle

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A COUPLED THERMO-HYDRAULIC MODEL FOR FLUID FLOW IN CLAMPED-PINNED PIPES

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Abstract
This paper aims to create a thermo-hydraulic numerical model for study free vibration of pipes conveying hot fluid flow. The motion equation is derived for the pipe structure with the effects of linear stress–temperature case. A numerical modal analysis is realized in the fluid-structure interaction configuration where the equations are discretized with finite element method. Finite element beam type with two degrees of freedom per node was used. Parameters frequencies are calculated by using a program developed on Matlab. The advantage of Matlab language by using standard functions is to present the first Eigen-modes of the system aspect interaction fluid-structure for different physic and geometric parameters in complex planes. The numerical method is based on some research and semi-analytical models. The results are compared with those predicted by numerical approaches, and with other results listed in the literature, where several examples were studied. We determine the influence of the fluid velocity, mass ratio effect, thermal loads, and elastic foundation with Winkler model on the first natural frequencies and static critical speed. The study showed that the fluid flow, temperature increment, length, Winkler-elastic foundation affected in the system stability regions and static instabilities. Dynamic response of pipe structure carrying fluid flow under thermal loads is very important for safe design and process.
Keywords-Pipe conveying incompressible fluid, Thermal loads, Natural Frequencies, stability, critical velocity, static instability, FEM

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DAMS AND INTER-BASIN TRANSFERS. TOWARDS AN INTERCONNECTED PLANNING SYSTEM: THE CASE OF EASTERN ALGERIA

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Abstract
The mobilization of water resources is of a paramount importance for covering the water needs of the population and for socio-economic development in general. With the increasing water needs linked to population growth and the rising of the economic activities, ambitious programs for the construction of dams reservoirs for water storage are being implemented. Algeria has experienced a vast program of dam construction over the past three decades. The most humid region in the country, eastern Algeria, has benefited from the installation of a large number of dams. In total, 25 dams are operational with a total capacity of 3102 hm^3 (varying between 3 hm^3 at the small dam of Foum El Gueiss, and 963 hm^3 at the gigantic Béni Haroun dam). Those dams are distributed unevenly across hydrographic basins with very contrasting physico-climatic characteristics: a humid temperate climate of mediterranean type in the Tell, semi-arid climate of continental type in the High Plains, and arid-dry climate in the piedmont of the Saharian Atlas.
In order to alleviate for this unequal distribution across the territory and to supply water from producing regions to consuming regions, inter-basin water transfer systems are implemented, transferring water from large dams which are, in general, technically complex, and also expensive. According to the Ministry of Water Resources, eastern Algeria has seven interconnected transfer systems, structuring factors of space and regional integration (the Mexa-Bougous and Cheffia -Bouhaloufa - Boulatane system, the Ain Dalia - Foum El Khanga system, the Zardezas-Guénitra-Zit Emba system, the Béni Haroun complex, the West Ighil Emda - Mahouane system, the East Erraguene - Drâa Diss system, and the Tichy Haf transfer system).
In addition to their regional impact (especially for the benefit of semi-arid areas in the interior), the dynamic management of water reserves is necessary to face recurrent periods of drought.
Keywords: Surface water resources, dam, territory planning, water transfer, interconnection, East Algeria

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CHARACTERISTICS OF GOOD EFL TEACHERS FROM TURKISH EFL TEACHERS' PERSPECTIVES

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Abstract
Characteristics of an efficient teacher involve the related competencies in communication, collaboration, listening, adaptability, patience, classroom management, and empathy. Some other qualities of an effective teacher comprise engagement in classroom, appreciation of authentic learning, employing efficient practices, and enjoying both learning and teaching. The conceptions towards a brilliant teacher have been inquired from a number of perspectives over several decades, but majority of these inquiries have been carried out in the Western settings and have aimed to examine teachers from various disciplines. While some are in the view that good teacher characteristics involve a command of the subject field, proper teaching methods, and diverse teaching competencies, others underline personal features including sense of humor, charisma, honesty, fairness, innovation, and compassion. Further, perceptions towards a good EFL teacher may be affected by different factors such as culture, subject area, and gender. Thus, the aim of this study is to inquire the perceptions of Turkish EFL teachers (N= 102) towards the characteristics of a good EFL teacher. Based on a quantitative research design, a scale designed by Brosh (1996) was utilized to collect the related data. The results of the study suggest various characteristics that make a good EFL teacher. This study may supply great help for the future studies in the related field of study.
Keywords: EFL, EFL teachers, teacher characteristics, perceptions

Introduction

Teachers own content and pedagogical knowledge, ethical values, customs, endurance towards problems, and skills to respond to these problems in the classroom setting (Campbell et al., 2014; Gess-Newsome, 1999; Goldschmidt & Phelps, 2010; Graber, 1995; Kind & Chan 2019; Odumosu & Fisayi, 2018). Good teachers have a significant role in the life of the students. Good teachers should be unbiased and impartial towards learners by approaching their students in an equal manner. A good teacher must be patient and represent tolerance to the children. Further, good teachers bear communicative skills while developing collaboration in the class environment (Miller, 2012). Such characteristics as adaptability and empathy are also required skills of good teachers. Besides, proficient teachers represent dedication, give importance to authentic classroom setting, employ the most adequate practices, and enjoy lifelong learning. They also set effective learning aims. Additionally, an effective teacher is both flexible and prepared during the process (Harris & Sass, 2009). Self-reflection is another dimension of being an effective teacher. A good teacher also fosters love for learning among students. They are always dedicated to their job and accordingly they motivate and support their students. Brilliant teachers also collaborate with their colleagues in order to promote learning. They are also passionate about learning and their subject. Moreover, good teachers always listen to their students and spare time for every individual student (Bullock, 2015). Good teachers teach best what they most need to learn. They also learn new things every day. They represent positive energy and handle the challenging situations competently.

They are also in search of ways to be more and more adequate. Furthermore, professional teachers have the required critical and reflective thinking skills. Their imagination is also strong enough to push students one step further. Good teachers also support and follow the school's aims and standards (Murphy, Delli, & Edwards, 2004). Good teachers also have organization, leadership, time management, and leadership skills. Further, EFL teachers teach their students how to use English through four language skills; speaking, listening, reading, and writing. Further, they involve culture in foreign language teaching (Ida, 2017). Content knowledge, pedagogical knowledge, cultural intelligence, and general competencies are the required aspects in teaching profession (Mullock, 2003). Lastly, a proficient teacher develops comfortable learning environments for the students, fosters hopefulness, develops passion, makes connections between the previous and the next coming ones, follow the foreign language students' development steps, discover and employ various teaching methods and techniques, and engages in teacher training activities (Loeb, Soland, & Fox, 2014). Hence, the aim of this paper is to examine the views of Turkish EFL teachers towards the characteristics of a good EFL teacher.

Methodology

This study inquiries the perceptions of Turkish EFL teachers towards the characteristics of a good EFL teacher (N= 102) by the help of a scale designed by Brosh (1996). Based on a quantitative research design, the study aims to evaluate data by means of statistical data analysis. Similarly, the present study examines the conceptions of English teachers as to the required qualities for being a good English teacher. The teachers participated in the study work in the socio-economically different places in Turkey. Further, the teachers responded to the survey are state school teachers who voluntarily took part in the study. A Google form was utilized in order to collect the data from diverse regions in Turkey. The scorings below were employed in order to compare the means ($\bar{x}$) scores.

1. Strongly disagree: 1.00 – 1.49
2. Disagree: 1.50 – 2.49
3. Uncertain: 2.50 – 3.49
4. Agree: 3.50 – 4.49
5. Strongly agree: 4.50 – 5.00

Findings and Results

The following table represents the related mean ($\bar{x}$) scores from the scale. The mean ($\bar{x}$) scores of the related items are displayed in a descending order.

Table 1: ELT Characteristics

Item	($\bar{x}$)
1. Makes lessons interesting	4,8431
2. Prepares and organizes the lesson	4,8431
3. Does not discriminate among students	4,8039
4. Develops motivation to study the language	4,8039
5. Teaches comprehensibly	4,7353
6. Stimulates independent learner	4,6176
7. Acquainted with the curriculum	4,5784
8. Provides students with experiences of success	4,4510
9. Has sense of humor	4,4314
10. Is sensitive to students' problems	4,3922
11. Has positive attitudes toward the native speakers	4,3627
12. Helps students after class time	4,3235
13. Flexible with students	4,3039
14. Maintains discipline in class	4,2451
15. Commands the language	4,2059
16. Has research orientation	4,1961
17. Attentive to his/her appearance	4,0882
18. Acquainted with the native speakers' culture	3,9314
19. Conducts the lesson in the target language	3,9216
20. Teacher's sex	3,9012

It is simply understood from table 1 that the informants strongly agree on the items Makes lessons interesting ($\bar{x}$= 4,8431), Prepares and organizes the lesson ($\bar{x}$= 4,8431), Does not discriminate among students ($\bar{x}$= 4,8039), Develops motivation to study the language ($\bar{x}$= 4,8039), Teaches comprehensibly ($\bar{x}$= 4,7353), Stimulates independent learner ($\bar{x}$= 4,6176), and Acquainted with the curriculum ($\bar{x}$= 4,5784). Further, the respondents agree on the items Provides students with experiences of success ($\bar{x}$= 4,4510), Has sense of humor ($\bar{x}$= 4,4314), Is sensitive to students' problems ($\bar{x}$= 4,3922), Has positive attitudes toward the native speakers ($\bar{x}$= 4,3627), Helps students after class time ($\bar{x}$= 4,3235), Flexible with students ($\bar{x}$= 4,3039), Maintains discipline in class ($\bar{x}$= 4,2451), Commands the language ($\bar{x}$= 4,2059), Has research orientation ($\bar{x}$= 4,1961), Attentive to his/her appearance ($\bar{x}$= 4,0882), Acquainted with the native speakers' culture ($\bar{x}$= 3,9314), Conducts the lesson in the target language ($\bar{x}$= 3,9216), and Teacher's sex ($\bar{x}$= 3,9012).

Discussion and Conclusion

For several decades, the standards for adequate teaching have established a significant research question, and excessive work has been carried out to reveal and interpret the features of the good teacher (Arnon & Reichel, 2007; Baier et al., 2019, Benekos, 2016; Brody, 1977; Hamachek, 1969; Kutnick & Jules, 1993; Reichel & Arnon, 2009) and the good English teacher (Al-Mahrooqi, Denman, Al-Siyabi, & Al-Maamari, 2015; Alzeebaree & Zebari, 2021; Chen, 2012; Flowerdew, Levis, Zhang, & Watkins, 2007; Miller, 2012; Richter & Lara Herrera, 2017). However, there seems to be no agreement on the best type of ideal teacher. In order to bring a light to the stated issue, the present study tried to clarify the characteristics of a good English teacher from the perspectives of Turkish EFL teachers. The picture drawn by the study highlights that a good EFL teacher:

- makes the lessons interesting
- prepares and organizes the lesson
- does not discriminate among students
- develops motivation to study the language
- teaches comprehensibly
- stimulates independent learner
- is acquainted with the curriculum
- provides students with experiences of success
- has sense of humor
- is sensitive to students' problems
- has positive attitudes toward the native speakers
- helps students after class time
- is flexible with students
- maintains discipline in class
- commands the language
- has research orientation
- is attentive to his/her appearance
- is acquainted with the native speakers' culture
- conducts the lesson in the target language

In sum, a good EFL teacher needs to have various qualities in order to promote learning in the EFL classroom. Thus, authorities should empower EFL teachers through both high quality in-service and pre-service education and take the required steps accordingly. This study may support ELT departments, education faculties, and Turkish Council of Higher Education accordingly.

References

Al-Mahrooqi, R., Denman, C., Al-Siyabi, J., & Al-Maamari, F. (2015). Characteristics of a good EFL teacher: Omani EFL teacher and student perspectives. SAGE Open, 5(2), 2158244015584782.

Alzeebaree, Y., & Zebari, I. (2021). What makes an effective EFL teacher: High School Students' Perceptions. The Asian ESP Journal.

Arnon, S., & Reichel, N. (2007). Who is the ideal teacher? Am I? Similarity and difference in perception of students of education regarding the qualities of a good teacher and of their own qualities as teachers. Teachers and Teaching: theory and practice, 13(5), 441-464.

Baier, F., Decker, A. T., Voss, T., Kleickmann, T., Klusmann, U., & Kunter, M. (2019). What makes a good teacher? The relative importance of mathematics teachers' cognitive ability, personality, knowledge, beliefs, and motivation for instructional quality. British Journal of Educational Psychology, 89(4), 767-786.

Benekos, P. J. (2016). How to be a good teacher: Passion, person, and pedagogy. Journal of Criminal Justice Education, 27(2), 225-237.

Brody, J. A. (1977). A Good Teacher Is Harder to Define Than Find. American School Board Journal, 164(7), 25-28.

Bullock, M. (2015). What makes a good teacher? Exploring student and teacher beliefs on good teaching. Rising Tide, 7(1), 1-30.

Campbell, P. F., Nishio, M., Smith, T. M., Clark, L. M., Conant, D. L., Rust, A. H., ... & Choi, Y. (2014). The relationship between teachers' mathematical content and pedagogical knowledge, teachers' perceptions, and student achievement. Journal for Research in Mathematics Education, 45(4), 419-459.

Chen, J. (2012). Favorable and unfavorable characteristics of EFL teachers perceived by university students of Thailand. International Journal of English Linguistics, 2(1), 213.

Flowerdew, J., Levis, J., Zhang, Q., & Watkins, D. (2007). Conceptions of a good tertiary EFL teacher in China. Tesol Quarterly, 41(4), 781-790.

Gess-Newsome, J. (1999). Pedagogical content knowledge: An introduction and orientation. In Examining pedagogical content knowledge (pp. 3-17). Springer, Dordrecht.

Goldschmidt, P., & Phelps, G. (2010). Does teacher professional development affect content and pedagogical knowledge: How much and for how long?. Economics of Educatio Review, 29(3), 432-439.

Graber, K. C. (1995). The influence of teacher education programs on the beliefs of student teachers: General pedagogical knowledge, pedagogical content knowledge, and teacher education course work. Journal of teaching in physical Education, 14(2), 157-178.

Hamachek, D. (1969). Characteristics of good teachers and implications for teacher education. The Phi Delta Kappan, 50(6), 341-345.

Harris, D. N., & Sass, T. R. (2009). What makes for a good teacher and who can tell? (Vol. 30). Washington, DC: Urban Institute.

Ida, Z. (2017). What Makes a Good Teacher?. Universal Journal of Educational Research, 5(1), 141-147.

Kind, V., & Chan, K. K. (2019). Resolving the amalgam: connecting pedagogical content knowledge, content knowledge and pedagogical knowledge. International Journal of Science Education, 41(7), 964-978.

Kutnick, P., & Jules, V. (1993). Pupils' perceptions of a good teacher: A developmental perspective from Trinidad and Tobago. British Journal of Educational Psychology, 63(3), 400-413.

Loeb, S., Soland, J., & Fox, L. (2014). Is a good teacher a good teacher for all? Comparing value-added of teachers with their English learners and non-English learners. Educational Evaluation and Policy Analysis, 36(4), 457-475.

Miller, P. (2012). Ten Characteristics of a Good Teacher. In English Teaching Forum (Vol. 50, No. 1, pp. 36-38). US Department of State. Bureau of Educational and Cultural Affairs, Office of English Language Programs, SA-5, 2200 C Street NW 4th Floor, Washington, DC 20037.

Mullock, B. (2003). What makes a good teacher? The perceptions of postgraduate TESOL students. Prospect, 18(3), 3-24.

Murphy, P. K., Delli, L. A. M., & Edwards, M. N. (2004). The good teacher and good teaching: Comparing beliefs of second-grade students, preservice teachers, and inservice chers. The Journal of experimental education, 72(2), 69-92.

Odumosu, O., & Fisayi, A. (2018). Teachers' content and pedagogical knowledge on students' achievement in algebra. International Journal of Education and Research, 6(3), 83-94.

Reichel, N., & Arnon, S. (2009). A multicultural view of the good teacher in Israel. Teachers and Teaching: theory and practice, 15(1), 59-85.

Richter, K. G., & Lara Herrera, R. (2017). Characteristics and pedagogical behaviours of good EFL instructors: The views of selected Southeast Asian and Mexican SLTE students. RELC Journal, 48(2), 180-196.

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THE CONCEPT OF MULTIDISCIPLINARITY IN THE SYSTEM OF HELPING PROFESSIONS IN THE CONTEXT OF UNDERGRADUATE EDUCATION OF A SOCIAL WORKER AND A SPECIAL PEDAGOGUE

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Abstract
The professional paper entitled "The concept of multidisciplinarity in the system of helping professions in the context of undergraduate education of social worker and special pedagogue" deals with the importance of professional cooperation in the context of helping professions. It thus defines the helping profession in general and then focuses on the profession of social worker and special pedagogue in the context of the helping profession. Legislative and personal preconditions for the performance of the profession of social worker and special pedagogue are defined in the context of the importance of mutual cooperation, in order to support the social integrity of man / individual. Within the framework of Czech legislation, this is a specific feature where a special pedagogue can perform the work of a social worker. The importance of interdisciplinary cooperation with regard to the education of the child / pupil is not neglected. The paper presents quantitative research in the research part, 501 responses from students of the bachelor's degree program in special education in the context of higher education were processed and focused on their attitudes and views not only on the profession as such but also on the importance of university practice and professional identity.
Keywords: field cooperation, help and support, practice, profession, professional training.

This academic article is the result of an Internal exploratory project at the University of Jan Amos Komensky Prague s.r.o. named “The exploratory analysis of a strategy to solve and realize pedagogical placement at the School of special pedagogy” done in 2020-2021.

Introduction

The life aspects cause that every human being is facing to diverse social factors such as environment, people, groups, culture, political factors. These factors influence not only growing up but the rest of their life, and their choice of profession as well.
The terms multidisciplinary and interdisciplinary, together with other terms such as multiorganisational and inter-organisational are viewed by Kaňak (2018) as very similar, almost the same. Whether one defines the terms the same or differently as others, all professionals involved in the decision process must communicate with a similar goal that is the best possible for a client. According to Nancarrow et. al (2013), it is important to distinguish between the terms inter/multi-professional, which are terms used for the cooperation of professionals from diverse fields, and the terms inter/multidisciplinary, which are used for the cooperation of professionals with non-professionals.
An important role for clients is played by the support resulting from professional cooperation. Professionals can share their knowledge, competencies, abilities and skills. They can offer very complex help that a client demands and needs.

The concept of multidisciplinary was introduced between 1970–1980 by professionals who worked in social services dedicated to people with mental health disabilities and by professionals who worked in services for people with diabetes. (They cooperated.) The growing interest in this approach led to the creation of many definitions focused on cooperation with an interdisciplinary, multidisciplinary and transdisciplinary approach (Madge & Khair, 2000).

Ovretveit (1997) describes a multidisciplinary approach as when "two or more people from diverse fields communicate and cooperate towards common goal" (Ovretveit, 1997, p.12). The common goal is in this case a positive result for a client. The professional cooperation should start at the beginning of planning the goal, organising the path towards the goal. All of this ensures better communication and organisation of the help. Working teams have a significant role in multidisciplinary cooperation. Working teams can be categorised as follows (Ovretveit 1997):

- client's teams – the professionals take care of the individual client, but they communicate and discuss the client's situation;
- changing teams – each professional helps individually and sends a client to another professional.

Currently, there are no similar definitions for the multidisciplinary approach available, either in Czech or foreign literature.

Firstly, either a social worker and a special pedagogy needs any kind of professional training, also searching for a multidisciplinary system which is based in different disciplines getting information and helps to resolve a problem. This multidiscipline consists of a field of disciplines that open opportunities to have a good formation in these professions. In addition, these have a theoretical foundation and a practical side in these areas of social activities. Therefore, theory and practice are correlated, every discipline need these two factors, although the mechanisms conducive to changes and transformations of different elements.

Therefore, a special pedagogy and a social worker need, and education based on diversity of disciplines from history to planning, like history of education, educational psychology, educational planning… which have a common goal: the study of situations and educational facts. Moreover, humans are multidimensional, we are at the same time biological, psychic, social, affective, rational… Definitely, society has historical, economic, sociological, religious, and educational dimensions, so these helping professions are related with others human dimensions they cannot be isolated from these, since the way and the complexity of understanding this system, is given by different factors that complement the entire society.

Even though, these multidiscipline do not determine these professions, but rather they themselves use the "material" provided by the different sciences to complete and discover different aspects of their job. On the other hand, we could say that special pedagogy focuses on the entire population while social work focuses on a specific population with a certain problematic social situation. Even so, these two are really connected, each contributes to the other.

Every discipline collaborates in these helping professions in the analysis of educational phenomena in the didactic field. In addition, they need a study of the history and evolution of the society in this area since, the society, is the key to understanding the development of the human being in pedagogy and social education. The ability to help others is given with correct training that determines the ability to understand and teach a healthy education.

On the other hand, we can say that social work is an area of the practical part of social pedagogy so it belongs to a discipline that complements special pedagogy, although both can be disciplines that encompass pedagogical science. Moreover, an educational pedagogical fact is never simple, very often it is incomplete. The multidisciplinary explanation is therefore essential in the field of pedagogy, given the complexity of the phenomena to be analyzed and understood. In this sense, pedagogy, together with the other areas of knowledge, requires a general culture to emancipate humanistic education. It is not possible to specialize in one of the educational sciences without having an overview of the facts and educational situations, as well as of the techniques used by many sciences for the study of man as the center of a nature and complex educational universe.

So, the concept of multidiscipline in this area is considered necessary for the development of pedagogy in all its forms. Social work and special pedagogy are branches of pedagogy that have been developed from the different disciplines that complement it. Besides, sciences promote the need to discover, connect and relate different disciplines for their better development, that is, in this case there is a multidiscipline that is related to each other to provide information for better training. There is a practical and a theoretical part, and both are connected since without the theory the practice cannot be applied and without the practice the theory cannot be used.

In addition to, every social worker and special pedagogue need certain characteristics to offer the service they provide in different aspects that are given by an enriching and complete training, as well as present the different techniques provided by the disciplines that perform it, accompanied by the necessary skills to carry out this profession. The essential elements are determined by each one and the effort that is put into training to achieve greater success. In other matters, is important to have good qualities in these jobs, like applying different techniques to each person, spending time with the people served… Also know what our patients need to carry out a correct follow-up, and for them it is necessary to know the other well: their history from their childhood, their qualities, ambitions, highlight their capacities… among many others. Another quality that I highlight and consider that these professionals must have is to be patience which it is a virtue that with it a satisfactory job can be done, it begins with the basics in which we act doing a common good. The other person should feel comfortable and supported by us, just as they learn, we also learn from them. Each one gives us something different that with experience we can improve our learning and be able to apply it in future jobs.

Multidisciplinary team

Kuzníková (2013) defines the multidisciplinary team as a team of professionals when everyone has a crucial role, but together they are not able to reach an agreement because each has an individual goal with a client.

The term multidisciplinary approach can define a team of people, where everyone has a different field of focus and different goals. Even though the member of the multidisciplinary team can meet, discuss and communicate their goals are different and independent of each other. Consequently, there is a higher possibility for conflicts (Robertson, 2020). On the other hand, Swientozielskyj et. al (2015) see a multidisciplinary approach as the connection of diverse fields. In this instance, the author discusses providers of health, school, and social services. Through cooperation, information sharing, the search for a perspective and drawing from diverse disciplines, professionals attempt to achieve the complex care for a client.

The cooperation of all professionals allows the care to be comprehensive and connected throughout all fields. The individual aspects of care across diverse disciplines do not negate each other but ensures the understanding of individuals' needs, whether they are in the health, educational or welfare field. The common goal for all professionals allows the process of sharing important information about an individual. Therefore, in the future, the needs can be met, and a client can feel comfortable.

The multidisciplinary approach can be seen in real-time in one of the significant projects of transformation in psychiatric care in the Czech Republic. It is the cooperation of professionals from diverse social services and institutions that aim to offer help and support in all fields of an individual's life such as health care, social services, education, housing, etc. It is important that all professionals from different fields cooperate involve the offices and department of social structure. The professionals, through sharing information and cooperation, attempt to help a client and their family (Mental Health Reform, 2017).

Another no less important aspect is the legal level. "Modern trends in the history of democracy and the rule of law represent requirements for the active participation of citizens in creating an environment of legal stability and legal certainty, especially in relation to the protection of human rights and freedoms. Very complicated systems of legal rules are being created to guarantee the full and unviolated exercise of human rights and freedoms and, on the other hand, the fulfilment of legal obligations" (Víšek, Kroupa, 2020, p. 174).

With regards to starting a multidisciplinary team, it is important to take several steps. The first step is assigning the purpose of the team. Furthermore, it is important to write a report where the purpose of the team is described. It should include the common values, beliefs, and rules observed and respected by every member. Therefore, meeting the goals should be in accordance with this protocol. Finally, the last step is the decision about who is contributing to the cooperation and when. During the team's foundation phase, it is crucial to establish an environment for healthy and strong relationships in the teams based on clearly defined and limited roles and competencies of each team member. The professions are distinguished by their values, working methods, and statutes. They work with diverse knowledge and information and use various conceptual frames and discourse thay can lead to conflict inside of the team. "The team members must be able to understand and explain their formal responsibility. They have to be responsible towards their team and define with other team members their field of work in the team" (Nicholson et al., 2000, p. 43).

Hanušová and Hellebrandová (2006) based on their experiences have described ten steps for functioning interdisciplinary cooperation:

- Create a functioning team with competent professionals, where the respect and contribution of each member are taken into account;
- With the help of rules, the functioning of a team can be ensured; the best is a written agreement. Kuzníková (2011) highlights that the agreement should be understandable and approved by all members. It should contain realistic goals, tools and options, how these goals can be met;
- Ensure effective communication which allows presentation of the members' own opinions and attitudes, and simultaneously all members should be aware of others' opinions and attitudes;
- Ensure mutual respect of defined competitions and options of other members' multidisciplinary team;

- Gain knowledge about offered services, institutions, organisations, and other providers not only in the region;
- Ensure partners' approach in the team, based on mutual respect and trust;
- Educate the team members or to offer them further development of their education. Allow reciprocal education between members;
- Create methodologies, manuals, and strategies;
- Offer proper of help to a client, which will be due to steps 1–9 effective and with a clear goal.

The related fields for special pedagogy, where the multidisciplinary approach is applied, are pedagogy, sociology or social work. Another field closely related to special pedagogy is psychology and its subcategories such as developmental psychology and cognitive psychology. Multidisciplinary cooperation includes the relation between special pedagogy and medicine – for example paediatrics and neurology. Renotiérová (2005, p.24) states "findings another scientific field that has the normative character of a helping science. These fields help a disabled person determine and set their own goals. This can be discovered by searching for the optimal methods, approaches, attitudes, and norms. However, mainly it should be logic, ethic, law, and aesthetic." As with any other cooperation the multidisciplinary approach has advantages that are evident to team members as well as clients. On the other hand, there are some drawbacks, risks or barriers which can occur while using the multidisciplinary approach.

The positives for multidisciplinary approach organised by author Hrdá (2018), Swientozielskyj et al. (2015):

- Improvement in quality of care after one
- Effective and productive work of the team
- Gaining a broader overview of the problem
- Vocational enriching of professionals
- Cooperation while searching for a solution, new ideas
- Faster and more effective help for a client
- The feeling of certainty for the client's family
- Sharing and transferring important information.

Possible barriers in using the multidisciplinary approach include:

- Lack of time for building the trust between professionals and a client
- Nonuniform use of terminology (medicine – patient, education – pupil, social services – client)
- Undervaluing and disrespecting of vocational fields of other professionals
- Time burden and keeping meetings with every member of the multidisciplinary team
- The non-legislative definition of multidisciplinary teams
- Problems with sharing sensitive materials about a client.

For purpose of this text is adequate to use the definition from Matějček (2008) who includes identity as a primary human psychological need and sees it as important for gaining social value and social placement. From gaining the identity rise the health consciousness of myself and self-acceptance.

"The questions for building stable identity are part of all professions. Professional identity or collective identity is one of the three identity types (next to self-identity and group identity), which are closely linked together. Moreover, the need for identity is one of the main five psychological needs (Kovařík, Pazlarová, 2013). Identity is some "inner process which people use to compare themselves with other" (Geist, 2000, p.88)." (Elichová, 2017, p. 28).

Thus, identity should be seen as a source for motivation, which can influence social interaction such as:

- Inner responsibility to define relationships with surroundings;
- own right which drives needs and interests;
- reasonings and actions;
- a tool to control reality and correlate with the creation of self-respect.

Term identity is well known, and people use it in everyday life. However, after defining the term we can see that it is more complex and the importance of identity in human life is significant.

Definition of collective identity can be seen as "collective self-understanding of people, who claims it is important to observe goals and use specific tools and strategies for a profession." (Matoušek, 2012, p.512). "Common goal is an important aspect of professional identity. The workers can have diverse motivations, attitudes. However, they should adore one goal, towards which their profession is heading, and they should feel the urge to be in this professional group. Also, they should feel the need to differ from other groups." (Růžičková & Musil, 2009, p.80-81).

"Discussion about professional identity can be led towards two different directions. The first direction is towards understanding professional identity as part of a worker's social identity, which interacts with their understanding and other outside influences. The second direction is towards the question 'what is social work?'. More likely what are the specific aspects which differ this profession from other helping professions" (Šámalová, 2019, p. 39).

One of the exploratories approached toward professional identity presents Mareš (1996 and 2013) he has adjusted the work of Kelchtermans, who divided a teacher's professional identity into three dimensions:

1. The retrospective dimension of professional identity is divided to:
- self-picture, self-respect, self-evaluation,
- professional motivation,
- understanding of a task.
2. Current me, who has the same dimension as retrospective me, present in present.
3. Prospective dimensions of professional me are understood as professional perspective:
- my professional career,
- future paths of my pupils,
- the perspective of our school.

Strengthening of professional identity is an ongoing process of realizing own professionality. This means notifying myself in a teacher role, need of autonomy, initiatives for equal responsibility amount, the equal need of self-control, and bigger amount of self-engagement (Lukášová, 2015).

The professional identity is closely linked with professional ethics, consistent familiarising with professional ethos and values has practical meaning for the pedagogical worker also. Thus, it can help to stop and think about values that are required for the profession (Stárek, 2021).

The professional identity is linked and created by basic identity also. However, another crucial element is a professional ethic which is connected to professionality. In relation to the topic of this paper is important to mention the legal dimensions also. "… nowadays intensions in history of democratic and legal states introduce demand for citizens' active participation is the creation of legal stable environment and legal security in relation towards the human right and freedom protection. There are created complicated frameworks that should guarantee the full and non-district performance of human rights and freedom. Plus, the fulfilment of human/citizen duties." (Víšek, Kroupa, 2020, p. 174).
The student's achievement and furthermore the professional performance is related to the evaluation which can a student experience at placement. There are methods for assessing the employees which are based on diverse aspects and rules, which use different principles and criteria. Of course, each method has pros and cons. Methods of assessment can be divided into groups based on their focus, areas of assessment, or time diversity. The first assessment an employee experience when they are applying for the job (Zpěvák, Víšek, Kohout, Fiala, 2016).

Research survey

The questionnaire survey was part of the exploratory project of the School of special pedagogy "The exploratory analysis of a strategy to solve and realize pedagogical placement at the School of special pedagogy". The aim of the analysis was to draw on the view of undergraduate students at the School of special pedagogy at the University Jan Amos Komensky Prague s.r.o. Thus, highlight the students' opinion on professional identity in the context of placement which is conducted during their studies.
Furthermore, other aims were established:
- To elicit sociodemographic structure of students at the Schools of special pedagogy.
- To chart students' motivation for choosing their major and future career.
- To describe the relationship between practice and professional identity.

Data collection

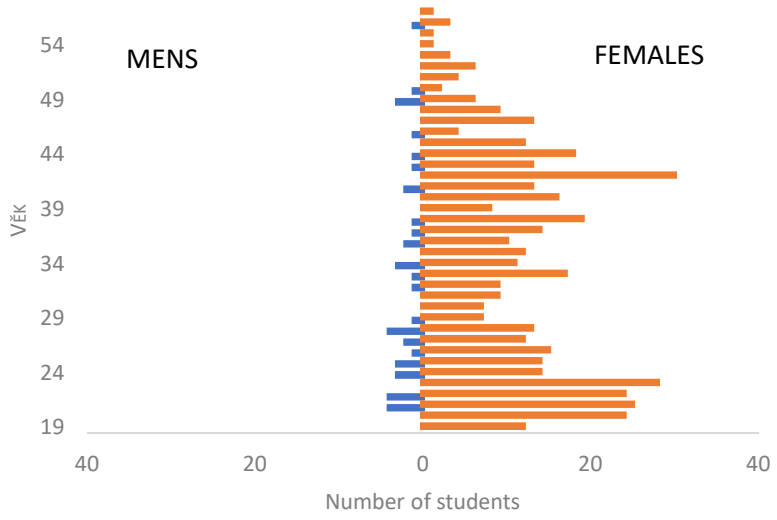
The method for data collection was a questionnaire. It is often used method in the pedagogical, sociological, and psychological fields. A questionnaire is used to collect information, perspectives, and ideas about a topic. According to Chraský (2016), a questionnaire is a process of asking or written questions and receiving written answers. It is a list of in advance prepared questions that are organized in an elaborate system. Thus, the questions are answered in written form by a respondent. Plus, this method allows a researcher to collect a bigger amount of data (Punch, 2008). Every respondent has received the same set of questions, this is important for assessing the results. Another advantage of the chosen method is the easier and quicker way of data collection. Also, the respondent can answer more personal questions which could be inappropriate in personal contact. The reason for choosing a questionnaire was the ability to gain more diverse respondents. The respondents were students at the University of Jan Amos Komesky Prague s.r.o. and mainly from the School of special pedagogy, who study undergraduate courses Special pedagogy or Re-socializing and penitentiary pedagogy either full-time or part-time. The questionnaire included open and closed questions. The pilot testing was conducted; thus, some changes were made in formulating the questions. The questionnaire was provided online throughout the Microsoft forms from November 2020 till February 2021.

Overall, 628 students were asked to participate and 501 has answered. Thus, 80% of respondents took part which we consider as a significant achievement.
By coding and description of output data file – transforming output data file i.e., cleaning the data, transforming, and coding value of all transfiguration was created outputting data file. The data file is customs' friendly and whether it is needed it can be further used or expanded. The outputting data file was analysed. By descriptive analysis were discovered basic frequencies and relations between transfigurations were. Furthermore, the results were presented in form of tables and graphs. Thus, the results in this paper are presented here and they are from this questionnaire.

Results

Sociodemographic structure of students

The questionnaire was filled out by 501 students including 41 men (8%) and 459 females (92%). The age pyramid in graph 1 "Respondents' structure based on age and gender" presents respondents' age layout. Only one-third of students at levels 1-3 are under 26 years. The other two-thirds are older, 6% is in age 42 years. Almost 5% is older than 50 years. The average students' age is 33 years. Thus, the average and the median age of students at special pedagogy major is higher. The age median which separates students' population equal in half is in the case of special pedagogy students for 6 years higher than within students of re-socializing and penitential pedagogy (34 vs. 24 years).



Graph 1. Respondents' structure based on age and gender (own data processing)

Based on graph 1 is obvious that the study at these majors is not attractive only for high school graduates, moreover for middle-aged workers who might need to supplement their education while working. This statement is supported by table 2 "Respondents' structure based on their motivation for studies and motivation for the choice of their profession". Similarly, the structure of respondents based on their achieved education shows one-fifth of students have studied as a form of continuing studies. The biggest part 59% of respondents graduated from specialized high school.

Plus, most of the respondents (92%) study Special pedagogy majors, and only 8% of respondents study Re-socializing and penitential pedagogy majors. It is important to highlight that the Re-socializing and penitential pedagogy is a new course offered since 2019. Whereas the Special pedagogy major has tradition and history. Half of the respondents are at the 1st level, more than one-fourth is at the 2nd level, and 22% is at the 3rd level of their studies.

Achieved education	Abs.	%
Specialized high school	293	58,5
High school	100	20,0
Specialized college or extra year to gain A-levels	87	17,4
Undergraduate course (Bachelor)	10	2,0
Postgraduate course (Mgr., Ing.)	11	2,2
Full postgraduate (Ph.D.)	0	0,0
Major		
Special pedagogy	461	92,0
Re-socializing a penitential pedagogy	40	8,0
Level		
I.	258	51,5
II.	133	26,5
III.	110	22,0

Table 1: Respondents' structure based on their achieved education, major and level of study (own data processing)

Motivation for studies and the choice of their profession

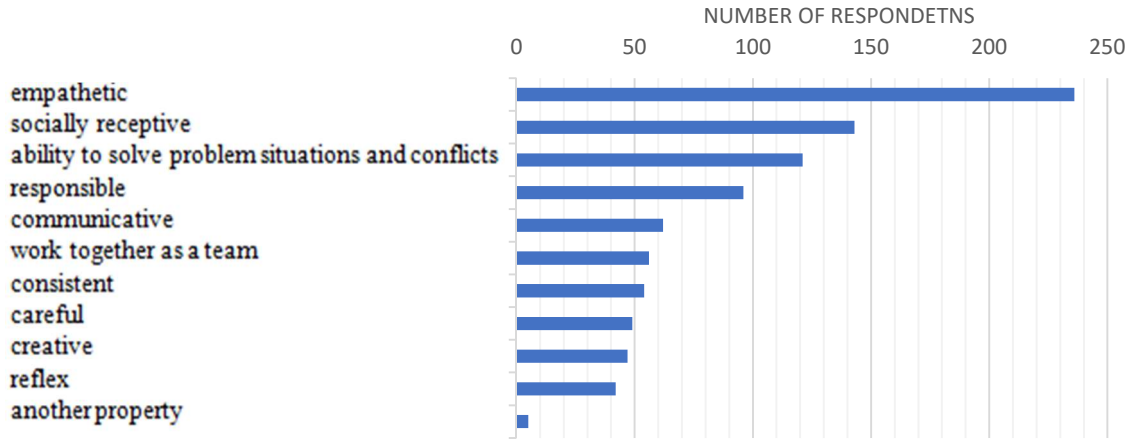
The questionnaire asked for respondents' motivation to study their major and their motivation for the chosen profession also. As shown in table 2 "Respondents' structure based on their motivation for studies and motivation for the choice of their profession" almost half of the students have decided to study this major to increase their education and qualification and almost one-third to increase their knowledge and orientation in their field. More than 6% of respondents have chosen their professional identity creation as their main motivation. To increase their financial income have chosen only 5 respondents (1%) and better position at job market have chosen only 2 students (0,5%). Also is interesting to investigate the motivation for the chosen profession (Table 2, second part). The categories are more equal than in motivation for studies. The biggest group of respondents 34% have chosen this major to be able to help and support the major's target group. Almost one-fourth of students identify these majors as professional interesting. For 18% of students, the most significant motivation is the need to enrich their education to be able to work in their current workplace. The personal experience whit target group from family or close friends have 18% of respondents.

Motivation for studies	Abs.	%
to increase qualification	244	48,7
to gain more knowledge and orientation in field	154	30,7
impulse for further studies	39	7,8
creation of professional identity	32	6,4
development of personal qualities in life-long education	21	4,2
increase of finance income	5	1,0
getting to know more people in the field	2	0,4
better position at job market	2	0,4
personal motivation – family member with disability	2	0,4
Motivation for choice of this profession		
motivation to help and support target group of these majors	169	33,7
professionally interesting work which I would like to do	119	23,8
need to increase the level of achieved education	91	18,2
personal experience with target group from family	89	17,8
previous volunteering or charity experience	18	3,6
this a field where I can always find a job	12	2,4
professional prestige	3	0,6
media influence	0	0,0

(Own data processing)

Another question which was in the questionnaire was a student's evaluation of personal assumptions. Almost half of the students identified empathy as the most important personal quality (47%). As graph 2 "Evaluation of student's personal assumptions at these majors" shows not any other personal quality was identified as often as empathy. The second most important was social awareness which was identified by 24% of respondents. The third was the ability to solve problematic situations and conflicts (24%). Nevertheless, responsibility, communication, consistency, and teamwork are important as well.

Graph 2 Evaluation of student's personal assumptions at these majors

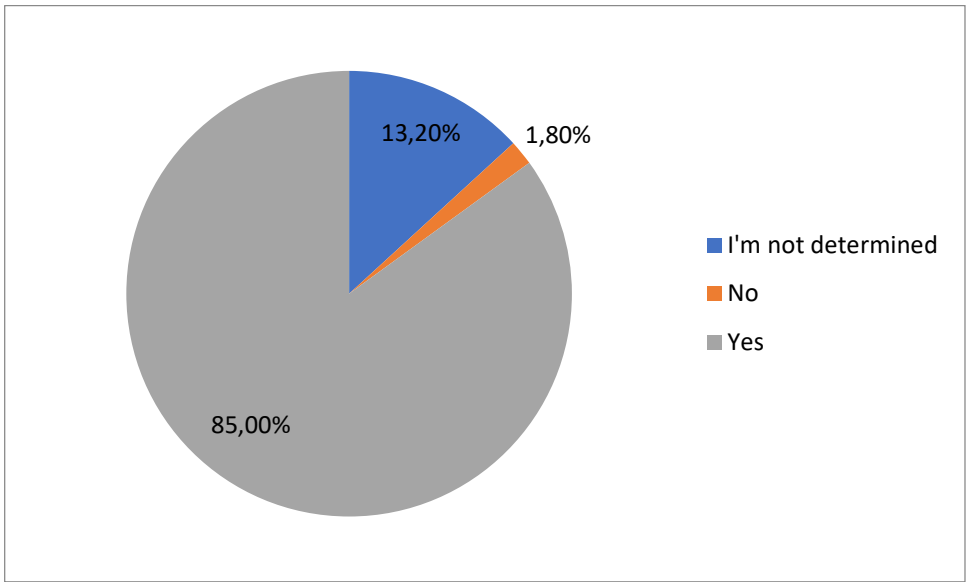


(Own data processing)

Professional identity

Some of the questions asked about professional identity. Most of the students recognize the influence of placement on their creation of professional identity. Only 20% of respondents think that placement does not influence the creation of professional identity (graph 3 "Understanding influence of placement on the creation of professional identity").

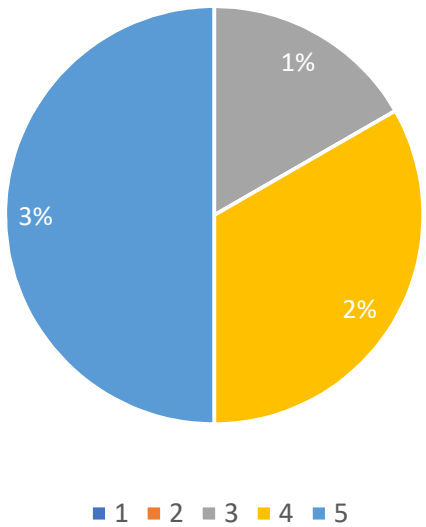
Graph 3. Understanding influence of placement on the creation of professional identity



(Own data processing)

However, more than four-fifths are convinced about the importance of professional identity for their studies and future career. None of the respondents does think that professional identity is not important (graph 4 "The importance of professional identity).

Graph 4 The importance of professional identity (1=not at all; 5= very important)



(Own data processing)

In relation to studies the professional identity means for 40% of respondent professional level of knowledge, abilities, and experiences. For almost one-third of respondents the professional identity means positive relationship towards their work with high level of expertise and human approach towards target group. For rest of the respondents the professional identity means personal approaches, goals in their profession, or moral and other values (see table 3 "The meaning of professional identity with regards to studies").

Table 3. The meaning of professional identity with regards to studies

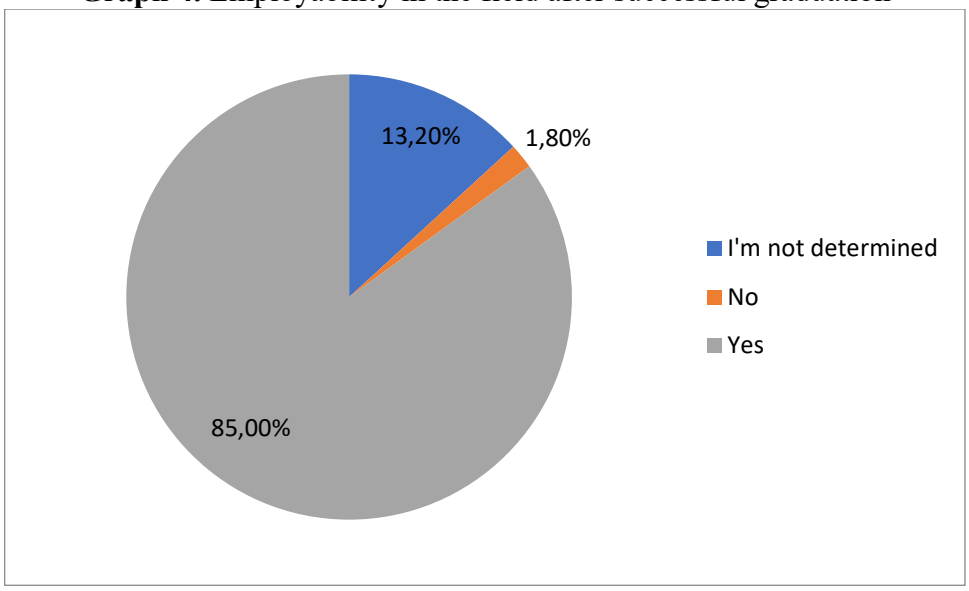
The meaning of professional identity with regards to studies	Abs.	%
Professional level of expertise, knowledge and abilties	203	40,5
Positive attitude towards work and high level of human approach	162	32,3
Own attitude and goal in the profession	45	9,0
Achieved education and quality placement	43	8,6
Moral and other values	17	3,4
Adequate set of boundaries	11	2,2
Multidisciplinary and cooperation with colleagues	11	2,2
Increase of social credits in the society	6	1,2
Recognition of the profession in the society	3	0,6

(Own data processing)

Employability in the field

Graph 4 shows "Employability in the field after successful graduation" significant part of students 85% are planning to work in their professional field after successful graduation. More than 13% of respondents are undecided and only 2% of respondents are not planning to work in the field.

Graph 4. Employability in the field after successful graduation



(Own data processing)

The students' minimum explains that they are not planning to work in this field because they are increasing their education to be able to work at their current workplace. Plus, some of the respondents are working at primary schools and they want to gain more knowledge about and be able to apply it i.e., during inclusion at their schools.
More than 73% of students are or plan to do their placement at their current workplace (Table 4). Only 5,5% of students are working in an institution where they could their placement, but they prefer to do their placement in different provisions.

Table 4. Students based on their placement in their current workplace

Placement at current workplace	Abs.	%	% of working students
Yes	338	67,5	73,8
No, I do not work in this provision	95	19,0	20,7
No, I do work in this provision but during my placement I want to discover something different	25	5,0	5,5
I am not working while I study	43	8,6	–
Total	**501**	**100,0**	**100,0**

(Own data processing)

Relationship between placement and professional identity
The following aim was to describe are advantages of placement from students' view.Students assessed criteria and they have assigned them the level of importance. As the average students have identified the level of practical abilities. Almost two-thirds of students have agreed that this is a very important factor.
95% of students see placement as a crucial part of their studies. The professional identity identifies 85% of respondents as an important tool. Also, 76% of respondents agree with the fact that placement has a significant influence on their creation of professional identity. Therefore, we can ask whether the understanding of professional identity differs based on the level where students' study. Based on this following question was developed.
H0: There are no differences in understanding the importance of placement based on the students' level.
HA: There are differences in understanding the importance of placement based on the students' level.
Firstly, the contingency table of the relationship of the importance of professional identity between the level of studies (Table 5). Followed by construction equal associations.
Table 5. The Contingency relation table of the importance of professional identity based on the level of studies. (2=not important, 5= very important).

Level of studies		The importance of professional identity				Total
		2	3	4	5	
1	Quantity	4	30	101	123	258
	%	1,6%	11,6%	39,1%	47,7%	100,0%
2	Quantity	3	21	57	52	133
	%	2,3%	15,8%	42,9%	39,1%	100,0%
3	Quantity	2	17	38	53	110
	%	1,8%	15,5%	34,5%	48,2%	100,0%
Total	Quantity	9	68	196	228	501
	%	1,8%	13,6%	39,1%	45,5%	100,0%

(Own data processing)

As we can observe in the contingency table there are no visible differences in understanding the importance of professional identity across the levels of studies. Also, the counted chi-quadrat = 4,43 neither significance = 0,618 not allow the total rejection of hypothesis. Therefore, we can accept the zero hypothesis and claim, that there are not any differences in understanding the importance of placement while studies.

However, it is possible professional identity is created by age nor the lower level of studies, and by placement can be meant the professional placement which can a student has done somewhere else also. Thus, a new zero hypothesis will be made:

H0: There are not any differences in understanding the importance of placement based on students' age.

HA: There are differences in understanding the importance of placement based on students' age.

The new contingency table was calculated and equal values of association were calculated also (Table 6).

Table 6. The contingency table of relationship between students' age and professional identity (2= not important; 5= very important).

Students' age		The importance of professional identity				Total
		2	**3**	**4**	**5**	
TO 24 years	quantity	4	24	61	49	138
	%	2,9%	17,4%	44,2%	35,5%	100,0%
25–33 years	quantity	2	15	47	52	116
	%	1,7%	12,9%	40,5%	44,8%	100,0%
34–42 years	quantity	3	16	52	71	142
	%	2,1%	11,3%	36,6%	50,0%	100,0%
43 years and more	quantity	0	13	36	56	105
	%	0,0%	12,4%	34,3%	53,3%	100,0%
Total	quantity	9	68	196	228	501
	%	1,8%	13,6%	39,1%	45,5%	100,0%

(Own data processing)

In this combination, chi-quadrat reaches higher values (=12). However, the significance does not reach a enough high value (=0,214). Therefore, the zero hypotheses cannot be accepted. However, the chi-quadrat is sometimes a too harsh solution, and it cannot identify some relations. Thus, it is important to acknowledge other indexes. In this case, all other indexes which indicate relations between two ordinal transfigurations that accomplish favourable values (Somers´ d, Kendalls´ tau, and Gamma have calculated values more favourable values of testes statistic = 0,002). Therefore, the zero hypothesis can be rejected and can be claimed there are differences in understanding the importance of placement based on students' age.

Conclusion

The respect and positive attitude towards other workers from different organisations is the basic component for effective cooperating relation. For establishing team cooperation is crucial that other members accept individual differences, learn to understand, respect others and build personal relationships with other members of the teams. Every member is important and can bring something unique to the team.

The multidisciplinary practice is unique even in the challenges which are involved. The cooperation of people from various fields brings differences for example in values, language, the ways of dealing with problems, strategies and diverse elements of professional behaviour. The barriers to effective cooperation are mainly in the field of trust, responsibility, communication, and fight for power (Stárek, 2015).

Nowadays, placement is a more significant part of studies not only in employability but in the international perspective of improving educational quality. Mainly, by highlighting the need for practical training at diverse provisions. A placement helps with the creation and development of a professional identity. Therefore, the attention to professional identity was paid because single moments, experiences, abilities, feelings, reflections, and other aspects which students experience can help or harm one in their professional career and future employability. Thus, a placement is a place for applying theoretical knowledge and realizing whether the student made the right choice to study their major. Also, it can be seen as motivation for those who are not studying types to finish their studies, so they will be able to do their profession.

Development and quality of placement is not the only result of university but a student who is representing university also. A placement is a place where a student can open the door for other students to do the same placement. A permanently developing portfolio of cooperating institutions on diverse activities such as projects, conferences, and expert seminars generates knowledge of professions' multifarious. Plus, it generates acknowledgement about cooperation and the ability to share the information which assesses a student, a university, and their expertise.

Bibliography

CHRÁSKA, Miroslav. Metody pedagogického výzkumu. Praha: Grada Publishing, a.s., 2016. ISBN 978-80-247-5326-3.

ELICHOVÁ, Markéta. Sociální práce – Aktuální otázky. Praha: Grada Publishing, a.s., 2017. ISBN 978-80-271-0080-4.

HANUŠOVÁ, Jaroslava, HELLEBRANDOVÁ, Kateřina. Interdisciplinární spolupráce. Praha: Vzdělávací institut ochrany dětí, 2006. ISBN 80-86991-79-2.

HELUS, Zdeněk. Sociální psychologie pro pedagogy. Praha: Grada Publishing, a.s., 2015. ISBN 978-80-247-4674-6.

HRDÁ, Karolína. Multidisciplinární tým v akci. Praha: Domov Sue Ryder, 2018. ISBN 978-80-907-1900-2.

KAŇÁK, Jan a kol. Mezioborová spolupráce v kontextu sociálních služeb: rámec, faktory, postup. Říčany: TCMD, 2018. ISBN 978-80-270-4110-7.

KUZNÍKOVÁ, Iva. Sociální práce ve zdravotnictví. Praha: Grada, 2011. ISBN 978-80-247- 3676-1.

LUKÁŠOVÁ, Hana. Učitelské sebepojetí a jeho zkoumání. Zlín: Univerzita Tomáše Bati ve Zlíně, Fakulta humanitních studií, 2015. ISBN 978-80-7454-552-8.

MADGE, Sally a KHAIR Kate. Multidisciplinary teams in the United Kingdom: problems and solutions. International Pediatric Nursing. W. B. Saunders company, 2000, 15(2):131-4.

MAREŠ, Jiří. Pedagogická psychologie. Praha: Portál, 2013. ISBN 978-80-262-0174-8.

MAŘÍKOVÁ, Hana, PETRUSEK, Miloslav, VODÁKOVÁ, Alena. Velký sociologický slovník. Praha: Karolinum (nakladatelství), 1996. ISBN 80-7184-310-5.

MATĚJČEK, Zdeněk. Co děti nejvíc potřebují. Praha: Portál, 2008. ISBN 978-80-7367-504-2.

MATOUŠEK, Oldřich et al. Metody a řízení sociální práce. Praha: Portál, 2013. ISBN 978-80-262-0213-4.

NAKONEČNÝ, Milan. Psychologie osobnosti. Praha: Academia, 2009. ISBN 978-80-200-1680-5.

NANCARROW, Susan A., Andrew BOOTH, Steven ARRIS, Tony SMITH, Pam ENDERBY a Alison ROOTS. Ten principles of good interdisciplinary team work. Human Resources for Health [online]. 2013, 10 May 2013, 11(19) [cit. 2020-04-24]. DOI: https://doi.org/10.1186/1478-4491-11-19. ISSN 1478-4491. Dostupné z: https://humanresources-health.biomedcentral.com/articles/10.1186/1478-4491-11-19#citeas

NICHOLSON, Diana et al.. Working Relationships and Outcomes in Multidisciplinary Collaborative Practice Settings. Child and Youth Care Forum. 2000, 29(1), s. 43. ISSN 1573-3319.

OVRETVEIT, John et al.. Interprofessional Working in Health and Social Care. Basingstoke: Palgrave Macmillan, 1997. ISBN 9780333645536.

PUNCH, F. Keith. Základy kvantitativního šetření. Praha: Portál, 2008. ISBN 978-80-7367-381-9.

REFORMA PÉČE O DUŠEVNÍ ZDRAVÍ: Strategie reformy psychiatrické péče [online]. Praha, 2017, Duben 2017 [cit. 2020-01- 14]. Dostupné z: http://www.reformapsychiatrie.cz/wpcontent/uploads/2017/04/MZ_psychiatrie_pruvodce_final.pdf

RENOTIÉROVÁ, Marie. Základy speciální pedagogiky I. Olomouc: Univerzita Palackého v Olomouci, 2005. ISBN 80-244-1083-4.

ROBERTSON, Duncan. Multidisciplinary Team: Encyclopedia of Aging. Encyclopedia.com [online]. Mar 12 2020 [cit. 2020-04-23]. Dostupné z: https://www.encyclopedia.com/medicine/anatomy-and-physiology/anatomy-andphysiology/multidisciplinary-team#34022002757

RŮŽIČKOVÁ, Daniela, MUSIL, Libor. (2009) Hledají sociální pracovníci kolektivní identitu? Sociální práce/Sociálna práca: Časopis pro teorii, praxi a vzdělávání v sociální práci. 3/2009, 79-92.

ŠÁMALOVÁ, Kateřina. Vzdělávání jako zdroj profesní identity. In: Sborník příspěvků z mezinárodní konference konané u příležitosti Světového dne sociální práce s názvem Vývoj kvality a efektivity výkonu sociální práce, pp. 38-41. Praha: Ministerstvo práce a sociálních věcí ČR, 2018. ISBN 978-80-7421-185.

STÁREK, Lukáš. Vybrané aspekty ovlivňující edukační proces dítěte. Praha: Univerzita Jana Amose Komenského Praha s.r.o., 2021. ISBN 978-80-7452-203-1.

SWIENTOZIELSKYJ, Susan a kol. Service Component Handbook - MDT Development: Working toward an effective multidisciplinary/multiagency team [online]. 2015 [cit. 2020-04- 23]. Dostupné z: https://www.england.nhs.uk/wp-content/uploads/2015/01/mdt-dev-guid-flatfin.pdf

VÍŠEK, Jiří a KROUPA, Petr. Moderní právní stát, stabilita práva a právní jistota. KRZYŽANKOVÁ (EDS.), Katarzyna Žák. Právo jako multidimenzionální fenomén: Pocta Aleši Gerlochovi k 65. narozeninám. Plzeň: Vydavatelství a nakladatelství Aleš Čeněk, 2020. ISBN 978-80-7380-797-9.

ZPĚVÁK, Aleš, KOHOUT, Martin, VÍŠEK Jiří a FIALA, Zdeněk. The Importance of Personnel Evaluation Activities of the Armed Forces — Evaluation Methods, Taking Into Account Certain Aspects of Czech Private Law. Internal Security [online]. 2016, 8(2), 7-18 [cit. 2017-10-17]. DOI: 10.5604/01.3001.0010.2267. ISSN 2080-5268. Dostupné z: http://internalsecurity.pl/gicid/01.3001.0010.2267

ZPĚVÁK, Aleš. Recentní aspekty podnikatelské činnosti v oblasti sociálních služeb. In Quo Vadis, sociální práce v ČR II (kolektivní monografie). Praha: Institut pro veřejnou správu, 2019. s. 29-36, 115 s. ISBN 978-80-86976-49-5.

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INTERGENERATIONAL DIGITAL LITERACY: A REAL OPPORTUNITY FOR LIFELONG EDUCATION

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ABSTRACT
The aging of the population is a global and extraordinary event, target of constant concerns and of growing importance at an economic, political, social, cultural and educational level. In this context is vital to understanding the challenges and opportunities of digital literacy for an intergenerational, continuing and lifelong education. This article aims to (i) revisit the literature of the last decade to understand the evolution of the concept, of digital literacy and its current importance, (ii) analyse digital literacy with the senior population, (iii) answer the question: can these learning users be considered a socio-educational vehicle that promotes the intentional sharing of (digital) knowledge between different generations?
We sought to collect information that would allow us to establish some conclusions, through which we formalized our opinion on the relevance of the study. In order to meet this objective a questionnaire was prepared. The methodology used was the quantitative method, although some qualitative issues are presented in the questionnaire, which allowed a more integrative approach to the study. The sample is composed by three associations from north to south of Portugal with the collaboration of those responsible. The majority of participants said that their quality of life has changed for the better since they started using mobile phones and the computer. We can also conclude that the Internet is important for them once they can communicate with their family and friends who are abroad, through skype and WhatsApp with greater ease.
Keywords: digital literacy, Intergenerational learning, lifelong education

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UTILIZATON OF DIGITAL MODE OF EDUCATION DURING COVID 19 PANDEMIC

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Abstract
Covid19 has dramatically changed the educational system and 1.2 billion children are affected worldwide. During this situation education is completely transferred to online mode in almost all countries around the world. In the developing countries digital way of learning is in progress before the pandemic. But covid19 forced the world to co-operate with this method. This research work was done through case study and received the information how the digital mode of learning applicable in the fast advances in technology. They need to learn at any time, and any place was in its way to be achieved. According to school students, online classes held through Whatsapp and sometimes teachers conduct live classes for better understand. Live classes held by Zoom meet, Google meet and other Microsoft platforms. The college students utilize the advantages of all kinds of digital platforms during the Covid pandemic situation. Like school students, Professors also used Whatsapp, Zoom meet, Google meet and other Microsoft platforms to conduct classes. Whatsapp was used to send and receive homework's, Zoom meet and Google meet were used for conducting live classes and similarly Google classroom and Microsoft team were used to perform the assigned tasks. Through online education new technical and communication skills, and knowledge of technology were improved among students and teachers .The conclusion of this study stated that a quick change from classroom to a digital platform of education emerged during pandemic and also some are already existed. Online learning was the best and only solution for continuing education during current pandemic situation.
Keywords: Covid19, Information, Microsoft platforms, technology

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INTERCULTURAL COMPETENCIES AS A SEGMENT OF TEACHER PROFESSIONAL DEVELOPMENT

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Abstract
The social context in most European countries today is characterized by multiethnicity, multiculturalism and interculturalism. Mutual contacts between members of different cultures imply the necessity of a quality relationship based on the idea of interculturalism, which appears as a possible solution for a quality life in a multicultural society. Starting from the reality that schools are becoming a meeting place for different cultures and languages, the development of attitudes towards diversity is becoming a key factor in quality education for all. The complex system of educational work, professional development and lifelong education of teachers should be viewed in a modern multicultural context. The intercultural dimension in upbringing and education is observed within the broader social discourse, the process of globalization and the internationalization of education. The general consideration of key intercultural competencies moves on a continuum, from a complete denial of the possibility of their taxonomy to imperatives about the necessity of their classification (Audigier, 2000; Kostović, 2008). In this paper, teacher competencies are viewed from the aspect of the changed social context as key determinants of their definition and taxonomy. The competency approach is based on learning outcomes as a starting point for teacher education as a moderator of intercultural relations. Strengthening the intercultural identity and developing the intercultural competencies of teachers are indispensable dimensions of lifelong teacher education adapted to the needs and challenges of modern society.
Keywords: interculturality, intercultural competencies, lifelong teacher education

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IMPLICATION OF CLASSICAL AND MODERN POLITICAL THOUGHTS FOR THE EMERGING FIELD OF POLITICAL SCIENCE EDUCATION IN NIGERIA

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Abstract
This study investigated the Effect of Motivation Strategies on Students' Achievement and Interest in Senior Secondary School Government in Nsukka Education Zone Enugu State. The study adopted Quasi experimental design, specifically the pre-test, post-test, control group research design. Two thousand six hundred and twenty (2,620) SSII Government students across the sixty-two (62) public secondary schools in Nsukka education zone formed the population while One hundred (100) respondents drawn from four (4) intact classes formed the sample size. Achievement test tagged "Government Academic Achievement Test (GAAT) and Government Interest Inventory Scale (GIIS)" designed by the researcher, duly vetted and validated by three experts from Science Education Department (Measurement and Evaluation unit) and Social Science Department (Political Science unit), Faculty of Education, University of Nigeria, Nsukka, were used for data collection. The reliability of the research instrument was determined using Cronbach Alpha for GIIS which yielded the reliability of 0.91 and Kuder Richardson formular 20 (KR-20) which yielded the reliability of 0.70. GAAT's temporal stability was established using Pearson Product Moment Correlation. Mean and standard deviation were used to answer the research questions, while ANCOVA was used to test the hypotheses at 0.05 level of significance. It was found that the intrinsic motivation strategy (IMS) had positive effect on the academic achievement and interest of students in Government than the extrinsic motivation strategy, and that gender is not significant factor in determining students' academic achievement and interest in Government. It was recommended among other things that use of intrinsic motivation strategy be encouraged in the teaching of Government in schools, for it helps to keep students abreast for they play the foremost role of intrinsically motivating themselves first, as they are the primary beneficiaries of their own academic achievement.; skillful teachers in motivation strategies should be employed to teach.
Keywords: Motivation, Strategies, Achievement, Government, Interest, Secondary School

INTRODUCTION

Education is an indispensable investments for human and economic development, such that, it is the basis upon which every modern society thrives (Haolader, Hakim, Kassim & Mubarak, 2017). Education promotes the value of a person and the progress of the society (National Policy on Education, Federal Republic of Nigeria – FRN, 2017). Formal education takes place in Schools and the tertiary institutions such as the Universities, Polytechnics and Colleges (Adeyemi, 2014). Nigeria set up three educational levels namely; primary education, secondary education and tertiary education to achieve her educational goal (FRN, 2017). In this study, the major concern is the secondary education which is the intermediary between the primary and the tertiary education.

Learners at this stage of education are exposed to the knowledge of the Government and the political environment of their country. There are three approaches to the definition of Government; Government as an institution of the states; Government as a process or art of governing; and Government as an academic field of study (Nkemka, 2015). Government as an academic field of study is the focus of this study. As an academic field of study, it denotes Government as a teaching subject or a discipline. Government as a school subject can also be referred to mean Government as an academic field of study (Okeke, 2013). In secondary school it called Government and in the tertiary institutions it is referred to as Political Science (Kwasau, 2013). Government is embedded with immense benefits. For instance, the content exposes learners to wealth of knowledge and skills of civic rights and responsibilities, duties and obligations, patriotism and civic loyalty alongside facts and ideas that help to transform the characters and behavioural attitudes among the learners in society, as well as enhances their awareness of the country's political system, etc (Gilbert, 2014).

In the National Policy on Education, Federal Republic of Nigeria (FRN, 2017), Government is grouped under the Non Vocational Elective Subjects. That implies, Government is not a compulsory subject in the Nigeria secondary schools, suggesting that students offer Government voluntarily, depending on the interest and motivation, as such their academic achievement supposedly not to be affected by lack of Interest. However, researches (Nkemka, 2015 & Eze, 2010) have shown that despite the wealth of knowledge Government offers, students' academic achievement in the subject is quite pitiable. Similarly, WAEC results for senior secondary school students in Government, as conducted by the external examination body – West African Examination Council (WAEC) in Nsukka Education Zone for 2015 to 2018 showed that the percentage achievement of students (i.e. those that scored between A, B and C) in Government were somewhat low. For instance, the percentage pass rate for Nsukka LGA of the Zone stood at 67.48% in 2015, 64.29% in 2017 and 56.88% in 2018 while the percentage failure (i.e. those that scored between D, E and F) stood at 32.52% in 2015, 35.71% in 2017 and 43.12% in 2018. The works of Adamma, Ekwutosim and Unamba (2018) and WAEC Chief examiner's report have it that lack of motivation, poor knowledge of concepts in the subject among other causes resulted to this high failure rate. As such the researcher sought to decipher and encourage the best form of motivation (intrinsic or extrinsic) that gives students the maximum propensity to high academic achievement and interest in Government, hence the study.

Teaching Government with the incorporation of motivation strategies sustains learners' interest to learn and also enhance their achievement (Ezike, 2018). For instance, the use of teaching techniques as opinion polls technique under Inquiry teaching method, among others, always make the teaching and learning of Government interesting and interactive (Ezegbe, 2019).

Motivation going by its Latin term movere implies to move (Cinar, Bektas & Aslan, 2011). It is defined by Guay, Channel, Ratelle, Marsh, Larose & Boivin, (2010) as the reason underlying behaviour. Broussard and Garrison in Lawrence (2015) defined motivation as the trait that stirs us to do or not to do anything whatsoever. It is motivation that gets a student opting to study (Government), keeps them going on in the subject and determines what they achieve from the subject (Brown in Adekeye, Remu & Ademuwagun, 2012). There are two types of motivation– intrinsic motivation and extrinsic motivation (Adamma, et al., 2018; Ryan and Deci, 2012).

Intrinsic motivation is defined as that impelling force which originates from within an individual (Emily, 2011). Extrinsic motivation on the other hand is defined as motivation that comes from outside an individual (Ghaonta, 2017). Extrinsic motivation, as opposed to intrinsic motivation is maneuvered by reinforcement possibilities (Guay, et al., 2010). The both motivations bear some influence as regards how students learn and respond to internal and external rewards, teachers' praises and feedbacks (Ormnde, cited in Abdu-Raheem, 2010). Hence the study of the two types of motivation need be conducted to ascertain their effects on achievement and interest of students (Çınar, Bektaş & Aslan, 2011). Achievement is a determinant of how well a student has been able to comprehend and transmit the knowledge of what has been taught them in a given subject (Daniel, 2015) while interest connotes, as defined by Paul (2014), a psychological situation of given to a strong attachment of the mind on something at a given moment. Interest could vary in terms of males and females students, since gender is a predictor variable of human conducts (Daniel, 2015). This denotes that there is possibility of gender differences in motivation and interest on academic achievement (Ayub, 2010). Gender is simply that social construct which ascribes dispositions and occupations to sex such as males and female (Aniaku, 2013; Okeagu, 2013), thus, there is possibility of interactive influence on students' academic achievement.

PURPOSE Of The Study

1. to determine the effect of intrinsic and extrinsic motivation on achievement and interest of students in Government in Nsukka Education Zone, Enugu State.
2. to determine the interaction effect of treatment (intrinsic and extrinsic motivation) and gender on students' mean interest in Nsukka Education Zone.

SIGNIFICANCE OF THE STUDY

Motivation theories such as expectancy value, self-efficacy and self-determination theories would be or not supported by the findings. Expectancy-value theory says, the tendency of doing an activity is based on the belief in the success and value in it. Self-efficacy theory says, a goal is achieved based on the level of perceived self-efficacy while, self-determination says that there is already inherent, the attitude of self-determination towards success in every goal.

RESEARCH QUESTIONS

1.What is the mean achievement and interest scores of students taught Government topics using intrinsic motivation and those taught using extrinsic motivation strategies in Nsukka Education Zone?
2.What is the interaction effect of treatment (intrinsic and extrinsic motivation) and gender on students' mean achievement and interest in Government in Nsukka Education Zone?

RESEARCH HYPOTHESES

H_{O1}. There is no significant difference in the mean achievement and interest scores of students taught Government using intrinsic motivation and those taught using extrinsic motivation strategies in Nsukka Education Zone

H_{O2} There is no significant difference between the interaction effect of treatment (intrinsic and extrinsic motivation) and gender on student' mean achievement in Nsukka Education Zone.

METHODOLOGY

This study adopted pretest post-test research design, because of the presence of intact class to estimate the causal impact of an intervention on target population without randomization. 2,620 population using the multi-stage and purposive sampling technique. Achievement test and Interest inventory scale validated by three experts formed the instrument used for data gathering. The reliability of government interest inventory scale (GIIS) 0.90 was gotten using cronbach alpha statistics while internal consistency of GAAT was established using kuder Richardson (KR–20) which yielded reliability index of 0.70. The temporal stability reliability of Government Academic Achievement Test (GAAT) using Pearson Product Moment Correction was 0.99.

THE EXPERIMENTAL PROCEDURE

Treatment lasted for 4 weeks, during which research assistants interacted with 100 respondents divided into experimental and control groups to avoid hawthorn effect. After the treatment Mean and Standard Deviation were used to answer the research questions while Analysis of Covariance (ANCOVA) was used to test the hypotheses at 0.05 level of significance

RESULTS

What is the mean achievement and interest scores of students taught Government topics using intrinsic motivation and those taught using extrinsic motivation strategies in Nsukka Education Zone?

Table 1: pre-test/Post-test Mean Achievement Scores of Students taught Government using Intrinsic Motivation and those taught using Extrinsic Motivation Strategies

Groups		Pre-test		Post-test		
	N	$\bar{x}$	SD	$\bar{x}$	SD	Mean Gain
Experimental (Intrinsic Motivation Strategy)	50	15.88	6.60	18.46	6.28	2.58
Control (Extrinsic Motivation Strategy)	50	21.90	8.13	22.68	8.40	0.78

Table 2: Post-test/Mean Interest Scores of Students taught Government topics using intrinsic motivation and those taught using extrinsic motivation strategies

Groups		Post-test		Interest		
	N	$\bar{x}$	SD	$\bar{x}$	SD	Mean Gain
Experimental (Intrinsic Motivation Strategy)	50	72.50	11.25	96.74	12.68	24.24
Control (Extrinsic Motivation Strategy)	50	78.28	11.78	94.36	12.58	16.08

Hypothesis One

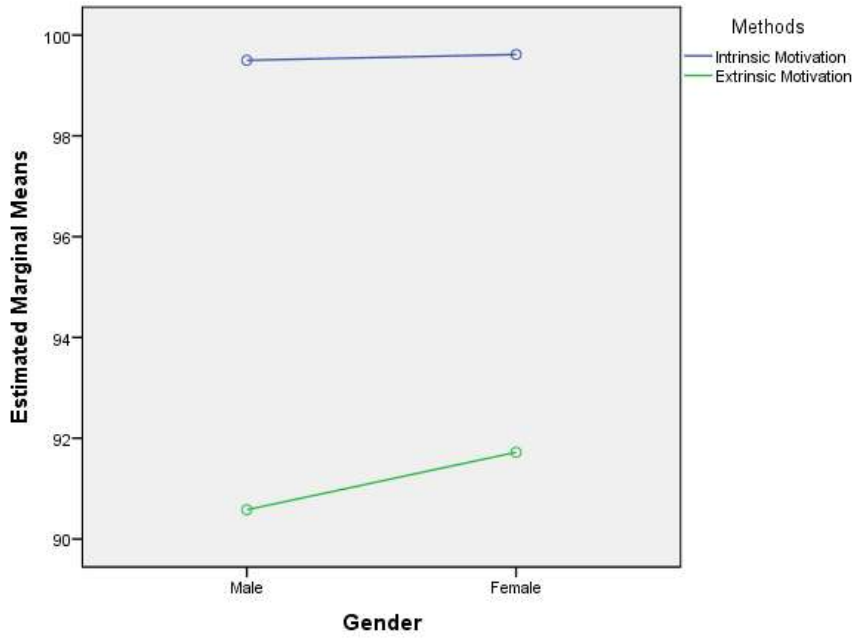
$H0_1$. There is no significant difference in the mean achievement and interest scores of students taught Government using intrinsic motivation and those taught using extrinsic motivation strategies in Nsukka Education Zone.

Table 3: Analysis of Covariance (ANCOVA) of the Effect of Intrinsic Motivation Strategy on Students' Achievement in Government

Source	Type III Sum of Squars	Df	Mean Sqaure	F	Sig,	Partial Eta Square	Dec.
Group	329.278	1	329.278	6.102	0.02	0.06	S
Group * Gender	155.260	1	155.260	2.877	0.09	0.02	NS
Total	48143.000	100					

Note: S =significant **NS= Not** **Significant**

The interaction effect of treatment (intrinsic and extrinsic motivation) and gender on student' mean achievement in Nsukka Education Zone



DISCUSSION

Table 1 shows the pre-test ($\bar{x}$ = 15.88, SD = 6.60) and post-test ($\bar{x}$ = 18.46, SD = 6.28) mean achievement scores of students taught Government with Intrinsic Motivation Strategy (IMS) and those taught using Extrinsic Motivation Strategy (EMS). The mean gain scores of 2.58 and 0.78 for the experimental and control groups respectively entails that the IMS had a positive effect on the mean achievement scores of students in Government than the EMS. This shows that the use of IMS in teaching Government proved to be more effective. Table 2 shows the post-test ($\bar{x}$ = 72.50, SD = 11.25) and interest mean scores ($\bar{x}$ = 96.74, SD = 12.68) of Students taught Government using IMS and those taught using EMS. The mean gain scores of 24.24 and 16.08 for the experimental and control groups respectively indicated that the use of IMS in teaching Government proved to be more efficient in boosting students' interest. Table 3 shows ANCOVA of the effect of intrinsic motivation strategy on students' achievement in Government. Result portrays that an F-ratio ($F(1, 99) = 6.102$, $p<0.05$, $\eta^2_p = 0.06$) was obtained.

Since the value of 0.02<0.05 benchmark, the hypothesis is rejected, depicting there is significant difference in the mean achievement scores of students taught Government using IMS and those taught using EMS. Graph A shows there is no interaction effect of treatment and gender on students' mean achievement and interest in Government.

CONCLUSION

It was concluded in the study that out of the two motivation strategy tested, intrinsic motivation strategy **(**IMS**)** had positive and significant effect on the academic achievement and interest of male and female students in Government than extrinsic motivation strategy (EMS), and the males have more interest in Government than the females and also intrinsic motivation strategy is not gender biased.

RECOMMENDATIONS

1.The use of IMS be encouraged in the teaching of Government
2.Trained teachers who are skillful in motivation strategies should be employed to teach Government in secondary schools.

REFERENCES

Adamma, O. N., Ekwutosim, O. P. & Unamba, E. C. (2018). Influence of Extrinsic and Intrinsic Motivation on Pupils Academic Performance in Mathematics. Supremum Journal of Mathematics Education (SJME), 2(2), 52-59

Adekeye, A. O., Remu, O. & Ademuwagun, E. O. (2012). Effects of Motivation on Test Performance of First Year Covenant University Students. Journal of Education and Practice, 3 (13), 65–73

Adeyemi, S. B. (2014). Comparative Study of Pupils' Academic Performance between Private and Public Primary Schools. World Journal of Education, 4(4), 55–60

Aniaku, O.L. (2013). Effects of Guided and Unguided Inquiry methods of teaching on Secondary School Students Achievement and Interest in Biology in Enugu state. Unpublished M.Ed. Thesis. Department of Science Education, University of Nigeria, Nsukka.

Ayub, N. (2010). Effect of intrinsic and extrinsic motivation on academic performance. Pakistan Business Review, 8, 363–372.

Cinar, O., Bektas, C. & Aslan, I. (2011). A Motivation Study on the Effectiveness of Intrinsic and Extrinsic Factors. Economic and management, 16, 690–695

Daniel, K. A. (2015). Effect of think-pair-share (TPS) and students' teams achievement divisions (STAD) instructional strategies on senior secondary school students' achievement and interest in economics. Unpublished M.Ed Thesis. Social Science Department, University of Nigeria, Nsukka.

Emily, L. R. (2011). Motivation: A Literature Review (Research Report). Pearson's Publication, 4-36.

Ezegbe, B. N. (2019). Innovative techniques in political science education. Unpublished lecture note (SSE 514). Department of Social Sciences Education, University of Nigeria, Nsukka

Ezike, B. U. (2018). Classroom Environment and Academic Interest as Correlates of Achievement in Senior Secondary School Chemistry in Ibadan South West Local Government Area, Oyo State, Nigeria. Global Journal of Educational Research, 17, 61–71

Eze, U. C. (2010). Effect of collaborative teaching method on students' achievement in English Language in Umuahia Education Zone, Abia State. International Journal of Educational Research and Development, 8(2), 96–102

Federal Republic of Nigeria (1999). National Policy on Education (2017th ed.). Yaba Lagos: NERDC Press

Ghaonta, I. (2017). Intrinsic and Extrinsic Academic Motivation of School Students of Shimla District. International Journal of Scientific Engineering and Science, 1(7), 24–28

Gilbert D. L. (2014). Interrogating the Fundamental Challenges Militating against the Teaching and Learning of Government in Nigerian Secondary Schools. European Scientific Journal, 10 (16), 225–235

Guay, F., Channel, J., Ratelle, C. F., Marsh, H. W., Larose, S. & Boivin, M. (2010). Intrinsic, Identified, and Controlled Types of Motivation for School Subjects in Young Elementary School Children. British Journal of Educational Psychology, 80(4), 711–735.

Haolader, A. F., Hakim, W., Kassim, K. & Mubarak, R. H. (2017). A Comparative Study on the Academic Performance of Students in Bachelor's Degree of Information Technology Having Arts and Science Background in Uganda. World Journal of Educational Research, 4(2), 257–273

Kwasau, A. M. (2013). Political Science Education in Nigeria: an imperative tool for sustainable development in Nigeria. European Scientific Journal, 9(8), 1857 – 7881

Lawrence, O. (2015). Influence of Motivation on Students' Academic Achievement in the teaching of JSS III Social Studies in Jalingo Metropolis Taraba State. Unpublished Research Project. Department of Arts and Social Science Education, Taraba State University, Jalingo.

Nkemka, P. N. (2015). Effects of simulation method on students' achievement and retention in some concepts in Government in senior secondary school in Nsukka Education Zone. Unpublished M.Ed Thesis. Department of Social Science Education, University of Nigeria, Nsukka.

Okeagu, R. U. (2013). Effects of Problem solving teaching methods on students' achievement in Mathematics. Unpublished M.Ed Thesis. Department of Social Science Education, University of Nigeria Nsukka.

Okeke, J. N. (2013). Effect of Project-based Method on Students' Achievement in Government Curriculum in Senior Secondary Schools in Nsukka Education Zone. Published M.Ed Thesis Department of Arts Education, University of Nigeria, Nsukka

Ormrod, J. E. (Eds.) Educational Psychology. Developing Learners. New York: Merrill Prentice Hall. In Abdu-Raheem, B. O. (2010). Relative Effects of Problem-Solving and Discussion Methods on Secondary Schools Students Achievement in Social Studies. Unpublished PhD Thesis, University of Ado-Ekiti, Ado-Ekiti.

Paul, K. (2010). School and classroom environment of a small Catholic secondary school. Unpublished PhD Thesis. Australian Catholic University McAnley Campus, Virginia, Qld 4014. Australia.

Ryan, R.M. & Deci, E.L. (2012). Motivation, Personality, and Development within embedded Social Contexts: An overview of Self-determination Theory. In R. M. Ryan (Ed.), Oxford handbook of human motivation (pp. 85-107). Oxford, UK: Oxford University Press

The West African Examination Council (2013). West African Senior School Certificate Examination (May/June 2007) Chief Examiners' Report (Nigeria). Lagos: WAEC

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COMPARISON OF THE EDUCATION SYSTEMS INDONESIA AND SAUDI ARABIA

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ABSTRACT
Indonesia is a developing country, Indonesia experiences continuous development and change as a result of a response to a problem that has occurred in the past and the influence of global change, the development of science, technology, art and culture. A comparative study of education between countries was conducted to find out the weaknesses and strengths between the education systems held in each of these countries. So that it can be used as input and solutions for countries whose education systems are still weak. The education system is a system consisting of components that exist in the educational process, where one component with other components is interrelated and interacts to achieve an educational goal. This paper seeks to examine and find and analyze the comparison of education in Indonesia and Saudi Arabia regarding the education system in the two countries. The results of this study include: The education system in Indonesia is divided into two, namely : (1) institutions consisting of educational level and educational path (2) types of education consisting of general, vocational, and others. Whereas in Saudi Arabia it includes primary education, secondary education, and higher education. In Indonesia, it consists of general subjects plus religious knowledge. Whereas in Saudi Arabia the integration between religious and general sciences, studies of religious and general sciences are adapted to the education model there.
Keywords : Comparison of Education Systems, Indonesia and Saudi Arabia, Indonesian Education, Saudi Arabian Education

INTRODUCTION
Indonesia is a developing country, Indonesia experiences continuous development and change as a result of a response to a problem that has occurred in the past and the influence of global change, the development of science, technology, art and culture. Indonesia, which is a developing country, still has a lot to learn from developed countries in education. Indonesia today cannot progress because of the management of the education system that has not been able to run so that our education in Indonesia today is representative of a country that will never be able to progress and one of the real forms of our current education is education that has not been able to educate the nation's children. . This makes it necessary for an improvement in the national education system, including improvements to the curriculum.

DISCUSSION

A. Comparison Of The Education Systems Indonesia And Saudi Arabia

a) Understanding the Indonesian Education System

The system is "a strategy, way of thinking or model of thinking". The traditional definition of a system is a set of components or elements that interact with each other to achieve a goal.
While the modern definition put forward by Immegart defines a system as a whole that has parts that are systematically arranged, the parts are related to one another, and care about the context of their environment.
Education is essentially an activity that is consciously and intentionally and full of responsibility carried out by adults to children so that interactions arise between the two so that the child reaches maturity.
So the education system is a system consisting of components that exist in the educational process, where one component with other components is interrelated and interacts to achieve an educational goal.

b) Education System in Saudi Arabia

In Saudi Arabia the education system is to separate men and women according to Islamic law. The education system generally consists of basic education, secondary/continued education, and higher education which will be further elaborated as follows :

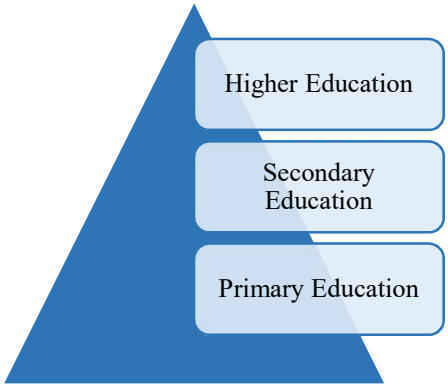


Figure 1: Education System in Saudi Arabia

1. Primary Education

- Primary school

- Duration: 6 years (age 6-12 years)
- Mandatory Lesson: Arabic, arts, geography, history, home economics (for women only), mathematics, physics education (for men), Islamic studies, and science.

- Secondary school

- Duration: 3 years (age 12-15 years)
- Mandatory Lesson: Arabic, arts, English, geography, history, home economics (for women only), mathematics, physics education (for men), Islamic studies, and science.

2. Secondary Education

- General Continuing Education

- Duration: 3 years (age 15-18 years)
- Mandatory Lesson: During the first year the general lessons are the same, the last 2 years are divided into science and social (literacy). Students who have a grade of 60% or more may choose both, while those who are less than 60% must choose social.

- Religious Continuing Education

- Duration: 3 years (age 15-18 years)
- Mandatory Lesson: Arabic language and literature, English, general culture, geography, history, and religious education.

- Technical Advanced Education

- Duration: 3 years (age 15-18 years)
- There are 3 (three) types of technical advanced education, namely:

1) Technical

Mandatory Lesson : Studying architectural drawings, automotive, electrical, mechanical mechanics. And additional lessons in Arabic, chemistry, English, mathematics, religious education, etc.

2) Commercial

Mandatory Lesson : Study Arabic, accounting and bookkeeping, correspondence, commercial, economics, English, mathematics, economics, general mathematics, geography, management and secretariat, and religious education.

3) Agriculture

Mandatory Lesson : Studying agricultural economics, agronomy, animal breeding, applied biology, applied chemistry, applied mathematics, applied physics, Arabic, English, agricultural and land management, horticulture, religious education, marketing, and food nutrition.

3. Higher Education

Higher education or universities in Saudi Arabia are divided into two, namely :

- General Higher Education

- University
- Institute for women (college for women)
- Institute of public administration
- Institute of teacher training (teacher training college)

All of the above General Higher Education are under the supervision of the Ministry of Higher Education in Saudi Arabia.

For higher education, the levels are the same as for universities in general, namely :

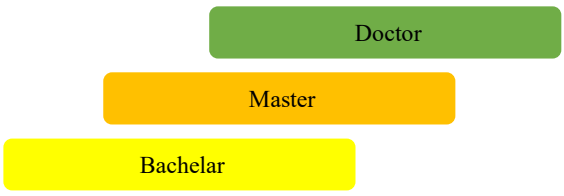


Figure 2: Higher Education Levels in Saudi Arabia

- Bachelar
A minimum of 4 years is required, but for engineering, medical, and pharmacy a minimum of 5 years is required to complete.

- Master
The time required is a minimum of 2 years to complete it on the condition that it must have completed S1. There are two pathways for master's degree, with a thesis (by thesis) or with lectures (by course). If we take the thesis path, then we will then complete the prescribed courses, we must complete the thesis for approximately one year (2 semesters), while for the course path, we only need to complete all the courses that have been determined, but with the number of courses the more.

- Doctor
The time required is 3 years to complete the master's degree. For doctoral degrees, we must complete courses and submit a dissertation which is the result of independent research that has been carried out. According to his talents and interests.

4. Religious Higher Education
Namely the Islamic University of Medina (Islamic University of Medina), the best university in Saudi Arabia for Islamic religious education, this University is under the supervision of the Council of Ministers. According to his talents and interests. However, more emphasis is placed on religious knowledge

c) Education System in Indonesia
The education system in Indonesia is called the national education system which has a meaning that all components of education are interrelated in an integrated manner to achieve a goal in national education.
The national education system is divided into two, namely :
1. Institutions consisting of education levels and educational path
- Educational level
Educational level is the stage of an education based on the level of development of students, goals that are immediately achieved, and abilities that have been developed.

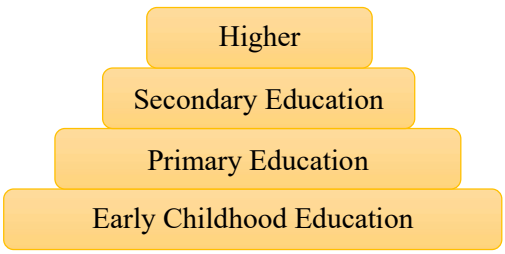


Figure 3: Educational Levels in Indonesia

The types are as follows

1) Early Childhood Education

Referring to Law Number 20 of 2003, Article 1 Point 14 concerning the National Education System, Early Childhood Education (PAUD) is a coaching effort aimed at children from birth to the age of six which is carried out through the provision of educational stimuli to help growth physically and spiritually so that children have readiness to enter further education.

2) Primary Education

Primary education is a level of education at the beginning for the first 9 years at school for children which is the basis for secondary education Mandatory lessons include religious education, civic education, language, mathematics, natural sciences, social sciences, arts and culture, physical education and sports, skills or vocational, and local content.

3) Secondary Education

Secondary education is a level of education after basic education. Mandatory lessons include religious education, civic education, language, mathematics, natural sciences, social sciences, arts and culture, physical education and sports, skills or vocational, and local content.

4) Higher

Higher education is a level of education after secondary education which includes diploma, bachelor, master, specialist, and doctoral education programs organized by a higher education institution. Mandatory lessons include religious education, citizenship education, and language.

- Educational path

The educational path is a park that is traversed by students with the aim of developing their potential in an educational process in accordance with an educational goal.

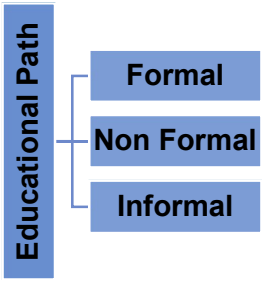


Figure 4: Educational Path in Indonesia

The types are as follows

1) Formal education

Formal education is an education held in schools in general. This educational path has a clear level of education, starting from basic education, secondary education, to higher education. The lessons are the same as at the education level.

2) Non formal education

This education is mostly found at an early age, and basic education is Al -Qur'an Learning Center in every mosque and Sunday schools in all churches. Then there are various courses, including music courses, tutoring and others. PNF programs are Functional Literacy, Equality Education A, B, C; Early Childhood Education; Apprenticeship; etc.

It is held for all people who need knowledge, skills, life skills, and attitudes to develop themselves, develop their professions, work, independent businesses, and wish to continue their education to a much higher level.

3) Informal education

This education is an educational pathway for families and the environment in the form of independent learning activities carried out consciously and with a sense of responsibility.

2. Types of education consisting of general, vocational, and others

The type of education is a group based on the specificity of educational goals in an educational unit.

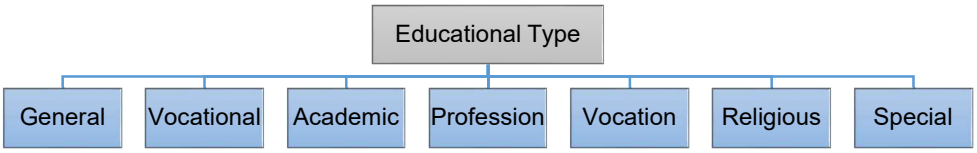


Figure 5: Types of Education in Indonesia

The types are as follows :

- General education

This education is a primary and secondary education that prioritizes an expansion of knowledge which is certainly needed by students in order to continue their education to a much higher level. The forms are: Elementary School, Junior High School, and Senior High School. This education prioritizes the expansion of knowledge which is certainly needed by students in order to continue their education to a much higher level.

- Vocational

This education is secondary education that prepares students to work in certain fields. The form of education unit is Vocational High School. Prepare students to work in certain fields.

- Academic

This education is a higher education for undergraduate and postgraduate programs aimed at mastering certain scientific disciplines. Aimed at mastery of a particular scientific discipline.

- Profession

This education is higher education after a bachelor's program that prepares students to enter a profession or become a professional. Prepare students to go to a profession or become a professional.

- Vocation

This education is a higher education that prepares students to have a job with certain applied skills, a maximum of 4 diploma level equivalent to a bachelor's program.

- Religious

This education is primary, secondary, and higher education that prepares a student to be able to carry out roles that require mastery of knowledge and experience in religious teachings and/or become an expert in religious science.

- Special

This education is the implementation of education for a student with a disability or a student with extraordinary intelligence that is carried out inclusively (joining an ordinary school).

CONCLUSION

From some of the descriptions and analysis of the previous discussion, it can be concluded that in Indonesia it consists of general subjects plus religious knowledge. Whereas in Saudi Arabia the integration between religious and general sciences, studies of religious and general sciences are adapted to the education model there.

REFERENCES

Arifin, M. 2003. Comparative Educational Science. Jakarta: Golden Terayon Press.

Assegaf, Rahman. 2003. Comparative Sketches of Education in Islamic and Western Countries. Yogyakarta: Gama Media.

Maunah, Binti. 2011. Comparison of Islamic Education. cet. 1. Yogyakarta: Teras.

Saud, Udin. 2012. Teaching Materials for Comparative Educational Systems. Bandung: UPI.

Shah Nur, Agustiar. 2001. Comparison of 15 Countries' Education Systems. cet. 1. Bandung: Lubuk Agung.

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INSIGHTS ON THE PROCESS OF ATHLETES' DEVELOPMENT IN NIGERIA

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Abstract
The process of talent development in sports requires an environment that encourage early identification of inherent sporting potentials in youngsters and provide the necessary support to grow such potentials into refined talents. Across cultures, athletic development is achieved through a synergy between athletes themselves, their coaches, family, school, the community as well as other significant persons and social institutions. Judging by Nigeria's rankings in global competitive sports, the country is yet to evolve an effective template for successful athletic development process. This study adopted a qualitative approach to examine the process of athlete's development in Nigeria. Seven elite Nigerian coaches were interviewed. Inductive analysis of the data indicated certain contextual impediments to athletes' development in Nigeria including organizational and culture specific barriers to talent development, two drivers of successful development were equally revealed. It was suggested that stakeholders in sport development should collaborate to evolve a template for successful athletes' development where the entire development environment provides the necessary support for athletic development.
Keywords: Athletes' development, talent identification culture specific barriers, drivers of success

INTRODUCTION

Elumaro, Andronikos, Martindale, and Westbury (2016) revealed some peculiarities with the process of Talent development in sports in Nigeria. Research on effective Talent Development (TD) suggest that developing athletes require an environment that is supportive of their sporting careers to be able to develop effectively. For example, the parents, siblings, friends, teachers, and coaches, as well as any other significant person in the life of the athletes most provide a network of support for athletes' development (Martindale, Collins & Abraham, 2007). Conversely, Nigerian athletes lacked the provision of the necessary support they need in the process of their athletic development. The extant literature suggest that, like many other developing countries, Nigeria is yet to evolve a consistent framework for sport development, this is evident through the level of in fractural deficits, administrative shortfalls, poor funding and other culturally related barriers to effective TD in sports (Adesanjo, 1997; Toriola, Adetoro, Toriola & Igbokwe, 2000; Aibueku & Ogbouma, 2013), beyond the limitations of the environment however, Elumaro and colleagues (2016) revealed a kind apathy towards sports participation in the Nigerian population. Beginning from the home, parents were opposed to their children taking part in sports because they believe that doing so will reduce the time children spend on their studies, teachers in schools were also largely reported to hold similar opinions to that of the parents, hence, the young athletes lacked the support and encouragement required for successful TD in sport.

However, there seems to be one consistent source of support for talent development in Nigeria, which is the coach. Previous research (i.e. Elumaro, 2015; 2016; 2021) indicated that Nigerian coaches play a significant role in the TID process in the Nigerian context far beyond what the responsibilities of a coach are in other cultures. In fact, Elumaro (2016) reported coaching as the second most important factor identified with TID success among Nigerian athletes, the first being the athletes themselves. For example, because most families were against their children's involvement in TID in sports, parents provided no support for training and so athletes would resort to the coach for both moral and financial supports. Nigerian coaches do not only help their athletes financially or morally, but in some instances, they also provide accommodation and feeding for their athletes (Elumaro, 2015). Thus the coach is seen as a father figure by his athletes and not just a coach; this complex role played by Nigerian coaches is not common across other cultures.

The role of the coach in the process of TD in sport has received significant interest in the literature. The coach plays a pivotal role in athletic development which include setting goals for their athletes and helping to develop strategies to achieve such goals (e.g. Worthington, 1984; Fairs, 1987). The coach also helps athletes to identify their strengths and how to harness them, while assisting them to manoeuvre round their weaknesses. Therefore, the relationship between the coach and his/her athletes has been reported among the key factors of successful TD in sports (e.g. Baron & Morin, 2009). Quality coaching which is dependent upon a robust coach-development programme (Mallett, 2011; Panfil *et al*., 2015), cannot be downplayed if developing athletes were to attain their full potentials (e.g. Smith *et al*., 1977). Thus, Duckworth and Maxwell (2015) submitted that the coach plays a mentorship role which is important to the entire process of TD.

Though, studies focusing on the role of the coach in the process of athletic development is popular in the literature, most of such studies relate to other cultures outside Nigeria, and so, there is the need to beam a searchlight on the role of the coach in the Nigerian context. This is necessary because TD in sport is culturally specific (e.g. Saltapidas & Ponsford, 2007; Collins & Bailey, 2013), furthermore, Elumaro and colleagues (2016) reported that Nigerian coaches play certain peculiar roles which are not necessarily included in the responsibility of the coach in other cultures. The current study therefore is intended to interrogate the perception of Nigerian coaches on the process of athletes' development in order to find support, or the lack of it, for earlier studies in the process of athletes' development in Nigeria.

This is considered necessary because previous TD researchers have adopted triangulation approaches to investigate issues relating to effective TID (i.e. Wolfenden & Holt, 2005; Gould *et al*., 2002; Martindale *et al*., 2007; Black & Holt, 2009). After the athletes themselves, the coach is the next most important person in TD, the perceptions of these key stakeholders in TD have made valuable contributions to the understanding of the subject. To set off the process of creating the synergy among the opinions of other stakeholders such as the family, coach, siblings, peers, and friends (e.g. Black & Holt, 2009) the current study is planned to investigate the perception of the coach on TID process in the Nigerian context.

METHOD

Procedure

Qualitative research method was adopted in the study. Seven Nigerian coaches who were experienced in helping athletes develop their athletic careers within the Nigerian context were purposely recruited for the study. Following institutional ethical approval for the study, participants were informed of the rational for the study and the reason for their inclusion. The major interview questions were handed to participants a week before the actual interview so that they would get themselves prepared for the interviews, and at the interview all participants were asked the same questions in the same order. Probing questions were used when necessary to gain deeper insights to the perceptions of participants on the research questions. Each interview lasted between forty-five minutes and one hour, all interviews were tape recorded with the consent of the participants.

Data Analysis

The interview audio of each participant was transcribed verbatim to a written form. Thereafter, the texts of each interview data were coded for experience, while coded experiences were compared for all participants to establish similarity of experiences. Inductive inferences were then used to identify themes and sub-themes as they emerged from the data. The final themes and categories were arranged in the order in which they emerged, and quotations were used to support themes in the results.

RESULTS

Two forms of barriers emerged from the data, namely sport-organisational barriers, and culture specific barriers. While these two forms of barriers consisted the negatives of the process of TD in the Nigerian context, the third theme that emerged from the data was positive on the drivers of success which included athletes psychology and support from the coach. These findings are explained in more details below.

Sport-Organizational Specific Barriers to TID

Development is Poorly Valued

The first sub-theme under sport-organisational specific barriers is that TD was poorly valued. Nigerian coaches felt that the government and the society at large do not place the appropriate value on sport development. This is evident in the fact little, or no interest is invested in TD in sport coupled with lack of investments in the infrastructural needs of successful TD.

“Athletes go through a lot of challenges in Nigeria because there is no supports and encouragement for development. The society will only celebrate them if and when they succeed in their sports, so the major the question is what happens before they succeed?” (C3)

“You know whatever happens to the head happens to the whole body, since Nigeria as a country is not giving the deserved attention to sport development, everywhere in the nation we have athletes and their coaches having to swim against the tide of several barriers to development in the environment” (C7)

"…Athletes are looked down on by the society as unserious people instead of encouraging them" (C1)

Corruption And Administrative Incompetence

The second sub-theme under sport-organisational specific barriers to TD relates to ineptitude in the handling of sport administration. Participants felt that wrong persons were usually appointed into sport administration positions due to their closeness to people in power and not necessarily on merit. The result is poor administration, corruption, and incompetence in the sport sector.

"Coaches and their athletes have not been very lucky with the type of sport administrators we have in the country. It has been rough to say the least" (C4)

"Our sport administration is very bad, in fact, most of the sports administrators are politicians who do not have any knowledge of sport development and they never care about the ordeal of the athletes and their coaches because their main priority is to enrich themselves" (C6)

"There is the need to have good administrators who would develop good policies and programmes to guide sports development. People holding sport administrative positions must be those that have the enabling background for sport development. Because one of the problems of sports development in Nigeria is that politicians who have little or no knowledge of sport are appointed to oversee sports ministries and departments" (C2)

Lack of Investment

Furthermore, the data showed a lack of investment in TD, facilities were reported to be inadequate, and non-existent in many instances. Where sport facilities are available, there would be inadequate funding for their megafinance, and as a result, most of the existing sporting facilities were in a state of decay. This lack of investment in sport development was seen as a demotivating factor to athletic development.

"Administrators need to invest in facilities because most people build their interest in sports based on the facility they see and would like to enjoy. This is one of the major problems of track and field in Nigeria" (C6)

"There are no facilities and equipment for sport development, access to good facilities will motivate children to take part in sporting activities regularly, and therefore enhance the chance that children would pick interest in developing a sporting career. Without money, most of the things we have spoken about will be impossible. Facility, equipment, nutrition, transportation, training kits are all factored by finance; talent development therefore is capital intensive, and as such, the government and other stakeholders must be willing to make the necessary investments" (C2)

"There are states that don't have any synthetic tracks so where will the motivation come from? This problem is more obvious now than ever before, because in those days there were open space around where the children can go to play but now all those pieces of land have been developed, so children no longer have the luxury of playing on the streets because the space are not there anymore. This is a reason sports are dying gradually in Nigeria" (C6)

Poor Policy Implementation

The data further indicated that sport development policies were not properly implemented. In fact, Nigerian coaches felt that the relevant government agencies responsible for the implementation of sport related policies usually do not live up to their responsibility. The following quote is an example of the perceptions of Nigerian coaches about poor implementation of sport development related policies.

"The last national policy on sport development stipulates that every state should have standard stadia, there should be community sports centres in all the Local Government Areas in Nigeria, the policy also states that there should be inter-school competitions at the primary school level, inter-Local Government competition, Zonal competitions, State competitions, and National competitions. But this has never been implemented. If a structure has been put in place to facilitate the implementation of the policy, that is when we could develop national pathways based on such national structure, but now there is no structural architecture to support national pathways for sport development" (C4)

Culture Specific Barriers to TID

The Family Is Opposed To Sports Development

The second general theme from the data relates with socio-cultural beliefs and or practices that are inimical TD in sports. The first sub-theme here is about the fact that the average Nigerian family would be opposed to their children taking part in sports. Reason being that Nigerian parents place premium interest on education of their children, it is a common belief that the best legacy parents can give to their children is education. While this belief is not wrong, the problem is that participation in sports is seen as an obstruction to education. The average parents would not allow the child to get involved in any activity not perceived as supportive to academic performance, unfortunately, participation in sport is viewed as waste of time and not supportive of academic performance of the child, as a result, parents would rather have their children spend time reading than have them going out to play sports. See the quotes below for coaches' views on this.

"Parents want their children to go to school and be fully committed to their studies, therefore, parents refuse to allow their children get involved in sports/training, because they believe this would be a form of distraction for the child. So, the task of the coach is to convince parents that their children can still go to school and be focused on their studies as well as going to training to develop their athletic talents" (C3)

"…No parent is willing to support the child to do sports training, they believe doing so will distract the child from his studies, so parents need to allow their children do sports and also support them both financially and emotionally" (C5)

"In a normal condition, parents should provide encouragement to their children but rather; Nigerian parents see sport as a kind of distraction to the education of their children and would do anything to prevent their children from playing any sport" (C4)

"…Parents also prevent their children from taking part in sports because they believe it is a barrier to the children' academic development. But I told them that there are many athletes who are doing very well in their studies" (C7)

The School Environment Is Hostile To TID

Apart from the family, the school is also reported to be unsupportive of TD in sports. Just like the family, many teachers believes that sport participation would have negative impacts on academic performance, and thus, would rather have students spend their time on academic engagements rather play sports. The following quotes are examples of coaches' feelings about the school environment in the Nigerian context.

"Even the teachers who should collaborate with the coach and the parents in supporting the development of the athletes are not encouraging, they consider athletes as unserious students who waste their time on sports" (C1)

"When you do sports as a student in Nigeria you are seen as 'a cast away'. Teachers and lecturers would see you as unserious with your studies because they see you playing sports; while in a real sense, they are supposed to be supportive of your development" (C3)

"There is a lot of discouragement from the schools. In a case where a school principal takes sports participation as a crime for the students, he would oppose sports openly and go as far as punishing students for playing sports, this makes it difficult for the children to develop interest in training" (C7)

Drivers of TD Success

Athletes' Psychology

Despite the challenges to TD in sports in the Nigerian environment as presented in this study, many Nigerian athletes who developed their athletic careers within the Nigerian environment have achieved great feats in global competitive sports. The third general theme that emerged from the current data provide insights into how successful Nigerian athletes navigated the barriers of the environment to fulfil their sporting aspirations. The two drivers of success showed by the current findings include athletes' psychology and support of the coach. Illustrated in the following quotes are the kinds of athletic psychology common among Nigerian athletes which assisted them in navigating environmental challenges to become successful in their sports.

"Nigerian athletes struggle against a lot of odds; there are no facilities, there are no sponsors, there are no supports, these are the challenges of sports development that athletes have to confront in Nigeria. Hence, each athlete must find the way through and build up himself. That is why I told you earlier "I have seen miracles", I have seen the most unexpected happen because a particular athlete has developed a personal (internal) motivation to succeed" (C4)

"Athletes' progress depends solely on their efforts because there is no programme in place. Therefore, the phases an athlete goes through to become an elite athlete in Nigeria is entirely based on the decision of the athlete, we have seen athletes who broke through within one year, and those who worked for years without any outstanding success, so it depends on the athletes and their trainers" (C6)

"The engine room of success in sport in Nigeria is determination, because in this part of the world we don't have the facilities, there are no good sport programmes, food and nutrition is poor, the financial backing is not there. With all these barriers and many more that we face in the Nigerian sport development environment, it takes determination for an athlete to navigate through the problems and make it to the international stage" (C5)

"The mind of the athlete is important, some people are very determined and whatever they set up to achieve they can achieve, with this type of mindset, nothing is impossible. If an athlete decides to train and become the best, he/she can be, he would do it with joy and a sense of fulfilment, they will never complain about challenges or contemplate dropping out" (C1)

Coaches' Support

The support of the coach is the second driver of success among Nigerian athletes. Possibly, because coaches are aware of the hostility to TD in sports in the Nigerian context, they decide to bridge the gap to provide encouragement for their athletes who already suffer abandonment from many segments of the society. Therefore, Nigerian coaches reportedly played more roles than their contemporaries in other cultures, see the quotes below for how far the coach is willing to go in supporting his athletes.

"Also, beyond being a coach, I see myself as a father to the children. I am concerned about their emotional well-being, I make sure am aware of whatever problem they have even those that are not sport related, and do anything I can to help them solve it to make sure that they are comfortable, because if athletes are not comfortable, they will not improve as much as you want, no matter the training you give them" (C6)

"You have to get the children closer to you because it is only under close relationship between athletes and the coach that the inner talent can be revealed" (C7)

"I have athletes that I can say t are where they are because of God's support, because at the time of need and problem everyone will desert them, they will have to depend on themselves or their coach for whatever help and support they need" (C7)

DISCUSSION

This study investigated the process of TD in Nigerian from the elite coaches' perspectives. The three general themes that emerged from the data including sport-organisational specific barriers to TD, culture specific barriers and drivers of success provide support for previous study of the same context but in the athletes' perspectives (i.e. Elumaro et al., 2016). The findings further support extant literature on the many problems confronting sport development in Nigeria such as the absence TD pathways (e.g. Ojeme, 1985); poor state of infrastructure (e.g. Omobowale, 2009); corruption (e.g. Osoba, 1999; Marquette, 2012; Adefila, 2012; Elendu, 2012); policy implementation issues (e.g. Ewah & Ekeng, 2009; Makinde, 2005); poor administration (e.g. Ikejiofor, 1999); and lack of investment (e.g. Ifeka, 2000).

The culture specific barriers revealed by the data are not unconnected to the wider social problems of poverty, unemployment and poor stage of the nation's economy which means make competition very rife (e.g. Uyanga, 1979; Uwakwe, 2005; Shola, 2010; Awotide, 2012; Joshua & Helen, 2013; Innocent, 2014; Kolawole et al., 2015; Iwu, 2015).

The average Nigerian family do not understand the economic values of sport participation, involvement in TD is seen as a waste of time and obstruction to academic performance because parents do not see the possibility of defeating poverty through sports. This fear is understandable against the reality that the environment lacks the requisite infrastructure to support effective TD in sports (e.g. Senbanjo & Oshikoya, 2010; Kimm, et al., 2002). Hence, parents' resistance to their children taking part in sports (Obadan, 2001; Saavedra, 2003). While previous research recommended that the family, including parents and siblings as well as other significant persons in athletes' lives should provide a network of support for athletes during the process of TD (Martindale, Collins and Abraham, 2007), TD in the Nigerian context is reportedly opposite (Elendu, 2012).

Furthermore, current findings relating to corruption, poor administration and incompetence in sport management have previously been associated with the Nigerian environment (e.g. Onifade, 1985; Bogopa, 2001; Jeroh, 2012). Therefore, it is important that the Nigerian government, particularly, begin to take sport development seriously by ensuring that merit and competence are not sacrificed on the altar of relationship. Only people with the right credentials and experience should be appointed to sport management positions if the sector is to record any meaningful success. This is one major step towards reversing the current decay in sport development in Nigeria (e.g. Toriola, 2000; Omobowale, 2009; Asiyai, 2012). Similarly, there is the need to develop the right policies and make sure they are implemented (e.g. Mgbor, 2006; Aluko & Adodo, 2011).

Severe as these barriers were, successful Nigerian athletes defied all the challenges posed by the hostile social culture to achieve top elite success in their athletic career. One of such major drivers of success in TID was athletes' psychology (Nia & Bessharat, 2010). Successful elites shared unique psychology of resilience (e.g. Smith et al., 1995; Fletcher & Sarkar, 2013) against all the levels of barriers to sport development. In fact, success or otherwise was mainly determined by the mindset of athletes. And as such, elite coaches reported that athletes' psychology was a major factor of successful talent identification and development. Also, the results revealed that the support coaches gave to their developing athletes made significant contributions towards successful development. This finding provides further evidence for earlier studies that suggest a relationship exist between quality of coaching and successful development (e.g. Bloom, 1985; Saavedra, 2003; Short & Short, 2005; Bouwer, 2010; Schlatter & McDowall, 2014).

This investigation has made several contributions to the TID discuss. To begin with, the nature of talent development in a Nigerian context has not been popular in the literature, thus the introduction of coaching in the Nigerian context to the TID discuss is the first achievement of the study. Also, the current results added more weight to the argument on the influence of socio-cultural factors on TID in sports (e.g. Maguire & Pearton, 2000; Henriksen et al., 2010; Shen, 2012). While previous studies have nurtured the idea that the cultural contexts of sports development are important to the design or adoption of TID models for a given society (e.g. Collins & Bailey, 2013), the current data suggest that socio-cultural factors can in fact determine the effectiveness or otherwise of TID models. The revelations about the strong influences of social culture on TID in Nigeria also enriched the debate about the dynamic nature of TID in sports (Abbott & Collins, 2004; Vaeyens et al., 2008; Phillips et al., 2010; Collins & MacNamara, 2011), such that the factors of successful development in a culture might become barriers in another. For example, Martindale, Collins and Abraham (2007) promoted the role of support from the family (i.e. parents, siblings), the community (i.e. peers) the school (i.e. teachers, friends, class & school mates) and the government in providing consistent and coherent support for TID, but in the Nigerian case, all the supports gears were reported to constitute functional barriers to TID. Nonetheless, through their resilient psychology (e.g. Martin-Krumm et al., 2003; Fletcher & Sarkar, 2012), elite athletes overcame all the barriers to become successful in their sports, hence, the model of athletes' development in Nigeria supports previous suggestion (e.g. Collins and MacNamara, 2011) that developing athletes may have to face some challenges to facilitate success at the elite level of sport performance

Finally, it is important to highlight some limitations of the current findings so that readers would have sufficient guidance in the application of the result. Firstly, the characteristic limitations of qualitative research methods must be considered before attempting to generalise the result. For example, the sample size was relatively small (n=7) and thus, the possibility of variations in opinions and themes within a larger sample should not be ruled out. Secondly, all participants in this study coached one sport (i.e. athletics), it is also possible that coaches in other sports might add other experiences to the study that would enrich the findings. However, the current study was a follow up to the previous one (i.e. Elumaro, 2016) and thus interviewing the coaches of participants in the athletes' study would help to monitor the consistency or otherwise of the reported nature of TID in Nigeria. Furthermore, the coaches and athletes' perceptions alone would not create a complete picture of the nature of sports development in Nigeria because other stakeholders (e.g. family, sports administrators, and the government) have all been identified among the influencing factors of TID.

REFERENCES

Abbott, A., & Collins, D. (2004). Eliminating the dichotomy between theory and practice in talent identification and development: considering the role of psychology. Journal Of Sports Sciences, 22(5), 395-408.

Adefila, J. (2012). Geo-Political Structure and Integration Strategies in Nigeria since Independence: A Critique. Jpag, 2(2).

Adesanjo, O. (1997). The Coach and his Athlete. Application of Current Sports Coaching Techniques and Strategies. National Institute for Sports.

Aibueku, S., & Ogbouma, S. (2013). Extent Of Implementation of The 2009 National Sports Policy Of Nigeria: Implications For Sports Science, Exercise Science, And Sport Medicine. Social Sciences And Humanities, 4(2), 541-549.

Ajiduah, A. (2001). Revitalizing sport in Nigeria: practices, problems and prospects (pp. 47-57). National committee on Problems of sport development in Nigeria.

Aluko, K., & Adodo, S. (2011). A Conceptual Analysis of School Sports Development in Nigeria. African Research Review, 5(5).

Asiyai, R. (2012). Assessing School Facilities in Public Secondary Schools in Delta State, Nigeria. African Research Review, 6(2).

Awotide, B. (2012). Poverty and Income Inequality among Fish Farming Households in Oyo State, Nigeria. Agricultural Journal, 7(2), 111-121.

Baron, L., & Morin, L. (2009). The coach-coachee relationship in executive coaching: A field study. Human Resource Development Quarterly, 20(1), 85-106.

Black, D., & Holt, N. (2009). Athlete Development in Ski Racing: Perceptions of Coaches and Parents. International Journal of Sports Science And Coaching, 4(2), 245-260.

Bogopa, D. (2001). Sports Development: Obstacles and Solutions in South Africa. Afr. Anthro., 8(1).

Bouwer, J. (2010). Evidence-based coaching (ebc): uitdaging voor coaching als professie. Supervisie En Coaching, 27(3), 127-134.

Collins, D., & Bailey, R. (2013). Scienciness and the allure of second-hand strategy in talent identification and development. International Journal Of Sport Policy And Politics, 5(2), 183-191.

Collins, D., & MacNamara, A. (2011). Comments on Expert Performance in Sport and the Dynamics of Talent Development. Sports Medicine, 41(7), 609-610.

Crosby, B. (1996). Policy implementation: The organizational challenge. World Development, 24(9), 1403-1415.

Duckworth, V., & Maxwell, B. (2015). Extending the mentor role in initial teacher education: embracing social justice. Intl Jnl Of Ment & Coach In Ed, 4(1), 4-20.

Elendu, I. (2012). Nigeria's Debased Values System at the Modern Era:. Journal Of Education And Practice, 3(3), 48-53.

Elumaro, A. I. (2015). Understanding the Nature of Talent Identification and Development in the Nigerian Context (Doctoral dissertation, Edinburgh Napier University).

Elumaro, A. I. (2016). The Dichotomy Between Preparation and Outcome Expectations; Athletes' Perceptions of the Nature of Talent Development in Nigeria. IOSR Journal of Sports and Physical Education, 3(1), 18-26.

Elumaro, A.I., Ayenigbara, G.O., Adegboro, J.S. and Momoh, D.M. (2021). Exploring Talent Development Environments in Nigeria: A case study of sport development framework in Ondo State. Journal of Advances in Sports and Physical Education, 4(10), 212-218.

Elumaro, A. I., Andronikos G., Martindale R.J.J., and Westbury T. (2016). Talent Development Environment in Nigeria: Athletes' Perception of Barriers, Opportunities and Facilitators. America Journal of Sports Science 4(6), 98-104.

Ewah, S., & Ekeng, A. (2009). Problems and Prospects of Marketing in Developing Economies: The Nigerian Experience. IJBM, 4(9).

Fairs, J. (1987). The coaching process: The essence of coaching. Sport Coaching, 11, 17-19.

Fletcher, D., & Sarkar, M. (2013). Psychological Resilience. European Psychologist, 18(1), 12-23

Gould, D., Dieffenbach, K., & Moffett, A. (2002). Psychological Characteristics and Their Development in Olympic Champions. Journal of Applied Sport Psychology, 14(3), 172-204.

Henriksen, K., Stambulova, N., & Roessler, K. (2010). Holistic approach to athletic talent development environments: A successful sailing milieu. Psychology of Sport And Exercise, 11(3), 212-222.

Henwood, K. L., & Pidgeon, N. F. (1992). Qualitative research and psychological theorizing. British journal of psychology, 83(1), 97-111.

Ifeka, C. (2000). Conflict, complicity & confusion: unravelling empowerment struggles in Nigeria after the Return to 'Democracy'. Review of African Political Economy, 27(83), 115-123.

Ikejiofor, U. (1999). The God that Failed: A Critique of Public Housingin Nigeria, 1975-1995. Habitat International, 23(2), 177-188.

Innocent, E. (2014). Unemployment Rate in Nigeria: Agenda for Government. AJIS. http://dx.doi.org/10.5901/ajis.2014.v3n4p103

Iwu, H. (2015). Re-Contextualizing Unemployment and National Security in Nigeria. JSD, 8(6).

Jeroh, E. (2012). The Place of Leadership Quality and Role of Coaches in Sports Performance by Nigerian University Students. African Research Review, 6(1).

Joshua, O., & Helen, A. (2013). Relationship between Entrepreneurship Development and Youth Unemployment Reduction in Nigeria. Journal of Transformative Entrepreneurship, 112-123.

Kimm, S., Glynn, N., Kriska, A., Barton, B., Kronsberg, S., & Daniels, S. et al. (2002). Decline in Physical Activity in Black Girls and White Girls during Adolescence. New England Journal Of Medicine, 347(10), 709-715.

Kolawole, B., Omobitan, O., & Yaqub, J. (2015). Poverty, Inequality and Rising Growth in Nigeria: Further Empirical Evidence. International Journal of Economics And Finance, 7(2).

Maguire, J., & Pearton, R. (2000). The impact of elite labour migration on the identification, selection and development of European soccer players. Journal of Sports Sciences, 18(9), 759-769.

Makinde, T. (2005). Problems of Policy Implementation in Developing Nations: The Nigerian Experience. Journal of Social Sciences, 11(1), 63-69.

Mallett, C. (2011). Quality Coaching, Learning and Coach Development. Japanese Journal Of Sport Education Studies, 30(2), 51-62.

Mambula, C. (2002). Perceptions of SME Growth Constraints in Nigeria. J Small Bus Man, 40(1), 58-65.

Marquette, H. (2012). Finding God Or Moral Disengagement In The Fight Against Corruption In Developing Countries? Evidence From India And Nigeria. Public Admin. Dev., 32(1), 11-26. http://dx.doi.org/10.1002/pad.1605

Martin-Krumm, C., Sarrazin, P., Peterson, C., & Famose, J. (2003). Explanatory style and resilience after sports failure. Personality And Individual Differences, 35(7), 1685-1695.

Martindale, R., Collins, D., & Abraham, A. (2007). Effective Talent Development: The Elite Coach Perspective in UK Sport. Journal of Applied Sport Psychology, 19(2), 187-206.

Mgbor, M. (2006). Issues and Future Direction of Physical Education in Nigeria. The Educational Forum, 70(2), 134-140.

Ministry of Youth and Sports,. (1989). Guidelines for implementation of the sports development policy for Nigeria. Lagos: Federal Republic of Nigeria.

Nia, M., & Besharat, M. (2010). Comparison of athletesâ€™ personality characteristics in individual and team sports. Procedia - Social And Behavioral Sciences, 5, 808-812.

Obadan, M. (2001). Poverty Reduction In Nigeria: The Way Forward. Cbn Economic & Financial Review, 39(4).

Ojeme, E. (1985). Problems in the Development of Sports in Nigerian Universities. International Review For The Sociology Of Sport, 20(3), 189-202.

Olukunle Adegbola,. (2008). Population Policy Implementation in Nigeria, 1988-2003. Population Review, 47(1).

Omobowale, A. (2009). Sports and European Soccer Fans in Nigeria. Journal Of Asian And African Studies, 44(6), 624-634.

Onifade, A. (1985). Historical Development of Amateur Sports and Their Administrative Agencies in Nigeria: 19th - 20th Century. Canadian Journal Of History Of Sport; Dec85, Vol. 16 Issue 2, P33, 16(2), 33.

Osoba, S. (1999). Corruption in Nigeria: historical perspectives. Review of African Political Economy, 23(69), 371-386.

Panfil, R., Krawczynski, M., Marek, P., & Panfil, L. (2015). Coaching and Coach Education in Poland. ISCJ, 2(1), 50-63. http://dx.doi.org/10.1123/iscj.2014-0106

Patton, M. Q. (1990). Qualitative evaluation and research methods. SAGE Publications.

Phillips, E., Davids, K., Renshaw, I., & Portus, M. (2010). Expert Performance in Sport and the Dynamics of Talent Development. Sports Medicine, 40(4), 271-283.

Saavedra, M. (2003). Football feminine development of the African game: Senegal, Nigeria and South Africa. Soccer & Society, 4(2-3), 225-253.

Saltapidas, H., & Ponsford, J. (2007). The Influence of Cultural Background on Motivation for and Participation in Rehabilitation and Outcome Following Traumatic Brain Injury. Journal of Head Trauma Rehabilitation, 22(2), 132-139.

Schlatter, N., & McDowall, A. (2014). Evidence-based EI coaching: a case study in the mining industry. Coaching: An international journal of theory, Research And Practice, 7(2), 144-151.

Senbanjo, I., & Oshikoya, K. (2010). Physical activity and body mass index of school children and adolescents in Abeokuta, Southwest Nigeria. World Journal Of Pediatrics, 6(3), 217-222.

Shen, B. (2012). Outside-school physical activity participation and motivation in physical education. Br J Educ Psychol, 84(1), 40-57.

Shola, S. (2010). Privatization and Poverty Reduction in Nigeria. SSRN Electronic Journal. http://dx.doi.org/10.2139/ssrn.1662377

Short, S., & Short, M. (2005). Essay: Role of the coach in the coach-athlete relationship. The Lancet, 366, 29-30.

Smith, R., Schutz, R., Smoll, F., & Ptacek, J. (1995). Development and Validation of a Multidimensional Measure of Sport-Specific Psychological Skills: The Athletic Coping Skills Inventory-28. Journal of Sports And Exercise Psychology, 17, 379-398.

Smith, R., Smoll, F., & Hunt, E. (1977). A system for the behavioural assessment of athletic coaches. Research Quarterly, 48, 401-4017.

Soludo, C., Ogbu, M., & Chang, H. (2004). The politics of trade and industrial policy in Africa. Trenton NJ: Africa World Press.

Toriola, A., Adetoro, A., Toriola, O., & Igbokwe, N. (2000). A Comparative Analysis of Youth Sports Programmes in Botswana and Nigeria. International Sports Studies, 22(2), 57-73.

Uwakwe, M. (2005). Co-operative employment education for target groups: solution to unemployment in Nigeria. Journal Of Technology And Education In Nigeria, 9(2). 11-27.

Uyanga, J. (1979). Landuse in the dimensions of rural unemployment and productivity in Nigeria. Geojournal, 3(6), 46-58.

Vaeyens, R., Lenoir, M., Williams, A., & Philippaerts, R. (2008). Talent Identification and Development Programmes in Sport. Sports Medicine, 38(9), 703-714.

Wolfenden, L., & Holt, N. (2005). Talent Development in Elite Junior Tennis: Perceptions of Players, Parents, and Coaches. Journal Of Applied Sport Psychology, 17(2), 108-126.

Worthington, E. (1984). Knowing, organising, observing and coaching. In F. Pyke, Towards better coaching (1st ed., pp. 239-262). Canberra: Australian Government Publishing Service.

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COMPULSORY ENVIRONMENTAL EDUCATION IN INDIA: IS IT APPROACH TO SUSTAINABLE DEVELOPMENT?

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ABSTRACT
It has demanded that environment education must be consider as one of the top priorities along with other educational fields. More and more students should be aware and attracted to this field and proper infrastructure and facilities should be provided for education as well as research and development. In India, environmental education is mandated by the Supreme Court of India and overseen by the National Council of Education Research and Training (NCERT) in formal schooling. Environmental studies has also compulsory implemented in higher education system. The present work has describes the development, successes, and challenges of a compulsory environmental education (EE) program in India as well as current scenario of environmental education as Indian perspective. This work is also dealing with India's approach towards sustainable development through compulsory environment education for students. The article also attempted to provide a brief analysis of various environmental education projects, academic programs, and curriculum development initiatives to achieve the goal of sustainability. It is stated that environmental education help to raise awareness among students which can shows different challenges and perspectives for future progress. Data has been executed from government documents, reports, research articles etc. At the end, this work will provide help to decision and policy makers for developing better strategies and policies with respect to the proper implementation of environmental education in India to achieve the common goal of sustainability.
Keywords: Environmental Education, Sustainable Development, India, Education System, Environmental Studies, Sustainability

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EXAMINING THE COPING STRATEGIES OF FATHERS AND MOTHERS OF CHILDREN WITH INTELLECTUAL DISABILITY AND WITHOUT DISABILITY

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ABSTRACT

OBJECTIVE

This study investigated the coping strategies of fathers and mothers of children with intellectual disability and without disability.

METHOD

For the data collection of the study purposive sampling technique was used. Total sample of fathers of both groups of children (N=150) and total mothers of both groups of children (N=150) were collected from Peshawar and Punjab based on cross-sectional research design. For the assessment consent form, demographic information sheet, and Brief COPE scale were administered.

RESULTS

Findings indicated that on COPE dimensions fathers of disabled children scored higher on active coping (M=5.16; SD=1.56), instrumental support (M=4.50; SD=1.39), positive reframing (M=6.98; SD=1.71), and humor (M=5.70; SD=1.91); while mothers scored higher on denial (M=5.25; SD=1.20), emotional support (M=5.05; SD=1.09), venting of emotions (M=4.80; SD=1.39), and religion (M=6.02; SD=1.75). Similarly, fathers of children without disability scored higher on active coping (M=5.71; SD=1.62), substance use (M=3.27; SD=1.54), instrumental support (M=4.95; SD=1.36), positive reframing (M=6.68; SD=2.36), and humor (M=5.61; SD=2.42); whereas mothers reported higher scores on self-distraction (M=4.41; SD=1.43), denial (M=4.98; SD=1.48), emotional support (M=3.52; SD=1.41), behavioral disengagement (M=5.02; SD=1.26), venting of emotions (M=5.16; SD=1.43), and self-blame (M=5.08; SD=1.54).

CONCLUSION

Findings confirmed that both fathers and mothers used mixed coping strategies for dealing with stresses. Both groups of fathers applied problem-based coping styles for handling children while mother of disabled and without disability children scores indicated that they used mostly emotion-based strategies. For clinicians and teachers this is a key step to develop intervention programs for the parents where they can educate and conduct one to one counseling sessions for them especially for the vulnerable group of mothers because they are emotionally weaker than their partners. In case of neglecting such groups in our society increasing the risks of multiple mental health related issues.

Keywords: Coping strategies; Intellectual Disability

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UNDERSTANDING DETERMINANTS OF CLOUD COMPUTING ADOPTION: A SYSTEMATIC REVIEW OF TECHNOLOGY ADOPTION MODELS

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ABSTRACT
The purpose of this study is to investigate and analyze the current state of literature on CCA (CCA) with various technology adoption models (frameworks) in different areas. Therefore, adoption of cloud computing has been facing various impediments as a result of inadequate understanding of the appropriate models to be applied and support the users' perception on cloud computing adoption. Hence, inappropriate models could not explain the factors determine the adoption determinants and little research attention has been paid on adoption on cloud computing adoption. For this reason various literatures were consulted to support the prior research evidences. There are quite number of models which used to predict, analyze and explain the factors determine or inhibit the adoption of cloud computing using one, two or more technology adoption models in a single research. Under this study the total of 204 articles were shortlisted and scrutinized accordingly. Furthermore, the total of 40 articles were finally selected as the study unit of analysis. The following models were selected and analyzed: Technology Organization and Environment (TOE), Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT) and Theory of Reason Action (TRA). The findings of the study revealed that TOE was the topmost adoption model followed DOI model. This study also identified 23 determinants of CCA from the four models employed in this study as significant factors determining the adoption of cloud computing. Out of this determinants the security and privacy (SP) was found as the most dominant factor of cloud computing adoption. The SMEs is the major area where CCA has been using especially from the year 2016 to 2017 respectively.
Keywords: Cloud computing, Perception, Users, Adoption, Technology adoption models, TOE framework, TAM and UTAUT model

INTRODUCTION
The evolution, adoption and diffusion of cloud computing and its roles play in sharpened the organization's competitiveness in various literatures served as a foundation used by many organizations especially those who cannot afford to implement adequate, large and expensive data storage devices or database management system (DBMS) (Huth & Cebula, 2011). Cloud computing is one of the subset of information communication technology (ICT). It is playing an important role for information management and security besides it also ensuring effective communication between cloud service providers and users (cloud service beneficiaries). (Hajizadeh & Navimipour, 2017). The cloud computing does not hosted on a user's physical computer rather it is hosted on the Internet. The access to the information stored on the cloud is possible at everywhere, anytime (24/7). Aharony (2015); Low and Chen, (2011) explains that the factors determine CCA were relatively few. Furthermore, Aharony added that the cloud computing technology is relatively new and there are no adequate studies focus on it.

A better comprehensive knowledge on the factors that encourage or inhibit CCA would allow companies to get access to a successful adoption (Maqueira-Marin, Bruque-Camara & Minguela-Rata, 2017).

Notwithstanding, the CCA impediments which lead to inadequate understanding of appropriate models/theories to be applied, that support the factors determine or inhibit its adoption (Sabi, Ukoza, Langmia, & Njeh, (2015). Aharony (2015) states that there are quite good number of literatures on cloud computing using various technologies adoption models in different sectors of the economy. But there are also quite number of corresponding issues associated with: choosing unsuitably and rarely model/theory that cannot be best explain the key factors determine the cloud computing adoption, there were very few literatures on factors determine the cloud computing adoption. It also added that little research attention has been paid on adoption and usage of cloud computing at educational establishments and how contextual factors can influence diffusion and adoption of cloud computing (Sabi et al., 2015).

This study underlines the following objectives aims to achieve. These are:

- To investigate the current state of literatures on the most frequent adoption model of cloud computing adoption.
- To identify the key factors determine the cloud computing adoption.
- To investigate the most frequent sectors that the prior studies focused for the cloud computing adoption.
- To examine the distribution of studies on CCA over time

The current study focused on the identifying and analyzing the current state of literature and key factors determining the CCA with evidences from the various literatures. The research questions move to investigate:

- What is the current state of literatures on the most frequent adoption model of cloud computing?
- What are the key determinants of cloud computing adoption?
- What are the most frequent sectors that the prior studies focused for the cloud computing adoption?
- What are the studies distribution of CCA over time?
- Whether a new model can be conceptualized at the end of the research?

Theoretical and Conceptual Background

The concept of CCA in the area such as small and medium enterprises (SMEs), business, and education, private and public organizations is a new phenomenon with regard to its adoption. Likewise, there are different definitions of cloud computing. Low and Chen, (2011) defined cloud computing as a kind of computing application service such as e-mail, office software, and enterprise resource planning and uses ubiquitous resources that can be shared by the business employee or trading partners. Moreover, Gangwar, Date and Ramaswamy, (2015) described cloud computing as a way to deliver information technology (IT) enabled services in form of software, platform and infrastructure using Internet technologies. Amron, Ibrahim, Abu Bakar, and Chuprat, (2019) described cloud computing as a virtual storage technology that uses to help businesses in managing and sharing of data in a more flexible, cost saving, and business scalability.

Basically, cloud computing has three different service models such as software as a service (SaaS), platform as a service (PaaS), Infrastructure as a service (IaaS) (Gangwar, et al., 2015).

The rise of Software as service has changed the concept of software as a product to that of services instead. The software run in the cloud and the user can access it via the Internet to work on an application. Platform as a service enables powerful tools for developers to create the application without having to deal with concerns about the infrastructure. Infrastructure as a service is known as the basic level of cloud services which delivers infrastructure as a service to customers or employees over the Internet network such as hardware (e.g. storage and network) and software (e.g. operating system and virtualization technologies) (Gangwar, et al., 2015).

Furthermore, cloud computing also has four basic deployment models which include public, private, hybrid and community cloud. Public cloud as the name implies renders services to the general public. Private cloud in contrast provides services not to the general public but to the specific number of private individuals, organizations for the better and secured services than public cloud (Gangwar, et al., 2015). Hybrid cloud encompassed both public and private cloud features in service delivery. While, community cloud provides services to the particular group of individuals or organization within specified geographical locations. The cloud computing services can be delivered by cloud service providers such as IBM, Amazon, and Google cloud among others (Senyo, Effah, and Addae, 2016).

Technology Adoption Models

There are quite number of studies on CCA in various fields (sectors of the economy) by different researchers. Some of these studies focus on CCA in small & medium enterprises (SMEs), businesses, educations and other areas. Evidently, there are many literatures which support the chosen models and variables (factors) employed by the researchers.

Table 1: Proposed Technology Adoption Models

Theory/Model	Acronyms	Developed by
Technology, Organization & Environment	TOE	Tornatzky and Fleisher (1990)
Technology Acceptance Model	TAM	Davis, (1989)
Unified Theory of Acceptance & Use of Technology	UTAUT	Venkatesh et al. (2003)
Innovation Diffusion Theory	DOI	Rogers (1962)

Technology Organization and Environment (TOE)

Being in the technology enabled and Information age, where most organizations' activities have been automated and information can be accessed anytime at everywhere 24/7. Therefore, this leads to the organizational turnaround as a result of diffusion of technology enabled devices, programmes and applications and the Internet. These enabling devices are the basis foundation of cloud computing adoption.

Technological Dimension (TD): Ahmad and Waheed, (2015) defined as interesting technological drivers such as online game, data backup, social media, remote access, storage and ease of use. Relative advantage, compatibility, and complexity were only observed under TD.

The adoption of cloud computing in some units of public organization by IS professionals depends on technological capacity, organizational dimension and environmental dimension. Consequently, technology, organization and environment (TOE) model will be adapted in this study due it its suitability by encompasses the three dimensions, Technology-Organization-Environment (TOE) by Tornatzky and Fleischer (1990).

To foster cloud computing adoption, it is mission critical to examine the factors that determine this adoption in firms across different industries and sectors. Senarathna, Wilkin, Warren, Yeon and Saizman, (2018) extent TOE model with other factors such as culture, different legal system and provider's management styles, Chiu, Chen, and Chen, (2017) employed TOE and Diffusion of Innovation (DOI) theory and come up with eleven integrated factors in an effort to establish a comprehensive view and to increase the level of understanding of broadband mobile application adoption by enterprises. The findings of that study found that company's size and type were significant. Awa, Ukoha, & Emecheta, (2016) provided further insight into IS adoption by investigating how 12 factors within the TOE framework to explain the adoption of enterprise resource planning (ERP) solutions in SMEs. However, the purposive and snowball sampling was adopted and framework was tested using logistic regression. Furthermore, it was highlighted that the adoption of ERP by SMEs is well-explained by TOE framework though it was more driven by technological factors than organization and environment factors.

Relative advantage (RA): Rogers (1983) defined relative advantage as the degree of which technological factors is perceived as providing greater benefit for firms. Low and Chen, (2011) highlighted that the benefit of RA factor for cloud computing services which enabled the organizational operations to be generalized and mobilized through internet transactions. Hence Senyo et al, (2016) explained that "Pay as you go" or Pay-per-use feature of motivated cloud computing helps businesses to control. Therefore, pay-per-use motivated cloud computing adoption.

Security Concern (SC): Rogers (1983) it is also described another benefit of CCA which is control over security issues by implementing a framework that is going to monitor customers' behavior in relation to installations, software updates, database access and cloud's management software and another one that is going to isolate the process for particular applications. Therefore, insecurity will not be a threat in CCA (Rad & Rana, 2017).

Compatibility (COM): Compatibility refers to the degree to which innovation fits with the potential adopter's existing values, pervious practices and current needs Rogers (1983). Compatibility as it was extracted from prior theories refers to how much the operating procedure and practices of the organization are relevant with the new technology that the organization is willing to adopt (Vu, Hartly, & Kankalli, 2020). It was confirmed that when technology is recognized as compatible with work application systems, firms are usually likely to consider the adoption of new technology. However, when technology is viewed as significantly incompatible, major adjustments in processes that involved considerable learning are required. The results of cloud computing services relied on communication tools which shifted from paper, telephone, and fax to digital to enhance digital assets and information flow compatible as the key driven force (Low and Chen, 2011).

Organizational Dimension (OD)

Organization Size (OS): This context the attribute size of firm found significant in the previous study. Moreover, the result implies that Firm size one of the determinant of CCA (Senyo et al. 2016). Similarly, the findings from another study defined firm capacity without regarding the geographical location.

Furthermore, the factors firm size and firm scope combined as one factor, as the scope mean area of operation of a firm. And the cloud computing defies geographical restriction therefore, organization with some branches are best to adopt the system (Low & Chen, 2011). Besides, the study by (Ahmad, & Waheed, 2015) also identified and discussed top management support, firm size, and technological readiness.
Therefore, with regard to this study the factor named firm size (FS) from previous studies now changed to organization size (OS).

Organization Objectives (OO): it refers to the expected aims and objectives of the organization that want to achieve at when cloud computing was adopt and successfully implemented. It is one of goals of every organization toward CCA that must have either direct or indirect effect on the organizational objectives Amron, et al. (2019).

Top Management Support (TMS): it refers all support lead to the integration of resources and reengineering of processes that will play an important role as a determinant of cloud computing adoption. TMS regarded as forefront determinant as it was found significant effect on CCA (Low & Chen, 2011).

Environmental Dimension (ED)
Hence suppliers of cloud services need to guarantee a good level of safety from all different threats coming from outside, there should be a solid and mutual agreement between the cloud suppliers and their respective clients (Rad & Rana, 2017). In environmental context includes competitive pressure, trading partners pressure are also influencing phenomenon that initiates the organizations to adopt in new trend of cloud computing. It was also identified that other factors such as customer behavior, IS infrastructure and governance influence as direct or indirect determinants of CCA (Ahmad, & Waheed, 2015).

Competitive Pressure (CP): with regards to this study, CP refers to the external factor that forcing that organization to accept existing, new and emerging technologies to meet the stakeholders needs (Tahir at el., 2015).

Concerned Parties Pressure (CPP): in respect to this study the CPP refers to the middle and high level management (from within), clients' (service beneficiaries' from outside) pressure toward difficult to access some services which will lead many clients to accept the process innovation for effective service delivery. Even though, the prior study "not surprisingly, requests from powerful partners (ones that generate a large proportion of sales or a large proportion of firm's profits) are critical factor in adoption of to specific innovation." Trading partners are concerned with the infrastructure and adoption trends so that this pressure forces companies to adopt cloud computing (Ahmad, & Waheed, 2015).

Regulatory Support (RS): With regard to cloud computing adoption, Senarathna et al., (2018) explained RS as the government policies that governing the affairs and usage of a particular technology that encourage or discourage the users to proper use or avoid it respectively.

Technology Acceptance Model (TAM original and modified)

According to Devis, (1989) TAM defined technology adoption model as a socio-technical model which aims to explain user acceptance of an information system. It is derived from the Theory of Reason Action (TRA, Fishbein and Ajzen, 1975) which defined as how people intent to particular behaviours. According to Devis, (1989) suggests that technology acceptance can be seen as individual's beliefs, attitudes and intention. Moreover, TAM proposed that individual's intention as best predictor of use behaviour. Behavioural intention (BI) depends on, perceived usefulness (PU) and perceived ease of use (PEOU). Furthermore, it was highlighted that PU refers to the individual's perception that using technology will boost performance. While on the other hand, PEOU refers to the individual's perception that using a particular platform or system will reduce user's effort and energy. The finding from prior study shows that information professionals' perceptions about new technology is affected by it simplicity and friendly interface (Aharony, 2015).

Unified Theory of Acceptance and Use of Technology (UTAUT)

Is one of the most recent frameworks for assessing the technology adoption determinants initiated by Venkatesh, Morris, Davis and Davis (2003). However, Bakkabulindi, (2014) highlights that UTAUT framework has a shortcoming in comparison to the TOE and IDT. The UTAUT found guilty of being biased toward the technological innovations only, while not all innovations are technological (Rogers, 2003 as sighted in Bakkabulindi, 2014). According to the findings of Khayer at el., (2019) reveals that the significant predictors of CCA (CCA) were performance expectancy, effort expectancy, absorptive capacity, data security and privacy and perceived trust. Moreover, CCA positively influenced firm performance directly and through organizational agility. Effort expectancy felt into critical zone then it need to be improved. The research findings yield noteworthy suggestions to cloud services providers, managers and government policy makers on way of motivating the spread of cloud computing in developing countries.

Theory of Reason Action (TRA original and modified)

TRA Fishbein and Ajzen, (1975) predict the relationship between human behaviour, attitude toward innovation. The TRA was developed as a result of frustrations and repeated failure to predict behaviour traditional measures of attitude. Rad and Rana, (2017) highlighted the issues and challenges associated with cloud computing adoption, while Hassan, et al., (2017) on CCA in an organization and many more as shown in table 2 below.

Data collection & Sampling method

In this study about 693 articles were gathered from various databases. After the data have been scrutinized about 204 articles were selected. However, 40 articles were shortlisted based on the key determinants (factors) of CCAwith regard to keywords, abstracts and full contents of the articles.

Method of Data Analysis

The secondary data collected was analyzed using Systematic Literature Review (SLR), and the Microsoft Excel was used to quantify the result in form of Charts, Tables to illustrate Descriptive Statistics such frequency and percentage.

Table 2: Assessment of key Factors determine the cloud computing adoption

S/N	Authors/Year/Tittle	Model/Theory Sample & Methodology	Sector, Participant & Country Applied	Adoption Determinants
1	Lawan, Oduoza C.F, Buckley K., (2020) Proposing a conceptual model for CCA in Upstream oil and gas sector	Technology, Organization, Environment (TOE), Institutional Theory, & Diffusion Innovation Theory (DOI)	Oil & Gas Industry, IS users	- Technological characteristics, - Organizational context - Environmental context as well as - Social & Political influence
2	Tella, Ukwoma and Kayode, (2020) A Two models modification for determining CCA for web-based service in academic libraries in Nigeria	Unified Theory and Use of Technology (UTAUT), & Technology Adoption Model (TAM) Survey sample of 105 Librarians, Quantitative research design, SEM	Education, 9 Universities Libraries, Southwestern Nigeria	The best predictors (determinants): - Perceived Security and - Perceived Reliability Others include: - Facilitating condition, - Perceived benefits, - User friendliness, - Perceived ease of use, - Ease of maintenance - Perceived Flexibility - Explained 73% factors of CCA
3	Abu Khayer, Nusrat Jahan, Md. Nahin Hossain (2019) The adoption of cloud computing in SMEs: A developing country perspective	UTAUT & TOE, Survey sample of 373 Managers & SMEs' owners Quantitative research design SEM	SMEs SMEs' owners & Managers only Bangladesh	- Performance Expectancy, - Effort Expectancy, - Absorptive Capacity, - Data Security & Privacy
4	Njenga, Garg, Bhardwaj, Prakash & Bawa, (2018) The CCAin higher learning institutions in KenyaL Hindering factors and Recommendations for the way forward	TOE Online survey Survey sample of 69 higher institutions Quantitative research design Cronbach's alpha, Analysis of variance (ANOVA), & Regression analysis	Education IT leaders Kenya	- Training from cloud services providers - Government policy - Reliability from cloud service providers - Data security
5	Sabi, Uzoka, Langmia and Njeh, (2016) Conceptualizing a model for adoption of cloud in education	DOI & TAM Online survey (Email) Survey sample of 30 people SEM	Education Sub-Saharan Africa	

6	Jianwen and Wakil, (2019). A model for evaluating the vital factors affecting cloud computing adoption. Analysis of the services sector	TOE Survey sample of 108 employees & Managers SEM	Health International hospitals IS users	- Human factor - Organizational factor - Technical factor
7	Alkhter, Walters, and Wills, (2017) An empirical study of factors influencing CCA among private sector organizations	TOE & DOI Survey sample of 300 IT staff Qualitative research	Private sectors (Organizations) IT staff Saudi Arabia	Strongest determinants: - Quality of service - Trues - Security & Privacy - Compliance with regulation - Physical location
8	Oliveira, Thomas and Espadanal, (2014) Assessing the determinants of cloud computing adoption: An analysis of manufacturing and services sectors	TOE & DOI Survey sample of 369 firms	Manufacturing & Services Sector Portugal	- Security & Privacy - Cost saving - Technology readiness - Firm size - Compatibility (in services sector not in manufacturing sector)
9	Asiaei and Rahim, (2019) A multifaceted framework for adoption of cloud computing in Malaysian SMEs	TOE & DOI Survey sample of 209 employees SEM	SMEs SMEs' Employees Malaysia	- Data security - Technology readiness - Top management support - Competitive pressure - Innovativeness
10	Kumar, Samalia, and Verma, (2017) Exploring suitability of cloud computing for SMEs in India	TOE, Survey sample of 121 SMEs, Factor analysis & Multiple regression analysis	Manufacturing Industry, IS users, India	- Perceived benefits - Top management support - Competitive Pressure - Perceived concerns
11	Senyo et al, (2016) Preliminary insight into CCA in a developing country	TOE, Survey sample of 305 organizations SEM & Logistic regression analysis	Service Industry (Clubs, Registered Stock Exchange & Multinational companies), IS users Ghana	- Relative advantage - Security concern - Top management support - Technology readiness - Competitive pressure - Trading partners' support

12	Gangwar, Date and Ramaswamy, (2015) Understanding determinants of CCA using an integrated TAM-TOE	TAM & TOE Survey sample of 280 companies SEM	IT, Manufacturing & Financial sectors IS users India	- Relative advantage - Compatibility - Complexity -Organizational readiness -Top management commitment - Training & Education
13	Aharony (2015) An factors affecting the adoption cloud computing by Information professionals	TAM Survey sample of 700 Librarians Cronchbach's Alpha	Education (Libraries) Librarians & IS users Israel	- Perceived ease of use -Personal innovativeness - Threat & Challenges - Self-efficiency - Openness to experience - Computer competence
14	Anabel Guitierrez Elias Boukrami Ronald Lumsden, (2015) TOE factors influencing managers' decision to adopt CC in the UK	TOE, 257 sample, Principal Analysis & Logistic Regression	Organizations, Mid-to-Senior level Managers & IT Professionals, United Kingdom	The most strongest determinant - Trading partner pressure Others include - Competitive pressure - Complexity - Technology readiness
15	Doherty (2015) Examining the drivers & barriers to ACC by SMEs in Ireland: An exploratory study	Online data collection 1500 samples,	SMEs Ireland	
16	Yikai Liang at el., (2017) Exploring the determinant & influence mechanism of E-government CA in government agencies in China	Grounded Theory (GT) 18 provincials & 59 municipals governments, ATLAS for data analysis	Government China	- Technology driving - Cloud providers' support - Environment stimulus - Organizational readiness - Cloud trust
17	Alharbi, Atkins, and Stanier, (2016) understanding of determinants of CCA in Saudi Healthcare organizations	TOE, IS Triangle, HOT-fit, 354 samples, Chronbach'a Alpha	Health, Managers & IS users, Saudia Arabia	- Soft financial analysis - Relative advantage - Hard financial analysis - Attitude toward change & pressure from partners

18	Lynn, Fox, Gourinovitch and Rosati, (2020). Understanding the determinants of CCA for HPC	DOI, HOT-fit 619 samples EFA	Organization Managers & IS user Saudi Arabia	- Indirect benefits, - Adequate resources, - Top management Support - compatibility
19	Lynn, Fox, Gourinovitch and Rosati, (2020). Understanding the determinants & future challenges of CCA for HPC	TOE 121 samples	Decision makers	- Organization factors - Human factors
20	Okai, Uddin, Arshad, Alsaqour & Shah, (2014). CCA model for universities to increase ICT proficiency	Mixed method	Education Malaysia	
21	Salim Alismaila atel., (2015) A multi-perspective approach for Australian SMEs	Quantitative Research design	SMEs Australia	- Security - Cost Saving or Service costs - Privacy
22	Adane (2018) CCA: Strategies for Sub-sahara Africa SMEs for enhancing competitiveness	Mixed method 261 samples		
23	Al-Dwarir, Al-Tweit & Zyout, (2018) Factors influencing CCA in SME-commerce enterprises in Jordan	Conceptual framework 16 managers	SME Jordan	- Need - Cost - Security - Reliability
24	Elaheh et al., (2017) Predicting the cloud-based technology using Fuzzy Analytic Hierarchy process & SEM approaches	UTAUT SEM & Fuzzy Analytic Hierarchy process (FAHP) 150 samples	Education Undergraduate Students Malaysia	-Performance expectancy - Effort expectancy - Social Influence - Personalization
25	Yoo, and Kim (2019) The effectives factors of CCA success in organization		Organization	- Environmental factors
26	Hassan, Herry, Khairudin and Adon, (2017) Factors influencing CCA in SMEs	TOE	SMEs Malaysia	- IT resources - External pressure

27	Sharma, Al-Badi, Govindaluri and Al-Kharusi, (2016) Predicting motivators of CCA: A developing country perspectives	TAM 101 samples Multi Linear Regression MLR) & Neural Network (NN) modelling RMSE	SMEs IT Professionals Oman	-Computer-self efficiency - Perceived usefulness - Trust - Perceived ease of use - Job opportunity
28	Arpaci (2016) Antecedents & consequences of CCA in education to achieve knowledge management	TAM 221 samples SEM	Education Undergraduate students Turkey	- Perceived usefulness - Innovativeness - Training & education
29	Raut, Gardas, Jha & Priyadashinee, (2017) Examining the critical success factors of CCA in Micro-SMEs	SEM Multi Criteria decision making (MCDM), MICMAC		- Previous technological experience
30	Priyadarshinee, Raut, Jha Gardas, (2017) Understanding & predicting the determinants of CCA: A two staged hybrid SEM_Neural Networks Approach	TOE 660 samples SEM	SMEs Managers	- Perceived IT security risk - Risk analysis -Technology innovation - Management style - Trust
31	Yanz Alshamaila Savvas Papagiannidid Feng Li, (2013) CCA by SMEs in the North East England: A multi-perspactive framework	TOE 15 sample (interview)	SMEs & Service providers North East, England	- Relative Advantage - Geo-restriction - Compatibility - Trialability - Size - Top management support - Prior experiences - Innovativeness - Industry - Scope - Uncertainty - Supplier effect - External computing support
32	Chhonker, M. S., Verma, D. & Kar, A. K. (2017) Review of technology adoption frameworks in commerce	TOE 209 samples SEM	SMEs Malaysia	- Data security - Technology readiness - Top management support - Competitive pressure - Innovativeness

33	Sahid, Maleh, and Belaissaoui, (2020) Cloud computing as a Drive for Strategic Agility in Organizations.		Business managers, IT professional and academicians	- IS performance -Organizational capabilities
34	Kandil, Ragheb, Ragab and Farouk (2020) Examining the effect of TOE model on CCA in Egypt	TOE SEM	IT department Employees Egypt	
35	Skafi, Yunis and Zekri, (2020) Factors influencing SMEs ACC services in Lebonon: An empirical analysis using TOE & Conceptual Theory	TOE & Conceptual Theory 139 samples Logistic Regression	SMEs IS users Lebanon	Technological factors - Complexity - Security Organization factors - Top management support - Prior IT experience
36	Low and Chen, (2011) Understanding the determinants of CCA	TOE 111 samples firms Logistic Regression	SMEs IT users Taiwan, China	- Relative advantage - Top management support - Firm size - Competitive pressure - Trading partner pressure
37	Senarathna, et al., (2018) Factors that influence ACC: An empirical study of Australian SMEs	TOE 149 samples Multiple Regression	SMEs Australia	- Relative advantage - Quality of Service - Awareness - Security - Privacy - Flexibility
38	Maqueira-Marin, et al. (2017) Environment determinants in business ACC	281 samples	Service IT users	- Technology providers - Success cases
39	Chhonker et al. (2017) Perception of CC in developing countries: A case study of Indian academic libraries	Conceptual model 339 samples	Education Library professionals India	- Ubiquitous availability - Economic & - Various resources
	Hassan, Mohd Nasir, Khairudin, (2017) Cloud computing adoption in organizations: Review of Empirical Literature	TOE N= 352 articles n = 9 articles samples		- CP, TMS, OS, COM, RA, were found significant on CCA. - Both Regulatory support, perceived legal uncertainty were not significant

RESEARCH AND FINDINGS

The research data were gathered from various articles such as the top journals, conference proceedings sourced from different online databases such as Science direct, Emerald, IEEE, Google Scholar and others. These selected articles were published within the timeframe 2015 to 2020. The sampling method (the search for data) was based on the keywords, tittles and abstracts within the range (selected years) and research questions and objectives.

This study as mentioned earlier employed the SLR to analyze the key factors determine CCA and identify the most frequent sectors, model used and also the popular years. The reviewed articles were analyzed and presented using descriptive statistic such as frequency tables, charts to explain adequately the research findings. The findings of this research identified and confirmed some key factors determine the adoption of cloud computing in various sectors of the economy.

What is the current state of literatures on the most frequent adoption model of cloud computing adoption?

The findings of this analysis in Figure 1 pinpointed four top technology adoption models (Amron, et al. 2019) hence, indicates that the TOE was the predominant technology adoption model followed by DOI and TAM respectively with regards to cloud computing adoption. However, this study highlights that UTAUT and TAM were not good enough to identify and explain the main factors determine cloud computing adoption. The analysis shows that (TOE) employed in 17 (43%) different studies out of 40, followed by (DOI) was employed in 6 (15%) different studies out of 40, TAM was employed in 4 (10%) different studies out of 40, (UTAUT) was also employed in 3 (8%) different studies out of 40, and the combined (TOE & TAM and TAM & DOI) were all employed in 3 (8%) different studies out of 40 respectively, finally, (TOE, TAM & DOI) and (TAM & UTAUT) were also employed in 2 different studies each. Hence, these combined models' usage were the least among researchers.

There is consistency between this study and the prior studies regarding TOE as the best model among others. Because, it perfectly explained the determinants of CCAtechnology based on the three (3) dimensions, such as Technological, Organizational and Environment Low & Chen, (2011), Senarathna et al. (2018), Yanz Alshamaila Savvas Papagiannidid Feng Li, (2013), Kandil, Ragheb, Ragab and Farouk (2020), and many more.

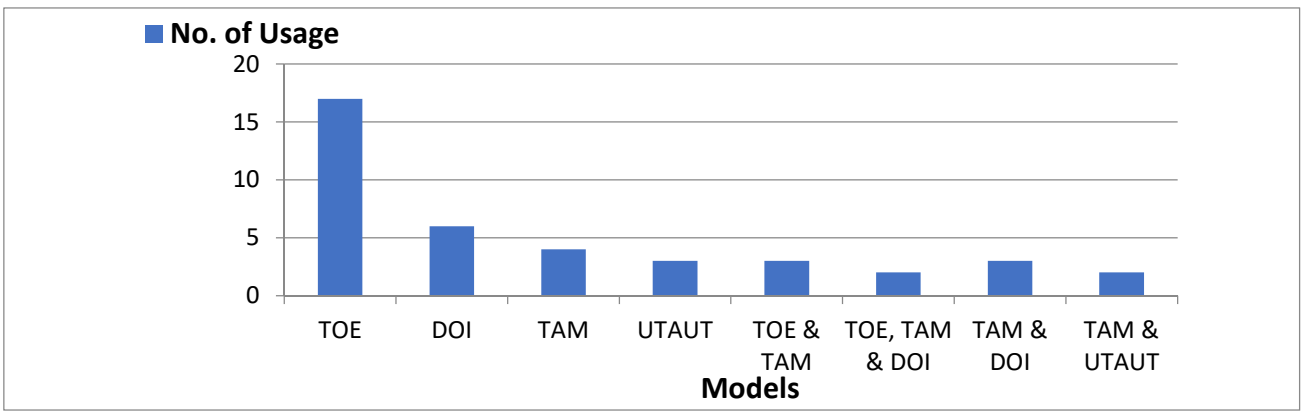


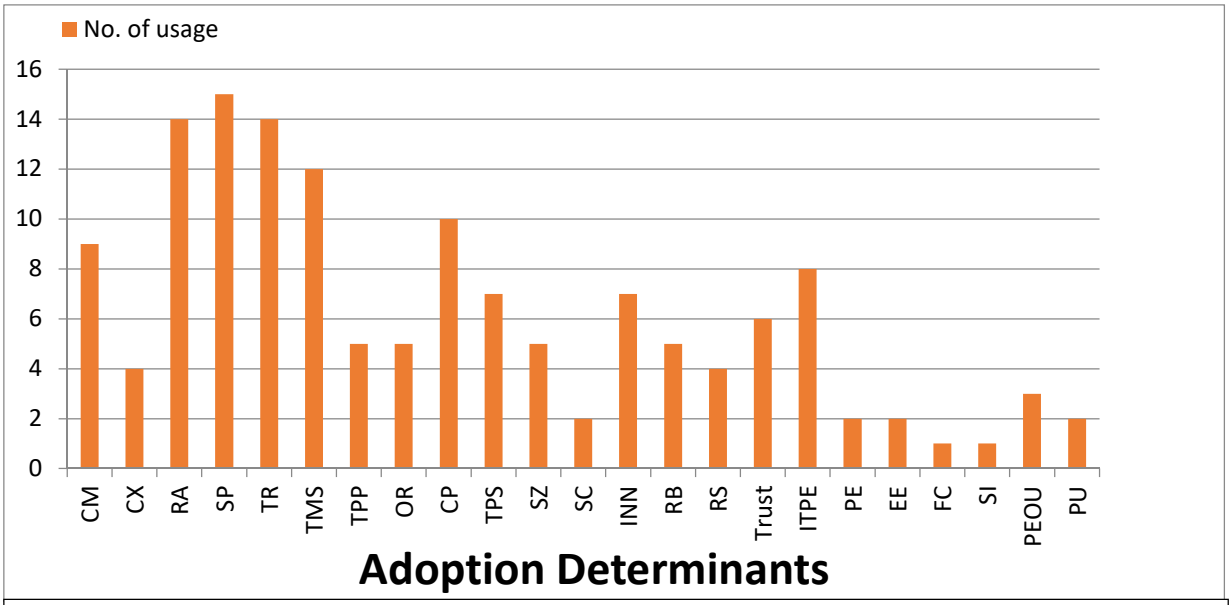
Figure 1: Technology Adoption Models (Models/Frameworks)

What are the key determinants the cloud computing adoption?

Based on the result illustrated in Figure 2 introduces 23 different adoption determinants with regards to four different technology adoption models: TOE, TAM, DOI and UTAUT or their combinations. The findings revealed that SP was used 15 (10.5%) supported the study of Tella, et al. (2020); Alkhter, et al. (2017); Oliveira, et al. (2014); Senyo, et al. (2016); Skafi, et al. (2020); and Priyadarshinee, et al. (2017), followed by RA Senarathna, et al. (2018); Low and Chen, (2011); and TR Senyo, et al. (2016) was used 14 (9.8%) in different studies and found as the most perceptible determinant respectively after SP, TMS was used 12 (8.4%), CP Skafi, et al. (2020) and Low and Chen, (2011) respectively, was used 10 (7.0%), CM was used 9 (6.3%), ITPE Skafi, et al. (2020) and was used 8 (5.6%), TPS and INN Yanz et al. (2013) were used 7 (4.9%) respectively, Trust was used 6 (4.2%), TPP, OR, SZ and RB Low and Chen (2011) were having 5 (3.5%) respectively, CX and RS was used 4 (2.8%) respectively, PEOU was used 3 (2.1%), SC, PE, EE (Abu Khayer et al. (2019) and PU Sharma et al. (2016) was used 2 (1.4%) (Tella, et al., 2020). Finally, the least among all these 23 determinants were FC and SI Tella et al. (2020) and Sharma et al. (2016) which are UTAUT variables used only once (0.7%) out of these 23 determinants (Tella, et al., 2020) . This shows that the consistency between this study and the prior studies have been established (Lawan et al., 2020).

What are the most frequent sectors that the prior studies focused for the cloud computing adoption?

The results of this analysis show in Figure 3 reveals that the most frequent sectors where cloud computing technology was employed based on the number of usage. According to the prior studies the SMEs was 24 (60%) considered as the dominant sector where CCAusing TOE as technology adoption model was employed Abu Khayer et al. (2019); Alkhter, et al. (2017); Oliveira et al. (2014); Asaei and Rahim, (2019); Senyo, et al. (2016); Anabel et al. (2016); Hassan et al. (2017); Sharma, et al. (2016); Priyadarshinee, et al. (2017) Skafi, et al. (2020); Low and Chen, (2011) and Senarathna, et al. (2018), followed Education Sector 7 (18%) Aharony (2015); Arpaci (2016) and Tella et al. (2020), then Administration (e.g. e-Gov., e-Voting etc.) 4 (8%) Priyadarshinee, et al. (2017), Health sector was the least among these sectors 2 (5%) Alharbi et al. (2016); and Unspecified sectors were also among the least with 4 (10%) of the total number of sectors Lawan et al. (2020) and Kumar et al. (2017). This result reveals that the fastest growing sector among these four well-known sectors was SMEs. It also shows that the SMEs is one of the global economic direction. Meanwhile, education was the second sector with huge investment in cloud computing. While the rest of the sectors follows the path.



*CM=Compatibility, *CX=Complexity, *RA=Relative Advantage, *SP=Security & Privacy, *TR=Technology Readiness, *TMS=Top Management Support, *TPP=Trading Partners Pressure, *OR=Organizational Readiness, *CP=Competitive Pressure, *TPS=Trading Partners Support, *SZ=Size, *SC=Scope, *INN=Innovativeness, *RB=Reliability, *RS=Regulatory Support, *ITPE=IT Prior Experience, *PE=Performance Expectancy, *EE=Effort Expectancy, *FC=Facilitating Condition, *SI=Social Influence, *PEOU=Perceived Ease of Use and *PU=Perceived Usefulness.

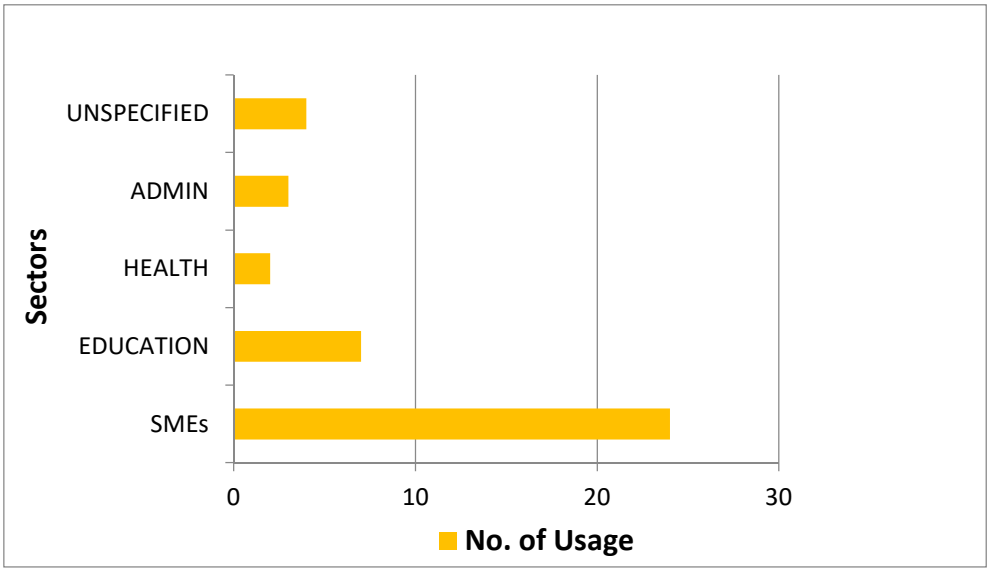


Figure 3: Popular Sectors investigated by prior studies on cloud computing adoption

What are the studies distribution of CCAover time?

The distribution and usage of CCA models over time was considered from the year 2015 to 2020 (6 years). Figure 4 shows that in 2017 there were 10 (25%), followed 2016 were 8 (20%), 2015, 2018 and 2020 were 6 (15%) respectively, then 2019 were 4 (10%) number of different studies on the cloud computing research. The year 2017 and 2016 were CCA years used in various sectors of the economy. However, from the year 2017 to 2020 the cloud computing usage in these sectors was reduced. Moreover, based on the findings of this study the 2019 was marked as the year with the least cloud computing investment.

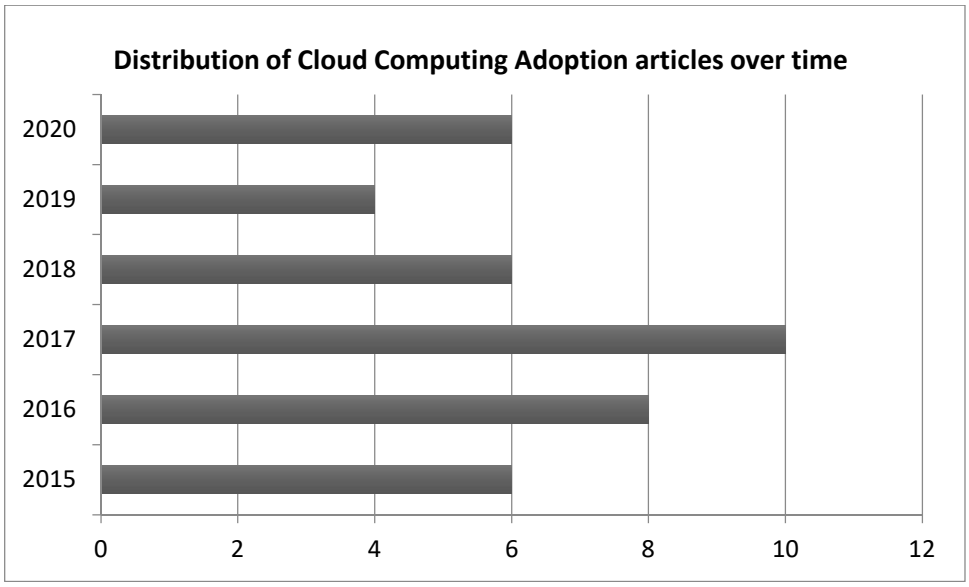


Figure 4: Distribution of articles overtime

CONCLUSION

This study investigated the influencing factors determine CCA of in various sectors of the economy. The study was also based on technology adoption literature with regards to cloud computing adoption. The systematic literature review was used to synthesize the research objectives such as to investigate the current state of literature on the frequent adoption model for cloud computing, key determinants, the most dominant sectors where cloud computing conceived most, and the distribution of cloud computing research over time respectively. With regards to current state of literature on the frequent CCA model, this study had found that TOE was the most theory used to identified and explain the factors determine CCA. Likewise, the key determinants were found to be more than half of the 18 as indicator of security and privacy, relative advantage, technological readiness, top management support, competitive pressure, compatibility and IT prior experience influence on CCA respectively. While SMEs is the sector where CCA diffused most and the results also revealed that the distribution of research over time indicated that 2016 and 2017 were found to be the most popular years of CCA research within this range of this study (2015 - 2020).

The findings of this study highlighted the following recommendations based on the research objectives accordingly:

- The results of this study revealed that TOE is the best adoption model among TAM, UTAUT and DOI that is capable of identifying and explaining the factors determine CCA in an organization. However, the future research should employed other models such as Theory of Planned Behaviour.
- Moreover, security and privacy was identified as the major threat for CCA in an organization. Therefore, there is need for an organization or researcher that plans to conduct a research adoption cloud computing to address all vulnerability about security and privacy.
- This study found that SMEs was the most frequent sectors where CCA has been employed. Therefore, there is need for research on other sectors of economy such as health, education, and so on.
- For the meantime, the time frame of this study was limited to six years research on CCA from (2015 – 2020). The future research should extent the distribution of research for ten years.

REFERENCES

Adane, M. (2018). Cloud computing adoption: Strategies for Sub-Saharan Africa SMEs for enhancing competitiveness. African Journal of Science, Technology, Innovation and development, Vol. 10 (2), pp. 197 – 207. https://doi.org/10.1080/20421338.2018 .1439288.

Ahmad, T. & Waheed, M. (2015). Cloud computing adoption issues and applications in developing countries: A Qualitative Approach. International Arab Journal of e-Technology, Vol. 4. No. 2, June, 2015.

Al-Dwairi, R. M., Al-Tweit, N. & Zyout, K. (2018). Factors influencing cloud-computing adoption in small and medium e-commerce enterprises in Jordan. Association for Computing Machenery. ACM ASBN 978-1-4503-6375-4/18/04. https://doi.org/10.1145 /3230348.3230390.

Alharbi, F., Atkins, A. & Stanier, C. (2016). Understanding the determinants of cloud computing adoption in Saudi healthcare organizations. Complex Intell Syst. Vol. 2, Pp. 155 – 171. https://doi.org/10.1007/s40747-016-0021-9.

Al-Khater, N., Walters, R. & Wills, G. (2017). An empirical study of factors influencing cloud adoption `among private sector organizations. Telematics and Informatics https://doi.org/10.1016/j.tele.2017.09.017.

Amron, M. T., Ibrahim, R., Abu Bakar, NA. & Chuprat, S. (2019). Determining factors influencing the acceptance of cloud computing implementation. Procedia Computer Science, Vol. 161, pp. 1055 – 1063.

Anabel, Gutierresz Elias Boukrami Ronald Lumsden, (2015). Technological, organizational and environmental factors influencing managers' decision to adopt cloud computing in UK. Journal of Enterprise Information Maagement, Vol.28, Iss 6. https://doi.org/10.1108/JEIM-01-2015-0001.

Arpaci, I. (2016). Antecedents and consequences of cloud computing adoption in education to achieve knowledge management. Computers in Human Behavior. https://doi.org/10.1016/j.chb.2017.01.024.

Asiaei, A. & Rahim, N. Z. Ab. (2019). A multifaceted framework for adoption of cloud computing in Malaysian SMEs. Journal of Science and Technology Policy Management, Vol. 10. No.3. 2, 2019. https://doi.org/10.1108/JSTPM-05-2018-0053.

Awa, H. O., Ukoha, O. & Emecheta, B. C. (2016). Using T-O-E theoretical framework to study the adoption of ERP solution. Cogent Business & Management, (2016), 3:1196571. https://doi.org/10.1080/23311975.2016.1196571.

Kandil, M. N .A., Ragheb, M. A., Ragab, A. A., and Farouk, M. (2020). Examining the effect of TOE model on cloud computing adoption in Egypt. 8th International conference on restructuring of the Global economy, 9 – 10th July 2018, University of Oxford, UK, The Business and Management Review, Vol 9, Iss 4.

Bakkabulindi, F. E. K. (2014). A call for return to Roger's Innovation Diffusion Theory. Makerere journal of Higher Education, ISSN 1816 -6822, vol.6, Iss 1, pp 55 – 85, ISSN: 2304 – 1366. https://doi.org/10.4314/majohe.v6.1.4

Chhonker, M. S., Verma, D. & Kar, A. K. (2017). Review of technology adoption frameworks in commerce, Information technology and quantitative management. Procedia Computer Science, 122 (2017), pp 888 – 895, https://doi.org/10.1016/j.procs.2017.11.451.

Chiu, C., Chen, S. & Chen C. (2017). An Integrated perspective of TOE framework and Innovation Diffusion in Broadband Mobile Applications Adoption by Enterprises. International Journal of Management, Economics & Social Sciences, 6 (1), pp. 14 – 39.

Davis, FD. (1989). Perceived usefulness, perceived ease of use, and user acceptance of Information technology." MIS Quarterly 13 (3): 319–40.

Hart, O., Awa Ojiabo Ukoha Ojiabo (2016). A model of adoption determinants of ERP within TOE framework. Informartion Technology & People, Vol. 29, Iss 4. Pp.901 – 930.

Hassan, H. (2017). Organizational factors affecting cloud computing adoption in small and medium enterprises (SMEs) in service sector. Procedia Computer Science, 121 (2017) 976 – 981. https://doi.org/10.1016/j.procs.2017.11.126.

Hassan, H., Herry, MN., Khairudin, N. & Adon, I. (2017). Factors influencing cloud computing adoption in small and medium enterprises. Journal of ICT. Vol. 16, No. 1, pp. 21 – 41.

Hassan, Mohd Nasir, Khairudin, (2017) Cloud computing adoption in organizations: Review of Empirical Literature, SHS Web of Conference 34, 02001 (2017), https://doi.org/10.1051/shsconf/20173402001

Jianwen, C. & Wakil, K. (2019). A model for evaluating the vital factors affecting cloud computing adoption: Analysis of the services sector. Kybernetes. https://doi.org/10.1108/k-06-2019-0434.

Kandil, AM. NA., Ragheb, M. A., Ragab, A. A. & Farouk, M. (2018). Examining the effect of TOE model on cloud computing adoption in Egypt. The 8th International Conference on Restructuring of the Global Economy, Business & Management Review, 9 (4). UK.

Khayer, A., Talukder, MS., Bao, Y., Hossain, M. N. (2019). Cloud computing adoption and its impact on
SMEs' performance for cloud supported operations: A dual-stage analytical approach. Technology in Society. https://doi.org/10.1016/j.techsoc.2019.101225.

Kumar, D., Samalia, H. V. & Verma, P. (2017). Exploring suitability of cloud computing for Small and Medium-sized Enterprises in India, Journal of Small Business and Enterprise Development, https://doi.org/10.1108/JSBED-01-2017-0002.

Lawan, M. M., Oduoza, C. F. & Buckley, K. (2020). Proposing a conceptual model for cloud computing adoption in upstream oil & gas sector. Procedia Manufacturing, 51, pp. 953 – 959. https://doi.org/10.1016/j.promfg.2020.10.134.

Low, C. & Chen, Y. (2011). Understanding the determinants of cloud computing adoption. Industrial Management & Data Systems, Vol. 111 (7), 2011. https://doi.org/10.1108/02635571111161262.

Lynn, T., Fox, G., Gourinovitch, A. & Rosati, P. (2020). Understanding the Determinants and Future Challenges of Cloud Computing adoption for High Performance Computing. Future Internet, (2020), Vol. 12 (135), https://doi.org/10.3390/fil2080135.

Maqueira-Marin, J. M., Bruque-Camara S. & Minguela-Rata, B. (2017). Envronment determinants in business adoption of cloud computing. Industrial Management & Data Systems, Vol. 117 Issue: 1, pp. 228 – 246, https://doi.org/10.1108/IMDS-11-2015-0468.

Njenga, K., Garg, L., Bhardwaj, A. K., Prakash, V. & Bawa, S. (2018). The cloud computing adoption in higher learning institutions in Kenya: Hindering factors and recommendations for the way forward. Telematics and Informatics. https://doi.org/10.1016/j.tele.2018.10.007.

Okai, S., Uddin, M., Arshad, A., Alsaqour, R. & Shah, A. (2014). Cloud computing adoption model for universities to increase ICT proficiency. SAGE Open. Pp. 1 – 10. https://doi.org/10.1177/2158244014546461.

Oliveira, T., Thomas, M. & Espadanal, M. (2014). Assessing the determinants of cloud computing adoption: An analysis of the manufacturing and services sectors. Information and Management. https://doi.org/10.1016/j.im.2014.03.006.

Priyadarshinne, P., Raut, R. D., Jha, M. K. & Gardas, B. (2017). Understanding and predicting the determinants of cloud computing adoption: A two staged hybrid SME-Neural Networks Approach. Computers in Human Behavior. https://doi.org/10.1016/j.chb.2017.07.027.

Raut, R. D., Gardas, B. B., Jha, M. K. & Priyadarshinee, P. (2017). Examining the critical Success Factors of cloud computing adoption in the MSMSEs by using ISM Model. Journal of High Technology Management Research. https://doi.org/10.1016/j.hitech.2017.10.004.

Rogers, EM. (2003) Diffusion of Innovations, 5th Edition, Simon and Schuster.

Sabi, H. M., Ukoza, FME., Langmia, K. & Njeh, F. N. (2015). Conceptualizing a model for adoption of cloud computing in education. International Journal of Information Management, 36 (2016) 183 – 191. https://doi.org/10.1016/j.ijinfomgt.2015.11.010.

Sahid, A., Maleh, Y., & Belaissaoui, M. (2020) Cloud computing as a Drive for Strategic Agility in Organizations: From Theory to Practices, Emerald Publishing Limited, Bingley, pp. 117 – 151

Senarathna, I., Wilkin, C., Warren, M., Yeoh, W. & Saizman, S. (2018). Factors that influence adoption of cloud computing: An empirical study of Australian SMEs. Australasia Journal of Information Systems, (2018), Vol 22 Iss, pp.,

Sharma, S. K., Al-Badi, A. H., Govindaluri, S. M. & Al-Kharusi, M. H. (2016). Predicting motivators of cloud computing adoption: A developing Country perspective. Computer in Human Behavior 62 (2016) pp. 61 – 69. https://doi.org/10.1016/j.chb.2016.03.073.

Skafi, M., Yunis, M.M & Zekri, A. (2020). Factors Influencing SMEs' Adoption of cloud computing Service in Lebanon: An Empirical Analysis using TOE and Conceptual Theory. IEEE Access. https://doi.org/10.1109/ACCESS.2020.2987331.

Tella, A., Ukwoma, S. C. & Kayode, A. I. (2020). A two models modification for determining cloud computing adoption for web-based services in academic Libraries in Nigeria. The Journal of Academic Librarianship 46 (2020) 102255. https://doi.org/10.1016/j.acalib.2020.102255.

Tornatzky, L.G., J.D. Eveland, M. and Fleischer. (1990). Technological innovation as a process." The Processes of technological Innovation. Lexington Books. pp. 28–49.

Venkatesh, V., M.G. Morris, G.B. Davis, and F.D. Davis. (2003) "User Acceptance of Information Technology: Toward a Unified View." MIS Quarterly 27 (3): 425–78.

Vu, K., Hartley, K. L. & Kankanhalli, A. (2020). Predictors of cloud computing adoption: A cross-sountry study. Telematics and Informatics 52 (2020), 101426. https://doi.org/10.1016/j.tele.2020.101426.

Yazn Alshamaila Savvas Papagiannidis Feng Li, (2013). Cloud computing adoption by SMEs in the north east of England. Journal of Enterprise Information Management, Vol. 26, Iss 3, pp. 250 – 275. https://doi.org/10.1108/17410391311325225.

Yoo, S. K. & Kim, B.Y. (2019). The effective factors of cloud computing adoption success in organization. Journal of Asian Finance, Economics and Business, vol6, iss1, pp 217 – 229, https://doi.org/10.13106/jafeb.2019.vol6.no1.217.

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THE ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGY FOR SCHOOL SYSTEM RE-ENGINEERING DURING THE PANDEMONIUM PERIOD OF COVID-19 OUTBREAK

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Abstract
The aim of this study is to identify the role of Information and Communication Technology (ICT) as a transformational tool for school system re-engineering and processes turnaround through asynchronous and synchronous technologies for e-learning. Moreover, the study analyzed the difference between the features and roles of synchronous and asynchronous technologies for e-learning system that will suit the current state of the COVID-19 pandemic. Initially, 88 articles were downloaded out of which 34 different articles related to the subject matter were reviewed based on title and content criteria. These articles were identified from various research databases such as Sciences Direct, Emerald Insight, Google Scholar, and Research Gate. The findings of this study revealed that both synchronous and asynchronous technologies are very useful in the current situation. Besides, this study also provides some recommendations on financial status of the parents affect the adoption and usage of ICT in school system, correspondingly the study also highlights which among these two technologies will be better suit their ability. In general these technologies are very simple to use and most of them are access free and it can be used as a platform such as e-mail, web 2.0 technologies such as Facebook, Whatsapp, Twitter, YouTube, and Telegram including audio/video conferencing, Discussions boards and many more.
Keywords: Synchronous, Asynchronous, e-Learning System, Re-engineering, Pandemonium period

1.0 INTRODUCTION

The global educational institutions start witnessing the rapid and persistent shift to distance and virtual learning environments due to the spread of COVID-19 pandemic (Carvalho, Rossiter, Angrist, Hares & Silverman, 2020). Information and Communication Technology (ICT) as a transformational weapon for achieving sustainable development goals including educational sector resists to a situation like competitive pressure from business environments and resolving certainties from uncertainties with regards to the school systems during pandemonium period such as COVID-19 pandemic and other related outbreaks such as Ebola and Lisa Fever. The provision and potentialities of online learning system in education is becoming the main challenging issue surrounding various schools during the pandemic (Almaiah, Al-Khasawneh, & Althunibat, 2020).This pandemonium period has posed unprecedented challenges requiring teachers to adapt to teaching online (Oyinloye, 2020).

The outbreak left people with little or no option to adopt and use ICT in various sectors of the economy including education. In a situation like this both learners and instructors have no option rather than to accept and use the full potentials that can be derived from using ICT in the learning environment. Unlike the situation in most developing countries before the pandemic where physical (traditional) teaching and learning exists.

And the learners and teachers having full chance of accepting or denying the school virtual setting where acceptance and usage of ICT depends primarily on learners' intention. Evidently, the prior studies of Rahman, Rosman, and Sahabudin (2020); Ullah et al., (2021) emphasized that adoption and usage of e-learning system depends largely on learners' behavioural intention especially when acceptance and usage is voluntarily. United Nations, (2020) highlighted that the unprecedented impacts of COVID-19 pandemic on education systems worldwide affected and led 1.6 billion learners to the unbearable loss during the schools closures. However, in a situation like the current pandemic acceptance and usage of ICT in schools is mandatory. This implies that the decision making power of acceptance and usage of e-learning system is no long with learners or instructors, rather the power of making such decision is vested on the governments and other educational stakeholders at different levels. As the schools closures is compulsory so as to comply with the international guidelines of social distance as one of the COVID-19 preventive measures (eLearning Africa, 2020).
Unfortunately, the next issue is which kind of ICT will be used (asynchronous or synchronous) to implement e-learning, the choice can be either one of the two or both? The answer to this rhetorical question will found together with this study research question stated below. This study underpinned the research question, what are the roles of ICT in school transformation processes through the use of synchronous and asynchronous e-learning system for school system turnaround? Hence, the identical research objectives are to: distinguish between synchronous and asynchronous in achieving old school system transformation to e-learning system.

2.0 Literature Review and Related Works

In respect to the current economic meltdown as a result of COVID-19 pandemic which negatively affected the school system and the students who are using traditional learning (Rigo & Mikuš, 2021). As early response strategy the governments at different levels of different countries including African countries declared state of emergency by ordering the schools closures with the aims of banning public gathering and install social distance of not less than two metres (Carvalho, et al., 2020). The governments response varied as: many African countries implemented radio and television educational programmes. While some countries implemented effective interventions programmes, other did not (eLearning Africa, 2020). However, many educational institutions are yet to transform the school system to virtual learning environment (Almaiah et al., 2020). Virtual learning environment requires no physical appearance. Despite being the alternative measure to overcome the situation like the recent lockdown declared by the governments, it is also less time and energy consuming, simple to use, everywhere and every time access and its on-demand nature (Luke & Kevin, 2021).
Basically, there is no much different between the normal classroom and virtual classroom, the only different is that body language and improvisation of teaching and learning materials during normal traditional classroom while in virtual classroom audiovisual material can be displayed and clearly demonstrated (Amiti, 2020). As in normal school environment, virtual learning environment (VLE) comprises all the academic activities such as teaching, learning, assessing and evaluating the students' academic performance and achievement. Both Learning Management System (LMS), Content Management (CM) and VLE are all described as universal components of e-learning system (Rigo & Mikuš, 2021).

E-learning system refers to the processes of imparting knowledge and skills through computer and network enabled digital technologies which include among other things, internet, intranet, computer, satellite TV, CDROM, audio and video resources (Dangwal, 2018). Therefore based on this study e-learning could be also defined as the use of ICT resources to enable, and enhancing teaching and learning activities. Likewise, the provision of ICT resources such as computer, radios, televisions and e-books and non-ICT products such as books and non-book materials that could be used to switch-over from analogue to digital learning environment. Empirically, eLearning Africa (2020) confirmed that the provision of radios, televisions, effective distribution of book materials and free data (Internet) access to educational sites would definitely promote traditional learning system during any form of outbreak.

The roles of ICT enabled technology called synchronous and asynchronous e-learning system toward coping with the current situation in the globe can never by estimated without its functionalities such as flexibility, accessibility, and convenient. Both synchronous and asynchronous learning system supported by LMS through real-time communication and collaboration software such as Elluminate Live or Wimber (Murphy et al., 2011). Moreover, both synchronous and asynchronous technologies are all pillars of every e-learning system, the only different between the two is the role each performs in in a teaching and learning session (Amiti, 2020).

The usual method used during the classroom session with synchronous learning includes video conference and teleconference software, live chatting and live-streamed lectures that have to be viewed in the real-time (Rigo & Mikuš, 2021). While the method used in asynchronous e-leaning system includes texts, recorded videos and audios, self-guided lesson modules, lecture note, virtual libraries, pre-recorded videos or audios content, links to Internet source, discussion boards and online materials (Rigo & Mikuš, 2021). But the biggest concern is inability of most parents to equip their children with all the necessary learning materials. Certainly, most parents in developing countries were unable to support their children with adequate learning materials talkless of computer and computer related devices that could be used to support the children (students) during the schools lockdown.

3.0 Methodology

The data were sourced from Google Scholar, Research Gate, and Science Direct. Initially, about 88 articles were gathered even though, 34 articles were sampled based on title and content quality criteria. The data were analyzed using comparative and explanatory analysis.

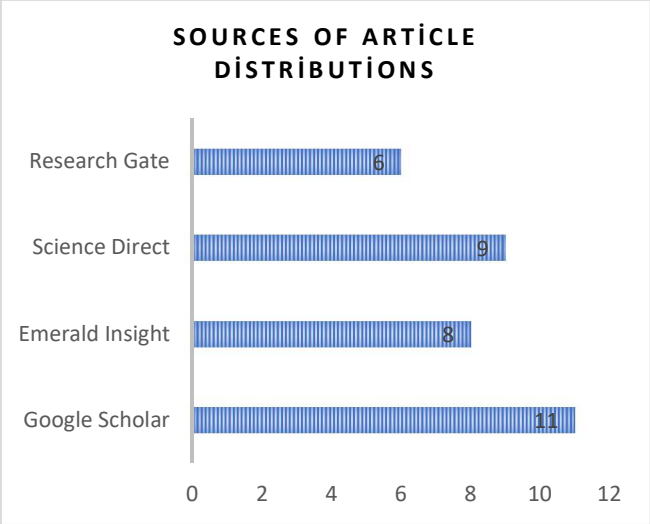


Figure 1: Articles distributions from different databases

Table 1: Article Distributions

SOURCE	FREQ
Research Gate	6
Science Direct	9
Emerald	8
Google Scholar	11

4.0 Results and Discussions

4.1 Synchronous Learning System

Synchronous e-learning system supports real-time audiovisual communication and collaboration between instructor and learners (Murphy et al., 2011). Amiti, (2020) described that no matter the geographical distance synchronous learning bring learners and instructors together from various locations and also provide comfortable and less stressed interface. So also, Murphy et al., (2011) highlighted that both instructor and learners are located in a remote location to communicate and collaborate using video or audio conferencing or both and other instantaneous tools such as instant messages, whiteboards, and phone calls. Synchronous tools, by contrast, involve media relative to meeting concurrently through text and voice (i.e., live chat), live document sharing, live audio or video conferencing (both one-to-one and one-to-group), meetings in virtual worlds, and white board sharing (Hurley, 2015; Mick & Middlebrook, 2015).

4.2 Asynchronous E-learning System

With regards to asynchronous learning both instructor and learners are separated in time and space and are therefore, geographically and temporally independent and diverse. Moreover, asynchronous learning system is supported by e-mail, content materials, discussion forums, fax machines, social media such as blogs and wikis and thus, WebCT, Moodle, or Black Board's tools are provided by learning management system (LMS) (Murphy et al., 2011). The study of Rigo & Mikuš, (2021) identified that the flexibility, pacing affordability, free accessibility of materials, convenience as it suited both quick and slow learners, cost-effective as it does not required real time and regular and daily attention of instructors or administrators (Rigo & Mikuš, 2021). Amiti, (2020) described Asynchronous e-learning system as an ICT enabled technology that facilitate communication and collaboration not instantly between the learners and instructors through recorded videos and audios lectures, e-mail, chat from discussion boards. The success of community development efforts in an asynchronous text-based learning environment is often associated to how much participants feel present within the shared space (Yamagata-lynch, 2014).

Being the technologies of e-learning system, Asynchronous e-learning system provide the learners with opportunities and freedom to learn at their leisure time, at the comfort of their rooms, offices or anywhere (Amiti, 2020).

4.3 The Roles of Synchronous and synchronous Learning System

The roles of ICT can be assessed based on the types and features of technology used and the functions each performed when carrying out a task. In this review, the roles of ICT based on features and roles of synchronous and asynchronous learning system. As early response International bodies supported education system by providing intervention in containment of COVID-19 pandemic such as Artificial Intelligent/Machine Learning, Mobile Apps, E-learning tools, Interactive voice response, Websites/Dashboards, Robotics and Drones, Data Analytic and Wearable/Sensor technology from which some are used for e-learning (Rahman et al., 2021). World Bank Group Education, (2020) that knowledge and use of ICT has become an almost essential requirement when it comes to finding employment in our society. There are numerous roles and tasks that are currently automated in an organization such as billing accounting, treasury management stock management, cost accounting, human resources management, payroll, budget accounting and many more.

With the help of ICT using either synchronous, asynchronous technology or both will be served as enabling environment for teaching and learning. It is one of the most important roles of ICT particularly synchronous and asynchronous learning system even before and during the pandemic (Amiti, 2020; Perveen, 2016). Thus, each one of these modes is useful for understanding how e-learning system can be used to expand and enhance the curriculum and content or to become an integral part of the content, curriculum, and instruction (Luke & Kevin, 2021).

Therefore, the decisions to use asynchronous and/or synchronous e-learning system resources were largely depends on the affordability of each mode in helping the teacher address the needs of learners during the class suspensions. To help understand these affordances, the relevant findings pertaining to each characteristic of the e-learning modes, instructional resources, assessment, and communication are presented (Luke & Kevin, 2021).

Consequently, the COVID-19 pandemic has a devastating impact on humanity. However, it has also led to one of the biggest opportunities for innovation in education in human history. This provides a unique opportunity to explore the digital technologies and instructional approaches teachers have employed at this time, which can add to our growing understanding of blended learning in relation to virtual schooling (Luke & Kevin, 2021). Similarly, the result of eLearning Africa (2020) confirmed that COVID-19 pandemic would provide new opportunities for educational system particularly in the integration of technology into learning processes.

Evidently, the research conducted by (Carvalho, Shelby, Rossiter, Jack Angrist, Noam Hares, Susannah, Silverman, 2020) suggested that the following as the remedies to current situation: of establishing public trust, managing fear, and perceptions of risk, and leveraging community engagement are key to effective crisis response.

4.4 Derived Benefits of Adopting Synchronous E-learning System

1. Reliability (it is more reliable because the learners can ask questions and get their answers promptly)
2. Real-time communication and collaboration
3. Effectiveness (responses with no delay)
4. Accessibility (accessing the materials within the time frame assigned by the instructor)
5. Requires more bandwidth data for accessing the materials
6. Enable two-ways communications

4.5 Derived Benefits of Adopting Asynchronous E-learning System

1) Affordability (mostly open source)
2) Accessibility (accessing the materials at learners' best times and not instantaneously but with stipulated period of time assigned by the instructor)
3) Convenience (accessing the learning materials can be done anywhere and anytime with no stress)
4) Requires and Consumes less bandwidth data for accessing the materials
5) Enable only one-way communication
6) Simple to use (self-guided modules)
7) Learner's centric learnings

The table 3 below demonstrates the roles of ICT the use of synchronous and asynchronous e-learning system. The features and corresponding roles of both types of e-learning system has been illustrated below

The decision to use either synchronous or asynchronous technologies and instructional resources or a blend of both were largely dependent on the affordability of each mode in helping the learners in a classroom session (Luke & Kevin, 2021). Moreover, another prior study highlighted that the choice between synchronous or asynchronous e-learning depends on several factors such as teachers/students' preferences, technical requirements, availability of technological resources and a decision of educational institutions to adopt and use a unified communication and collaboration tools (Rigo & Mikuš, 2021). In a situation where the stakeholders neglect the provision of infrastructure due to financial constraint, therefore with this regards asynchronous e-learning will be more appropriate as it requires minimum and not expensive technological requirements.

Table 3: Comparative Analysis between the Roles of Synchronous and Asynchronous e-Learning

SN	Features	Role of Synchronous	Role of Asynchronous
1	Mode	Here both instructor and learners have to meet at a specific time (Real-time and based on scheduled time).	Here there is no need to meet at a particular time, rather both instructor and learners may check the platform at their leisure time (Convenient-time)
2	Media	Live-streaming audio and video, Real-time chats or SMS (texts) all these can be access using computers or Mobile Phones	E-mails, SMS, After-time audios videos (recorded lectures, voice mail, chats from discussion boards, social networking all these can be also access using computers or Mobile Phones
3	Technologies required	Web browser, Zoom, Elluminate, Centra, Macromedia Breeze, Horizon Wimba, LearnLinc,	Moodle (open source), Blackboard, Schoology, Decebo, D2L, Google Classroom, Canvas
4	E-Learning Technologies	Learning Management System Course Management System Virtual Learning Environment	Learning Management System Course Management System Virtual Learning Environment
5	Assignments and Examination	Learners partake in assignment or exams at a stipulated period of time on real time basis	Learners partake in assignment or exams at their own schedule (not real time basis)
6	User Centric	Instructor centered	Learners' centered
7	Cost-effective (Affordability)	Expensive: It requires much money to purchase learning and teaching devices, Bandwidth (Partial affordable)	Cheap: it requires little amount of money to purchase learning and teaching devices (affordable)
8	Accessibility (Availability)	On schedule time at anywhere but within a fixed time frame of class	On learners' own schedules time at any time and everywhere
9	Timing	Instantly	Not instantly
10	Data Transmission	Two-way with high speed, A multiple blocks or Frames of characters at a time,	One-way with slow speed, a Character or Byte at a time
11	Implementation	Flexible	Highly Flexible
12	Local Storage	Not required	Required

Table 2: Technical Requirements Analysis for both Synchronous and Asynchronous E-learning

Requirements	Synchronous E-Learning	Asynchronous E-Learning
Capacity	More than 200,000 users	200,000 users
Computing devices	Computers and Mobile Phones with webcam	Computers, Mobile Phones
Processor	1.2 GHz Pentium 3	500 MHz Pentium 3
RAM	512 of RAM	1GB of RAM
Hard Disk Free Space	500 MB	200 MB
Operating System	Linux, Mac OS X, Windows etc.	Windows, Linux, Mac OS X, etc.
Front-end Enablers	Learners, Internet, World Wide Web (www), E-mail etc.	Learners, Internet, www, E-mail etc.
Users and Back-end Enablers	Service Providers Internet, www, Databases, Data Storage Devices, etc.	Instructor, Service Providers, PHP, MySQL, Microsoft SQL Server, etc.
Users	Instructors/Admin (at back-end), Learners (at front-end) ThirdParties (at back-end)	Instructors/Admin (at back-end), Learners (at front-end) ThirdParties (at back-end)

5.0 Conclusion and Recommendations

It is very important to note that e-learning system cannot be in existence without these two technologies (asynchronous and synchronous). Asynchronous e-learning system is more appropriate in terms of affordability, flexibility, convenience, (see table 3). However, many countries especially developing ones may not be able to adopt the both due to their economic instability and attitude of people, governments towards change. Surely, this study revealed that preserve the flexibility and convenience of asynchronous communication while enhancing efficiency and quality of feedback and interaction through synchronous communication (Learning, 2018). All these comfortability with asynchronous e-learning can be achieve with little resources support from both parents and schools' administrators and governments. There is need for the governments at different levels to provide adequate ICT infrastructure. The study recommend that the ICT plays an important role for school system re-engineering especially during this period of COVID-19 pandemic. As the pandemic forced governments from different countries to adopt and use the modern e-learning system. However, the choice of either synchronous or asynchronous e-learning system depends on condition warrant based on stakeholders, affordability and convenience from the learners' side.

References

Almaiah, M. A., Al-Khasawneh, A., & Althunibat, A. (2020). Exploring the critical challenges and factors influencing the e-learning system usage during COVID-19 pandemic. Education and Information Technology. https://doi.org/10.1007/s10639-020-10219-y

Africa, El. (2020). The Effect of Covid-19 on Education in Africa and its Implications for the Use of Technology. 1–81. https://doi.org/10.5281/zenodo.4018774

Amiti, F. (2020). Synchronous and Asynchronous E-learning. 60–70. https://doi.org/10.46827/ejoe.v5i2.3313

Carvalho, Shelby, Rossiter, Jack Angrist, Noam Hares, Susannah, Silverman, R. (2020). Planning for School Reopening and Recovery After COVID-19 An Evidence Kit for Policymakers.

Dangwal, K. L. (2018). Electronic Learning Technologies. 8(June), 11–22.

Education, W. B. G. (2020). The impact of the covid-19 pandemic on education financing. May, 1–12.

Hurley, R. (2015). An exploratory study of employee turnover indicators as predictors of customer satisfaction. June. https://doi.org/10.1108/08876040710746543

Learning, A. (2018). Asynchronous vs . Synchronous. 22, 24059. https://doi.org/10.24059/olj.v22i1.1092

Luke, B., & Kevin, M. (2021). Blending asynchronous and synchronous digital technologies and instructional approaches to facilitate remote learning. Journal of Computers in Education, 0123456789, 1–20. https://doi.org/10.1007/s40692-021-00195-8

Mick, C. S., & Middlebrook, G. (2015). ASYNCHRONOUS AND SYNCHRONOUS MODALITIES. 135–154.

Murphy, E., Rodríguez-manzanares, M. A., Barbour, M. K., Murphy, E., Rodríguez-manzanares, M. A., & Barbour, M. (2011). Asynchronous and Synchronous Teaching and Learning in High-School Distance Education. 42, 583–591. https://doi.org/10.1111/j.1467-8535.2010.01112.x

N S A. Rahman, A. N. R. and N. A. S. (2020). Students ' Continuance of Using E-Learning System : A Review of Conceptual Frameworks. https://doi.org/10.1088/1757-899X/769/1/012044

Oyinloye, O. M. (2020). Research Article Possible impact of COVID-19 on senior secondary school students ' performance in science education in Nigeria. November.

Perveen, A. (2016). Synchronous and Asynchronous E-Language Learning : A Case Study of Virtual University of Pakistan. 8(1), 21–39.

Rahman, H. U., Ali, G., & Zaman, U. (2021). Role of ICT Investment and Diffusion in the Economic Growth : A Threshold Approach for the Empirical Evidence from Pakistan. International Journal of Financial Studies, 9(14), 1–14.

Rigo, F., & Mikuš, J. (2021). Asynchronous And Synchronous Distance Learning Of English As A Foreign Language. 4(1), 89–106.

Ullah, N., Al-rahmi, W. M., Alzahrani, A. I., Alfarraj, O., & Alblehai, F. M. (2021). Blockchain Technology Adoption in Smart Learning Environments web APIs by using. 1–17.

Yamagata-lynch, L. C. (2014). Blending Online Asynchronous and Synchronous Learning. The International Review of Research in Open and Distance Learning, 15(2), 1–24.

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GPU IMPLEMENTATION OF FABER SCHAUDER DISCRETE WAVELET TRANSFORM USING CUDA

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Abstract
Wavelets are the foundation of powerful approaches in signal processing and multi-resolution. This later includes techniques from a variety of disciplines such as subband coding from signal processing, quadratic mirror filtering from digital speech, and image processing. The appeal of the multi-resolution theory is the detection of features at many levels of resolution. Since computers have just finite precision, floating-point transforms are less interesting from the viewpoint of numerical computation. That is why integer wavelets have been widely used in image processing. Faber Schauder discrete wavelet transform (FSDWT) has many interesting advantages in image and video processing owing to its simplicity and its multiscale-based theory. It preserves the pixel ranges, has arithmetic operations, and detects edges in multiscale representation. With the growth of technologies, computers operate on large data sets such as HD images or videos, and real-time requirement becomes more demanded in many image and video processing tasks. The FSDWT computation becomes complex and needs other techniques to deal with it. Thus, the use of parallel processing becomes necessary to provide high-performance at a reasonable cost. To solve this problem, we implement the FSDWT in parallel on a Graphics Processing Unit (GPU) using Compute Unified Device Architecture (CUDA) code. The results demonstrate that the GPU-based FSDWT exceedingly outperforms the CPU FSDWT.
Keywords: Image processing, FSDWT, GPU, CUDA, Multiscale transform

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DEEP LEARNING AS A SECOND LAYER TO SMART CONTRACT

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Abstract
The general objectives of smart contract design are to satisfy common contractual conditions (such as payment terms, liens, confidentiality, and even enforcement), minimize exceptions both malicious and accidental, and minimize the need for trusted intermediaries. Related economic goals include lowering fraud loss, arbitration and enforcement costs, and other transaction costs.
As different kinds of assert and token are rapidly being exchange over the smart contract on block chain and fetching of data by smart contact on public sources called off-chain data fetching are increasing massively due to the internet of things. The need for verifying of the original asserts and off-chain data fetching for more trustable and security efficiency.
This paper propose the second layer to smart contract to address the above challenge using deep learning which is “a subset of machine learning where neural networks — algorithms inspired by the human brain — learn from large amounts of data. Deep learning algorithms perform a task repeatedly and gradually improve the outcome” .to stay as the frontend and interface between the smart contract and data resources to provide a data which undergoes selection pattern and qualify to be fetched and provide to smart contact for reliable and secure transaction. Also this paper focuses on ethereum smart contract particularly to address this challenge.
Keywords: smart contract, artificial neural networks, off-chain data, trustable and security efficiency

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INTERNET OF CREATIVE-MUSIC THINGS: MULTIDISCIPLINARY ASPECTS IN COMPUTATIONAL MUSICOLOGY

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Abstract

Computational Music generation is a multidisciplinary approach that retrieves creative characteristics from computers. Music creation, composition, and reconstruction are the prolific subdomains which utilize computational means for generating music[1]. Due to the multidisciplinary research characteristics of computational musicology, it is often challenging to illustrate precise objectives and to preserve the statistical and analytical track of qualitative music computing. We would like to provide the systematic organisation for exploring Computational music creativity, music generation, and music reconstruction paradigms. We demonstrate the overview on state-of-the-art computational music researches for (a) human-computer interaction-inspired music formation, (b) intelligence on music generation, and (c) music analytics and reconstruction in the context of Internet of Things (IoT)[2] for remote music performances. We wish to categorically illustrate the creative musical attributes as (i) human-based music personification; (ii) Process-induced music artifacts for humanistic care; (iii) Professionalised music reconstruction; and (iv) societal and cultural music ecosystems. The conventional music generation, composition, and reconstruction methodologies are typically based on (A) Object-Oriented Musical pattern analysis and musical information retrieval for classical music formation; (B) Stochastic Markov chain for music creation; (C) Grammar-based music composition; (D) Constraint-inspired music composition frameworks; (E) Machine, Deep, and Representation learning paradigms for music reconstruction; (F) Evolutionary intelligence for music generation; and (G) Nature-inspired music compositional phenomena. Although now-a-days we are living in this world where there are beyond the IoT connected devices than the human beings. Connected devices communicate using distributed networks or cloud-based infrastructures connected to the IoT. In the context of Internet of Music Things (IoMT)[3][4], the music instruments [5] can be connected through the IoT devices to consent the musicians and composers to operate them through connected devices.

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[1]Carnovalini F, Rodà A (2020) Computational creativity and music generation systems: An introduction to the state of the art. Frontiers in Artificial Intelligence 3:14.

[2] Roy S, Sarkar D, De D (2020) Entropy-aware ambient IoT analytics on humanized music information fusion. J Ambient Intell Human Comput 11 (1): 151-171.

[3] Roy S, Sarkar D, Hati S, De D (2018) Internet of Music Things: an edge computing paradigm for opportunistic crowdsensing. J Supercomput 74 (11): 6069-6101.

[4] Roy S, Sarkar D, De D (2021) DewMusic: crowdsourcing-based internet of music things in dew computing paradigm. J Ambient Intell Human Comput 12(2): 2103-2119.

[5] Roy P, Roy S, De D (2020) TMIR: Transient Length Extraction Strategy for ANN-inspired Musical Instrument Recognition. In: 2020 IEEE WIECON-ECE (pp. 267-271).

Connecting musical objects in IoMT framework has concreted the pathways for several industry-oriented musical applications, such as, (a) organisation of remote musical performances through the internet-enabled platforms; (b) intelligent and real-time musical rhythmic improvisation[6]; and (c) system-induced auto-tuning of the real-time performing musical instruments with less human-intervention. Consequently, the IoMT is not a complementary framework that is designed for music analytics, rather the IoMT framework is an extension of conventional music generation and reconstruction artifacts, which bracket together the established music-making methodologies with the remotely scattered musical performances through the dedicated internet connectivity. As musical performances are largely dependent upon the quality viewpoints of the audiences and music listeners, the advancements of music-making paradigms have the responsibilities to develop the multidisciplinary human-emotion and sentiment-oriented music recommendation systems[7]. The music provider can envisage and then extend the apposite musical performances to their active audiences depending on the music appearances that has been taken heed earlier [8].

Keywords: Internet of Music Things; Music composition; Music Generation; Intelligent systems; Recommendation Systems

[6] Roy S, Chakrabarty S, De D, Bhattacharya A, Dutta S, Ghatak S (2021) Rhythmic Finger-Striking: A Memetic Computing-Inspired Musical Rhythm Improvisation Strategy. In: IEMIS 2020 (pp. 893-905). Springer, Singapore.

[7] Roy S, Biswas M, De D (2020) iMusic: a session-sensitive clustered classical music recommender system using contextual representation learning. Multimed Tools Appl 79 (33): 24119-24155.

[8] Roy S, Chakrabarty S, De D (2017) Time-based raga recommendation and information retrieval of musical patterns in Indian classical music using neural networks. IAES International Journal of Artificial Intelligence *6*(1): 33-48.

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PERFORMANCE OF INTER SATELLITE COMMUNICATION LINK THROUGH DIFFERENT MODULATION METHODS

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ABSTRACT
In the world satellite communication is act as main role to provide and use various space and other public applications such as communication, navigation, earth observation, weather reading checking and monitoring, environment monitoring etc. In all the above applications to observation earth the satellites which placed using the important traditional design called low earth orbit which used to increases the data resolution but above method will take more time to present of duration outcomes because not able to transmit the high resolution data rate to grand station antenna from low earth orbit satellite. Another one is geostationary earth orbit satellite model that one have more visible time than low earth orbit satellite, so inter satellite communication is should be used between necessary between above two methods use to increases higher performance of resolution. In this emerging recent developed design, to compare the result analysis of above two satellite models using three traditional modulation methods like such as quadrature phase shift keying, 8 phase shift keying and 16 SK and 16 quadrature amplitude modulation with different amplifier models like rapp amplifier, saleh and ghorbhani models to measure used via a with eco-signal (doppler effect) air medium. Even though observed the output of quadrature amplitude modulation scheme achieve better error vector magnitude through MATLAB simulator.
Keywords: Long Distance Broadcasting; Modulation Methods; Inter Satellite; Amplifier Models

1. DOPPLER EFFECT
The representation block of inter satellite communication using three different modulation techniques to use different amplifier modes with error vector magnitude with observed performance on system of amplitude, frequency and phase, below techniques used in this work.
- quadrature phase shift keying
- 8 phase shift keying
- 16 quadrature amplitude modulation with three different amplifier models namely Saleh, Ghorbani and Rapp.
- SALEH AMPLIFIER MODEL
- GHORBANI AMPLIFIER MODEL
- RAPP AMPLIFIER MODEL

The change of amplitude, phase and frequency due to relative between two different inter satellite methods with various velocities. So eco signal frequency related with original frequency as followed by carrier frequency and velocity to transmit via light.

THERMEL
I\Q IMBALANCE
ERROR VECTOR MAGNITUDE (EVM)

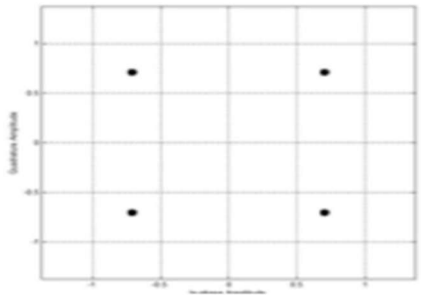


Figure 1: basic constellation

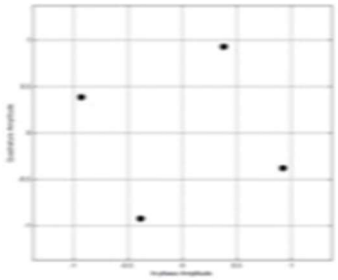


Figure 2: after saleh model amplifier

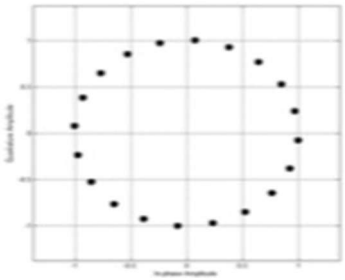


Figure 3: Doppler Effect

QPSK- MODULATION

The constellation diagrams of quadrature phase shift keying signal with various stages with different amplifier model such as saleh model amplifier are shown in Figure 2 and four point constellation as shown in Figure 1 and eco signal received quality output of both the amplitude with phase as shown in Figure 2.

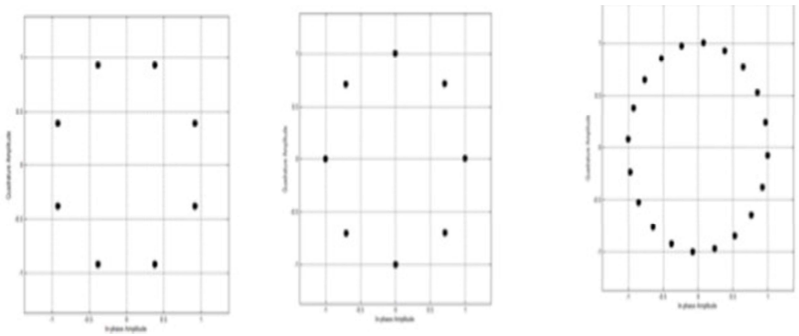


Figure 4: error vector magnitude of QPSK modulation

8-PSK MODULATION

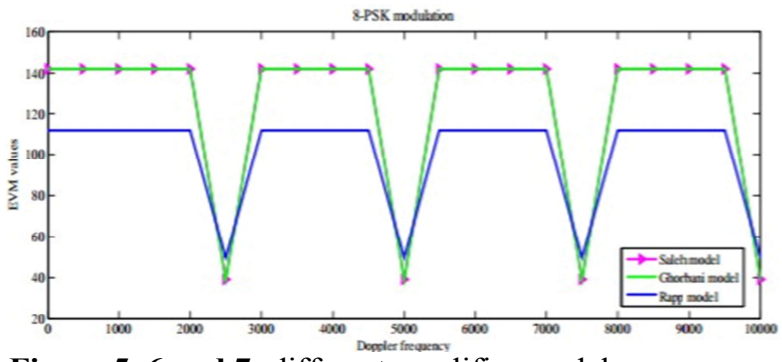


Figure 5, 6 and 7: different amplifier model

In this session using 8 phase shift keying such as 45 degree, 90 degree 135 degree, 180 degree, 225 degree, 270 degree, 315 degree and 360 degree as shown in Figure 6 and the effect different amplifier model monitored as show in Figure 7. In Figure 8 shows the eco signal (Doppler Effect) of inter satellite communication model in distorted signal.

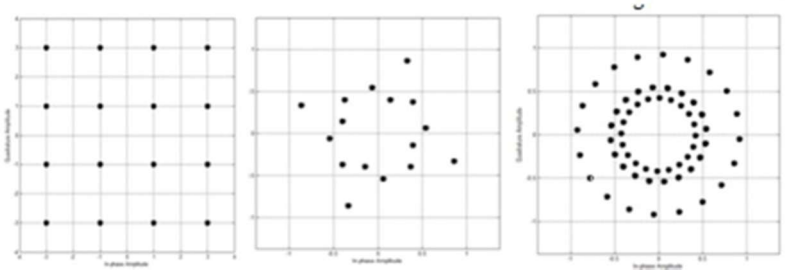


Figure 8: EVM values versus Doppler frequency of 8-PSK modulation

16-QAM MODULATION

The 16 quadrature amplitude modulation models provide 4 different points like 90 degree, 180 degree, 270 degree and 360 degree with 16 different amplitudes as shown in Figure 10.

8-PSK-MODULATION

Parameter	EVM values		
	Saleh Model	Ghorbani Model	Rapp Model
After amplifier	39.43	38.85	50
After frequency offset	141.7	141.9	111.8
After noise figure of 3dB	141.7	141.9	111.8
After I/Q imbalance	145.3	145.5	112.9

16-QAM MODULATION

Parameter	EVM values		
	Saleh Model	Ghorbani Model	Rapp Model
After amplifier	86.26	75.25	77.51
After frequency offset	102	104.6	102.6
After noise figure of 3dB	102	104.6	102.6
After I/Q imbalance	102.2	105.1	102.8

QPSK MODULATION

Parameter	EVM values		
	Saleh Model	Ghorbani Model	Rapp Model
After amplifier	39.43	38.85	50
After frequency offset	141.7	141.9	111.8
After noise figure of 3dB	141.7	141.9	111.8
After I/Q imbalance	145.4	145.7	113

2. RESULTS & DISCUSSION

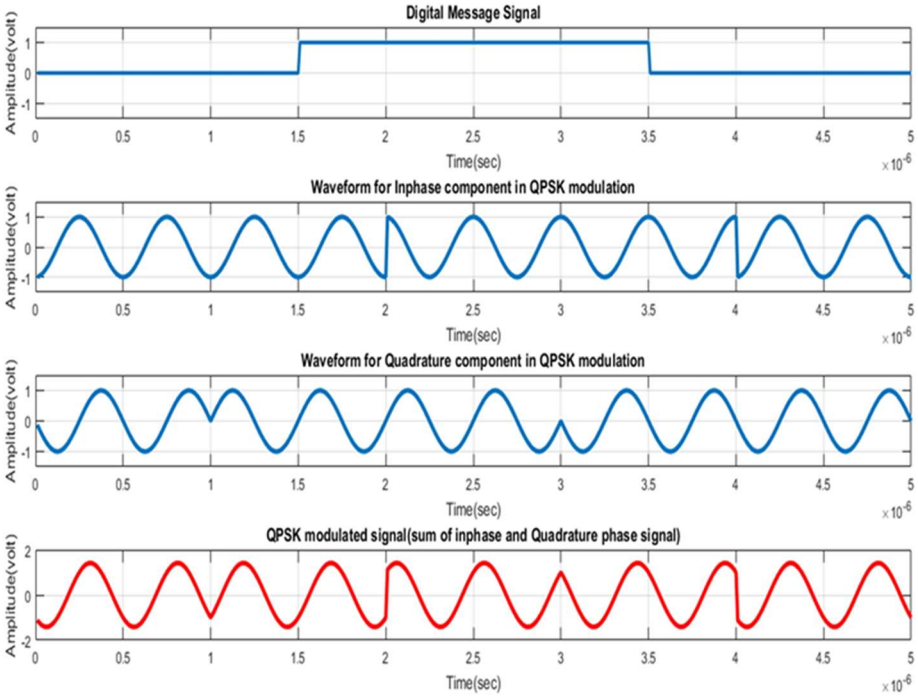


Figure 9: SIMULATED WAVEFORM

SIGNAL CONSTELLATION

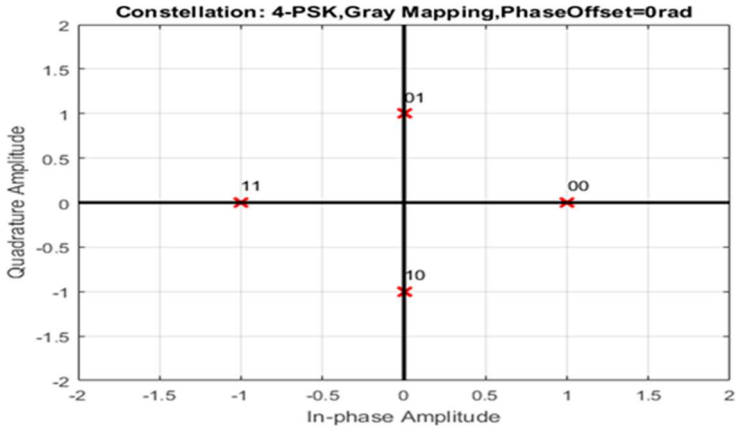


Figure 10 SIGNAL CONSTELLATION

The received signal (eco signal) frequency of 2.5 KHz and its multiples, error vector magnitude value provide and also same value of produced amplifier model. More over 16 quadrature phase shift modulation achieve more advantage of time and resolution than other modulation techniques used in above inter satellite communication designs with various applications.

3. SUMMARY & FUTURE RESEARCH WORK

We conculed the above two orbit model with three different modulation methods with the performance of different amplifier models like rapp amplifier, saleh and ghorbhani using error vector magnitude parameters. Simulation results of various parameters like amplifier, frequency offset and noise figure and I/Q imbalance of through low earth orbit and geostationary earth orbit inter satellite models. The analysis of output using error vector magnitude parameters design and also achieve better outcomes of transmitting and received eco signal (Doppler Effect) with evidence of simulation results this model having lower time management and higher resolution. The effect of achievement in inter satellite models between low earth orbit and geostationary earth orbit i.e., eco signals observed the received channel capacity and quality of results. It is observed that quadrature phase shift keying archive 145.7 and 8 phase shift keying archive 145.5 respectively and also error vector magnitude archive of 16- quadrature using saleh amplifier model is 105.1. To increase the merits of above research techniques, I plan to investigate and implement the following issues in our future research.

- The same concept can be applied in satellite to increase delivery ratio and reduce delay in the route and also to save more energy.
- The performance of proposed design can be tested in real time network environment.

REFERENCES

1. R. Radhakrishnan, et al, “Optimal Multiple Access Protocol for Inter-satellite Communication in Small Satellite Systems,” in The 4S Symposium, Majorca, Spain, 2014.

2. F. Pinto, et al, “Software Defined Radio Implementation of DS-CDMA in Inter Satellite Communications for Small Satellites,” in International Conference on wireless for Space and Extreme Environments, Orlando, Florida, USA, 2015.

3. B. W. Barbee, et al., “Guidance and Navigation for Rendezvous and Proximity Operations with a Non- Cooperative Spacecraft at Geosynchronous Orbit,” in George H. Born Symposium, Boulder, Colorado, 2010.

4. O Baran and M.kasal “Modeling of the simultaneous influence of the thermal noise and the phase noise in Space communication systems”, International journal Radio engineering, 2010, Vol, 19,No. 4, PP 618-626.

5. R.Rinaldo and R.D Gaudenzi “Capacity Analysis and System optimization for the forward link of multi-beam satellite broadband systems exploiting adaptive coding an modulation”, in International Journal of satellite communication and Networking, Vol. 22, PP 401-423,2004.

6. “M-ary PSK over Non-linear Satellite Channels “, James Cladwell and clark Robertson, PP :23 in IEEE conference PACRIM 2009. SSC02-IV-6 -16th Annual AIAA/USU Conference on SmallSatellites, Logan, Utah, USA, 2002.

7. B. Palmintier, et al, “Distributed Computing Architecture for Small Satel-lite and Multi-Spacecraft Missions," in SSC02-IV-6 -16th Annual AIAA/USU Conference on Small Satellites, Logan, Utah, USA, 2002.

8. M. Rajanna, et al, “Satellite Networks Routing Protocol Issues and Challenges: A Survey," International Journal of Innovative Research in Computer and Communication Engineering, vol. 2, no. 2, pp. 153,157, May 2014.

9. D.-Y. Zhang, et al, “A Satellite Routing Algorithm Based on Optimization of Both Delay and Bandwidth," in Wireless Communications, Networking and Mobile Computing (WiCOM), 2011 7th International Conference on, Sept 2011.

10. R. Sun, et al, “Enabling Inter-satellite Communication and Ranging for Small Satellites," in Proceedings of the small satellite systems and services symposium, Funchal, Portugal, 2010.

11. W. Guoqiang, et al, “Research on Formation of Microsatellite Communication with Genetic Algorithm," The Scientific World Journal, vol. 2013, pp. 1-7, 2013

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SOME NEW EXTENSION OF BETA, GAUSS, CONFLUENT HYPERGEOMETRIC FUNCTIONS AND BETA DISTRIBUTION

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ABSTRACT
This talk is inspired by the recent work that involve a product of Bessel-Struve function as a kernel of some special functions such as beta, Gauss and confluent hypergeometric function and their applications to beta distribution and generating function. In sequel to this a further extension of beta function and certain of its properties such symmetric property, functional relation, summation formulas, partial derivative and integral representations are discussed. We propose Gauss and confluent hypergeometric function in term of the new extended beta function with their properties like integral representations, differential formulas and transformation formulas. We investigated applications of our new extended beta function to statistical distribution by providing beta distribution and its corresponding moment, mean, variance, coefficient of variance, moment generating function, characteristic function, cumulative distribution, reliability function, upper and lower incomplete beta functions of the new extended distribution. Moreover, two and three variables hypergeometric functions are defined by using the new extended beta function with their integral representations and applications to Riemann-Liouville fractional derivative operator, linear and bilinear generating functions are also proposed.
Keywords and phrases: Gauss hypergeometric function, confluent hypergeometric function, Bessel-Struve function, beta distribution, incomplete beta function, reliability function, Appell's function, Lauricella's functions.
MSc 2010: 33B15, 33B20, 33C05, 33C15.

1. INTRODUCTION
Recently in 2020, Ghayasuddin et al., [1] used product of Bessel-Struve function to investigate the following extended beta function:

$$B_n^{p,q}(t,y) = \int_0^1 x^{t-1}(1-x)^{y-1} S_n\left(-\frac{p}{x}\right) S_n\left(-\frac{q}{1-x}\right) dx, \qquad (1)$$

$(Re(t) > 0, Re(y) > 0, Re(p) > 0, Re(q) > 0, Re(n) > -1),$
and $S_n(;)$ is the Bessel-Struve function (see for example, [2] and also [3]).
Putting $n = -\frac{1}{2}$ equation (1) reduces to extended beta function presented by Choi et al., [4]:

$$B_{p,q}(t,y) = \int_0^1 x^{t-1}(1-x)^{y-1} exp\left(-\frac{p}{x} - \frac{q}{1-x}\right) dx, \qquad (2)$$

$(Re(t) > 0, Re(y) > 0, Re(p) > 0, Re(q) > 0).$
On setting $p = q$ in equation (2) the following extended Euler's beta function can be establish (see, [5-7]):

$$B_p(t,y)=\int_0^1 x^{t-1}(1-x)^{y-1}exp\left(-\frac{p}{x(1-x)}\right)dx, \quad (3)$$
$$(Re(t)>0, Re(y)>0, Re(p)>0).$$

If $p=0$ in equation (3), classical beta function can be obtained as follows [8-11]:

$$B(t,y)=\int_0^1 x^{t-1}(1-x)^{y-1}\,dx, \quad (4)$$
$$(Re(t)>0, Re(y)>0).$$

In this article, we proposed the following extension of beta function in equation (1):

$$B_{m,n}^{p,q}(t,y)=\int_0^1 x^{t-1}(1-x)^{y-1}S_n\left(-\frac{p}{x^m}\right)S_n\left(-\frac{q}{(1-x)^m}\right)dx, \quad (5)$$
$$(Re(t)>0, Re(y)>0, Re(p)>0, Re(q)>0, Re(m)>0, Re(n)>-1).$$

2. MAIN RESULTS

Theorem 1: The functional relation is

$$B_{m,n}^{p,q}(t,y+1)+B_{m,n}^{p,q}(t+1,y)=B_{m,n}^{p,q}(t,y).$$

Proof Using equation (5), gives

$$B_{m,n}^{p,q}(t,y+1)+B_{m,n}^{p,q}(t+1,y)$$
$$=\int_0^1 x^{t-1}(1-x)^{y}S_n\left(-\frac{p}{x^m}\right)S_n\left(-\frac{q}{(1-x)^m}\right)dx+\int_0^1 x^{t}(1-$$
$$x)^{y-1}S_n\left(-\frac{p}{x^m}\right)S_n\left(-\frac{q}{(1-x)^m}\right)dx$$
$$=\int_0^1[x^{t-1}(1-x)^{y}+x^{t}(1-x)^{y-1}]S_n\left(-\frac{p}{x^m}\right)S_n\left(-\frac{q}{(1-x)^m}\right)dx$$
$$=\int_0^1 x^{t-1}(1-x)^{y-1}S_n\left(-\frac{p}{x^m}\right)S_n\left(-\frac{q}{(1-x)^m}\right)dx$$
$$=B_{m,n}^{p,q}(t,y).$$

Theorem 2: The following symmetric property holds

$$B_{m,n}^{p,q}(t,y)=B_{m,n}^{q,p}(y,t).$$

Proof This result can simply be obtained by using $x\to 1-x$ in equating (5).

Theorem 3: The following summation formula holds

$$B_{m,n}^{p,q}(t,1-y)=\sum_{k=0}^{\infty}B_{m,n}^{p,q}(t+k,1)\frac{(y)_k}{k!}.$$

Proof Considering equation (5), yields

$$B_{m,n}^{p,q}(t,1-y)=\int_0^1 x^{t-1}(1-x)^{-y}S_n\left(-\frac{p}{x^m}\right)S_n\left(-\frac{q}{(1-x)^m}\right)dx.$$

Applying $(1-x)^{-y}=\sum_{k=0}^{\infty}\frac{(y)_k}{k!}x^k \quad (|x|<1)$, leads to

$$B_{m,n}^{p,q}(t,1-y)=\int_0^1 x^{t-1}\left\{\sum_{r=0}^{\infty}\frac{(y)_k}{k!}x^k\right\}S_n\left(-\frac{p}{x^m}\right)S_n\left(-\frac{q}{(1-x)^m}\right)dx$$
$$=\sum_{k=0}^{\infty}\frac{(y)_k}{k!}\int_0^1 x^{t+k-1}(1-x)^{1-1}S_n\left(-\frac{p}{x^m}\right)S_n\left(-\frac{q}{(1-x)^m}\right)dx$$
$$=\sum_{k=0}^{\infty}B_{m,n}^{p,q}(t+k,1)\frac{(y)_k}{k!}.$$

Theorem 4: The following summation formula holds
$B_{m,n}^{p,q}(t,y) = \sum_{k=0}^{\infty} B_{m,n}^{p,q}(t+k,1)$.
Proof Considering equation (5), yields
$B_{m,n}^{p,q}(t,y) = \int_0^1 x^{t-1}(1-x)^{y}(1-x)^{-1} S_n\left(-\frac{p}{x^m}\right) S_n\left(-\frac{q}{(1-x)^m}\right) dx.$
Applying $(1-x)^{-1} = \sum_{k=0}^{\infty} x^k \ (|x|<1)$, leads to
$B_{m,n}^{p,q}(t,y) = \int_0^1 x^{t-1}\{\sum_{k=0}^{\infty} x^k,\} S_n\left(-\frac{p}{x^m}\right) S_n\left(-\frac{q}{(1-x)^m}\right) dx$
$= \sum_{k=0}^{\infty} \int_0^1 x^{t+k-1}(1-x)^{1-1} S_n\left(-\frac{p}{x^m}\right) S_n\left(-\frac{q}{(1-x)^m}\right) dx$
$= \sum_{k=0}^{\infty} B_{m,n}^{p,q}(t+k,1)$.

Theorem 5: For the new extended beta function the following partial differential formula hold true
$$\frac{\partial^{w_1}}{\partial t^{w_1}} B_{m,n}^{p,q}(t,y) = \int_0^1 x^{t-1} In^{w_1}(t)(1-x)^{y-1} S_n\left(-\frac{p}{x^m}\right) S_n\left(-\frac{q}{(1-x)^m}\right) dx. \quad (6)$$
The following differential formulas also hold
$$\frac{\partial^{w_2}}{\partial y^{w_2}} B_{m,n}^{p,q}(t,y) = \int_0^1 x^{t-1}(1-x)^{y-1} In^{w_2}(1-x) S_n\left(-\frac{p}{x^m}\right) S_n\left(-\frac{q}{(1-x)^m}\right) dx, \quad (7)$$
and
$$\frac{\partial^{w_1+w_2}}{\partial t^{w_1}\partial y^{w_2}} B_{m,n}^{p,q}(t,y) = \int_0^1 x^{t-1} In^{w_1}(t)(1-x)^{y-1} In^{w_2}(1-x) S_n\left(-\frac{p}{x^m}\right) S_n\left(-\frac{q}{(1-x)^m}\right) dx. \quad (8)$$
Proof From equation (5)
$\frac{\partial^{w_1}}{\partial t^{w_1}} B_{m,n}^{p,q}(t,y) = \frac{\partial^{w_1}}{\partial t^{w_1}} \left\{\int_0^1 x^{t-1}(1-x)^{y-1} S_n\left(-\frac{p}{x^m}\right) S_n\left(-\frac{q}{(1-x)^m}\right) dx\right\}$
$= \int_0^1 x^{-1} \frac{\partial^{w_1}}{\partial t^{w_1}}\{x^t\}(1-x)^{y-1} S_n\left(-\frac{p}{x^m}\right) S_n\left(-\frac{q}{(1-x)^m}\right) dx.$
Considering $\frac{\partial^{w_1}}{\partial t^{w_1}}\{x^{t-1}\} = x^t In^{w_1}(t)$, one can have
$\frac{\partial^{w_1}}{\partial t^{w_1}} B_{m,n}^{p,q}(t,y) = \int_0^1 x^{t-1} In^{w_1}(t)(1-x)^{y-1} S_n\left(-\frac{p}{x^m}\right) S_n\left(-\frac{q}{(1-x)^m}\right) dx.$
Equations (7) and (8) also follow from (6).

Theorem 6: The following integral formulas are valid
$$B_{m,n}^{p,q}(t,y) = 2\int_0^{\frac{\pi}{2}} cos^{2t-1}\theta\, sin^{2y-1}\theta S_n(-psec^{2m}\theta) S_n(-qcsc^{2m}\theta) d\theta, \quad (9)$$
$$B_{m,n}^{p,q}(t,y) = \int_0^{\infty} \frac{u^{t-1}}{(1+u)^{t+y}} S_n\left(-\frac{p(1+u)^m}{u^m}\right) S_n(-q(1+u)^m) du, \quad (10)$$
and
$$B_{m,n}^{p,q}(t,y) = 2^{1-(t+y)} \int_{-1}^{+1} (1+u)^{t-1}\,(1-u)^{y-1} S_n\left(-\frac{2^m p}{(1+u)^m}\right) S_n\left(-\frac{2^m p}{(1-u)^m}\right) du. \quad (11)$$
Proof Equations (9), (10) and (11) are obtained setting $x = cos^2\theta, x = u(1+u)^{-1}$ and $x = 2^{-1}(1+u)$ in equation (5), respectively.

3. AN EXTENDED BETA DISTRIBUTION

$$f(x) = \begin{cases} \frac{1}{B_{m,n}^{p,q}(t,y)} x^{t-1}(1-x)^{y-1} S_n\left(-\frac{p}{x^m}\right) S_n\left(-\frac{q}{(1-x)^m}\right), & 0<x<1, \\ 0, & \text{otherwise}, \end{cases} \quad (12)$$
$(p,q>0, -\infty<t,y<\infty, Re(n)>-1, Re(m)>0).$

The moment of X is

$$E(X^k) = \frac{B_{m,n}^{p,q}(t+k,y)}{B_{m,n}^{p,q}(t,y)},$$

$$(t, y, k \in \mathbb{R}, p, q \in \mathbb{R}^+, Re(n) > -1, Re(m) > 0).$$

In particular, if $k = 1$ the mean can be obtained as

$E(X) = \frac{B_{m,n}^{p,q}(t+1,y)}{B_{m,n}^{p,q}(t,y)}$.

The variance can be given by

$$Var(X) = E(X^2) - [E(X)]^2 = E[(X - E(X))^2]$$
$$= \frac{B_{m,n}^{p,q}(t+2,y)B_{m,n}^{p,q}(t,y) - [B_{m,n}^{p,q}(t+1,y)]^2}{[B_{m,n}^{p,q}(t,y)]^2}.$$

The coefficient of variance which is defined as the ratio of standard deviation and mean is

$$C.V = \sqrt{\frac{B_{m,n}^{p,q}(t+2,y)B_{m,n}^{p,q}(t,y)}{B_{m,n}^{p,q}(t+1,y)} - 1}.$$

The moment generating function (m.g.f) about the origin is

$$M_X(x) = \sum_{k=0}^{\infty} E(X^k)\frac{x^k}{k!}$$
$$= \sum_{k=0}^{\infty} \frac{B_{m,n}^{p,q}(t+k,y)}{B_{m,n}^{p,q}(t,y)}\frac{x^k}{k!}.$$

The characteristic function can be express as follows

$$M_X(\exp(ix)) = \sum_{k=0}^{\infty} E(X^k)\frac{i^k x^k}{k!}$$
$$= \sum_{k=0}^{\infty} \frac{B_{m,n}^{p,q}(t+k,y)}{B_{m,n}^{p,q}(t,y)}\frac{i^k x^k}{k!}.$$

The probability (cumulative) distribution function is given by

$$F(x) = P(X < x) = \int_0^z f(x)\,dx$$
$$= \frac{B_{m,n}^{p,q;z}(t,y)}{B_{m,n}^{p,q}(t,y)},$$

where $B_{m,n}^{p,q;z}(t,y)$ is the lower incomplete extended beta function defined as

$$B_{m,n}^{p,q;z}(t,y) = \int_0^z x^{t-1}(1-x)^{y-1} S_n\left(-\frac{p}{x^m}\right) S_n\left(-\frac{q}{(1-x)^m}\right) dx,$$

$$(p, q > 0, -\infty < t, y < \infty, Re(n) > -1, Re(m) > 0).$$

The reliability function is the complement of the cumulative distribution function defined by

$$R(x) = P(X \geq x) = 1 - F(x) = \int_z^1 f(x)\,dx$$
$$= \frac{B_{m,n;z}^{p,q}(t,y)}{B_{m,n}^{p,q}(t,y)},$$

where $B_{m,n}^{p,q;z}(t,y)$ is the lower incomplete extended beta function defined as

$$B_{m,n;z}^{p,q}(t,y) = \int_z^1 x^{t-1}(1-x)^{y-1} S_n\left(-\frac{p}{x^m}\right) S_n\left(-\frac{q}{(1-x)^m}\right) dx,$$

$$(p, q > 0, -\infty < t, y < \infty, Re(n) > -1, Re(m) > 0).$$

4. EXTENDED GAUSS AND CONFLUENT HYPERGEOMETRIC FUNCTIONS

The extended Gauss and confluent hypergeometric functions in term of the extended beta function defined in equation (5) and their properties are discussed in this section.

Definition 7: The generalized Gauss hypergeometric function is

$$F_{n,m}^{p,q}(a,b;c;z)=\sum_{k=0}^{\infty}\frac{B_{n,m}^{p,q}(b+k,c-b)}{B(b,c-b)}(a)_k\frac{z^k}{k!}, \quad (13)$$

$$(p,q\geq 0,\lceil z\rceil<1,Re(c)>Re(b)>0,Re(a)>0,Re(n)>-1,Re(m)>0).$$

Definition 8: The generalized confluent hypergeometric function is given by

$$\Phi_{n,m}^{p,q}(b;c;z)=\sum_{k=0}^{\infty}\frac{B_{n,m}^{p,q}(b+k,c-b)}{B(b,c-b)}\frac{z^k}{k!}, \quad (14)$$

$$(p,q\geq 0,Re(c)>Re(b)>0,Re(n)>-1,Re(m)>0).$$

Theorem 9: The following equality holds

$$F_{n,m}^{p,q}(a,b;c;z)=\frac{1}{B(b,c-b)}\int_0^1 x^{b-1}(1-x)^{c-b-1}(1-xz)^{-a}S_n\left(-\frac{p}{x^m}\right)S_n\left(-\frac{q}{(1-x)^m}\right)dx, \quad (15)$$

$$(p,q\geq 0,|\arg(1-z)|<\pi,Re(c)>Re(b)>0,Re(a)>0).$$

And

$$\Phi_{n,m}^{p,q}(b;c;z)=\frac{1}{B(b,c-b)}\int_0^1 x^{b-1}(1-x)^{c-b-1}\exp(xz)S_n\left(-\frac{p}{x^m}\right)S_n\left(-\frac{q}{(1-x)^m}\right)dx, \quad (16)$$

$$(p,q\geq 0,Re(c)>Re(b)>0,Re(n)>-1,Re(m)>0).$$

Proof Equations (15) and (16) follows by using integral representation of the extended beta function in (5) into (13) and (14).

Corollary 10: The following confluent hypergeometric integral representation also holds

$$\Phi_{n,m}^{p,q}(b;c;z)=\frac{\exp(z)}{B(b,c-b)}\int_0^1 x^{c-b-1}(1-x)^{b-1}\exp(-xz)S_n\left(-\frac{p}{x^m}\right)S_n\left(-\frac{q}{(1-x)^m}\right)dx, \quad (17)$$

$$(p,q\geq 0,Re(c)>Re(b)>0,Re(n)>-1,Re(m)>0).$$

Theorem 11: The following differential formula is valid

$$\frac{d^k}{dz^k}F_{n,m}^{p,q}(a,b;c;z)=\frac{(a)_k(b)_k}{(c)_k}F_{n,m}^{p,q}(a+k,b+k;c+k;z),p,q\geq 0,k\in\mathbb{N}_0, \quad (18)$$

The following is also valid

$$\frac{d^k}{dz^k}\Phi_{n,m}^{p,q}(b;c;z)=\frac{(b)_k}{(c)_k}\Phi_{n,m}^{p,q}(b+k;c+k;z),p,q\geq 0,k\in\mathbb{N}_0, \quad (19)$$

Proof Differentiate (13) with respect to z, yields

$$\frac{d}{dz}F_{n,m}^{p,q}(a,b;c;z)=\sum_{k=1}^{\infty}\frac{B_{n,m}^{p,q}(b+k,c-b)}{B(b,c-b)}(a)_k\frac{z^{k-1}}{(k-1)!}.$$

Putting k→ $k+1$, gives

$$\frac{d}{dz}F_{n,m}^{p,q}(a,b;c;z)=\sum_{k=0}^{\infty}\frac{B_{n,m}^{p,q}(b+k+1,c-b)}{B(b,c-b)}(a)_{k+1}\frac{z^k}{k!}.$$

Applying $(a)_{k+1}=a(a+1)_k$ and $B(b,c-b)=\frac{c}{b}B(b+1,c-b)$, gives

$$\frac{d}{dz}F_{n,m}^{p,q}(a,b;c;z)=\frac{(a)(b)}{(c)}\sum_{k=0}^{\infty}\frac{(a+1)_kB_{n,m}^{p,q}(b+k+1,c-b)}{B(b+1,c-b)}\frac{z^k}{k!}.$$

This can be express by

$$\frac{d}{dz}F_{n,m}^{p,q}(a,b;c;z)=\frac{(a)(b)}{(c)}F_{n,m}^{p,q}(a+1,b+1;c+1;z). \quad (20)$$

On recursive differentiation of (20), equation (18) follows. Following similar argument (19) also follows.

Theorem 12: The following transformation formulas are true

$$F_{n,m}^{p,q}(a,b;c;z) = (1-z)^{-a} F_{n,m}^{p,q}\left(a,c-b;c;-\frac{z}{1-z}\right), \quad (21)$$

$$F_{n,m}^{p,q}(a,b;c;z) = (1-z)^{-b} F_{n,m}^{p,q}\left(c-a,b;c;-\frac{z}{1-z}\right), \quad (22)$$

$$F_{n,m}^{p,q}(a,b;c;z) = (1-z)^{c-(a+b)} F_{n,m}^{p,q}\left(c-a,c-b;c;-\frac{z}{1-z}\right), \quad (23)$$

$(p,q \geq 0, |\arg(1-z)| < \pi, Re(c) > Re(b) > 0, Re(a) > 0)$,
and

$$\Phi_{n,m}^{p,q}(b;c;z) = \exp(z)\Phi_{n,m}^{p,q}(c-b;c;-z), \quad (24)$$

$$(p,q \geq 0, Re(c) > Re(b) > 0, Re(n) > -1, Re(m) > 0).$$

Proof Considering $x \to 1-x$ in equation (15) and using

$$[1-z(1-x)]^{-a} = (1-z)^{-a}\left[1+\frac{z}{1-z}x\right]^{-a},$$

yields

$$F_{n,m}^{p,q}(a,b;c;z) = \frac{(1-z)^{-a}}{B(b,c-b)}\int_0^1 x^{c-b-1}(1-x)^{b-1}\left[1+\frac{z}{1-z}x\right]^{-a} S_n\left(-\frac{p}{x^m}\right) S_n\left(-\frac{q}{(1-x)^m}\right) dx$$
$$= (1-z)^{-a} F_{n,m}^{p,q}\left(a,c-b;c;-\frac{z}{1-z}\right).$$

Using equation (21), the desired results in (22), (23) and (24) can be obtained.

Theorem 13: The following transformation formulas also hold

$$F_{n,m}^{p,q}(a,b;c;1-z^{-1}) = z^a F_{n,m}^{p,q}(a,c-b;c;1-z), \quad (25)$$

$(p,q \geq 0, |\arg(1-z)| < \pi, Re(c) > Re(b) > 0, Re(a) > 0, Re(n) > -1, Re(m) > 0)$.
And

$$F_{n,m}^{p,q}(a,b;c;z(1+z)^{-1}) = (1+z)^a F_{n,m}^{p,q}(a,c-b;c;-z), \quad (26)$$

$(p,q \geq 0, |\arg(1-z)| < \pi, Re(c) > Re(b) > 0, Re(a) > 0, Re(n) > -1, Re(m) > 0)$.

Proof Equations (25) and (26) follows by putting $z \to 1-z^{-1}$ and $z \to z(1+z)^{-1}$ in equation (21), respectively.

Theorem 14: The following formula holds

$$\int_0^\infty z^{a-1}\Phi_{n,m}^{p,q}(b;c;-z) = \Gamma(a)\, F_{n,m}^{p,q}(a,c-b;c;1),$$
$$(p,q \geq 0, Re(c) > Re(b) > 0, Re(a) > 0, Re(n) > -1, Re(m) > 0).$$

Proof Setting $z \to -z$ the result in equation (24), gives

$$\Phi_{n,m}^{p,q}(b;c;-z) = \exp(-z)\Phi_{n,m}^{p,q}(c-b;c;z).$$

Multiplying both sides by z^{a-1} and integrates with respect to z taking limit from 0 to ∞, yields

$$\int_0^\infty z^{a-1}\Phi_{n,m}^{p,q}(b;c;-z)dz = \int_0^\infty z^{a-1}\exp(-z)\left\{\sum_{k=0}^\infty \frac{B_{n,m}^{p,q}(c-b+k,b)}{B(b,c-b)}\frac{z^n}{n!}\right\}dz.$$

Changing the order of integration and summation, leads to

$$\int_0^\infty z^{a-1}\Phi_{n,m}^{p,q}(b;c;-z)dz = \sum_{n=0}^\infty \frac{B_{n,m}^{p,q}(c-b+k,b)}{B(b,c-b)k!}\left\{\int_0^\infty z^{a+k-1}\, exp(-z)dz\right\}.$$

Applying the definition of classical beta function and Pocchhammer symbol, one can obtain

$$\int_0^\infty z^{a-1}\Phi_{n,m}^{p,q}(b;c;-z) = \Gamma(a)\, F_{n,m}^{p,q}(a,c-b;c;1).$$

5. THE EXTENDED APPELL AND LAURICELLA HYPERGEOMETRIC FUNCTIONS

The extended Appell and Lauricella hypergeometric functions using extended beta function in equation (5) are define as follows:

Definition 15: The extended Appell $F_{1;n,m}^{p,q}$ hypergeometric function is

$$F_{1;n,m}^{p,q}(a,b,c;d;y;z)=\sum_{k,r=0}^{\infty}\frac{B_{n,m}^{p,q}(a+k+r,d-a)}{B(a,d-a)}(b)_k(c)_r\frac{y^k}{k!}\frac{z^r}{r!}, \quad (27)$$

$$(Re(p)\geq 0, Re(q)\geq 0, |y|<1, |z|<1, 0<Re(a)<Re(d), Re(b)>0, Re(c)>0).$$

Definition 16: The extended Appell $F_{2;n,m}^{p,q}$ hypergeometric function is

$$F_{2;n,m}^{p,q}(a,b,c;d,e;z)=\sum_{k,r=0}^{\infty}\frac{B_{n,m}^{p,q}(b+k,d-b)}{B(b,d-b)}\frac{B_{n,m}^{p,q}(c+r,e-c)}{B(c,e-c)}(a)_{k+r}\frac{y^k}{k!}\frac{z^r}{r!}, \quad (28)$$

$$(Re(p)\geq 0, Re(q)\geq 0, |y|+|z|<1, 0<Re(b)<Re(d), 0<Re(c)<Re(e), Re(a)>0).$$

Definition 17: The extended Lauricella $F_{D;n,n}^{3;p,q}$ hypergeometric function is

$$F_{D;n,n}^{3;p,q}(a,b,c,d;e;w,y,z)=\sum_{k,r,l=0}^{\infty}\frac{B_{n,m}^{p,q}(a+k+r+l,e-a)}{B(a,e-a)}(b)_k(c)_r(d)_l\frac{w^k}{k!}\frac{y^r}{r!}\frac{z^l}{l!}, \quad (29)$$

$$(Re(p)\geq 0, Re(q)\geq 0|w|<1, |y|<1, |z|<1, 0<Re(a)<Re(d), Re(b)>0, Re(c)>0).$$

Theorem 18: The following generalized Appell-Lauricella's hypergeometric functions integral formulas hold

$$F_{1;n,m}^{p,q}(a,b,c;d;y;z)$$
$$=\frac{1}{B(a,d-a)}\int_0^1 x^{a-1}(1-x)^{d-a-1}(1-xy)^{-b}(1-xz)^{-c}S_n\left(-\frac{p}{x^m}\right)S_n\left(-\frac{q}{(1-x)^m}\right)dx,$$

$$F_{2;n,m}^{p,q}(a,b,c;d,e;z)$$
$$=\frac{1}{B(b,d-b)B(c,e-c)}\int_0^1\int_0^1 s^{b-1}(1-s)^{d-a-1}t^{c-1}(1-t)^{e-c-1}(1-sy-tz)^{-a}$$
$$\times S_n\left(-\frac{p}{x^m}\right)S_n\left(-\frac{q}{(1-x)^m}\right)S_n\left(-\frac{p}{t^m}\right)S_n\left(-\frac{q}{(1-t)^m}\right)dxdt,$$

$$F_{D;n,n}^{3;p,q}(a,b,c,d;e;x,y,z)$$
$$=\frac{1}{B(a,e-a)}\int_0^1 s^{a-1}(1-s)^{e-a-1}(1-sx)^{-b}(1-sy)^{-c}(1-sz)^{-d}S_n\left(-\frac{p}{x^m}\right)S_n\left(-\frac{q}{(1-x)^m}\right)ds.$$

Proof: The proof is similar to that of equations (15) and (16).

6. THE EXTENDED RIEMANN-LIOUVILLE FRACTIONAL DERIVATIVE OPERATOR

The generalized Riemann-Liouville fractional derivative operator is defined using generalized beta function in equation (5)

Definition 19: The generalized Riemann-Liouville fractional derivative operator is

$$D_{z;n,m}^{\lambda;p,q}\{f(z)\} = \begin{cases} \frac{1}{\Gamma(-\lambda)}\int_0^z f(x)(1-x)^{-\lambda-1} S_n\left(-\frac{pz^m}{x^m}\right) S_n\left(-\frac{qz^m}{(z-x)^m}\right) ds, \ Re(\lambda) < 0, \\ \frac{d^n}{dz^n}\left\{D_{z;n,m}^{\lambda;p,q}\{f(z)\}\right\}, \qquad n-1 \le Re(\lambda) < n; n \in \mathbb{N}_0. \end{cases} \tag{30}$$

Theorem 20: The following equality is valid

$$D_{z;n,m}^{\lambda;p,q}\{z^\eta\} = \frac{1}{\Gamma(-\lambda)} B_{n,m}^{p,q}(\eta+1, -\lambda) z^{\eta-\lambda}, \qquad \text{where } Re(\lambda) < 0. \tag{31}$$

Proof Using equation (30), leads to

$$\begin{aligned} D_{z;n,m}^{\lambda;p,q}\{z^\eta\} &= \frac{1}{\Gamma(-\lambda)}\int_0^z x^\eta (z-x)^{-\lambda-1} S_n\left(-\frac{pz^m}{x^m}\right) S_n\left(-\frac{qz^m}{(z-x)^m}\right) dx \\ &= \frac{z^{\eta-\lambda}}{\Gamma(-\lambda)}\int_0^1 u^\eta (1-u)^{-\lambda-1} S_n\left(-\frac{p}{u^m}\right) S_n\left(-\frac{q}{(1-u)^m}\right) du \\ &= \frac{1}{\Gamma(-\lambda)} B_{n,m}^{p,q}(\eta+1, -\lambda) z^{\eta-\lambda}. \end{aligned}$$

Theorem 21: Supposed$Re(\lambda) < 0$ and $f(z)$ is analytic function at the origin with the Maclaurin series expansion $f(z) = \sum_{k=0}^{\infty} a_k z^k$, $|z| < h$ for some $h \in \mathbb{R}^+$, then the following is true

$D_{z;n,m}^{\lambda;p,q}\{f(z)\} = \sum_{n=0}^{\infty} a_n D_{z;n,m}^{\lambda;p,q}\{z^\eta\}$.

Proof By direct computation, yields

$$D_{z;n,m}^{\lambda;p,q}\{f(z)\} = \frac{1}{\Gamma(-\lambda)}\int_0^z \{\sum_{k=0}^{\infty} a_k x^k\}(z-x)^{-\lambda-1} S_n\left(-\frac{pz^m}{x^m}\right) S_n\left(-\frac{qz^m}{(z-x)^m}\right) dx.$$

Term by term integration can be use since power series converge uniformly on closed disk with center at the origin and radius smaller than ξ, and so does the series on the line segment from zero to a fixed z for $|z| < \xi$.

$$\begin{aligned} D_{z;n,m}^{\lambda;p,q}\{f(z)\} &= \sum_{k=0}^{\infty} a_k \left\{\frac{1}{\Gamma(-\lambda)}\int_0^z x^k (z-x)^{-\lambda-1} S_n\left(-\frac{pz^m}{x^m}\right) S_n\left(-\frac{qz^m}{(z-x)^m}\right) ds\right\} \\ &= \sum_{k=0}^{\infty} a_k D_{z;n,m}^{\lambda;p,q}\{z^k\}. \end{aligned}$$

Theorem 22: Let $Re(\lambda) > Re(\eta) > 0$ and $|z| < 1$,then

$$D_{z;n,m}^{\eta-\lambda;p,q}\{z^{\eta-1}(1-z)^{-\alpha}\} = \frac{\Gamma(\eta)}{\Gamma(\lambda)} F_{n,m}^{p,q}(\alpha, \eta; \lambda; z) z^{\eta-1}. \tag{32}$$

Proof Considering equations (30) and (15), one can obtain

$$\begin{aligned} &D_{z;n,m}^{\eta-\lambda;p,q}\{z^{\eta-1}(1-z)^{-\alpha}\} \\ &= \frac{1}{\Gamma(\lambda-\eta)}\int_0^z x^{\lambda-1}(1-x)^{-\alpha}(z-x)^{\lambda-\eta-1} S_n\left(-\frac{pz^m}{x^m}\right) S_n\left(-\frac{qz^m}{(z-x)^m}\right) dx \\ &= \frac{z^{\eta-1}}{\Gamma(\lambda-\eta)}\int_0^1 u^{\lambda-1}(1-uz)^{-\alpha}(1-u)^{\lambda-\eta-1} S_n\left(-\frac{p}{u^m}\right) S_n\left(-\frac{q}{(1-u)^m}\right) du \\ &= \frac{\Gamma(\eta)}{\Gamma(\lambda)} F_{n,m}^{p,q}(\alpha, \eta; \lambda; z) z^{\eta-1} \end{aligned}$$

Theorem 23: For $Re(\lambda) > Re(\eta) > 0, Re(\alpha) > 0, Re(\beta) > 0, |az| < 1$ and $|bz| < 1$, then

$$D_{z;n,m}^{\eta-\lambda;p,q}\{z^{\eta-1}(1-az)^{-\alpha}(1-bz)^{-\beta}\} = \frac{\Gamma(\eta)}{\Gamma(\lambda)} F_{1;n,m}^{p,q}(\eta,\alpha,\beta;\lambda;az,bz)z^{\eta-1}. \quad (33)$$

Similarly, the following result also holds

$$D_{z;n,m}^{\eta-\lambda;p,q}\{z^{\eta-1}(1-z)^{-\alpha}(1-bz)^{-\beta}(1-cz)^{-\gamma}\} = \frac{\Gamma(\eta)}{\Gamma(\lambda)} F_{D;n,m}^{3;p,q}(\eta,\alpha,\beta,\gamma;\lambda;az,bz,cz)z^{\eta-1},$$
$$(Re(\lambda) > Re(\eta) > 0, Re(\alpha) > 0, Re(\beta) > 0, |az| < 1, |bz| < 1 \text{ and } |cz| < 1).$$

Proof By using generalized binomial theorem$(1-az)^{-\alpha} = \sum_{k=0}^{\infty}(\alpha)_k \frac{(az)^k}{k!}$ $([az] < 1)$,leads to

$$D_{z;n,m}^{\eta-\lambda;p,q}\{z^{\eta-1}(1-az)^{-\alpha}(1-bz)^{-\beta}\} = \sum_{k,r=0}^{\infty}(\alpha)_k\,(\beta)_r \frac{a^k}{r!}\frac{b^k}{r!} D_{z;n,m}^{\eta-\lambda;p,q}\{z^{\eta+k+r-1}\}.$$

Applying equations (31) and (27), leads to

$$D_{z;n,m}^{\eta-\lambda;p,q}\{z^{\eta-1}(1-az)^{-\alpha}(1-bz)^{-\beta}\} = \frac{\Gamma(\eta)}{\Gamma(\lambda)} F_{1;n,m}^{p,q}(\eta,\alpha,\beta;\lambda;az,bz)z^{\eta-1}.$$

Theorem 24:

$$D_{z;n,m}^{\eta-\lambda;p,q}\left\{z^{\eta-1}(1-z)^{-\alpha}F_{n,m}^{p,q}\left(\alpha,\beta;\gamma;\frac{y}{1-z}\right)\right\}$$
$$= \frac{1}{\Gamma(\lambda-\eta)B(\beta,\gamma-\beta)} F_{2;n,m}^{p,q}(\alpha,\beta,\eta;\gamma,\lambda;y,z)z^{\eta-1}. \quad (34)$$

Proof Using equation (13) and binomial theorem$(1-z)^{-\alpha} = \sum_{k=0}^{\infty}(\alpha)_k \frac{z^k}{k}$ $([z] < 1)$, gives

$$D_{z;n,m}^{\eta-\lambda;p,q}\left\{z^{\eta-1}(1-z)^{-\alpha}F_{n,m}^{p,q}\left(\alpha,\beta;\gamma;\frac{y}{1-z}\right)\right\}$$
$$= \frac{1}{B(\beta,\gamma-\beta)} \sum_{k,r=0}^{\infty}(\alpha)_k\,(\alpha+k)_r B_{n,m}^{p,q}(\beta+k,\gamma-\beta)\frac{y^k}{k!} D_{z;n,m}^{\eta-\lambda;p,q}\{z^{\eta+k+r-1}\}.$$

Applying equations (28) and (31), yields

$$D_{z;n,m}^{\eta-\lambda;p,q}\left\{z^{\eta}(1-z)^{-\alpha}F_{n,m}^{p,q}\left(\alpha,\beta;\gamma;\frac{y}{1-z}\right)\right\}$$
$$= \frac{1}{\Gamma(\lambda-\eta)B(\beta,\gamma-\beta)} F_{2;n,m}^{p,q}(\alpha,\beta,\eta;\gamma,\lambda;y,z)z^{\eta-1}.$$

7. GENERATING FUNCTIONS AND FURTHER RESULTS

Linear and bilinear generating functions, further result of the new generalized Riemann-Liouville fractional derivative with illustration to exponential, classical Gauss hypergeometric, confluent hypergeometric and classical Mittag-Leffler functions is studied

Theorem 25: The following equality holds

$$\sum_{k=0}^{\infty}\frac{(\eta)_k}{k!} F_{n,m}^{p,q}(\eta+k,\alpha;\beta;z)x^k = (1-x)^{-\eta} F_{n,m}^{p,q}\left(\eta+n,\alpha;\beta;\frac{z}{1-x}\right), \quad (35)$$

where $|z| < min\{1, |1-x|\}$ and $Re(\eta) > 0, Re(\beta) > Re(\alpha) > 0$.

Proof using the elementary identity in [12-14]

$$\{(1-z)-x\}^{-\eta} = (1-x)^{-\eta}\{1-x(1-z)^{-1}\}^{-\eta}.$$

Expansion of left-hand sides, yields

$$\sum_{k=0}^{\infty} \frac{(\eta)_k}{k!}(1-z)^{-(\eta+k)}\, x^n = (1-x)^{-\eta}\{1-z(1-x)^{-1}\}^{-\eta}.$$

Multiplying both sides by $z^{\alpha-1}$ and the operator $D_{z;n,m}^{\alpha-\beta;p,q}$, we have

$\sum_{k=0}^{\infty} \frac{(\eta)_k}{k!} D_{z;n,m}^{\alpha-\beta;p,q}\{z^{\alpha-1}(1-z)^{-(\eta+k)}\}x^k = (1-x)^{-\eta} D_{z;n,m}^{\alpha-\beta;p,q}\{z^{\alpha-1}\{1-z(1-x)^{-1}\}^{-\eta}\}.$

Applying equation (32), we have

$$\sum_{k=0}^{\infty} \frac{(\eta)_n}{k!} F_{n,m}^{p,q}(\eta+k,\alpha;\beta;z)x^k = (1-x)^{-\eta} F_{n,m}^{p,q}\left(\eta+n,\alpha;\beta;\frac{z}{1-x}\right).$$

Theorem 26: The following equation holds

$\sum_{k=0}^{\infty} \frac{(\eta)_k}{k!} F_{n,m}^{p,q}(\eta-k,\alpha;\beta;z)x^k = (1-x)^{-\eta} F_{1;n,m}^{p,q}\left(\alpha,\lambda,\eta;z;\frac{zx}{1-x}\right)$, where $Re(\beta) > Re(\alpha) > 0, Re(\lambda) > 0, |x| < (1+|x|)^{-1}$.

Proof using the elementary identity in [12-14]

$\{1-(1-z)x\}^{-\eta} = (1-x)^{-\eta}\{1-(-xz)(1-x)^{-1}\}^{-\eta}.$

Expanding the left-hand sides give

$$\sum_{k=0}^{\infty} \frac{(\eta)_k}{k!}(1-z)^k\, x^k = (1-x)^{-\eta}\{1-(-xz)(1-x)^{-1}\}^{-\eta}.$$

Multiplying both sides by $z^{\alpha-1}(1-z)^{-\lambda}$ and applying the operator $D_{z;n,m}^{\alpha-\beta;p,q}$, we get

$$\sum_{k=0}^{\infty} \frac{k}{k!} D_{z;n,m}^{\alpha-\beta;p,q}\{z^{\alpha-1}(1-z)^{-(\lambda+k)}\}x^k = (1-x)^{-\eta} D_{z;n,m}^{\alpha-\beta;p,q}\{z^{\alpha-1}\{1-(-xz)(1-x)^{-1}\}^{-\eta}\}.$$

Applying equations (32) and (33), yields

$$\sum_{k=0}^{\infty} \frac{(\eta)_k}{k!} F_{n,m}^{p,q}(\eta-k,\alpha;\beta;z)x^k = (1-x)^{-\eta} F_{1;n,m}^{p,q}\left(\alpha,\lambda,\eta;z;\frac{xz}{1-x}\right).$$

Theorem 27: The following generating function is valid

$\sum_{k=0}^{\infty} \frac{(\eta)_k}{k!} F_{n,m}^{p,q}(\gamma,-k;\delta;z)F_{n,m}^{p,q}(\eta+ks,\alpha;\beta;z) = (1-x)^{-\eta} F_{2;n,m}^{p,q}\left(\eta,\alpha,\gamma;\beta,\delta;\frac{y}{1-s},-\frac{xz}{1-x}\right),$

where $\mathrm{Re}(\delta) > Re(\gamma) > 0, Re(\lambda) > 0, Re(\beta) > 0, |x| < (1-|y|)(1+|z|)^{-1}$ and $|z| < 1$.

Proof Setting $x \to (1-y)x$ in equation (35), multiple the resulting equation by $y^{\gamma-1}$ and applying the operator $D_{y;n,m}^{\gamma-\delta;p,q}$, leads to

$D_{y;n,m}^{\gamma-\delta;p,q}\left\{\sum_{k=0}^{\infty} \frac{(\eta)_k}{k!} y^{\gamma-1} F_{n,m}^{p,q}(\eta+k,\alpha;\beta;z)[(1-y)x]^k\right\}$

$= D_{y;n,m}^{\gamma-\delta;p,q}\left\{y^{\gamma-1}(1-(1-y)x)^{-\eta} F_{n,m}^{p,q}\left(\eta+k,\alpha;\beta;\frac{z}{1-(1-y)x}\right)\right\}.$

Changing the order of summation, yields

$\sum_{k=0}^{\infty} \frac{(\eta)_k}{k!} D_{y;n,m}^{\gamma-\delta;p,q}\{(1-y)^k s^k\}F_{n,m}^{p,q}(\eta+k,\alpha;\beta;z)$

$= D_{y;n,m}^{\gamma-\delta;p,q}\left\{y^{\gamma-1}(1-(1-y)x)^{-\eta} F_{n,m}^{p,q}\left(\eta+k,\alpha;\beta;\frac{z}{1-x}\right)\right\}.$

Applying equation (32) and (34), gives

$\sum_{k=0}^{\infty} \frac{(\eta)_k}{k!} F_{n,m}^{p,q}(\gamma,-k;\delta;y)F_{n,m}^{p,q}(\eta+k,\alpha;\beta;z) = (1-x)^{-\eta} F_{2;n,m}^{p,q}\left(\eta,\alpha,\gamma;\beta,\delta;\frac{y}{1-x},-\frac{xz}{1-x}\right).$

Theorem 28: The following equality hold true

$$D_{z;n,m}^{\lambda;p,q}\{\exp(z)\} = \frac{z^{-\lambda}}{\Gamma(-\lambda)}\sum_{k=0}^{\infty} B_{n,m}^{p,q}(k+1,-\lambda)\frac{z^k}{k!}.$$

Proof Using equation (31), we have

$$D_{z;n,m}^{\lambda;p,q}\{\exp(z)\} = D_{z;n,m}^{\lambda;p,q}\left\{\sum_{k=0}^{\infty}\frac{z^k}{k!}\right\} = \sum_{k=0}^{\infty}\frac{1}{k!}D_{z;n,m}^{\lambda;p,q}\{z^k\} = \frac{z^{-\lambda}}{\Gamma(-\lambda)}\sum_{k=0}^{\infty} B_{n,m}^{p,q}(k+1,-\lambda)\frac{z^k}{k!}.$$

Theorem 29: The following formula is valid

$$D_{z;\alpha_1,\alpha_2,\alpha_3}^{\eta-\lambda;\alpha_4;p,q}\{\mathrm{F(a,b;c;z)}\} = \frac{z^{-\lambda}}{\Gamma(-\lambda)}\sum_{k=0}^{\infty}\frac{(a)_k(b)_k}{(c)_k} B_{n,m}^{p,q}(k+1,-\lambda)\frac{z^k}{k!},$$

where $Re(a)>0, Re(b)>0, Re(c)>0, |z|<1.$

Proof Using equation (31), we have

$$D_{z;n,m}^{\eta-\lambda;p,q}\{\mathrm{F(a,b;c;z)}\} = D_{z;n,m}^{\eta-\lambda;p,q}\left\{\sum_{k=0}^{\infty}\frac{(a)_k(b)_k}{(c)_k}\frac{z^k}{k!}\right\} = \sum_{k=0}^{\infty}\frac{(a)_k(b)_k}{(c)_k}\frac{z^k}{k!}D_{z;n,m}^{\eta-\lambda;p,q}\{z^k\}$$

$$= \frac{z^{-\lambda}}{\Gamma(-\lambda)}\sum_{k=0}^{\infty}\frac{(a)_k(b)_k}{(c)_k} B_{n,m}^{p,q}(k+1,-\lambda)\frac{z^k}{k!}.$$

Corollary 30: The following formula is also valid

$$D_{z;n,m}^{\lambda;p,q}\{\Phi(\mathrm{b;c;z})\} = \frac{z^{-\lambda}}{\Gamma(-\lambda)}\sum_{k=0}^{\infty}\frac{(b)_k}{(c)_k} B_{n,m}^{p,q}(k+1,-\lambda)\frac{z^k}{k!},$$

where $Re(b)>0, Re(c)>0.$

Theorem 31: The following formula is valid

$$D_{z;n,m}^{\eta-\lambda;p,q}\left\{z^{\eta-1}E_{\alpha,\beta}^{\gamma}(z)\right\} = \frac{z^{-\lambda}}{\Gamma(-\lambda)}\sum_{k=0}^{\infty}\frac{(\gamma)_k}{\Gamma(\alpha k+\beta)} B_{n,m}^{p,q}(k+1,-\lambda)\frac{z^k}{k!},$$

where $Re(\alpha)>0, Re(\beta)>0, Re(\gamma)>0$ and $E_{\alpha,\beta}^{\gamma}(z)$ is a three parameters Mittag-Leffler function also known as Prabhakar function [15, 16]

$$D_{z;n,m}^{\lambda;p,q}\{\mathrm{F(a,b;c;z)}\} = D_{z;n,m}^{\lambda;p,q}\left\{\sum_{k=0}^{\infty}\frac{(b)_k}{(c)_k}\frac{z^k}{k!}\right\} = \sum_{k=0}^{\infty}\frac{(b)_k}{(c)_k}\frac{1}{k!}D_{z;n,m}^{\lambda;p,q}\{z^k\}$$

$$= \frac{z^{-\lambda}}{\Gamma(-\lambda)}\sum_{k=0}^{\infty}\frac{(b)_k}{(c)_k} B_{n,m}^{p,q}(k+1,-\lambda)\frac{z^k}{k!}$$

8. CONCLUSION

The author proposed and investigated new extension of the beta function and some of its properties by using product of Bessel-Struve function as kernel, the new extended beta function is used as a tool to established applications statistics by providing the statistical distribution and its properties, for example, mean, moment, characteristic function, cumulative distribution, reliability function and so on. Furthermore, application of this new extended beta function to linear and bilinear generating functions for the extended hypergeometric function are studied via new extended Riemann-Liouville fractional derivative operator.

In conclusion if $m = 1$ all the results investigated here reduced to the results defined in Ghayasuddin, et al., [1]; if $m = 1$ and $n = -\frac{1}{2}$ using the fact that $S_{-\frac{1}{2}}(z) = \exp(z)$, the results in Choi et al., [4] and Baleanu et al., [17]; setting $m = 1, n = -\frac{1}{2}$ and $p = q$, the extended functions and operators from Chaudhry et al., [5], Chaudhry et al., [6] and Ozarslan and Ozergin [7] follows; similarly, on substituting $m = 1, n = -\frac{1}{2}$ and $p = q = 0$ the classical functions and operations are obtained. The new extended beta function can also be investigated by studying further extended special functions such as Bessel-Maitland, Wright, Mittag-Leffler functions and so on.

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REFERENCES

[1] M. Ghayasuddin, M. Ali and R.B. Paris, Certain new extension of beta and related functions, 10 pages, 2020, Retrieved on August 1, 2021 from https://arXiv.org/abs/2006.15352v1

[2] A. Gasmi and M. Sifi, The Bessel-Struve interwining operator on C and mean periodic functions, IJMMS 59 (2004), 3171–3185.

[3] N. U. Khan, S. W. Khan and M. Ghayasuddin, Some new results associated with the Bessel-Struve kernel function, Acta Uni. Apul. 48 (2016), 89–101.

[4] J. Choi, A.K. Rathie, R.K. Parmar, extension of extended beta, hypergeometric and confluent hypergeometric functions, Honam Mathematical Journal, 36 (2) (2014), 357-385.

[5] M.A. Chaudhry, A. Qadir, M. Rafique, S.M. Zubair, Extension of Euler's beta function, Journal of Computation and Applied Mathematics, 78 (1997), 19-32.

[6] M.A. Chaudhry, A. Qadir, H.M. Srivastava, R.B. Paris, Extended hypergeometric and confluent hypergeometric functions, Applied Mathematics and Computation, 159 (2004), 589-604.

[7] M.A. Ozarslan, E.Ozargin, Some generating relations for extended hypergeometric functions via generalized fractional derivative operator, Mathematical and Computational Modeling, 52 (2010), 1825-1833.

[8] U.M. Abubakar, S.R. Kabara, A note on a new extended gamma and beta functions and their properties, IOSR Journal of Mathematics, 15 (5) (2019), 1-6.

[9] U.M. Abubakar, New generalized beta function associated with the Fox-Wright function, Journal of Fractional Calculus and Application, 12 (2) (2021), 204-227.

[10] U.M. Abubakar, A study of extended beta and associated functions connected to Fox-Wright function. Paper presented at 12th Symposium of the Fractional Calculus and Applications Group, 1st International (Online) Conference in Mathematical Science and Fractional Calculus, 16-18 February 2021, 1-23.

[11] U.M. Abubakar, S. Patel, On a new generalized beta function defined by the generalized Wright function and its applications, Malaysian Journal of Computing, 6 (2) (2021), 851-870.

[12] U.M. Abubakar, S.R. Kabara,M.A. Lawan,F.A. Idris, A new extension of modified gamma and beta functions, Cankaya University Journal of Science and Engineering, 18(1), 9-23(2021).

[13] U.M. Abubakar, Applications of the generalized extended mathematical physics functions to the modified Riemann-Liouville fractional derivative operator, Proceedings Book of the 1st International Conference of Physics(Online), 17 August 2021 Ankara, Turkey, 118-133.

[14] U.M. Abubakar, Applications of the modified extended special functions to statistical distribution and fractional calculus, Euro Asia 9th. International Congress on Applied Sciences (Online), August 11-12, 2021 Erzurum, Turkey

[15] T. R. Prabhakar, A singular integral equation with a generalized Mittag-Leffler function in the kernel," Yokohama Mathematical Journal, 19 (1971), 7–15.

[16] H.J. Haubold, A.M. Mathai, R.K. Saxena, Mittag-Leffler functions and their applications, Journal of Applied Mathematics, (2011), 1-51, Article ID 298628.

[17] D. Baleanu, P. Agarwal, R.K. Parmar, M.M. Alquarashi, S. Salahsshour, extension of the fractional derivative of the Riemann-Liouville, Journal of Nonlinear Science and Applications, 10 (2017), 2914-2924.

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THE NEW GENERALIZED BETA AND ASSOCIATED FUNCTIONS DEFINED BY CONSIDERING BIVARIATE MITTAG-LEFFLER FUNCTION AS THE REGULARIZER WITH THEIR APPLICATIONS TO DISTRIBUTION THEORY AND FRACTIONAL CALCULUS

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ABSTRACT
The object of this talk is to use bivariate Mittag-Leffler function as the regularizer to present new generalized beta function and associated functions like Gauss, confluent, Appell's and Lauricella's hypergeometric functions. Symmetric property, summation formulas, functional relation, partial differential formulas and integral formulas of our new generalize beta function is established. Application of this beta function to statistical distribution and some useful properties of this beta distribution such as moment, mean, variance, coefficient of variance, moment generating function, characteristic function, cumulative distribution, reliability function, upper and lower incomplete beta functions are investigated. The generalized Gauss hypergeometric and confluent hypergeometric functions are represented in term of the new generalized beta function with their properties such as integral representations, differential formulas and transformation formulas are studied. Furthermore, the generalized Riemann-Liouville fractional derivative operator is defined and generating relations for the extensions of generalized Appell's and Laurecila's hypergeometric functions and the generalized Riemann-Liouville fractional derivative of some familiar special functions such as exponential, classical Gauss hypergeometric, classical confluent hypergeometric and Mittag-Leffler function functions are introduced. Some special cases of this new generalized beta function, beta distribution, Gauss, confluent, Appell's and Lauricella's hypergeometric functions are pointed out.
Keywords: Beta distribution, Mittag-Leffler function, Riemann-Liouville fractional operator, Appell-Laurecilla function, generating function.
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1. INTRODUCTION
Classical beta function is given by [1]

$$\mathrm{B}(\ell_1, \ell_2) = \int_0^\infty s^{\ell_1 - 1}(1-s)^{\ell_2 - 1} ds, \text{ where } Re(\ell_1) > 0, Re(\ell_2) > 0. \qquad (1)$$

The classical Gauss and confluent hypergeometric functions can be expressed using classical beta function in (1) as follows (see [2]):

$$F(a, b; c; z) = \sum_{n=0}^{\infty} \frac{(a)_n B(b+n, c-b)}{B(b, c-b)} \frac{z^n}{n!}, \qquad (2)$$

where $|z| < 1; \mathrm{Re}(c) > \mathrm{Re}(b) > 0, \mathrm{Re}(a) > 0.$
And

$$\Phi(b;c;z)=\sum_{n=0}^{\infty}\frac{B(b+n,c-b)}{B(b,c-b)}\frac{z^n}{n!}, \quad (3)$$

where $Re(c)>Re(b)>0$.

Classical Appell's F_1 and F_2 can be represented using equation (1) as follows [3]:

$$F_1(a,b,c;d;y;z)=\sum_{n,m=0}^{\infty}\frac{(b)_n(c)_m B(a+n+m,d-a)}{B(a,d-a)}\frac{y^n}{n!}\frac{z^m}{m!}, \quad (4)$$

where $|y|<1,|z|<1,0<Re(a)<Re(d),Re(b)>0,Re(c)>0$.

$$F_2(a,b,c;d,e;z)=\sum_{n,m=0}^{\infty}\frac{(a)_{n+m}B(b+n,d-b)}{B(b,d-b)}\frac{B(c+m,e-c)}{B(c,e-c)}\frac{y^n}{n!}\frac{z^m}{m!}, \quad (5)$$

where $|y|+|z|<1,0<Re(b)<Re(d),0<Re(c)<Re(e),Re(a)>0$.

Considering classical beta function in (1), Laurecilla's hypergeometric function F_D^3 can also be given as [4]

$$F_D^3(a,b,c,d;e;x,y,z)=\sum_{n,m,r=0}^{\infty}\frac{(b)_n(c)_m(d)_r B(a+n+m+r,e-a)}{B(a,e-a)}\frac{x^n}{n!}\frac{y^m}{m!}\frac{z^r}{r!}, \quad (6)$$

where $|x|<1,|y|<1,|z|<1,0<Re(a)<Re(d),Re(b)>0,Re(c)>0$.

Chaudhry et al., [5] was the pioneer's to propose the first extension of Euler's beta function in (1) as follows:

$$B_p(\ell_1,\ell_2)=\int_0^{\infty}s^{\ell_1-1}(1-s)^{\ell_2-1}\exp\left(-\frac{p}{s(1-s)}\right)ds, \quad (7)$$

where $Re(p)>0,Re(\ell_1)>0,Re(\ell_2)>0$.

They [5] also discussed extended properties such as functional relation, summation formulas, integral representations, Mellin transform, beta distribution and connection with other special functions likes Macdonald, error and Whittaker functions.

Chaudhry et al., [6] used their new extended beta function in (7) to defined new extended Gauss and confluent hypergeometric functions as follows:

$$F_p(a,b;c;z)=\sum_{n=0}^{\infty}\frac{(a)_n B_p(b+n,c-b)}{B(b,c-b)}\frac{z^n}{n!}, \quad (8)$$

where $Re(p)\geq 0,|z|<1;Re(c)>Re(b)>0,Re(a)>0$.

And

$$\Phi_p(b;c;z)=\sum_{n=0}^{\infty}\frac{B_p(b+n,c-b)}{B(b,c-b)}\frac{z^n}{n!}, \quad (9)$$

where $Re(p_2)\geq 0;Re(c)>Re(b)>0$.

They [6] also give the integral representation, differential formulas, transformation, summation formulas, recurrence relations and asymptotic behavior of (8) and (9).

Ozarslan and Ozergin [7] studied linear and bilinear generating relations for the following extended Appel's and Laurecilla's hypergeometric functions using extended beta function in (7):

$$F_{1;p}(a,b,c;d;y;z)=\sum_{n,m=0}^{\infty}\frac{(b)_n(c)_m B_p(a+n+m,d-a)}{B(a,d-a)}\frac{y^n}{n!}\frac{z^m}{m!},$$

where $Re(p)\geq 0,|y|<1,|z|<1,0<Re(a)<Re(d),Re(b)>0,Re(c)>0$.

$$F_{2;p}(a,b,c;d,e;z)=\sum_{n,m=0}^{\infty}\frac{(a)_{n+m}B_p(b+n,d-b)}{B(b,d-b)}\frac{B_p(c+m,e-c)}{B(c,e-c)}\frac{y^n}{n!}\frac{z^m}{m!},$$

where $Re(p)\geq 0,|y|+|z|<1,0<Re(b)<Re(d),0<Re(c)<Re(e),Re(a)>0$.

And

$$F_{D;p}^3(a,b,c,d;e;x,y,z)=\sum_{n,m,r=0}^{\infty}\frac{(b)_n(c)_m(d)_r B_p(a+n+m+r,e-a)}{B(a,e-a)}\frac{x^n}{n!}\frac{y^m}{m!}\frac{z^r}{rs!},$$

where $Re(p)\geq 0,|x|<1,|y|<1,|z|<1,0<Re(a)<Re(d),Re(b)>0,Re(c)>0$.

Choi et al., [8] investigated the following extension of beta function:

$$B_{p,q}(\ell_1,\ell_2)=\int_0^{\infty} s^{\ell_1-1}(1-s)^{\ell_2-1}\exp\left(-\frac{p}{s}-\frac{q}{1-s)}\right)ds, \quad (10)$$

where $Re(p)>0, Re(q)>0, Re(\ell_1)>0, Re(\ell_2)>0$.

They [8] also discussed extended properties this beta function such as functional relation, summation formulas, integral representations, Mellin transform, beta distribution, connection with other special functions and the following extended Gauss and confluent hypergeometric functions:

$$F_{p,q}(a,b;c;z)=\sum_{n=0}^{\infty}\frac{(a)_n B_{p,q}(b+n,c-b)}{B(b,c-b)}\frac{z^n}{n!}, \quad (11)$$

where $Re(p)\geq 0, Re(q)\geq 0, |z|<1; Re(c)>Re(b)>0, Re(a)>0$.

And

$$\Phi_{p,q}(b;c;z)=\sum_{n=0}^{\infty}\frac{B_{p,q}(b+n,c-b)}{B(b,c-b)}\frac{z^n}{n!}, \quad (12)$$

where $Re(p)\geq 0, Re(q)\geq 0; Re(c)>Re(b)>0$.

Baleanu et al., [9] studied linear and bilinear generating relations for the following extended Appell's and Laurecilla's hypergeometric functions using extended beta function in (10):

$$F_{1;p,q}(a,b,c;d;y,z)=\sum_{n,m=0}^{\infty}\frac{(b)_n(c)_m B_{p,q}(a+n+m,d-a)}{B(a,d-a)}\frac{y^n}{n!}\frac{z^m}{m!},$$

where $Re(p)\geq 0, Re(q)\geq 0, |y|<1, |z|<1, 0<Re(a)<Re(d), Re(b)>0, Re(c)>0$.

$$F_{2;p,q}(a,b,c;d,e;y,z)=\sum_{n,m=0}^{\infty}\frac{(a)_{n+m}B_{p,q}(b+n,d-b)}{B(b,d-b)}\frac{B_{p,q}(c+m,e-c)}{B(c,e-c)}\frac{y^n}{n!}\frac{z^m}{m!},$$

where $Re(p)\geq 0, Re(q)\geq 0 |y|+|z|<1, 0<Re(b)<Re(d), 0<Re(c)<Re(e), Re(a)>0$.

And

$$F^3_{D;p,q}(a,b,c,d;e;x,y,z)=\sum_{n,m,r=0}^{\infty}\frac{(b)_n(c)_m(d)_r B_{p,q}(a+n+m+r,e-a)}{B(a,e-a)}\frac{x^n}{n!}\frac{y^m}{m!}\frac{z^r}{r!},$$

where $Re(p)\geq 0, Re(q)\geq 0 |x|<1, |y|<1, |z|<1, 0<Re(a)<Re(d), Re(b)>0, Re(c)>0$.

Other recent article considered Mittag-Leffler function as the regularizer includes [10]-[17]

In this talk, the authors used bivariate Mittag-Leffer function to defined new generalization of beta function as follows:

$$B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2)=\int_0^1 s^{\ell_1-1}(1-s)^{\ell_1-1}E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{p}{s},-\frac{q}{1-s}\right)ds, \quad (13)$$

where $Re(\ell_1)>0, Re(\ell_2)>0, Re(p)>0, Re(q)>0, Re(\alpha_1)>0, Re(\alpha_2)>0, Re(\alpha_3)>0, Re(\alpha_4)>0$.

Here $E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}(;)$ is the bivariate Mittag-Leffler function defined as ([18], see also [19])

$$E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}(y,z)=\sum_{n,m=0}^{\infty}\frac{(\alpha_4)_{n+m}}{\Gamma(\alpha_1 n+\alpha_2 m+\alpha_3)}\frac{y^n}{n!}\frac{z^m}{m!},$$

where $Re(\alpha_1)>0, Re(\alpha_2)>0, Re(\alpha_3)>0, Re(\alpha_4)>0$, with the property

$$E^1_{1,1,1}(y,z)=\exp(y)\exp(z)=\exp(y+z).$$

2. MAIN RESULTS

This part contains functional relation, summation formulas, symmetric relation, partial differential formulas and integral representations for the newly introduced generalized beta function.

Theorem 1: The following functional relation formula is valid

$$B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2+1)+B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1+1,\ell_2)=B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2). \quad (14)$$

Furthermore, the following result also is valid

$$B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2)=\sum_{n=0}^{r}\binom{r}{n}B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1+r,\ell_2+r-n). \quad (15)$$

Proof Considering the left-hand side

$$B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2+1)+B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1+1,\ell_2)$$
$$=\int_0^1 s^{\ell_1-1}(1-s)^{\ell_1}E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{p}{s},-\frac{q}{1-s}\right)ds+\int_0^1 s^{\ell_1}(1-s)^{\ell_1-1}E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{p}{s},-\frac{q}{1-s}\right)ds$$
$$=\int_0^1\left[s^{\ell_1-1}(1-s)^{\ell_1}+s^{\ell_1}(1-s)^{\ell_1-1}\right]E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{p}{s},-\frac{q}{1-s}\right)ds$$
$$=\int_0^1 s^{\ell_1}(1-s)^{\ell_1}[s^{-1}+(1-s)^{-1}]E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{p}{s},-\frac{q}{1-s}\right)ds$$
$$=\int_0^1 s^{\ell_1}(1-s)^{\ell_1}[s^{-1}(1-s)^{-1}]E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{p}{s},-\frac{q}{1-s}\right)ds$$
$$=\int_0^1 s^{\ell_1-1}(1-s)^{\ell_1-1}E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{p}{s},-\frac{q}{1-s}\right)ds$$
$$=B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2).$$

Using equation (14) and mathematical induction, (15) also follows.

Theorem 2: The following symmetric relation holds

$$B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2)=B^{\alpha_4;q,p}_{\alpha_1,\alpha_2,\alpha_3}(\ell_2,\ell_1).$$

Proof Substituting s by $1-s$ in (13), give the required result.

Theorem 3: The following summation formula hold true

$$B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,1-\ell_2)=\sum_{n=0}^{\infty}\frac{(\ell_2)_n}{n!}B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1+n,1).$$

Proof Using equation (13)

$$B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,1-\ell_2)=\int_0^1 s^{\ell_1-1}(1-s)^{-\ell_1}E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{p}{s},-\frac{q}{1-s}\right)ds.$$

Using the generalized binomial theorem$(1-s)^{-\ell_1}=\sum_{n=0}^{\infty}\frac{(\ell_2)_n}{n!}s^n$ for $|s|<1$, gives

$$B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,1-\ell_2)=\int_0^1 s^{\ell_1-1}\left\{\sum_{n=0}^{\infty}\frac{(\ell_2)_n}{n!}s^n\right\}E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{p}{s},-\frac{q}{1-s}\right)ds$$
$$=\sum_{n=0}^{\infty}\frac{(\ell_2)_n}{n!}\int_0^1 s^{\ell_1+n-1}(1-s)^{1-1}E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{p}{s},-\frac{q}{1-s}\right)ds$$
$$=\sum_{n=0}^{\infty}\frac{(\ell_2)_n}{n!}B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1+n,1).$$

Theorem 4: The following summation formula holds

$$B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,1-\ell_2)=\sum_{n=0}^{\infty}\frac{(\ell_2)_n}{n!}B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1+n,1).$$

Proof Using equation (13)

$$B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,1-\ell_2)=\int_0^1 s^{\ell_1-1}(1-s)^{\ell_2}(1-s)^{-1}E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{p}{s},-\frac{q}{1-s}\right)ds.$$

On considering generalized binomial theorem$(1-s)^{-1}=\sum_{n=0}^{\infty}s^n$ for $|s|<1$, gives

$$B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,1-\ell_2)=\int_0^1 s^{\ell_1-1}(1-s)^{\ell_2}\{\sum_{n=0}^{\infty}s^n\}E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{p}{s},-\frac{q}{1-s}\right)ds$$
$$=\sum_{n=0}^{\infty}\frac{(\ell_2)_n}{n!}\int_0^1 s^{\ell_1+n-1}(1-s)^{\ell_2+1-1}E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{p}{s},-\frac{q}{1-s}\right)ds$$
$$=\sum_{n=0}^{\infty}B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1+n,\ell_2+1).$$

Theorem 5: The following generalized beta function differential formulas hold true

$$\frac{\partial^m}{\partial \ell_1^m} B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2) = \int_0^1 s^{\ell_1-1} \ln^m(s)(1-s)^{\ell_1-1} E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{p}{s}, -\frac{q}{1-s}\right) ds.$$

The following partial differential formulas are also valid

$$\frac{\partial^r}{\partial \ell_2^r} B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2) = \int_0^1 s^{\ell_1-1}(1-s)^{\ell_1-1} \ln^r(1-s)\, E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{p}{s}, -\frac{q}{1-s}\right) ds,$$

and

$$\frac{\partial^{m+r}}{\partial \ell_1^m \partial \ell_2^r} B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2) = \int_0^1 s^{\ell_1-1} \ln^m(s)(1-s)^{\ell_1-1} \ln^r(1-s) E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{p}{s}, -\frac{q}{1-s}\right) ds.$$

Proof On differentiating equation (13), partially with respect to ℓ_1, gives

$$\frac{\partial^m}{\partial \ell_1^m} B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2) = \frac{\partial^m}{\partial \ell_1^m}\left\{\int_0^1 s^{\ell_1-1}(1-s)^{\ell_1-1} E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{p}{s}, -\frac{q}{1-s}\right) ds\right\}$$

$$= \int_0^1 s^{-1}\left\{\frac{\partial^m}{\partial \ell_1^m} s^{\ell_1}\right\}(1-s)^{\ell_1-1} E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{p}{s}, -\frac{q}{1-s}\right) ds$$

Considering $\frac{\partial^m}{\partial \ell_1^m} s^{\ell_1} = s^{\ell_1} \ln^m(s)$, yields

$$\frac{\partial^m}{\partial \ell_1^m} B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2) = \int_0^1 s^{\ell_1-1} \ln^m(s)(1-s)^{\ell_1-1} E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{p}{s}, -\frac{q}{1-s}\right) ds.$$

Theorem 6: The following beta function integral representations hold

$$B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2) = \int_0^{\frac{\pi}{2}} \cos^{2\ell_1-1}\varphi \sin^{2\ell_1-1}\varphi\, E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}(-p\sec^2\varphi, -q\csc^2\varphi) d\varphi, \quad (16)$$

$$B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2) = \int_0^1 \frac{\vartheta^{\ell_1-1}}{(1+\vartheta)^{\ell_1+\ell_2}} E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{p(1+\vartheta)}{\vartheta}, -q(1+\vartheta)\right) d\vartheta, \quad (17)$$

$$B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2) = 2^{1-(\ell_1+\ell_2)} \int_0^\infty (1+\vartheta)^{\ell_1-1}(1-\vartheta)^{\ell_1-1} E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{2p}{1+\vartheta}, -\frac{2q}{1-\vartheta}\right) d\vartheta. \quad (18)$$

Proof Setting $s = \cos^2\varphi, s = \vartheta(1+\vartheta)^{-1}$ and $s = 2^{-1}(1+\vartheta)$ in (13), equations (16), (17) and (18) follow.

3. GENERALIZED BETA DISTRIBUTION

The application of the newly generalized beta function to distribution theory is given here by providing the generalized beta distribution as follows:

$$f(s) = \begin{cases} \frac{1}{B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2)} s^{\ell_1-1}(1-s)^{\ell_1-1} E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{p}{s}, -\frac{q}{1-s}\right), & 0 < s < 1, \\ 0, & \text{otherwise}, \end{cases} \quad (19)$$

where $p, q \geq 0, -\infty < \ell_1, \ell_2 < \infty, \mathrm{Re}(\alpha_1) > 0, \mathrm{Re}(\alpha_2) > 0, \mathrm{Re}(\alpha_3) > 0, \mathrm{Re}(\alpha_4) > 0$.

The moment of the generalized distribution can be expressed by

$$E(S^n) = \frac{B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1+n,\ell_2)}{B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2)}, \qquad \text{where } \ell_1, \ell_2, n \in \mathbb{R}, p, q \in \mathbb{R}^+.$$

Specifically, if $n = 1$ the mean can be obtained as follows:

$$E(S) = \frac{B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1+1,\ell_2)}{B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2)}.$$

The variance of this distribution is given by

$$\mathrm{Var}(S) = E(S^2) - [E(S)]^2 = E[(S - E(S))]$$

$$= \frac{B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1+2,\ell_2) B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2) - [B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1+1,\ell_2)]^2}{[B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2)]^2}.$$

The coefficient of variance (ratio of standard deviation and mean) is

$$C.V = \sqrt{\frac{B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1+2,\ell_2)B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2)}{B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1+1,\ell_2)} - 1}.$$

The moment generating function (m.g.f) about the origin is

$$M_X(s) = \sum_{n=0}^{\infty}\frac{s^n}{n!}E(S^n)$$
$$= \frac{1}{B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2)}\sum_{n=0}^{\infty}B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1+n,\ell_2)\frac{s^n}{n!}.$$

The characteristic function is given by

$$M_X(\exp(is)) = \sum_{n=0}^{\infty}\frac{i^n s^n}{n!}E(S^n)$$
$$= \frac{1}{B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2)}\sum_{n=0}^{\infty}B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1+n,\ell_2)\frac{i^n s^n}{n!}.$$

The probability distribution (Cumulative distribution) functions

$$f(s) = f(S<s) = \int_0^x f(s)ds$$
$$= \frac{B^{\alpha_4;p,q;x}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2)}{B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2)},$$

where $B^{\alpha_4;p,q;x}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2)$ is the incomplete generalized beta function defined as

$$B^{\alpha_4;p,q;x}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2) = \int_0^x s^{\ell_1-1}(1-s)^{\ell_1-1}E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{p}{s},-\frac{q}{1-s}\right)ds,$$

where $p,q \geq 0, -\infty < \ell_1,\ell_2 < \infty, \mathrm{Re}(\alpha_1)>0, \mathrm{Re}(\alpha_2)>0, \mathrm{Re}(\alpha_3)>0, \mathrm{Re}(\alpha_4)>0.$

The reliability function (complement of probability distribution function) is

$$R(s) = 1 - f(s) = \int_x^1 f(s)ds$$
$$= \frac{B^{\alpha_4;p,q;x}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2)}{B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2)},$$

where $B^{\alpha_4;p,q;x}_{\alpha_1,\alpha_2,\alpha_3}(\ell_1,\ell_2)$ is the incomplete generalized beta function defined as

$$B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3;x}(\ell_1,\ell_2) = \int_x^1 s^{\ell_1-1}(1-s)^{\ell_1-1}E^{\alpha_4}_{\alpha_1,\alpha_2,\alpha_3}\left(-\frac{p}{s},-\frac{q}{1-s}\right)ds,$$

where $p,q \geq 0, -\infty < \ell_1,\ell_2 < \infty, \mathrm{Re}(\alpha_1)>0, \mathrm{Re}(\alpha_2)>0, \mathrm{Re}(\alpha_3)>0, \mathrm{Re}(\alpha_4)>0.$

4. THE GENERALIZED GAUSS AND CONFLUENT HYPERGEOMETRIC FUNCTIONS

The Gauss and confluent hypergeometric functions are defined using generalized beta function in equation (13) and some of their properties are established in this section

Definition 7: The generalized Gauss hypergeometric function is

$$F^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(a,b;c;z) = \sum_{n=0}^{\infty}\frac{(a)_n B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(b+n,c-b)}{(b,c-b)}\frac{z^n}{n!}, \qquad (20)$$

where $p,q \geq 0, |z|<1, \mathrm{Re}(c)>\mathrm{Re}(b)>0, \mathrm{Re}(a)>0, \mathrm{Re}(\alpha_1)>0, \mathrm{Re}(\alpha_2)>0, \mathrm{Re}(\alpha_3)>0, \mathrm{Re}(\alpha_4)>0.$

Definition 8: The generalized confluent hypergeometric function is given by

$$\Phi^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(a,b;c;z) = \sum_{n=0}^{\infty}\frac{(a)_n B^{\alpha_4;p,q}_{\alpha_1,\alpha_2,\alpha_3}(b+n,c-b)}{B(b,c-b)}\frac{z^n}{n!}, \qquad (21)$$

where $p,q \geq 0,, \mathrm{Re}(c)>\mathrm{Re}(b)>0, \mathrm{Re}(\alpha_1)>0, \mathrm{Re}(\alpha_2)>0, \mathrm{Re}(\alpha_3)>0, \mathrm{Re}(\alpha_4)>0.$

Theorem 9: The following equality holds

$$F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(a,b;c;z)=\frac{1}{B(b,c-b)}\int_0^1 s^{b-1}(1-s)^{c-b-1}(1-sz)^{-a}E_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4}\left(-\frac{p}{s},-\frac{q}{1-s}\right)ds, \quad (22)$$

where $p,q\geq 0, |\arg(1-z)|<\pi, \mathrm{Re}(c)>\mathrm{Re}(b)>0, \mathrm{Re}(a)>0, \mathrm{Re}(\alpha_1)>0, \mathrm{Re}(\alpha_2)>0, \mathrm{Re}(\alpha_3)>0, \mathrm{Re}(\alpha_4)>0.$

And

$$\Phi_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(b;c;z)=\frac{1}{B(b,c-b)}\int_0^1 s^{b-1}(1-s)^{c-b-1}\exp(sz)E_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4}\left(-\frac{p}{s},-\frac{q}{1-s}\right)ds, \quad (23)$$

where $p,q\geq 0, \mathrm{Re}(c)>\mathrm{Re}(b)>0, \mathrm{Re}(\alpha_1)>0, \mathrm{Re}(\alpha_2)>0, \mathrm{Re}(\alpha_3)>0, \mathrm{Re}(\alpha_4)>0.$

Proof Equation (22) and (23) follows by applying integral representation of the generalized beta function in (13) to (20) and (21).

Corollary 10: The following formula also holds

$$\Phi_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(b;c;z)=\frac{\exp(z)}{B(b,c-b)}\int_0^1 s^{c-b-1}(1-s)^{b-1}\exp(-sz)E_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4}\left(-\frac{p}{1-s},-\frac{q}{s}\right)ds, \quad (24)$$

where $p,q\geq 0, \mathrm{Re}(c)>\mathrm{Re}(b)>0, \mathrm{Re}(\alpha_1)>0, \mathrm{Re}(\alpha_2)>0, \mathrm{Re}(\alpha_3)>0, \mathrm{Re}(\alpha_4)>0.$

Theorem 11: The following differential formula is valid

$$\frac{d^n}{dz^n}F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(a,b;c;z)=\frac{(a)_n(b)_n}{(c)_n}F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(a+n,b+n;c+n;z), p,q\geq 0, n\in\mathbb{N}_0, \quad (25)$$

The following confluent hypergeometric differential formula is also valid

$$\frac{d^n}{dz^n}\Phi_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(b;c;z)=\frac{(b)_n}{(c)_n}\Phi_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(b+n;c+n;z), p,q\geq 0, n\in\mathbb{N}_0, \quad (26)$$

Proof Differentiate (20) with respect to z, yields

$$\frac{d}{dz}F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(a,b;c;z)=\sum_{n=1}^{\infty}\frac{(a)_nB_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(b+n,c-b)}{B(b,c-b)}\frac{z^{n-1}}{(n-1)!}.$$

Putting $s\to 1-s$, gives

$$\frac{d}{dz}F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(a,b;c;z)=\sum_{n=0}^{\infty}\frac{(a)_{n+1}B_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(b+n+1,c-b)}{B(b,c-b)}\frac{z^n}{n!}.$$

Applying $(a)_{n+1}=a(a+1)_n$ and $B(b,c-b)=\frac{c}{b}B(b+1,c-b)$, leads to

$$\frac{d}{dz}F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(a,b;c;z)=\frac{(a)(b)}{(c)}\sum_{n=0}^{\infty}\frac{(a+1)_nB_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(b+n+1,c-b)}{B(b,c-b)}\frac{z^n}{n!}.$$

This can be express by

$$\frac{d}{dz}F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(a,b;c;z)=\frac{(a)(b)}{(c)}F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(a+1,b+1;c+1;z). \quad (27)$$

On recursive differentiation of (27), equation (25) follows. Following similar argument (26) also follows.

Theorem 12: The following transformation formulas hold true

$$F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(a,b;c;z)=(1-z)^{-a}F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}\left(a,c-b;c;-\frac{z}{1-z}\right), \quad (28)$$

where $p,q\geq 0, |\arg(1-z)|<\pi, \mathrm{Re}(c)>\mathrm{Re}(b)>0, \mathrm{Re}(a)>0, \mathrm{Re}(\alpha_1)>0, \mathrm{Re}(\alpha_2)>0, \mathrm{Re}(\alpha_3)>0, \mathrm{Re}(\alpha_4)>0.$

And

$$\Phi_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(b;c;z)=\exp(z)\Phi_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(b;c;z) \quad (29)$$

where $p,q\geq 0, \mathrm{Re}(c)>\mathrm{Re}(b)>0, \mathrm{Re}(\alpha_1)>0, \mathrm{Re}(\alpha_2)>0, \mathrm{Re}(\alpha_3)>0, \mathrm{Re}(\alpha_4)>0.$

Proof Considering $s \to 1-s$ in equation (22) and using

$$[1-z(1-s)]^{-a} = (1-z)^{-a}\left[1+\frac{z}{1-z}s\right]^{-a},$$

yields

$$F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(a,b;c;z) = \frac{(1-z)^{-a}}{B(b,c-b)}\int_0^1 s^{c-b-1}(1-s)^{b-1}\left[1+\frac{z}{1-z}s\right]^{-a} E_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4}\left(-\frac{p}{1-s},-\frac{q}{s}\right)ds$$
$$= (1-z)^{-a}F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}\left(a,c-b;c;-\frac{z}{1-z}\right).$$

Using equation (24), the desired result in (29) can be obtained.

Theorem 13: The following transformation formulas also hold

$$F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(a,b;c;1-z^{-1}) = z^a F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(a,c-b;c;1-z), \quad (30)$$

where $p,q \geq 0, |\arg(1-z)| < \pi, \mathrm{Re}(c) > \mathrm{Re}(b) > 0, \mathrm{Re}(a) > 0, \mathrm{Re}(\alpha_1) > 0, \mathrm{Re}(\alpha_2) > 0, \mathrm{Re}(\alpha_3) > 0, \mathrm{Re}(\alpha_4) > 0.$

And

$$F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(a,b;c;z(1+z)^{-1}) = (1+z)^a F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(a,c-b;c;-z), \quad (31)$$

where $p,q \geq 0, |\arg(1-z)| < \pi, \mathrm{Re}(c) > \mathrm{Re}(b) > 0, \mathrm{Re}(a) > 0, \mathrm{Re}(\alpha_1) > 0, \mathrm{Re}(\alpha_2) > 0, \mathrm{Re}(\alpha_3) > 0, \mathrm{Re}(\alpha_4) > 0.$

Proof Equations (30) and (31) follows by setting $z \to 1-z^{-1}$ and $z \to z(1+z)^{-1}$ in equation (28), respectively.

Definition 14: The generalized Appell-Laurecilla's hypergeometric functions using generalized beta function in (13) are define as

$$F_{1;\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(a,b,c;d;y;z) = \sum_{n,m=0}^{\infty}\frac{(b)_n(c)_m B_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(a+n+m,d-a)}{B(a,d-a)}\frac{y^n}{n!}\frac{z^m}{m!}, \quad (32)$$

where $\mathrm{Re}(p) \geq 0, \mathrm{Re}(q) \geq 0, |y| < 1, |z| < 1, 0 < \mathrm{Re}(a) < \mathrm{Re}(d), \mathrm{Re}(b) > 0, \mathrm{Re}(c) > 0.$

$$F_{2;\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(a,b,c;d,e;z) = \sum_{n,m=0}^{\infty}\frac{(a)_{n+m}B_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(b+n,d-b)}{B(b,d-b)}\frac{B_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(c+m,e-c)}{B(c,e-c)}\frac{y^n}{n!}\frac{z^m}{m!}, \quad (33)$$

where $\mathrm{Re}(p) \geq 0, \mathrm{Re}(q) \geq 0 |y| + |z| < 1, 0 < \mathrm{Re}(b) < \mathrm{Re}(d), 0 < \mathrm{Re}(c) < \mathrm{Re}(e), \mathrm{Re}(a) > 0.$

And

$$F_{D;\alpha_1,\alpha_2,\alpha_3}^{3;\alpha_4;p,q}(a,b,c,d;e;x,y,z) = \sum_{n,m,r=0}^{\infty}\frac{(b)_n(c)_m(d)_r B_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(a+n+m+r,e-a)}{B(a,e-a)}\frac{x^n}{n!}\frac{y^m}{m!}\frac{z^r}{rs!}, \quad (34)$$

where $\mathrm{Re}(p) \geq 0, \mathrm{Re}(q) \geq 0 |x| < 1, |y| < 1, |z| < 1, 0 < \mathrm{Re}(a) < \mathrm{Re}(d), \mathrm{Re}(b) > 0, \mathrm{Re}(c) > 0.$

Theorem 15: The following generalized Appell-Laurecilla's hypergeometric functions integral formulas holds

$$F_{1;\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(a,b,c;d;y;z)$$
$$= \frac{1}{B(a,d-a)}\int_0^1 s^{a-1}(1-s)^{d-a-1}(1-sy)^{-b}(1-sz)^{-c}E_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4}\left(-\frac{p}{s},-\frac{q}{1-s}\right)ds,$$
$$F_{2;\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(a,b,c;d,e;z) = \frac{1}{B(b,d-b)B(c,e-c)}\int_0^1\int_0^1 s^{b-1}(1-s)^{d-a-1}t^{c-1}(1-t)^{e-c-1}$$
$$\times (1-sy-tz)^{-a}E_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4}\left(-\frac{p}{s},-\frac{q}{1-s}\right)E_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4}\left(-\frac{p}{t},-\frac{q}{1-t}\right)dsdt,$$

$$F_{D;\alpha_1,\alpha_2,\alpha_3}^{3;\alpha_4;p,q}(a,b,c,d;e;x,y,z)$$
$$= \frac{1}{B(a,e-a)}\int_0^1 s^{a-1}(1-s)^{e-a-1}(1-sx)^{-b}(1-sy)^{-c}(1-sz)^{-d}E_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4}\left(-\frac{p}{s},-\frac{q}{1-s}\right)ds.$$

Proof: The proof is similar to that of Theorem

5. THE GENERALIZED RIEMANN-LIOUVILLE FRACTIONAL DERIVATIVE OPERATOR

The generalized Riemann-Liouville fractional derivative operator is defined using generalized beta function in equation (13)

Definition 16: The generalized Riemann-Liouville fractional derivative operator is

$$D_{z;\alpha_1,\alpha_2,\alpha_3}^{\lambda;\alpha_4;p,q}\{f(z)\} = \begin{cases} \frac{1}{\Gamma(-\lambda)}\int_0^z f(s)(1-s)^{-\lambda-1}E_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4}\left(-\frac{pz}{s},-\frac{qz}{z-s}\right)ds, \ Re(\lambda)<0, \\ \frac{d^n}{dz^n}\left\{D_{z;\alpha_1,\alpha_2,\alpha_3}^{\lambda-n;\alpha_4;p,q}\{f(z)\}\right\}, \quad n-1\le Re(\lambda)<n; n\in\mathbb{N}_0. \end{cases} \tag{35}$$

Theorem 17: The following is valid

$$D_{z;\alpha_1,\alpha_2,\alpha_3}^{\lambda;\alpha_4;p,q}\{z^\eta\} = \frac{1}{\Gamma(-\lambda)}B_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(\eta+1,-\lambda)z^{\eta-\lambda}, \text{ where } Re(\lambda)<0. \tag{36}$$

Proof Using equation (35),

$$D_{z;\alpha_1,\alpha_2,\alpha_3}^{\lambda;\alpha_4;p,q}\{f(z)\} = \frac{1}{\Gamma(-\lambda)}\int_0^z s^\eta(z-s)^{-\lambda-1}E_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4}\left(-\frac{pz}{s},-\frac{qz}{z-s}\right)ds$$
$$= \frac{z^{\eta-\lambda}}{\Gamma(-\lambda)}\int_0^1 g^\eta(1-g)^{-\lambda-1}E_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4}\left(-\frac{p}{g},-\frac{q}{1-g}\right)dg$$
$$= \frac{1}{\Gamma(-\lambda)}B_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(\eta+1,-\lambda)z^{\eta-\lambda}.$$

Theorem 18: Supposed $Re(\lambda)<0$ and $f(z)$ is analytic function at the origin with the Maclaurin series expansion $f(z)=\sum_{n=0}^{\infty}a_n z^n$, $|z|<h$ for some $h\in\mathbb{R}^+$, then the following is true

$$D_{z;\alpha_1,\alpha_2,\alpha_3}^{\lambda;\alpha_4;p,q}\{f(z)\} = \sum_{n=0}^{\infty}a_n D_{z;\alpha_1,\alpha_2,\alpha_3}^{\lambda;\alpha_4;p,q}\{z^\eta\}. \tag{37}$$

Proof By direct computation, yields

$$D_{z;\alpha_1,\alpha_2,\alpha_3}^{\lambda;\alpha_4;p,q}\{f(z)\} = \frac{1}{\Gamma(-\lambda)}\int_0^z\{\sum_{n=0}^{\infty}a_n s^n\}(z-s)^{-\lambda-1}E_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4}\left(-\frac{pz}{s},-\frac{qz}{z-s}\right)ds.$$

Term by term integration can be use since power series converge uniformly on closed disk with center at the origin and radius smaller than h, and so does the series on the line segment from zero to a fixed z for $|z|<h$

$$D_{z;\alpha_1,\alpha_2,\alpha_3}^{\lambda;\alpha_4;p,q}\{f(z)\} = \sum_{n=0}^{\infty}a_n\left\{\frac{1}{\Gamma(-\lambda)}\int_0^z(z-s)^{-\lambda-1}E_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4}\left(-\frac{pz}{s},-\frac{qz}{z-s}\right)ds\right\}$$
$$= \sum_{n=0}^{\infty}a_n D_{z;\alpha_1,\alpha_2,\alpha_3}^{\lambda;\alpha_4;p,q}\{z^\eta\}.$$

Theorem 19: Let $\mathrm{Re}(\lambda) > \mathrm{Re}(\eta) > 0$ and $|z| < 1$,then

$$D_{z;\alpha_1,\alpha_2,\alpha_3}^{\eta-\lambda;\alpha_4;p,q}\{z^{\lambda-1}(1-z)^{-\alpha}\} = \frac{\Gamma(\eta)}{\Gamma(\lambda)} F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(\alpha,\eta;\lambda;z)z^{\eta-1}. \quad (38)$$

Proof

$$D_{z;\alpha_1,\alpha_2,\alpha_3}^{\eta-\lambda;\alpha_4;p,q}\{z^{\lambda-1}(1-z)^{-\alpha}\} = \frac{1}{\Gamma(\lambda-\eta)}\int_0^z s^{\lambda-1}(1-s)^{-\alpha}(z-s)^{\lambda-\eta-1} E_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4}\left(-\frac{pz}{s},-\frac{qz}{z-s}\right) ds$$

$$= \frac{z^{\eta-1}}{\Gamma(\lambda-\eta)}\int_0^1 g^{\lambda-1}(1-gz)^{-\alpha}(1-g)^{\lambda-\eta-1} E_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4}\left(-\frac{p}{g},-\frac{q}{1-g}\right) dg$$

$$= \frac{\Gamma(\eta)}{\Gamma(\lambda)} F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(\alpha,\eta;\lambda;z)z^{\eta-1}.$$

Theorem 20: For $\mathrm{Re}(\lambda) > \mathrm{Re}(\eta) > 0, \mathrm{Re}(\alpha) > 0, \mathrm{Re}(\beta) > 0, |az| < 1$ and $|bz| < 1$, then

$$D_{z;\alpha_1,\alpha_2,\alpha_3}^{\eta-\lambda;\alpha_4;p,q}\{z^{\eta-1}(1-az)^{-\alpha}(1-bz)^{-\beta}\} = \frac{\Gamma(\eta)}{\Gamma(\lambda)} F_{1;\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(\eta,\alpha,\beta;\lambda;az,bz)z^{\eta-1}. \quad (39)$$

Similarly, the following also holds

$$D_{z;\alpha_1,\alpha_2,\alpha_3}^{\eta-\lambda;\alpha_4;p,q}\{z^{\eta}(1-z)^{-\alpha}(1-bz)^{-\beta}(1-cz)^{-\gamma}\} = \frac{\Gamma(\eta)}{\Gamma(\lambda)} F_{D;\alpha_1,\alpha_2,\alpha_3}^{3;\alpha_4;p,q}(\eta,\alpha,\beta,\gamma;\lambda;az,bz,cz)z^{\eta-1},$$

where $\mathrm{Re}(\lambda) > \mathrm{Re}(\eta) > 0, \mathrm{Re}(\alpha) > 0, \mathrm{Re}(\beta) > 0, |az| < 1, |bz| < 1$ and $|cz| < 1$.

Proof By using generalized binomial theorem $(1-az)^{-\alpha} = \sum_{k=0}^{\infty}(\alpha)_k \frac{z^k}{k}$ $(\lceil az \rceil < 1)$

$$D_{z;\alpha_1,\alpha_2,\alpha_3}^{\eta-\lambda;\alpha_4;p,q}\{z^{\eta-1}(1-az)^{-\alpha}(1-bz)^{-\beta}\} = \sum_{n,m=0}^{\infty}(\alpha)_n\,(\beta)_m \frac{a^n}{n!}\frac{b^m}{m!} D_{z;\alpha_1,\alpha_2,\alpha_3}^{\eta-\lambda;\alpha_4;p,q}\{z^{\eta+n+m-1}\}.$$

Applying equations (32) and (36), leads to

$$D_{z;\alpha_1,\alpha_2,\alpha_3}^{\eta-\lambda;\alpha_4;p,q}\{z^{\eta-1}(1-az)^{-\alpha}(1-bz)^{-\beta}\} = \frac{\Gamma(\eta)}{\Gamma(\lambda)} F_{1;\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(\eta,\alpha,\beta;\lambda;az,bz)z^{\eta-1}.$$

Theorem 21:

$$D_{z;\alpha_1,\alpha_2,\alpha_3}^{\eta-\lambda;\alpha_4;p,q}\left\{z^{\eta}(1-z)^{-\alpha} F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}\left(\alpha,\beta;\gamma;\frac{y}{1-z}\right)\right\}$$

$$= \frac{1}{\Gamma(\lambda-\eta)B(\beta,\gamma-\beta)} F_{2;\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(\alpha,\beta,\eta;\gamma,\lambda;y,z)z^{\eta-1}. \quad (40)$$

Proof Considering equations (20), (32) and generalized binomial theorem $(1-z)^{-\alpha} = \sum_{k=0}^{\infty}(\alpha)_k \frac{z^k}{k}$ $(\lceil z \rceil < 1)$, gives

$$D_{z;\alpha_1,\alpha_2,\alpha_3}^{\eta-\lambda;\alpha_4;p,q}\left\{z^{\eta}(1-z)^{-\alpha} F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}\left(\alpha,\beta;\gamma;\frac{y}{1-z}\right)\right\}$$

$$= \frac{1}{B(\beta,\gamma-\beta)}\sum_{n,m=0}^{\infty}(\alpha)_n\,(\alpha+n)_m B_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(\beta+n,\gamma-\beta)\frac{y^n}{n!} D_{z;\alpha_1,\alpha_2,\alpha_3}^{\eta-\lambda;\alpha_4;p,q}\{z^{\eta+n+m-1}\}.$$

Applying equation (36), yields

$$D_{z;\alpha_1,\alpha_2,\alpha_3}^{\eta-\lambda;\alpha_4;p,q}\left\{z^{\eta}(1-z)^{-\alpha} F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}\left(\alpha,\beta;\gamma;\frac{y}{1-z}\right)\right\}$$

$$= \frac{1}{\Gamma(\lambda-\eta)B(\beta,\gamma-\beta)} F_{2;\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(\alpha,\beta,\eta;\gamma,\lambda;y,z)z^{\eta-1}.$$

6. GENERATING FUNCTIONS AND FURTHER RESULTS

Linear and bilinear generating functions, further result of the new generalized Riemann-Liouville fractional derivative with illustration to exponential, classical Gauss hypergeometric, confluent hypergeometric and classical Mittag-Leffler functions is studied

Theorem 22: The following equality holds

$$\sum_{n=0}^{\infty}\frac{(\eta)_n}{n!}F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(\eta+n,\alpha;\beta;z)s^n=(1-s)^{-\eta}F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}\left(\eta+n,\alpha;\beta;\frac{z}{1-s}\right), \quad (41)$$

where $|z|<\min\{1,|1-s|\}$ and $\mathrm{Re}(\eta)>0,\mathrm{Re}(\beta)>\mathrm{Re}(\alpha)>0$.

Proof Using the elementary identity in [20]

$$\{(1-z)-s\}^{-\eta}=(1-s)^{-\eta}\{1-s(1-z)^{-1}\}^{-\eta}.$$

Expansion of left-hand sides, yields

$$\sum_{n=0}^{\infty}\frac{(\eta)_n}{n!}(1-z)^{-(\eta+n)}s^n=(1-s)^{-\eta}\{1-z(1-s)^{-1}\}^{-\eta}.$$

Multiplying both sides by $z^{\alpha-1}$ and the operator $D_{z;\alpha_1,\alpha_2,\alpha_3}^{\alpha-\beta;\alpha_4;p,q}$, we have

$$\sum_{n=0}^{\infty}\frac{(\eta)_n}{n!}D_{z;\alpha_1,\alpha_2,\alpha_3}^{\alpha-\beta;\alpha_4;p,q}\{z^{\alpha-1}(1-z)^{-(\eta+n)}\}s^n=(1-s)^{-\eta}D_{z;\alpha_1,\alpha_2,\alpha_3}^{\alpha-\beta;\alpha_4;p,q}\{z^{\alpha-1}\{1-z(1-s)^{-1}\}^{-\eta}\}.$$

Applying equation (38), we have

$$\sum_{n=0}^{\infty}\frac{(\eta)_n}{n!}F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(\eta+n,\alpha;\beta;z)s^n=(1-s)^{-\eta}F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}\left(\eta+n,\alpha;\beta;\frac{z}{1-s}\right).$$

Theorem 23: The following equation holds

$$\sum_{n=0}^{\infty}\frac{(\eta)_n}{n!}F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(\eta-n,\alpha;\beta;z)s^n=(1-s)^{-\eta}F_{1;\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}\left(\alpha,\lambda,\eta;z;\frac{zs}{1-s}\right),$$

where $\mathrm{Re}(\beta)>\mathrm{Re}(\alpha)>0,\mathrm{Re}(\lambda)>0,|s|<(1+|s|)^{-1}$.

Proof Using the elementary identity in [20]

$$\{1-(1-z)s\}^{-\eta}=(1-s)^{-\eta}\{1-(-sz)(1-s)^{-1}\}^{-\eta}.$$

Expanding the left-hand sides give

$$\sum_{n=0}^{\infty}\frac{(\eta)_n}{n!}(1-z)^n s^n=(1-t)^{-\lambda_2}\{1-(-zs)(1-s)^{-1}\}^{-\eta}.$$

Multiplying both sides by $z^{\alpha-1}(1-z)^{-\lambda}$ and applying the operator $D_{z;\alpha_1,\alpha_2,\alpha_3}^{\alpha-\beta;\alpha_4;p,q}$, we get

$$\sum_{n=0}^{\infty}\frac{(\eta)_n}{n!}D_{z;\alpha_1,\alpha_2,\alpha_3}^{\alpha-\beta;\alpha_4;p,q}\{z^{\alpha-1}(1-z)^{-(\lambda+n)}\}s^n=(1-s)^{-\eta}$$
$$\times D_{z;\alpha_1,\alpha_2,\alpha_3}^{\alpha-\beta;\alpha_4;p,q}\{z^{\alpha-1}\{1-(-sz)(1-s)^{-1}\}^{-\eta}\}.$$

Applying equations (32) and (38), yields

$$\sum_{n=0}^{\infty}\frac{(\eta)_n}{n!}F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(\eta-n,\alpha;\beta;z)s^n=(1-s)^{-\eta}F_{1;\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}\left(\alpha,\lambda,\eta;z;\frac{zs}{1-s}\right).$$

Theorem 24: The following generating function is valid

$$\sum_{n=0}^{\infty}\frac{(\eta)_n}{n!}F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(\gamma,-n;\delta;z)F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(\eta+n,\alpha;\beta;z)$$
$$=(1-s)^{-\eta}F_{2;\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}\left(\eta,\alpha,\gamma;\beta,\delta;\frac{y}{1-s},\frac{-s}{1-s}\right),$$

where $\mathrm{Re}(\delta)>\mathrm{Re}(\gamma)>0,\mathrm{Re}(\lambda)>0,\mathrm{Re}(\beta)>0,|s|<(1-|y|)(1+|z|)^{-1}$ and $|z|<1$.

Proof Setting $s \to (1-y)s$ in equation (41), multiple the resulting equation by $y^{\gamma-1}$ and applying the operator $D_{ys;\alpha_1,\alpha_2,\alpha_3}^{\gamma-\delta;\alpha_4;p,q}$, leads to

$$D_{y;\alpha_1,\alpha_2,\alpha_3}^{\gamma-\delta;\alpha_4;p,q}\left\{\sum_{n=0}^{\infty}\frac{(\eta)_n}{n!}y^{\gamma-1}F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(\eta+n,\alpha;\beta;z)[(1-y)s]^n\right\}$$
$$= D_{y;\alpha_1,\alpha_2,\alpha_3}^{\gamma-\delta;\alpha_4;p,q}\left\{y^{\gamma-1}(1-(1-y)s)^{-\eta}F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}\left(\eta+n,\alpha;\beta;\frac{z}{1-(1-y)s}\right)\right\}.$$

Changing the order of summation, yields

$$\sum_{n=0}^{\infty}\frac{(\eta)_n}{n!}D_{y;\alpha_1,\alpha_2,\alpha_3}^{\gamma-\delta;\alpha_4;p,q}\{(1-y)^n s^n\}F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(\eta+n,\alpha;\beta;z)$$
$$= D_{y;\alpha_1,\alpha_2,\alpha_3}^{\gamma-\delta;\alpha_4;p,q}\left\{y^{\gamma-1}(1-(1-y)s)^{-\eta}F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}\left(\eta+n,\alpha;\beta;\frac{z}{1-s}\right)\right\}.$$

Applying equation (33) and (38), gives

$$\sum_{n=0}^{\infty}\frac{(\eta)_n}{n!}F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(\gamma,-n;\delta;y)F_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(\eta+n,\alpha;\beta;z)$$
$$= (1-s)^{-\eta}F_{2;\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}\left(\eta,\alpha,\gamma;\beta,\delta;\frac{y}{1-s},\frac{-sz}{1-s}\right).$$

Theorem 25: The following equality hold true

$$D_{z;\alpha_1,\alpha_2,\alpha_3}^{\lambda;\alpha_4;p,q}\{\exp(z)\} = \frac{z^{-\lambda}}{\Gamma(-\lambda)}\sum_{n=0}^{\infty}B_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(n+1,-\lambda)\frac{z^n}{n!}.$$

Proof Using equations (36) and (37), we have

$$D_{z;\alpha_1,\alpha_2,\alpha_3}^{\lambda;\alpha_4;p,q}\{\exp(z)\} = D_{z;\alpha_1,\alpha_2,\alpha_3}^{\lambda;\alpha_4;p,q}\left\{\sum_{n=0}^{\infty}\frac{z^n}{n!}\right\}$$
$$= \sum_{n=0}^{\infty}\frac{1}{n!}D_{z;\alpha_1,\alpha_2,\alpha_3}^{\lambda;\alpha_4;p,q}\{z^n\}$$
$$= \frac{z^{-\lambda}}{\Gamma(-\lambda)}\sum_{n=0}^{\infty}B_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(n+1,-\lambda)\frac{z^n}{n!}.$$

Theorem 26: The following formula is valid

$$D_{z;\alpha_1,\alpha_2,\alpha_3}^{\eta-\lambda;\alpha_4;p,q}\{F(a,b;c;z)\} = \frac{z^{-\lambda}}{\Gamma(-\lambda)}\sum_{n=0}^{\infty}\frac{(a)_n(b)_n}{(c)_n}B_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(n+1,-\lambda)\frac{z^n}{n!},$$

Where $\mathrm{Re}(a)>0, \mathrm{Re}(b)>0, \mathrm{Re}(c)>0, |z|<1$.

Proof Using equations (36) and (37), we have

$$D_{z;\alpha_1,\alpha_2,\alpha_3}^{\lambda;\alpha_4;p,q}\{F(a,b;c;z)\} = D_{z;\alpha_1,\alpha_2,\alpha_3}^{\lambda;\alpha_4;p,q}\left\{\sum_{n=0}^{\infty}\frac{(a)_n(b)_n}{(c)_n}\frac{z^n}{n!}\right\}$$
$$= \sum_{n=0}^{\infty}\frac{(a)_n(b)_n}{(c)_n n!}D_{z;\alpha_1,\alpha_2,\alpha_3}^{\lambda;\alpha_4;p,q}\{z^n\}$$
$$= \frac{z^{-\lambda}}{\Gamma(-\lambda)}\sum_{n=0}^{\infty}\frac{(a)_n(b)_n}{(c)_n}B_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(n+1,-\lambda)\frac{z^n}{n!}.$$

Corollary 27: The following formula is also valid

$$D_{z;\alpha_1,\alpha_2,\alpha_3}^{\lambda;\alpha_4;p,q}\{\Phi(b;c;z)\} = \frac{z^{-\lambda}}{\Gamma(-\lambda)}\sum_{n=0}^{\infty}\frac{(b)_n}{(c)_n}B_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(n+1,-\lambda)\frac{z^n}{n!},$$

where $\mathrm{Re}(b)>0, \mathrm{Re}(c)>0$.

Theorem 28: The following formula is valid

$$D_{z;\alpha_1,\alpha_2,\alpha_3}^{\eta-\lambda;\alpha_4;p,q}\left\{z^{\eta-1}E_{\alpha,\beta}^{\gamma}(z)\right\} = \frac{z^{-\lambda}}{\Gamma(-\lambda)}\sum_{n=0}^{\infty}\frac{(\gamma)_n}{\Gamma(\alpha n+\beta)}B_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(n+1,-\lambda)\frac{z^n}{n!},$$

where $Re(\alpha) > 0, Re(\beta) > 0, Re(\gamma) > 0$ and $E_{\alpha,\beta}^{\gamma}(z)$ is a three parameters Mittag-Leffler function also known as Prabhakar function [21, 22]

Proof Using equations (36) and (37), we have

$$\begin{aligned} D_{z;\alpha_1,\alpha_2,\alpha_3}^{\lambda;\alpha_4;p,q}\{F(a,b;c;z)\} &= D_{z;\alpha_1,\alpha_2,\alpha_3}^{\lambda;\alpha_4;p,q}\left\{\sum_{n=0}^{\infty}\frac{(b)_n}{(c)_n}\frac{z^n}{n!}\right\} \\ &= \sum_{n=0}^{\infty}\frac{(b)_n}{(c)_n n!}D_{z;\alpha_1,\alpha_2,\alpha_3}^{\lambda;\alpha_4;p,q}\{z^n\} \\ &= \frac{z^{-\lambda}}{\Gamma(-\lambda)}\sum_{n=0}^{\infty}\frac{(b)_n}{(c)_n}B_{\alpha_1,\alpha_2,\alpha_3}^{\alpha_4;p,q}(n+1,-\lambda)\frac{z^n}{n!}. \end{aligned}$$

7. CONCLUSION

The authors discussed new generalized beta, Gauss hypergeometric, confluent hypergeometric, Appell's hypergeometric and Lauricella's hypergeometric functions by using bivariate Mittag-Leffler function presented in [18] as the regularizer. With their properties and application to statistical distribution and Riemann-Liouville fractional derivative of some familiar special functions are introduced. Some special cases of this new generalized beta function, Gauss hypergeometric, confluent hypergeometric, Appell's hypergeometric and Lauricella's hypergeometric functions are pointed out as follows:

If $\alpha_1 = \alpha_2 = \alpha_3 = \alpha_3 = 1$, the new generalized functions reduce to results given in [8], [9]:

$B_{1,1,1}^{1;p,q}(\ell_1,\ell_2) = B_{p,q}(\ell_1,\ell_2)$,

$F_{1,1,1}^{1;p,q}(a,b;c;z) = F_{p,q}(a,b;c;z)$,

$\Phi_{1,1,1}^{1;p,q}(b;c;z) = \Phi_{p,q}(b;c;z)$,

$F_{1;1,1,1}^{1;p,q}(a,b,c;d;y;z) = F_{1;p,q}(a,b,c;d;y;z)$,

$F_{2;1,1,1}^{1;p,q}(a,b,c;d,e;z) = F_{2,p,q}(a,b,c;d,e;z)$,

$F_{D;1,1,1}^{3;1;p,q}(a,b,c,d;e;x,y,z) = F_{D,p,q}^{3}(a,b,c,d;e;x,y,z)$

If $\alpha_1 = \alpha_2 = \alpha_3 = \alpha_3 = 1, p = q$ then the new generalized functions reduce to results given in [5], [6], [7]:

$B_{1,1,1}^{1;p,p}(\ell_1,\ell_2) = B_{p}(\ell_1,\ell_2)$,

$F_{1,1,1}^{1;p,p}(a,b;c;z) = F_{p}(a,b;c;z)$,

$\Phi_{1,1,1}^{1;p,q}(b;c;z) = \Phi_{p}(b;c;z)$,

$F_{1;1,1,1}^{1;p,p}(a,b,c;d;y;z) = F_{1;p}(a,b,c;d;y;z)$,

$F_{2;1,1,1}^{1;p,p}(a,b,c;d,e;z) = F_{2;p}(a,b,c;d,e;z)$,

$F_{D;1,1,1}^{3;1;p,p}(a,b,c,d;e;x,y,z) = F_{D;p}^{3}(a,b,c,d;e;x,y,z)$.

If $\alpha_1 = \alpha_2 = \alpha_3 = \alpha_3 = 1, p = q = 0$ then the new generalized functions reduce to results in [1]-[4], [23], [24]:

$B_{1,1,1}^{1;0,0}(\ell_1, \ell_2) = B(\ell_1, \ell_2)$,

$F_{1,1,1}^{1;0,0}(a, b; c; z) = F(a, b; c; z)$,

$\Phi_{1,1,1}^{1;0,0}(b; c; z) = \Phi(b; c; z)$,

$F_{1;1,1,1}^{1;0,0}(a, b, c; d; y; z) = F_1(a, b, c; d; y; z)$,

$F_{2;1,1,1}^{1;0,0}(a, b, c; d, e; z) = F_2(a, b, c; d, e; z)$,

$F_{D;1,1,1}^{3;1;0,0}(a, b, c, d; e; x, y, z) = F_D^3(a, b, c, d; e; x, y, z)$.

And all other properties such as functional relation, summation formulas, integral representations, differential formulas beta distribution and Riemann-Liouville fractional derivative operators also follow.

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REFERENCES

[1] U.M. Abubakar, S.R. Kabara, A note on a new extended gamma and beta functions and their properties, IOSR Journal of Mathematics, 15 (5) (2019), 1-6.

[2] U.M. Abubakar, New generalized beta function associated with the Fox-Wright function, Journal of Fractional Calculus and Application, 12 (2) (2021), 204-227.

[3] U.M. Abubakar, A study of extended beta and associated functions connected to Fox-Wright function. Paper presented at 12th Symposium of the Fractional Calculus and Applications Group, 1st International (ONLINE) Conference in Mathematical Science and Fractional Calculus, 16-18 February 2021, 1-23.

[4] U.M. Abubakar, S. Patel, On a new generalized beta function defined by the generalized Wright function and its applications, Malaysian Journal of Computing, 6 (2) (2021), 851-870.

[5] M.A. Chaudhry, A. Qadir, M. Rafique, S.M. Zubair, Extension of Euler's beta function, Journal of Computation and Applied Mathematics, 78 (1997), 19-32.

[6] M.A. Chaudhry, A. Qadir, H.M. Srivastava, R.B. Paris, Extended hypergeometric and confluent hypergeometric functions, Applied Mathematics and Computation, 159 (2004), 589-604.

[7] M.A. Ozarslan, E. Ozargin, Some generating relations for extended hypergeometric functions via generalized fractional derivative operator, Mathematical and Computational Modeling, 52 (2010), 1825-1833.

[8] J. Choi, A.K. Rathie, R.K. Parmar, extension of extended beta, hypergeometric and confluent hypergeometric functions, Honam Mathematical Journal, 36 (2) (2014), 357-385.

[9] D. Baleanu, P. Agarwal, R.K. Parmar, M.M. Alquarashi, S. Salahsshour, extension of the fractional derivative of the Riemann-Liouville, Journal of Nonlinear Science and Applications, 10 (2017), 2914-2924.

[10] R. Goyal, S. Momani, P. Agarwal, M.T. Rassias, An Extension of beta function by using Wiman's function, Axioms,10 (187) (2021) 1-11.

[11] P.I. Pucheta,: A new extended beta function,International Journal of Mathematics and Its Applications, 5(3-C)(2017), 255-260.

[12] P.I. Pucheta,An the new Riemann-Liouville fractional operator extended, International Journal of Mathematics and Its Applications, 5 (4-D)(2017), 491-497.

[13] M.S. Shadab, S.J. Jabee, J. Choi, An extended beta function and its applications, Far East Journal Mathematical Science, 103 (2018), 235-251.

[14] A.A. Atash, S.S. Barahmah, M.A. Kulib, On a new extension of extended Gamma and Beta functions. International Journal of Statistic and Applied Mathematics, 3, (2018), 4–18.

[15] U.M. Abubakar, S.R. Kabara,M.A. Lawan,F.A. Idris, A new extension of modified gamma and beta functions, Cankaya University Journal of Science and Engineering, 18 (1), 9-23(2021).

[16] U.M. Abubakar, Applications of the generalized extended mathematical physics functions to the modified Riemann-Liouville fractional derivative operator, Proceedings Book of the1st International Conference of Physics 17 August 2021 Ankara, Turkey, 118-133

[17] U.M. Abubakar, Applications of the modified extended special functions to statistical distribution and fractional calculus, Euro Asia 9th. International Congress on Applied Sciences, August 11-12, 2021 Erzurum, Turkey

[18] A. Fernandez, C. Kurt, M.A. Ozarslan, A naturally emerging bivariate Mittag-Leffler function and associated fractional-calculus operator, 1-22, 2020, https://arXiv.org/abs/2002.12171v1

[19] I.T. Huseynov, T. Ahmadova, G.O. Ojo, N.I. Mahmudov, A natural extension of Mittag-Leffler function associated with a triple infinite series, 1-22, 2020, https://aXiv.org/abs/2011.03999v1

[20] H.M. Srivastava, H.L. Manocha, A Treatise on Generating Functions, Halsted Press (Ellis Horwood Limited, Chichester), John Wiley and Sons, New York, Chichester, Brisbane and Toronto, 1984.

[21] T. R. Prabhakar, A singular integral equation with a generalized Mittag-Leffler function in the kernel," Yokohama Mathematical Journal, 19 (1971), 7–15.

[22] H.J. Haubold, A.M. Mathai, R.K. Saxena, Mittag-Leffler functions and their applications, Journal of Applied Mathematics, (2011), 1-51, Article ID 298628, https://doi.org/10.11/2011/298628

[23] A.A. Kilbas, H.M. Srivastava, J.J. Trujillo, Theory and applications of fractional Differential equations. North-Holland Mathematical Studies; Elsevier (North-Holland) Science Publishers: Amsterdam, The Netherlands, 2006; Volume 204.

[24] H.M. Srivastava, P.W. Karlsson, Multiple Gaussian hypergeometric Series, Halsted press (Ellis Horwood Limited, Chichester), John Wiley and Sons, New York, Chichester, Brisbane and Toronto, 1985.

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RADIUS PROBLEM FOR A SUBCLASS OF ANALYTIC FUNCTIONS INVOLVING SECOND DERIVATIVE

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ABSTRACT
Let $\mathcal{A}$ denote the class of all normalized analytic and complex valued functions f defined in the open unit disk $\Delta = \{z \in \mathbb{C}: |z| < 1\}$ with $f(0) = f'(0) - 1 = 0$, where $\mathbb{C}$ denotes the set of all complex numbers. An interesting problem of research in the field of Geometric Function Theory is that of the "Radius Problem" which is stated as follows. Let $\mathcal{F}$ and $\mathcal{G}$ be two distinct subclasses of $\mathcal{A}$ defined using certain geometric condition. Given $f \in \mathcal{F}$, find a positive real number R, such that for each $r \leq R, z \in \mathbb{C}$ with $|z| < r < R$, the function, $r^{-1}f(rz) \in \mathcal{G}$. Many researchers in Geometric function Theory have studied the above problem for different choices of pairs of subclasses $\mathcal{F}$ and $\mathcal{G}$ of $\mathcal{A}$. In this research article, we consider the subclass as $\mathcal{A}$ itself and another subclass of $\mathcal{A}$, namely Ω, defined by $\Omega = \{f \in \mathcal{A} : |zf''(z)| < M,\ M > 0, z \in \Delta\}$. For two functions $f, g \in \mathcal{A}$ with Taylor's series $f(z) = z + \sum_{n=2}^{\infty} a_n z^n$ and $g(z) = z + \sum_{n=2}^{\infty} b_n z^n$, we define a new function G by $G(z) = \frac{f(z)g(z)}{z}$, $z \in \Delta$. For various choices of bounds on the modulus of coefficients of fand g, namely on $|a_n|$ and $|b_n|$, we obtain the radii R of the largest disk inside the unit disk, such that $\frac{1}{r}G(rz)$ is in Ω for all $z \in \Delta$ with $|z| < r < R$.

Keywords: Analytic function, normalized, geometric condition, Taylor's series, radius problem, coefficient, unit disk

1. INTRODUCTION
Let $\mathcal{A}$ be the class of normalized analytic functions f defined on the unit disk $\Delta = \{z \in \mathbb{C}: |z| < 1\}$ with Taylor's series expansion of the form $f(z) = z + \sum_{n=2}^{\infty} a_n z^n$ and $\mathcal{S}$ denote the subclass of $\mathcal{A}$ containing univalent functions. It is well known that the Taylor's coefficients of functions in $\mathcal{S}$ satisfy the inequality $|a_n| \leq n$ [P. L. Duren (1983)]. However functions of the form $f(z) = z + \sum_{n=2}^{\infty} a_n z^n$ for which $|a_n| \leq n$ is necessarily analytic but need not be univalent. Hence we find that the largest disk inside Δ within which the function satisfying the coefficient inequality $|a_n| \leq n, n \geq 2$ is univalent. In general, if $\mathcal{P}$ is a property which the functions in the class of functions $\mathcal{M}$ may or may not possess in the disk $|z| < r$, the radius for property $\mathcal{P}$ in $\mathcal{M}$ is the largest $R > 0$ such that every function in $\mathcal{M}$ has the property $\mathcal{P}$ in each disk $\{z \in \mathbb{C}: |z| < r\}$, $r < R$ [A. W. Goodman (1983)]. If given that $\mathcal{F}$ and $\mathcal{G}$ are two subsets of $\mathcal{A}$ then the $\mathcal{G}$ radius of f in $\mathcal{F}$ is the largest R such that for each $f \in \mathcal{F}$, $r^{-1}f(rz) \in \mathcal{G}$, $r \leq R$. Several authors [M. Obradovic et al. (2012) , Rosihan M. Ali et al. (2013), S. Yamashita (1982)] had considered this problem for various pairs of subclasses of $\mathcal{S}$.

Definition 1. [S. Ponnusamy et al.(2009)] Let $\mathcal{A}$ denote the class of all normalized analytic functions in the unit disk $\Delta = \{z \in \mathbb{C}: |z| < 1\}$ and Ω denote the subclass of $\mathcal{A}$ consisting functions f satisfying $|zf''(z)| < M,\ M > 0,\ z \in \Delta$.

2. MAIN RESULTS

Let f and g be two functions in the class $\mathcal{A}$ having Taylor's series

$$f(z) = z + \sum_{n=2}^{\infty} a_n z^n \text{ and } g(z) = z + \sum_{n=2}^{\infty} b_n z^n \quad (1)$$

respectively. Define $G(z) = \frac{f(z)g(z)}{z}$. (2)

Then $G \in \mathcal{A}$ and

$$|zG''(z)| = \left|f''(z)g(z) + g''(z)f(z) + 2f'(z)g'(z) - 2\left(\frac{f'(z)g(z)}{z} + \frac{f(z)g'(z)}{z} - \frac{f(z)g(z)}{z}\right)\right|$$

$$\Rightarrow \quad |zG''(z)| \le |f''(z)||g(z)| + |g''(z)||f(z)| + 2|f'(z)||g'(z)| + 2|f'(z)|\left|\frac{g(z)}{z}\right| + 2\left|\frac{f(z)}{z}\right||g'(z)| + 2\left|\frac{f(z)}{z}\right|\left|\frac{g(z)}{z}\right|. \quad (3)$$

Substituting the Taylor's series for the functions f and g we get

$$\begin{aligned}|zG''(z)| \le{}& \left(\sum_{n=2}^{\infty} n(n-1)|a_n|r^{n-2}\right)\left(r + \sum_{n=2}^{\infty}|b_n|r^n\right) \\ &+2\left(1 + \sum_{n=2}^{\infty} n|a_n|r^{n-1}\right)\left(1 + \sum_{n=2}^{\infty} n|b_n|r^{n-1}\right) \\ &+2\left(1 + \sum_{n=2}^{\infty} n|a_n|r^{n-1}\right)\left(1 + \sum_{n=2}^{\infty}|b_n|r^{n-1}\right) \\ &+\left(\sum_{n=2}^{\infty} n(n-1)|b_n|r^{n-2}\right)\left(r + \sum_{n=2}^{\infty}|a_n|r^n\right) \\ &+2\left(1 + \sum_{n=2}^{\infty}|a_n|r^{n-1}\right)\left(1 + \sum_{n=2}^{\infty} n|b_n|r^{n-1}\right) \\ &+2\left(1 + \sum_{n=2}^{\infty}|a_n|r^{n-1}\right)\left(1 + \sum_{n=2}^{\infty}|b_n|r^{n-1}\right). \end{aligned} \quad (4)$$

Theorem 1. Let f, g and G be given by (1) and (2) respectively. Let $|a_n| \le 1$ for all $n \ge 2$.
(i) If $|b_n| \le 1$ for all $n \ge 2$, then $G \in \Omega$ in the disk $|z| < R_1$, where R_1 is the root of the equation $Mr^4 - 4Mr^3 + 6Mr^2 - 2(2M-1)r + M - 8 = 0$ in $(0,1)$.
(ii) If $|b_n| \le n$ for all $n \ge 2$, then $G \in \Omega$ in the disk $|z| < R_2$, where R_2 is the root of the equation $Mr^5 - 5Mr^4 + 10Mr^3 - 2(5M-1)r^2 + (5M+2)r - M + 8 = 0$ in $(0,1)$.

(iii) If $|b_n| \leq \frac{2}{n}$ for all $n \geq 2$, then $G \in \Omega$ in the disk $|z| < R_3$, where R_3 is the root of the equation $Mr^4 - (3M+1)r^3 + (3M - 2\log(1-r) + 1)r^2 - \big(M - 6\log(1-r)\big)r - 8\log(1-r) = 0$ in $(0,1)$.

(iv) If $|b_n| \leq \frac{n+1}{2}$ for all $n \geq 2$, then $G \in \Omega$ in the disk $|z| < R_4$, where R_4 is the root of the equation $Mr^5 - (5M-1)r^4 + 5(2M-1)r^3 - 2(5M-6)r^2 - (5M-13)r - M + 8 = 0$ in $(0,1)$.

Proof. (i) Applying the conditions $|a_n| \leq 1$ and $|b_n| \leq 1$ in (4) we have

$$|zG''(z)| \leq \frac{2(2r+1)}{(1-r)^4} + \frac{6}{(1-r)^3} = \frac{(8-2r)}{(1-r)^4}$$

$$= M - \frac{1}{(1-r)^4}\big(M(1-r)^4 - (8-2r)\big)$$

which is less than M, provided $\phi_1(r) > 0$ where
$\phi_1(r) = Mr^4 - 4Mr^3 + 6Mr^2 - 2(2M-1)r + M - 8$. Thus $|zG''(z)| < M$ for $0 \leq r < R_1$, where R_1 is a root of the equation $Mr^4 - 4Mr^3 + 6Mr^2 - 2(2M-1)r + M - 8 = 0$.
(ii) Applying the conditions $|a_n| \leq 1$ and $|b_n| \leq n$ in (4) we have

$$|zG''(z)| \leq \frac{2(1+4r+r^2)}{(1-r)^5} + \frac{2(2+r)}{(1-r)^4} + \frac{2}{(1-r)^3}$$
$$= \frac{2(4+r+r^2)}{(1-r)^5}$$
$$= M - \frac{1}{(1-r)^5}\big(M(1-r)^5 - 2(4+r+r^2)\big)$$

which is less than M, provided $\phi_2(r) > 0$ where
$\phi_2(r) = Mr^5 - 5Mr^4 + 10Mr^3 - 2(5M-1)r^2 + (5M+2)r - M + 8$.
Thus $|zG''(z)| < M$ for $0 \leq r < R_2$, where R_2 is a root of the equation
$Mr^5 - 5Mr^4 + 10Mr^3 - 2(5M-1)r^2 + (5M+2)r - M + 8 = 0$.
(iii) Applying the conditions $|a_n| \leq 1$ and $|b_n| \leq \frac{2}{n}$ in (4) we have

$$|zG''(z)| \leq \frac{(r^2-3r+4)(-2\log(1-r) - r)}{r(1-r)^2} + \frac{2(2-r)(1+r)}{(1-r)^3} + \frac{2r}{(1-r)^3}$$

$$= \frac{(-2r^2+6r-8)\log(1-r) - r^3 + r^2}{r(1-r)^3}$$

$$= M - \frac{1}{r(1-r)^3}\left(Mr(1-r)^3 + \log(1-r)(2r^2-6r+8) + r^3 - r^2\right)$$

which is less than M, provided $\phi_3(r) > 0$ where $\phi_3(r) = Mr^4 - (3M+1)r^3 + (3M - 2\log(1-r) + 1)r^2 - \big(M - 6\log(1-r)\big)r - 8\log(1-r)$.

Thus $|zG''(z)| < M$ for $0 \le r < R_3$, where R_3 is a root of the equation
$Mr^4 - (3M+1)r^3 + (3M - 2\log(1-r) + 1)r^2 - \big(M - 6\log(1-r)\big)r - 8\log(1-r) = 0.$
(iv) Applying the conditions $|a_n| \le 1$ and $|b_n| \le \frac{n+1}{2}$ in (4) we have

$$|zG''(z)| \le \frac{(2-r)(4-2r+r^2)}{(1-r)^4} + \frac{3r}{(1-r)^5}$$

$$= \frac{r^4 - 5r^3 + 12r^2 - 13r + 8}{(1-r)^5}$$

$$= M - \frac{1}{(1-r)^5}(M(1-r)^5 - r^4 + 5r^3 - 12r^2 + 13r - 8)$$

which is less than M, provided $\phi_4(r) > 0$ where
$\phi_4(r) = Mr^5 - (5M-1)r^4 + 5(2M-1)r^3 - 2(5M-6)r^2 - (5M-13)r - M + 8.$
Thus $|zG''(z)| < M$ for $0 \le r < R_4$, where R_4 is a root of the equation $Mr^5 - (5M-1)r^4 + 5(2M-1)r^3 - 2(5M-6)r^2 - (5M-13)r - M + 8 = 0.$

Theorem 2. Let f, g and G be given by (1) and (2) respectively. Let $|a_n| \le n$ for all $n \ge 2$.
(i) If $|b_n| \le n$ for all $n \ge 2$, then $G \in \Omega$ in the disk $|z| < R_5$, where R_5 is the root of the equation $Mr^6 - 6Mr^5 - 15Mr^4 - 20Mr^3 + (15M-4)r^2 - (6M-8)r + M - 8 = 0$ in $(0,1)$.
(ii) If $|b_n| \le \frac{2}{n}$ for all $n \ge 2$, then $G \in \Omega$ in the disk $|z| < R_6$, where R_6 is the root of the equation $Mr^6 - 5Mr^5 - 10Mr^4 - (10M - 4\log(1-r) - 2)r^3 + (5M - 4\log(1-r) + 4)r^2 - (M - 8\log(1-r) - 2)r - 8\log(1-r) = 0$ in $(0,1)$.
(iii) If $|b_n| \le \frac{n+1}{2}$ for all $n \ge 2$, then $G \in \Omega$ in the disk $|z| < R_7$, where R_7 is the root of the equation $Mr^6 - 6Mr^5 - 15Mr^4 - 5(4M-1)r^3 + (15M+4)r^2 - (6M-4)r + M - 8 = 0$ in $(0,1)$.
Proof. (i) Applying the conditions $|a_n| \le n$ and $|b_n| \le n$ in (4) we have

$$|zG''(z)| \le \frac{2(1+4r+r^2)}{(1-r)^6} + \frac{2(1+r)}{(1-r)^5} + \frac{2(1+r)^2}{(1-r)^6} + \frac{2}{(1-r)^4}$$

$$= \frac{4(r^2+2r+2)}{(1-r)^6}$$

$$= M - \frac{1}{(1-r)^6}(M(1-r)^6 - 4(r^2+2r+2)$$

which is less than M, provided $\phi_5(r) > 0$ where
$\phi_5(r) = Mr^6 - 6Mr^5 - 15Mr^4 - 20Mr^3 + (15M-4)r^2 - (6M-8)r + M - 8.$
Thus $|zG''(z)| < M$ for $0 \le r < R_5$, where R_5 is a root of the equation
$Mr^6 - 6Mr^5 - 15Mr^4 - 20Mr^3 + (15M-4)r^2 - (6M-8)r + M - 8 = 0.$

(ii) Applying the conditions $|a_n| \le n$ and $|b_n| \le \frac{2}{n}$ in (4) we have

$$|zG''(z)| \le \frac{2(r+2)\big(-2log(1-r)\big)}{(1-r)^4} + \frac{2(r+1)\big(-2log(1-r)\big)}{r(1-r)^3} + \frac{-4log(1-r)}{r(1-r)^2} + \frac{2(1+r)^2}{(1-r)^4} + \frac{4r-2}{(1-r)^5} + \frac{2(1+r)}{(1-r)^3}$$

$$= \frac{r^3\big(1+2log(1-r)\big) + 2r^2\big(1-log(1-r)\big) + r\big(1+4log(1-r)\big) - 4log(1-r)}{r(1-r)^5}$$

$$= M - \frac{1}{r(1-r)^5}\big(Mr(1-r)^5 - r^3\big(1+2log(1-r)\big) - 2r^2\big(1-log(1-r)\big) - r\big(1+4log(1-r)\big) + 4log(1-r)\big)$$

which is less than M, provided $\phi_6(r) > 0$ where

$$\phi_6(r) = Mr^6 - 5Mr^5 - 10Mr^4 - (10M - 4\log(1-r) - 2)r^3 + (5M - 4\log(1-r) + 4)r^2 - (M - 8\log(1-r) - 2)r - 8\log(1-r).$$

Thus $|zG''(z)| < M$ for $0 \le r < R_6$, where R_6 is a root of the equation

$$Mr^6 - 5Mr^5 - 10Mr^4 - (10M - 4\log(1-r) - 2)r^3 + (5M - 4\log(1-r) + 4)r^2 - (M - 8\log(1-r) - 2)r - 8\log(1-r) = 0.$$

(iii) Applying the conditions $|a_n| \le n$ and $|b_n| \le \frac{n+1}{2}$ in (4) we have

$$|zG''(z)| \le \frac{2r^2(2+r)(1+r)}{(1-r)^6} + \frac{2(1+r)(2-r)}{(1-r)^5} + \frac{3r+2}{(1-r)^4}$$

$$= \frac{5r^3 - 4r^2 - 2r + 8}{(1-r)^6}$$

$$= M - \frac{1}{(1-r)^6}(M(1-r)^6 - 5r^3 + 4r^2 + 2r - 8)$$

which is less than M, provided $\phi_7(r) > 0$ where

$$\phi_7(r) = Mr^6 - 6Mr^5 + 15Mr^4 - 5(4M-1)r^3 + (15M+4)r^2 - (6M-4)r + M - 8.$$

Thus $|zG''(z)| < M$ for $0 \le r < R_7$, where R_7 is a root of the equation $Mr^6 - 6Mr^5 + 15Mr^4 - 5(4M-1)r^3 + (15M+4)r^2 - (6M-4)r + M - 8 = 0$.

Theorem 3. Let f, g and G be given by (1) and (2) respectively. Let $|a_n| \le \frac{2}{n}$ for all $n \ge 2$.

(i) If $|b_n| \le \frac{2}{n}$ for all $n \ge 2$, then $G \in \Omega$ in the disk $|z| < R_8$, where R_8 is the root of the equation $2r^4 + (M + 8\log(1-r) - 4)r^3 - 2(2M + 4\log(1-r) + 3)r^2 - (M - 40\log(1-r) - 16)r + 8\log(1-r) + 4 = 0$ in (0,1).

(ii) If $|b_n| \le \frac{n+1}{2}$ for all $n \ge 2$, then $G \in \Omega$ in the disk $|z| < R_9$, where R_9 is the root of the equation $2Mr^5 - (8M-3)r^4 + (12M - 2\log(1-r) - 3)r^3 - (8M + 8\log(1-r) + 13)r^2 + (2M - 2\log(1-r) + 3)r - 8\log(1-r) = 0$ in (0,1).

Proof. (i) Applying the conditions $|a_n| \leq \frac{2}{n}$ and $|b_n| \leq \frac{2}{n}$ in (4) we have

$$|zG''(z)| \leq \frac{4(1+2r-r^2)(-2log(1-r)-r)}{r(1-r)^2} + \frac{2(r+1)^2}{(1-r)^2} + \frac{2}{r^2}(-2log(1-r)-r)^2$$

$$= \frac{2\left((4r^3-4r^2-20r+4)log(1-r)+r^4-2r^3+3r^2-8r+2\right)}{r(1-r)^2}$$

$$= M - \frac{1}{r(1-r)^2}(Mr(1-r)^2 - 2((4r^3-4r^2-20r+4)(log(1-r) + r^4-2r^3+3r^2-8r+2))$$

which is less than M, provided $\phi_8(r) > 0$
where $\phi_8(r) = 2r^4 + (M+8log(1-r)-4)r^3 - 2(2M+4log(1-r)+3)r^2 - (M-40log(1-r)-16)r + 8log(1-r) + 4.$

Thus $|zG''(z)| < M$ for $0 \leq r < R_8$, where R_8 is a root of the equation

$$2r^4 + (M+8log(1-r)-4)r^3 - 2(2M+4log(1-r)+3)r^2 - (M-40log(1-r)-16)r + 8log(1-r) + 4 = 0.$$

(ii) Applying the conditions $|a_n| \leq \frac{2}{n}$ and $|b_n| \leq \frac{n+1}{2}$ in (4) we have

$$|zG''(z)| \leq \frac{r^2+2r+2}{(1-r)^4} + \frac{2r(1+r)+(r+5)(-2log(1-r)-r)}{2(1-r)^3}$$

$$+ \frac{2(-2log(1-r)-r)}{r(1-r)^3} + \frac{(-2log(1-r)-r)}{(1-r)^2}$$

$$= \frac{-2(r^3-4r^2-r+4)log(1-r) - 3r^4+3r^3+13r^2-3r}{2r(1-r)^4}$$

$$= M - \frac{1}{2r(1-r)^4}(2Mr(1-r)^4 + 2(r^3-4r^2-r+4)log(1-r) + 3r^4-3r^3-13r^2+3r))$$

which is less than M, provided $\phi_9(r) > 0$ where

$$\phi_9(r) = 2Mr^5 - (8M-3)r^4 + (12M-2log(1-r)-3)r^3 - (8M+8log(1-r)+13)r^2 + (2M-2log(1-r)+3)r - 8log(1-r).$$

Thus $|zG''(z)| < M$ for $0 \leq r < R_9$, where R_9 is a root of the equation

$$2Mr^5 - (8M-3)r^4 + (12M-2log(1-r)-3)r^3 - (8M+8log(1-r)+13)r^2 + (2M-2log(1-r)+3)r - 8log(1-r) = 0.$$

Theorem 4. Let f, g and G be given by (1) and (2) respectively. If $|a_n| \leq \frac{n+1}{2}$ and $|b_n| \leq \frac{n+1}{2}$ for all $n \geq 2$, then $G \in \Omega$ in the disk $|z| < R_{10}$, where R_{10} is the root of the equation

$$2Mr^6 - 12Mr^5 + (30M-1)r^4 - (40M-6)r^3 + (30M-9)r^2 - (12M-10)r + 2M - 16 = 0 \text{ in } (0,1).$$

Proof. Applying the conditions $|a_n| \leq \frac{n+1}{2}$ and $|b_n| \leq \frac{n+1}{2}$ in (4) we get

$$|zG''(z)| \leq \frac{6(2-r)}{(1-r)^6} + \frac{(2-r)^2}{(1-r)^5} + \frac{(2-r)^2}{2(1-r)^4}$$

$$= \frac{r^4 - 6r^3 + 9r^2 - 10r + 16}{2(1-r)^6}$$

$$= M - \frac{1}{2(1-r)^6}(2M(1-r)^6 - r^4 + 6r^3 - 9r^2 + 10r - 16)$$

which is less than M, provided $\phi_{10}(r) > 0$ where

$$\phi_{10}(r) = 2Mr^6 - 12Mr^5 + (30M-1)r^4 - (40M-6)r^3 + (30M-9)r^2 - (12M-10)r + 2M - 16.$$

Thus $|zG''(z)| < M$ for $0 \leq r < R_{10}$, where R_{10} is a root of the equation

$$2Mr^6 - 12Mr^5 + (30M-1)r^4 - (40M-6)r^3 + (30M-9)r^2 - (12M-10)r + 2M - 16 = 0.$$

REFERENCES

[1] P. L. Duren (1983), Univalent Functions (Grundlehren der mathematischen Wissenschaften 259, New York, Berlin, Heidelberg, Tokyo), SpringerVerlag.

[2] A.W. Goodman (1983), Univalent Functions, Vol 1 and 2, Mariner Publishing, Tampa, Fla. USA,.

[3] V.I. Gavrilov (1970), Remarks on the radius of univalence of holomorphic functions, Mathematicheskie Zametki., Vol 7, 295-298.

[4] M. Obradovic, S. Ponnusamy and N. Tuneski, (2012) Radius of univalence of certain combination of univalent and analytic functions, Bull. Malay. Math. Sci. Soc.,Vol 35, no.2, 325 - 334.

[5] S. Ponnusamy, A. Vasudevarao and M. Vuorinen,(2009) Region of variability for certain
classes of univalent functions satisfying differential inequalities, Complex Variables and Elliptic Equations Vol. 54, No. 10, October, 899–922.

[6] Rosihan M. Ali, Naveen Kumar Jain, V. Ravichandran (2013), On the Radius Constants for classes of Analytic Functions, Bulletin. Malays. Math. Sci.Soc.(2), 36(1) , 23–38

[7] S.Yamashita (1982), Radii of univalence starlikeness and convexity, Bull. Aust. Math. Soc., Vol 25, no.3, 453-457.

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A GENERALIZATION OF THE COMMUTATIVITY DEGREE ON THE GROUP K_m

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Abstract
For a group G, the commutativity degree of G is one of the most important aspects of using probability in finite group theory.

Definition 1. Let G be a finite group. The commutativity degree of G, written $P(G)$, is defined as the ratio
$P(G)=\frac{|\{(x,y)\in G\times G: xy=yx\}|}{|G|^2}$.
Clearly $0<P(G)\leq 1$ and $P(G)=1$, if and only if G is abelian.
For $g\in G$ and $n\in\mathbb{N}$, an ordered pair $(x_1,y_1)\in G\times G$ is called a solution of the commutator equation $[x^n,y]=g$ if $[x_1{}^n,y_1]=g$. We consider $\rho_g^n(G)=\{(x,y)\in G\times G;[x^n,y]=g\}$. Then the probability that the commutator equation $[x^n,y]=g$ has a solution, written $P_g^n(G)$, is equal to $\frac{|\rho_g^n(G)|}{|G\times G|}$. That is $P_g^n(G)=\frac{|\rho_g^n(G)|}{|G\times G|}$.

Note that for every $g\in G$, we have $0\leq P_g(G)\leq 1$. In particular for $g\in G-G'$, we get $P_g(G)=0$ and $P_g(G)=1$
if and only if G is abelian and $g=e$.
In this paper, we obtain explicit formula for the $P_g^n(G)$, where
$G=K_m=\langle a,b\,|\,a^{-1}b^m a=b, b^{-1}a^m b=a\rangle$, $m\geq 2$.
We start with the following Theorems:

Theorem 2. For the integers t,n and variables x,y,u and z, the number of solutions of the equation $xy-zu\equiv t(mod\ n)$, is
$\sum_{d|n}[\sum_{d_2|(d,t)}(\frac{n^2}{d}\phi(\frac{n}{d})\phi(\frac{d}{d_2})\times d_2)]$.

Theorem 3. Let $G=K_m$. Then
1) every element of K_m may be uniquely presented by $x=a^r b^s a^{(m-1)t}$, where $1\leq r,s,t\leq m-1$.
2) $[a,b]=b^{m-1}\in Z(K_m)$.
3) $|G|=(m-1)^3$.

Lemma 4. Let $G = K_m$ and $x = a^r b^s a^{(m-1)t} \in G$. Then For integer $n \in \mathbb{Z}$, we have $x^n = a^{nr} b^{ns} a^{(m-1)(nt+\frac{n(n-1)}{2}rs)}$.

By the above results, we prove that

Theorem 5. For the group K_m, $g=[a,b]^t \in K_m'$ and $n \in \mathbb{Z}$;

(1) the equation $[x^n,y]=g$ has a solution in K_m if and only if $l \mid t$, when $l = gcd(m-1, n)$.

(2) $P_g^n(K_m) = \gamma/(m-1)^6$, where

$$\gamma = \sum_{d \mid \frac{m-1}{l}} [\sum_{d_2 \mid (d, \frac{t}{l})} (\frac{(m-1)^2}{l^2 d} \phi(\frac{m-1}{ld}) \phi(\frac{d}{d_2}) \times d_2)].$$

Also we note that this method can be applied to any two generated group of nilpotency class two. These results can be checked for small values of m by GAP.

Keywords: Finite groups, nilpotent groups, commutativity degree, GAP

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EXCHANGE RATE REGIMES AND ECONOMIC PERFORMANCE IN NIGERIA: A COMPARATIVE ANALYSIS (1960-2014)

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Abstract
For decade, Nigeria has witnessed changes in her exchange rate regime which has influenced the structure of the Nigerian economy in the various ways. This study was thus conducted with the objective of comparing the impact of the exchange rate regimes on the economic performance of Nigerian from (1960-2014). This period has been split into two, namely the period of the fixed exchange rate system (1960-1985) and the period of the flexible exchange rate system (1986-2014). The methodology adopted for this study has been the ex post facto research design which enabled the researcher makes use of secondary data for the periods to test the two hypotheses stated in this study. The researcher made use of the Ordinary Least Square (OLS) through the use e-view8.0 to analyze the data. Results show that the fixed exchange rate system has a significant positive impact on the performance of the Nigerian economy while the flexible exchange regime had positive but insignificant impact on the economy. It has been recommended that the present system of flexible exchange rates should be fine-tuned to allow for some form of government intervention in fixing exchange rates when the need arises. Another recommendation is that the government should adopt a policy of import-substitution to conserve the scarce foreign reserves so as to help improve balance of payments position among other recommendations.
Keywords: Exchange Rate, Exchange Rate Regime, Fixed Exchange Rate, Flexible Exchange Rate, Gross Domestic Product (GDP), Privatization and Commercialization

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MOBILE MONEY AT OPEN ECONOMY: A LITERATURE REVIEW AND ECONOMIC IMPLICATIONS

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Abstract

Objective

The paper reviews the recent literature on the impact of mobile money on the cross-border capital flows within the financial globalization context. The mobile money is considered as a type of electronic money, thus, its application can be potential to cover both advanced and developing economies.

Methodology

The research method employs the qualitative method to analyze the mobile money. In particular, the paper clarifies both theoretical models and empirical evidence on the role of mobile money as a key driver of cross-border capital flows. Then, it discusses the potential economic implications of the mobile money for both advanced and developing economies.

Findings

The recent research results shows that the mobile money can stimulate the cross-border capital flows, by raising the speed and value of international transactions, as well as by enhancing the competition for currencies between countries and between public and private digital currencies. Thus, the mobile money can affect the current structure of international monetary system.

Implications

The mobile money raises potential channels for the changing pattern of cross-border capital flows, then, opening new research agenda for both the advanced and developing economies.
Keywords: Mobile money; Literature review; Economic implications; Vietnam

INTRODUCTION

The digital currency covers all currencies operating on the basis of digital technology platform (Prasad, 2018). The main types of digital money include electronic money, virtual currency and others. In which, the electronic money has a value of 1 to 1 for cash, while the virtual currency has a different value of 1 to 1. The digital currencies also covers other currencies, such as the Central Bank Digital Currency (CBDC), which has just been piloted in China, and is also being studied by many countries.

Within these categories, the mobile money belongs to the group of electronic money, which converts cash value to digital currency at the rate of 1 for 1. With this ratio, the mobile money acts like cash with three functions, including accounting unit, unit of exchange and store of value. Thus, the mobile money belongs to the category of electronic money in a broader sense, and also belongs to digital currency in the broadest sense.

The literature review indicates that the mobile money, along with other digital currencies, has the potential to bring about changes in the international monetary system through a change of international investment pattern and an increased competition across national currencies and between public and private digital currencies. For the economic implications, the implementation of mobile money can change the pattern of cross-border capital flows, especially on the digital platform.
The paper has the following structure. After the introduction, section 2 reviews the research results on mobile money. From there, section 3 discusses the economic implications of mobile money. Finally, section 4 concludes the paper.

LITERATURE REVIEW

The cross-border capital flows measures the international investment aspect of financial globalization, beside the cross-border movement of labor force, and the cross-border movement of goods and services. The mobile money can affect the pattern of international capital flows by its function as store of value. In particular, the households can choose the mobile money as a place to store its wealth. This behavior drives the precautionary savings, then, changes the gross domestic savings. Since the net total capital inflows are the gap between the domestic investment and savings, they can be affected by the implementation of mobile money. Moreover, the mobile money also serves as a domestic currency. With its function of store of value, beside unit of account and unit of exchange, the mobile money can become a type of safe assets which serve as store of wealth. Thus, the application of mobile money can attract the inflows of foreign capital in seeking the store of wealth.
In brief, the impact of mobile money on the cross-border capital relies on its main function of store of value, and works through two channels: the first one is the accumulation of savings and the second one is the seeking of store of wealth motivation.

Savings accumulation

The potential impact of mobile money can be referred to the literature on the role of savings on the capital flows. Coeurdacier et al (2015) prove that the saving behavior of each household determines the cross-border capital flows. By an empirical evidence on a data sample of two countries, United States and China, they uncover that the savings depend on the age profile. In particular, the young people tend to borrow, the middle-age people tend to save, and the old people tends to consume. Then, along this age-saving profile, the savings increase from the youth to get a pick at the middle-age, then, reduces at the old age. Next, the authors analyzes impact of financial development on the age-saving profile. Each household can face the credit constraint when borrowing money from banks. For the high level of financial development level, the borrowing constraint is relaxed, then, the young people can borrow more.
Thus, when the young people accounts for a large share of population in an economy with high financial development level, their borrowing motivation combined with relaxed borrowing constraint results in a huge borrowing demand, and an associated low aggregate savings. This case happens in United States. But in the economy with low financial development level, the borrowing constraint is tightened, then, the young people can borrow less. Then, when the share of young people with borrowing motivation reduces, and the share of middle-age people with saving motivation increase, the aggregate savings increase. This case happens in China.

At the financial integration, the huge savings in China flows out to finance the high borrowing demand in United States. Therefore, an economy with huge aggregate savings, based on a low financial development level and a high share of young people over total population, tends to become an exporter of capital flows to the rest of world.

The role of savings on capital flows is also analyzed by Gourinchas and Jeanne (2013). By a neoclassical growth model (Solow, 1956; Swan, 1956), the authors show that the financial frictions, modelled as a saving wedge, can affect the aggregate savings. In the economy with a high saving wedge, the households tend to have a huger savings. And in the economy with a high productivity growth rate, the investment demand is high. Thus, the economy, with both high saving wedge and high productivity growth rate, can have both huge savings and high investment. If the effect of saving wedge is strong enough, the savings are greater than the investment. Then, that economy will experience an outflows of capital. This is the case of some emerging economies such China and Republic of Korea. Even these economies have a high productivity growth rate, they still export the capital to the rest of world when their financial friction is relatively more severe than the rest of world.

Song et al (2011) tell another story about the role of savings on the capital flows. In particular, the savings can be driven by the reallocation of resource from the sector of low productivity level to the sector of high productivity level. Along this process, the income of worker increases when they move from the former sector to the latter sector. Given a constant marginal saving rate, the increase of income raises the aggregate savings. At the financial integration, the huge savings leads to the outflows of capital. In China, this outflows of capital is mostly in term of foreign reserve accumulation, such as USD currency, United States government bonds.

Store of wealth motivation

The function of domestic currency as store of value is determined by various factors. The currency can be a type of safe assets which is an uncertainty-insensitive asset, which can preserve its value in all states of nature. Thus, the store of value function of domestic currency can be referred to the literature on the safe assets determination.

He et al (2019) show that the an asset become safer if its fundamentals are strong relative to other possible safe assets, not merely strong on an absolute basis. The fundamentals ensures the ability of country which issues the debts to roll-over the debts at time of maturity. On another paper, He et al (2016) emphasize the coordination among investors as the key determinant of safety of assets. In particular, when the investors believe that an asset is safe, their behaviors would eventually turn that asset to be safe. Within that framework, an asset with large absolute supply of asset is much more convenient to become safe, since the investors tend to choose that asset to be a safe asset.

By focusing the on the supply of financial assets, Farhi and Maggiori (2017) raises another aspect of the determinant of safe assets. They show that the dependence of the assets safety on the supply of asset can follow a non-linear pattern. In particular, an asset can be safe with a low or high supply, but turns to be risky for a middle range of asset's supply. The reason is that, in the economic environment with limited commitment, the investors raise question about the ability of country which issues asset to keeps its value. For instance, that country can devaluate their domestic currency to reduce their value of debts, even when their supply of debts is constant. The concern of investors, in turn, imposes the existence of a trap in which the asset turns from being safe to be risky.

And the trap applies for the middle range of assets supply. Recently, Hung (2020) carries out an empirical analysis of safe assets determinants. Base on a data sample of 150 economies over the period 1980-2013, the evidence shows that the safety of asset depends non-linearly on its supply. Only with the economies with high enough income per capita, i.e, higher than a threshold uncovered by the evidence, the safety of asset improves for an increase of its supply. But for the economies with low income per capita, the safety of asset deteriorates for an increase of its supply.

The existence of digital currency, including the mobile money and the virtual currency, can reshape the determinants of the store of value aspect of each currency. In the real world, the fiat money is anchored on the legal backup by the government. This anchor is confidential since the government can raises the taxation income by taxing the agents on the economy such as firms, households. On other words, the value of fiat money is indexed on the power of government to tax the economy (Eichengreen, 2019). The digital currency, however, varies by its type of anchor. The mobile money is converted into fiat money by a ratio of 1 for 1. Then, this type of electronic money has the same anchor as the fiat money. The virtual currency, such as Bitcoin, or Libra issued by Facebook, is recognized within a network, and its supply is decentralized across users. Then, basically, this type of digital currency do not have any anchor. Thus, its function as the store of value is weaker than the fiat money, and some other electronic money such as mobile money.

The mobile money is potential to shapes the pattern of international capital flows by two different mechanism.

For the first mechanism, the difference on the supply of assets as store of value affects the pattern of capital flows. On Caballero et al (2008), an economy with higher supply of financial assets would have a higher rate of return. At the financial integration when the capital moves freely across countries, the interest rate is equalized across countries. Thus, the capital flows from the economy with low rate of return to the economy with high rate of return. On other words, the capital flows from the economy with low supply of financial assets, i.e, scarcity of safe assets, to the economy with high supply of financial assets, i.e, abundance of safe assets. As a role of store of value, the currency also underlines the cross-border capital flows. In details, the capital flows from the developing economies to some advanced economies whose the global reserve currency, mainly the United States with the USD. Bernanke et al (2011) shows that this inflows of capital into United States underline the accumulation of government bonds, treasury notes and AAA-ranked securities, which are considered as safe assets. In brief, the economy with the global reserve currency can receive the net inflows of capital from the rest of world, underlined by the motivation of seeking the store of value.

For the second mechanism, a domestic currency can shape the international capital flows by the valuation effect. In particular, a domestic currency is exchanged with the foreign currency by the exchange rate in the foreign exchange market. Since the exchange rate fluctuates over time, the value of a domestic currency in term of foreign currency also fluctuates over time. Let's focus on the economy whose a strong domestic currency, i.e, a currency with strong function of store of value. When the reserve currency depreciates with respect to the foreign currency, the value of profit by domestic investors earned on the foreign assets becomes greater when converted into the domestic currency. And the value of profit that the domestic economy pays the foreign investors on each foreign liabilities would go down.

Therefore, the net return, which is equal to the value of profit earning from abroad on foreign assets subtracting by the value of profit paying to foreign investor on foreign liabilities increases for a depreciation of domestic currency. According to Gourinchas and Rey (2007), the valuation effects, based on fluctuation of exchange rate of USD in the foreign exchange market, contribute 27 percent of the cyclical external adjustment for the case of United States.
The combination of the motivation of seeking for store of value with valuation effect empowers the position of an economy whose a domestic currency with strong function of store of value in the international capital market. As Gourinchas and Rey (2007) prove, the United States has moved from the position of a world banker to a position of a world venture capitalist from 1980s. In particular, after 1945 to the beginning of 1980s, the United States is the main provider of funds to the rest of world such as to the reconstruction of Europe, or Japan after the World war II. This role is stressed as a world banker. However, from 1980s, the United States, with its USD as global store of value currency, has turned to be a world venture capitalist. On one hand, this economy attracts the inflows of capital from the rest of world, a large part of which is driven by the huge savings from developing economies (Bernanke et al, 2011). The inflows of capital are allocated into the US government bonds, Treasury notes. Since these assets provides low rate of return, the cost that United States pays on its foreign liabilities is also low. On other hand, this economy also make a great foreign direct investment into the rest of world, such as in emerging economies like China. Since these type of investment give high rate of return, the profit that United States earns on its foreign assets is high. Thus, combined with valuation effect generated from the fluctuation of USD, the profit that United States earns on its foreign assets is far higher than the cost that this economy pay foreign investors on its foreign liabilities. This differential rates of return underlines the term of world venture capitalist that Gourinchas and Rey (2007) coin on their paper.
In brief, at the international financial context, the mobile money, as a type of digital currency, raises important concern about the pattern of cross-border capital flows, underlined by the function of mobile money as a store of value.

ECONOMIC IMPLICATIONS

The research on the store of value function of a currency and the associated pattern of capital flows raises an important implications for both advanced and developing economy with the application of mobile money.
In particular, as a type of money, the mobile money has the store of value function, beside working as the unit of account and unit of exchange. In a digital platform, there is a concern on whether the mobile money can preserve its store of value function, under the pressure of competition induces by other electronic money such as e-wallet, and especially by other possible foreign digital currency at the financial globalization. A more important concern is that, when the store of value function of mobile money is ensured, their impact on the pattern of cross-border capital flows is still undetermined.
As the literature review suggests, the application of mobile money can affect the savings accumulation and safe assets exchange across countries. At the financial integration, if the savings are greater than the investment, an economy can become an exporter of capital flows to the rest of world.

Since the capital stock plays an important role on the economic growth, understanding the mechanism that the mobile money affecting the capital flows would be important research agenda to ensure the sustainable economic growth for both advanced and developing economies, especially at the financial integration context.

CONCLUSION

The paper reviews the recent literature on the impact of mobile money on the cross-border capital flows within the financial globalization context. The research method employs the qualitative method to analyze the mobile money by firstly clarifying both theoretical models and empirical evidence then analyzing the potential economic implications of the mobile money for both advanced and developing economies.

The recent research results shows that the mobile money can stimulate the cross-border capital flows, by raising the speed and value of international transactions, as well as by enhancing the competition for currencies between countries and between public and private digital currencies. Therefore, the mobile money raises potential channels for the changing pattern of cross-border capital flows, then, opening new research agenda for both the advanced and developing economies.

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REFERENCES

Bernanke, B. S., Bertaut, C. C., Demarco, L., & Kamin, S. B. (2011). International capital flows and the return to safe assets in the united states, 2003-2007. FRB International Finance Discussion Paper, (1014).

Caballero, R. J., Farhi, E., & Gourinchas, P. O. (2008). An equilibrium model of global imbalances and low interest rates. The American Economic Review, 98(1), 358-93.

Coeurdacier, N., Guibaud, S., & Jin, K. (2015). Credit constraints and growth in a global economy. The American Economic Review, 105(9), 2838-81.

Eichengreen, B. (2019). From commodity to fiat and now to crypto: what does history tell us? (No. w25426). National Bureau of Economic Research.

Farhi, E., & Maggiori, M. (2018). A model of the international monetary system. The Quarterly Journal of Economics, 133(1), 295-355.

Gourinchas, P. O., & Jeanne, O. (2013). Capital flows to developing countries: The allocation puzzle. The Review of Economic Studies, 80(4), 1484-1515.

Gourinchas, Pierre-Olivier, and Helene Rey. "International financial adjustment." Journal of Political Economy 115.4 (2007): 665-703.

He, Z., Krishnamurthy, A., & Milbradt, K. (2019). A model of safe asset determination. The American Economic Review, 109(4), 1230-62.

He, Z., Krishnamurthy, A., & Milbradt, K. (2016). What makes US government bonds safe assets?. The American Economic Review, 106(5), 519-23.

Hung, L. D. (2020). Public safe assets determination. Global Economic Review, 49(4), 350-368.

Prasad, E. (2018). Central banking in a digital age: Stock-taking and preliminary thoughts. Hutchins Center on Fiscal & Monetary Policy at Brookings.

Solow, RM (1956). A contribution to the theory of economic growth. The Quarterly Journal of Economics , 70 (1), 65-94.

Song, Z., Storesletten, K., & Zilibotti, F. (2011). Growing like china. The American Economic Review, 101(1), 196-233.

Swan, TW (1956). Economic growth and capital accumulation. Economic Record, 32 (2), 334-361.

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USAGE OF SOCIAL MEDIA IN SRI LANKA BANKING INDUSTRY: A STUDY OF AWARENESS AND USER KNOWLEDGE PERSPECTIVES

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ABSTRACT
The purpose of the study was to assess the usage of social media in banking industry for their promotional activity. Specially to understand the association of consumer awareness of banking services and user's knowledge on the usage of social media. The study was conducted survey and utilized the sample frame of the all online social media users Jaffna District in Sri Lanka. Hence, data were collected by distributing structured questionnaire and responses from 105 online users has been gathered. Statistical Package for the Social Sciences (SPSS) was used as the key analysis tool. According to the research findings, there is a positive impact on customer usage of banking services and usage of social media in banking industry. Therefore there is a positive impact user knowledge and usage of social media in banking industry. Further, research findings revealed that gender does not moderate the relationship between usage of social media and user knowledge .All the relationship got positive medium level correlation (Consumer awareness- 0.583, User knowledge –0.402,).That is important to consider about the factors of consumer awareness and user knowledge directly affect to usage of social media. All the relationship among were rated as significant when ascertaining results, hence it can be further noted that all the variables have a direct positive impact on describing the usage of social media in banking industry.
Keywords: Awareness, Knowledge, banking, Social media

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TICKET PRICES FOR SPORT EVENTS, FOCUS ON JUSTICE-ANALYSIS OF THE IIHF ICE HOCKEY WORLD CHAMPIONSHIPS TICKET PRICES

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Abstract
The IIHF (International Ice Hockey Federation) ice hockey world championships are among the major sport events. A possible measure of the bigger interest is the audience's attendance. What determines the number of on-site viewers? The attendance of the sport event depends largely on the official ticket prices, which are defined by the organizers. Are the ticket prices legal? The basis of legitimate and the righteousness is the Aristotelian supreme virtue, the justice. The study examines in connection with the event the following theories of justice: evolutionist conception, Aristotle's justice theory, Bentham and Mill's utilitarian perception, libertarianism, meritocracy, egalitarianism, and the theory of the positive discrimination. Based on the presented theories of justice it must be decided, which theories of justice follow the organizers, regarding the determination of ticket prices for the individual games, and why? In the study, the examined sport event is the 2019 IIHF Ice Hockey World Championship. How could the organizers determine fair and just ticket prices for the group matches and for the knock-out system? Whichever justice theory is followed, it must be consistent with the essential nature (telos) of the event. During the research we can conclude: each of the examined theories of justice in the study appears – however none can be realized alone and exclusively in relation to the ice hockey world championships official ticket prices. In summary: determination of the event's official ticket prices (by the organizers) are considered to be fair, just depends which justice theory is considered legitimate and justified in relation to certain individual games' ticket prices, and why.
Keywords: telos, ice hockey, events, ticket prices, theories of justice

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DYNAMIC CAPABILITIES AND FIRM PERFORMANCE OF QUOTED FOOD AND BEVERAGE MANUFACTURING COMPANIES IN SOUTH WEST NIGERIA

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ABSTRACT
The turbulent nature of the food and beverage manufacturing environment gives rise to a large number of new problems which must be analysed using dynamic capabilities. As competitive advantage is becoming less valuable, the performance of Nigerian food and beverage manufacturing companies is greatly affected as more and more firms are facing rapid and unprecedented changes. The main aim of this study is to examine the relationship between dynamic capabilities and firm performance of the quoted food and beverage manufacturing companies in South west Nigeria. The specific objectives were: to determine the relationship between product innovation capability and sales growth; to examine the extent of relationship between strategic decision making capability and employee turnover; to assess the relationship between technological capability and return on equity; to evaluate the relationship between competitive intensity and operating cash flow; and, to ascertain the extent of relationship between technological turbulence and working capital management. The study adopted a survey research design. The target population consisted of 11 quoted food and beverage manufacturing companies in South west Nigeria, comprising of 692 middle and top level managers of the quoted firms. Primary and secondary data was adopted for the study. The response rate was 92.9% which was 643 copies of the questionnaires administered out of 692. The Cronbach alpha coefficients for the constructs ranged between 0.81 and 0.96.
The data were analysed using descriptive and inferential (Pearson Product Moment Correlation and multiple regression) statistics. Findings revealed that there was a significant relationship between: product innovation and sales growth; strategic decision making capability and employee turnover; technological capability and return on equity; competitive intensity and operating cash flow; and, between technological turbulence and working capital management. It was recommended that food and beverage manufacturing firms should be consistently customer-oriented as this will lead to continuous customer satisfaction and eventually aid customer loyalty. For firms to consistently sustain their competitive advantage, they need to adopt the identified five components of dynamic capabilities elucidated in this study.
Keywords: Dynamic capabilities, Firm Performance, Product innovation capabilities, Strategic decision making capability, Technological capability, Competitive intensity, Technological turbulence

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FACTORS INFLUENCING THE CONSUMER'S PERCEPTIONS TOWARDS FRESH MILK AND TETRA PACK MILK

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ABSTRACT
Milk is a nutritional rich food item, it is white liquid food produced by the mammary glands of mammals. Milk is the best source of nutrients in human diet. It is used by human being of all groups of age. It provides proteins, vitamins, fats and minerals to human body. The purpose of the study was to examine the factor effecting consumer perception toward milk consumption in the form of fresh and tetra pack milk. The study was conducted in Faisalabad district to observe the consumer buying behavior toward fresh milk and tetra pack milk. Information was collected from 130 consumers through well-structure and comprehensive questionnaire by using random sampling. Binary Logistic Regression has used for data analysis. From this result, Nagelkerke R^2= 0.616 and Cox and Snell's R^2= 0.446 which showed that logistic regression has a strong prediction power and goodness to fit the model. Our model is able to predict 85.4 of the categories. Total 85.4 percent of the outcome is correctly predicted by our model. It was also revealed that income has positive impact on consumer's behavior. Moreover, Color, smell, availability and un-adulteration have also positive impact on consumer buying behavior toward milk. The education, income, price, availability and un-adulteration have significant impact on consumer's buying behavior toward milk. On the basis of outcome of the research it was necessary that milk should be available to the consumers without any adulteration and special measurement of quality must be developed to check the quality of milk. The study was suggested that the govt. should encourage and promote investment in tetra pack milk industry and also take measures to improve milk quality.
Keywords: Fresh milk, Tetra pack milk, Consumer buying behavior, Consumption, Binary Logistic Regression

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REGIONAL EDUCATION LEVELS AND THE EXPORTS OF INFORMATION AND COMMUNICATION SERVICES

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ABSTRACT
Information and communication technologies and services are integral components of vibrant and entrepreneurial economies. The provision and exports of these services, despite being usually exempt of transport costs unlike most other export products, are often clustered in areas with improved infrastructure levels and high human capital. The concept of "Digital Divide" characterizes access to communication infrastructure of different socioeconomic groups and geographic areas. Furthermore, being an activity subject to high technical requirements, information and communication industries often rely on highly educated individuals. In addition to its linkages with various other high-tech sectors, the information and communication industry has a high potential to contribute to regional economies thanks to providing high value-added activities. As a result, clusters of information and communication activities are major drivers of regional economic growth. In this regard, international exports emerge as an essential performance measure and contributing factor to regional economies. This study employs modern big data machine learning techniques to identify the major regional determinants of export performance of the regional information and communication industry. In more specific terms, a stochastic gradient boosting machine algorithm in addition to a random forest model is used to uncover the regional attributes and socioeconomic factors associated with information and communication service exports. The data consists of a large set of regional variables from the Turkish Statistical Institute. Results of both machine learning models suggest that regional information and communication service exports are positively associated with the share of individuals in the region with higher education degrees, industrial clustering, in addition to the imports of information and communication services into the region. Findings also indicate that information and communication services related to agriculture is seldom subject to exports in Turkish regions, as regions with high agricultural activity lag behind in terms of exports of information and communication services.
Keywords: Information and communication, exports, regional economies, education, machine learning.

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AN IDEOLOGY OF HUMAN NOBILITY AND B.R. AMBEDKAR

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Abstract
The ideology and the philosophy of Dr. B.R. Ambedkar consist of human dignity, which is respect, nobility, honour. A human being is a great exploration by God. Therefore, it is a responsibility to protect humans by gracing and honour. Dr. Ambedkar was one of the greatest sons of India who himself was a victim of insult and dishonour because of his lower-class status in the Indian class-based social system. Dr. Ambedkar was speaking about [1]"Dalit." (Sirswal, 2016) who has been exploited by the upper caste Hindus for a long time. The term untouchable has been a curse for the communities of Dalits that has given social-economical-cultural-political and educational lowliness from the other section of the society. They were in society but isolated by the dominant group. It is enslavement in the context of societal status. Dr. Ambedkar was upset about the Hindu grading system in the Indian social contract through which many unfair activities have been done for centuries, but there was no file case against the Hindu hierarchy. Dr. Ambedkar spoke for the Dalits as he belonged to the Dalit community and his expression was for the elimination of the caste system. His dignity was about the dignity of a human being. This is how the Dalit community can receive their award for which they are waiting for a long term. The award is recognition of their humanity and nobility. The objective of the paper is about human dignity through which India's lower-class section can receive their honour, recognition. The outcome is to know the core belief of humanity and dignity through a theoretical discussion. The methodology has been grasped through qualitative analysis such as through e-book, journal documentation. The feature question is how can Ambedkar ideology of human nobility get its rationality in India's caste-based scenario?
Keywords: Dalit (Called by Ambedkar), Harijan (Called by Gandhiji), Untouchables, Equality, Round Table Conference, Caste and Hierarchies, Human Dignity, Rights &Freedom of Humanity

Introduction

Dr. Bhimrao Ramji Ambedkar was a humanist. He was not a representative from a particular religion such as Hinduism, he read Islam, Sikhism, and Buddhism and tried to focus every religion by conversion. Therefore, he said that he likes the religion that teaches equality, fraternity and liberty and he solemnly ensured that he will not die as a Hindu. His deep expression of society, equality, human dignity, and development came from his heart due to his painful life as himself an Untouchables from [2]Mahar community of Maharashtra, India, one of the isolated communities (Vijayakumar, 2020) because of the curse of untouchability in the Indian societal diasporic problem.

[1] The Struggle for Human Dignity: Dr. B.R. Ambedkar's Perspective
[2] Ambedkar – The Social Reformer. Paragraph 1st.

He was highly educated from Columbia University and London School of Economics which set his position as one of the higher educated people of India in his time but because of his Untouchables status, he faced various barriers in India after his return to India from the Western education. [3]He started Satyagraha (a policy of passive political resistance) in Mahad (Maharashtra) (Vijaya Kumar, 2020) through which Untouchables was allowed to use water from a public water tank in Mahad. He asked Dalit women to avoid all old traditional activities and was Saris like higher caste women (Vijaya Kumar, 2020) through which he was trying to raise concern within the Dalit section of the society to know those terms of inequalities, intersectionality for the renaissance. Dr. Ambedkar's thesis [4]"Caste in India-Their Mechanism, Genesis and Development" (Vijaya Kumar, 2020) showed the system of Brahmin communities of India who created the [5]system of endogamy and membership by autogeny for a one-sided hierarchy. He was trying to make India open to all especially for the rights of Untouchables sections. Therefore, the ideology of [6]Ambedkarism (Omvedt,2018) in current India is more necessary than Marxism for the complete elimination of the caste system. It means the ideology of the Dalit movement from the beginning to the present. His dream to making India fully open from religious issues and equal for everyone as an ambassador (Omvedt,2018) of depressed communities of India was not fulfilled but a few of his ideologies are ways for the continuous development of India's social classification such as uncompromised dedication for his people's need, equally string dedication, religion conversion from Hinduism to Buddhism(a liberal religion where no castes are visible), economic radicalization through socialism, liberation theology and making a separate political group by peasants and the worker class, Dalits of India.

Literature Review

The article has been discussed through the view of Dr. B.R. Ambedkar who was advocating for the rights of Untouchables in India and to establish human dignity through equality, rights, and freedom. His books like [7]Mook Nayak, Bahiskrit Bharat, Equality are those books through which he started to protect Dalit's rights and criticized about the [8]Chatur Barna system of India. The Untouchables section of India was suffering from the begging of India's social diaspora to the present. It has been constitutionally banned, but practically still exists. The article has shown the social scenarios of India's Dalit community with various evidence and the initiatives of Dr. Ambedkar as the only hope for the deprived communities of India. It has been critically analyzed with a question of its continual processes for the protection of the Dalit community. It has been said that rationalities and humanities are the approaches that can flourish Ambedkar's ideology for the betterment of India's Dalit community.

[3] Ambedkar – The Social Reformer. His Relations with Hinduism and Caste. Paragraph 3rd.
[4] Ambedkar – The Social Reformer. His Relations with Hinduism and Caste. Paragraph 2nd.
[5] Ambedkar – The Social Reformer. His Relations with Hinduism and Caste. Paragraph 2nd.
[6] Ambedkarism – The Theory of Dalit Liberation. Paragraph 1st.
[7] Impact of Dr. B.R. Ambedkar movement on Dalit development and rights in India (a sociological study). Dr. Ambedkar's Struggle for Dalit's Rights. Paragraph 1st.
[8] The Chaturbarna system: perspectives of Srimanta Sankaradeva and Swami Vivekananda.

The objective of the Paper

To highlight India's social classification and the deprivation of the lower caste section who are called Untouchables. To highlight Dr. B.R. Ambedkar's reformation through his ideologies (Ambedkarism) for the protection of India's lower-caste societies for the establishment of their dignity through freedom, rights and equality and their political representation.

Methodology

The paper has been assumed through subordinate sources of data. Subordinate sources of data include academic articles, websites etc. The methodology to write the paper has been taken by the description of sources, by reading, gathering in-depth insights on topics, focuses on exploring ideas, summarising, and interpreting and mainly expressed in words (documentary analysis through qualitative approach).

Result and Discussion

The term untouchable is insufferable for the lower caste section of India's social diaspora. There are various social, economic and education on the credit of their birth category. [9]The social classification of India has been divided into upper-class Hindu and Dalits (Lower Class Communities such as Schedule Cast and Schedule Tribe). They are constantly deprived by the upper class in the societal scenario, while unfortunately national(state) mechanisms (policy leaders) are unproductive or inactive for those incidents of Indian society. Police administration is silent against any crime (Sirswal, 2016); therefore, there is no social justice for the Dalit community. [10]The term "untouchability" (Sirswal, 2016) is so obnoxious in the Indian social scenario due to its blind faith nature that untouchables are witches and the representatives of evil power. Therefore, they can not get any witness Hindus during the crime. The society (Police, Policy Makers, Upper castes, Judiciary) are silent against any misbehaves situation against Dalits, and without any evidence or witness, the chances to open any legal action is impossible. [11]On 30th September 1937, the annual report of the Tamil Nadu Harijan Sevak Sangh said, [12]"The political consciousness of the Harijans having been roused by the rights. in the remotest villages where it is only the policeman that reign, it is not. always possible for the Harijan to do this, for the assertion of his rights means a clash between him and the caste men, in which it is always the latter. that have the upper hand. The natural consequences of this scuffle are a complaint either to the police or the Magistrate. The latter course is beyond. the means of a Harijan while the former resort is worse than useless. The complaints are in many cases not inquired into at all, while in others a verdict favourable to the caste men is entered. Our complaints to the Police also meet. with a similar fate. The trouble seems to us to be that there is no change in the mentality of the lower policeman. Either he is unaware of the rights of the Harijans of which he is supposed to be the guardian, or he is influenced by caste men. Or it may also be that he is indifferent. In other cases, corruption is responsible for his taking the side of the richer caste men." (Sirswal, 2016).

[9] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. What Untouchables have to face. Paragraph 1st.

[10] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. What Untouchables have to face. Paragraph 1st.

[11] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. What Untouchables have to face. Paragraph 2nd.

[12] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. What Untouchables have to face. Paragraph 2nd

The battle is now between upper Hindus and the Harijan community (Dalit) where the administration is pro-Hindu and anti untouchables. The entire system is corrupt and a mental set-up not to backup those poor people who are completely isolated from the mainstream of the society in India's diaspora. [13]This bias created a terror environment for the Dalits through the creation of various negative circumstances such as deal of protection and justice to the Harijan, not to help them in advance, destitute their causes and everyday necessities etc. (Sirswal, 2016). [14]The hostile environment creates when two communities' clashes and the administration take favour of rich Hindu community and suppresses the Dalits through shameful attempt (beating, arresting, and awful torturing in the prison, and even killing). This is how to teach untouchables a lesson they do by holding them down in their own homes. The Judiciary and the law have loopholes that can protect the upper classes of Hindus and favour the deprivation. The truth is also known by the exploiters. [15]On 4th September 2012, a publication has come through the newspaper "The Hindu" (Sirswal, 2016) that [16]"Now the food they cooked is untouchable." It is evident that any events are performed by the Dalit community will become touchless for society. Any Dalit women who cook for the school children will be an outcast as well. [17]"A host of Dalit women, who cook food for children at noon meal centres attached to schools in various villages in Kadayampatti Union in Salem district said that they are facing a social boycott. Caste Hindus in a few villages are preventing their children from having the noon meal cooked by Dalit women cooks, claiming that it is a sin to eat food cooked by them." (Sirswal, 2016). In this context, the term human dignity has been completely ignored by Dalits in India. The non-violent Hindu Community had turned into violence for the suppression of untouchables in India through which they can go to any extend. Newspaper The Hindu dated [18]"on 9th September 2012 that "A Dalit woman was assaulted, tortured, and tonsured in Jayaghanta village under the Dharma police station limits of Odisha's Sambalpur district. Locals held her responsible for the death of a young man named Sudam Mahananda. The Dalit woman's 18-year-old daughter had eloped with Sudam. Unfortunately, Sudam died on the way. The villagers held that the Dalit woman and her family were responsible for Sudam's death. That is why; they did this brutal act against the woman." (Sirswal, 2016). Dalit communities who have been recognized as Harijan by Mahatma Gandhi for their development and improvement have been exploited by the upper classes of the Hindu community even yet their similar civic rights as the citizens of India.

[13] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. What Untouchables have to face. Paragraph 3rd.
[14] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. What Untouchables have to face. Paragraph 3rd.
[15] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. What Untouchables have to face. Paragraph 6th.
[16] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. What Untouchables have to face. Paragraph 6th.
[17] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. What Untouchables have to face. Paragraph 8th.
[18] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. Lawlessness against the Untouchables. Paragraph 2nd.

Dalits are not allowed to stay in lodges. In Given, August 1938, a report has been said about Kanhaiya Lal Yadav of Fetegarh that [19]"When I went to stay in Dharamshala near Allahabad Junction on 15th August 1938 at 10.00 p.m. there was no difficulty and I laid down on a cot after paying an advance of one rupee. But at 11.00 p.m. when the lodgers went to the manager of the Dharamshala to note down their addresses, and while noting down my address I put down my caste as Jadav, the Manager got wild and said that the Dharamshala was not meant for the stay of low caste people and asked me to get out at once. I pointed out to him that according to the rules of the Dharamshala, it was meant for Hindus only and there was no ban on Untouchables. So, I am entitled to stay here. Then why are you asking me to leave? I also pleaded that being a resident of Farrukhabad and not acquainted with anyone in Allahabad there was no place where I could go at 11.00 p.m. On this, the Manager got furious and repeating the couplet from Ramayana (Shudra's illiterate, cattle, and women all these deserve to be beaten) said that despite being a low caste he dared to talk about rules and law and will not get out unless he is beaten. Then suddenly he got my bedding etc., threw out of the Dharamshala and lay down on a plank of wood in front of the shop facing the Dharamshala and had to pay annas 2 as rent to the shopkeeper for a night. I, therefore, appeal to my Scheduled Caste brethren to hold meetings everywhere and request the government to construct separate Dharmshalas for our people in every (Sirswal, 2016) town or to get all the existing Dharmshalas opened for us." [20]Dr. Ambedkar (Sahoo, 2016) observed that until the hierarchies of the social caste system in India, it is impossible to protect Dalits from the upper caste Hindus. It was already a social myth to isolate untouchables while there was no protection from the policymakers, judiciaries of the country. It was explicit support from the State for the exploitation of the lower caste as a minority section. He then started to think about the abolition of caste hierarchies for the self-dignity of Dalits. Therefore, he imagined a system called [21]extinction of caste for freedom. He was telling me that [22]"It is not possible to break Caste without annihilating the religious notions on which it, (Sirswal, 2016) the Caste system is founded." The Caste system created a division of Hindu society, inequality, and revulsion among the entire Hindu society. [23]Dr. Ambedkar followed the rule of Buddhism as the practical solution to the caste system in the Hindu religion. He never mentioned the ethics of Islam or Sikhism (Sirswal, 2016) but was influenced by Buddhism and was thinking to converse Buddhism from Hinduism to become a protected community in India. It was his solution criteria for the Dalit. [24]Before his death on December 6th, 1956, he accepted Buddhism on October 14th, 1956. [25]On that estimated 8,00000(Eight Hundred Thousand) people, who had his supporters also accepted (Sirswal, 2016) Buddhism. It was the biggest moment of India on a single day on transformation from Hinduism to Buddhism. [26]They had been given meat to eat and had been allowed to drenched God and Goddess of Hinduism (Sirswal, 2016) of their houses.

[19] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. Lawlessness against the Untouchables. Paragraph 5th.
[20] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. Annihilation of Caste. Paragraph 1st.
[21] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. Annihilation of Caste. Paragraph 1st.
[22] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. Annihilation of Caste. Paragraph 1st.
[23] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. Religious Conversion. Paragraph 1st.
[24] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. Religious Conversion. Paragraph 1st.
[25] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. Religious Conversion. Paragraph 1st.
[26] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. Religious Conversion. Paragraph 1st.

[27]According to Dr. Ambedkar (Sirswal, 2016), it was a counter revolt for the establishment of an independent and an alternative community for dignity and equality in the Indian societal, economic, political, and cultural diaspora. Therefore, the status of slavery can not be justified. [28]Dr. Ambedkar was talking about Buddhism and his likeness to the religion, which had been broadcasted by the BBC, London (British Broadcasting Corporation). He was saying (Sirswal, 2016) [29]"Why I like Buddhism and how it is useful to the world in its present circumstances." He said, (Sahoo, 2016) [30]"I prefer Buddhism because it gives three principles in combination, which no other religion does. Buddhism teaches prana (understanding as against superstition and supernaturalism), karuna (love), and Samata (equality). This is what man wants for a good and happy life. Neither God nor soul can save society. In his last speech delivered in Bombay on 24th May 1956 in which he declared his resolve to embrace Buddhism, Ambedkar observed:" [31]He found and observed (Sirswal, 2016) that there is no God in Buddhism, while there is God in Hinduism, there is a soul in Hinduism, while there is no soul in Buddhism, there is a caste system in Hinduism, while there is no caste system in Buddhism. [32]Dr. Bhimrao Ramji Ambedkar was a god gifted person for the Dalit community who tried his best to campaign against injustice, intersectionality against the untouchables of India. He belonged to the Dalit community and saw the inequalities in his childhood. He tried his best to abolish the societal hierarchies (Sirswal, 2016). He became the first Minister of Law in India and wiped out through the amendment of all traditionality that caused a big divisional gap among the Hindu community in the name of Dalit and upper-caste Hindu. Therefore, the atmosphere of equality had been set up by Dr. Ambedkar as a Minister of Law, as well as a Lawyer himself. [33]His argument was If the Hindu community can touch Muslims and other communities then why not the (Sirswal, 2016) Dalit community who are Hindu and the worshipper of Hindu Gods and Goddess? The Dalit community therefore should enter all Hindu temples for the worship of the Hindu Gods and Goddesses. He was (Sirswal, 2016) calling for the punishment of those sections of the Hindus who will not obey the law of equality and will not follow the atmosphere of brotherhoods. [34]In the 1927 (Sirswal, 2016) conference the decision has made that there will be quality in Hindu Dharma, there will be no hierarchies in Hindu Dharma. All communities from the Dalit to the other communities will work as the priests in the temples. [35]Dr. Ambedkar took some steps such as (Sirswal, 2016) [36]"no section of the Hindus will be kept out of temples, more representation of Untouchables in the Legislature, the Government will not nominate them, but the people should elect, the Government should employ Harijans to the army and the police department etc."

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[27] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. Religious Conversion. Paragraph 1st.
[28] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. Religious Conversion. Paragraph 2nd.
[29] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. Religious Conversion. Paragraph 2nd.
[30] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. Religious Conversion. Paragraph 2nd.
[31] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. Religious Conversion. Paragraph 2nd.
[32] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. The contribution of Ambedkar. Paragraph 1st.
[33] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. The contribution of Ambedkar. Paragraph 2nd.
[34] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. The contribution of Ambedkar. Paragraph 3rd.
[35] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. The contribution of Ambedkar. Paragraph 3rd.
[36] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. The contribution of Ambedkar. Paragraph 3rd.

Ambedkar's initials were benevolent and raised voice that who were suffered from the decades they will now get justice and freedom from slavery and inequalities. [37]In the Round Table Conference in London (Sirswal, 2016) invited by the British Government about the societal crisis of India, he raised his voice loudly from the beginning on inequalities and blamed the British Government for the listening of Upper Caste Hindu community mostly for the creation of this unexpected scenario in India among Hindu communities. [38]Ambedkar was argumentative about Gandhiji's (Mahatma) steps on Harijan's rights, he was asking Gandhiji about his decisions. Mahatma Gandhi was a devotional personality for the Indians at that time because of his unparallel work and duties for the freedom of India. Ambedkar was able to convince the British Government (Sirswal, 2016) in the 2nd Round Table Conference in 1931 and secured the Dalit's separate electorates, resulting in separate representatives by the votes of Harijans for their claims to the Government. [39]Gandhi could not agree with Dr. Ambedkar's initiatives for the Harijan's representation (Sirswal, 2016).

Conclusion

The feature question is how can Ambedkar ideology of human nobility get its rationality in India's caste-based scenario? The answer to the question is an analysis of the descriptions of Ambedkar's contribution to the Harijan community. In India, it is now a law for the protection of Dalit and Minorities' rights and duties. The hierarchies still exist in Indian society, but nobody can openly exploit the poor section of the society. The initiative of Ambedkar must be communing, continuing by the current policymakers of India for an equal and secular structure of the society. The success of the society of India depends on the continuation of improvement based on equalities and similarities. India is a multilingual and secular country. The image needs to be focused on by every ruler of India for her glimpses of civilization. Ambedkar said that [40]"With justice on our side, I do not see how we can lose our battle. The battle to me is a matter of joy… For ours is a battle not for wealth or for power. It is a battle for freedom. It is a battle for the reclamation of the human personality." (Senauke, 2015). It was Dr. B.R. Ambedkar who himself suffered to get accommodation even yet one of the best and brightest persons of India in his time due to his Dalit entity. The term "Dalit" (Senauke, 2015) has been given by Dr. Ambedkar for the realization of Untouchable people of India who were [41]estimated 300 million (25% of India's total population) feel themselves out of divine grace. [42]Mahatma Gandhi called the Untouchables "Harijan" (Senauke, 2015) meaning the children of God, but he was not a preformationist for the demolition of inequalities, which was done by Dr. Ambedkar. [43]The curses of Untouchability have been abolished by the Constitution of India in 1950 but the roots are still not demolished even in modern India.

[37] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. The contribution of Ambedkar. Paragraph 4th.
[38] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. The contribution of Ambedkar. Paragraph 4th.
[39] The Struggle for Human Dignity: Dr. B.R. Ambedkar Perspective. The contribution of Ambedkar. Paragraph 4th.
[40] Ambedkar's Vision for India's Dalits. Paragraph 1st.
[41] Ambedkar's Vision for India's Dalits. Paragraph 9th.
[42] Ambedkar's Vision for India's Dalits. Paragraph 9th.
[43] Ambedkar's Vision for India's Dalits. Paragraph 11th.

Therefore, a continuation of improvement and the initiatives of Dr. Ambedkar must be maintained for a brighter society and classes of Indian scenario which was Dr. Ambedkar's dream.

References

Borkakoti, S. K., Dr. (2021, May). The Chaturbarna system: Perspectives of Srimanta Sankaradeva and Swami Vivekananda [Web log post]. Retrieved from https://drsanjib.net/the-chaturbarna-system-perspectives-of-srimanta-sankaradeva-and-swami-vivekananda/.

Omvedt, G., Dr. (2018, April 05). Ambedkarism – The Theory of Dalit Liberation. Retrieved from https://velivada.com/2018/04/05/ambedkarism-the-theory-of-dalit-liberation/.

Singh, L., Dr. (2016). Impact of dr. B. R. Ambedkar movement on Dalit development and rights in India (a sociological study). International Journal of Current Research and Modern Education, 1(1), 118-123. Retrieved from http://ijcrme.rdmodernresearch.com/wp-content/uploads/2015/06/16.pdf.

Sirswal, D. R. (2016). Dr. B.R. Ambedkar: The Maker of Modern India. Research Gate. Retrieved from https://www.researchgate.net/publication/301802079_Dr_BR_Ambedkar_The_Maker_of_Modern_India.

Vijayakumar, A. (2020, November 8). Ambedkar- The Social Reformer [Web log post]. Retrieved from https://medium.com/munners-daily/ambedkar-the-social-reformer-fc29691fddee.

Senukake, H. A. (2015, August 28). Ambedkar's Vision for India's Dalits. Lion's Roar. Retrieve from https://www.lionsroar.com/ambedkars-vision/

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MICROBIOLOGICAL ASSESSMENT OF BOREHOLES, SACHET AND BOTTLE WATER IN ANCHOR UNIVERSITY AND AYOBO COMMUNITY

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ABSTRACT

The physicochemical and bacteriological quality of borehole, bottle and sachet water sold in Anchor University and within Ayobo community Lagos state, Nigeria was investigated Microbiological analysis was carried out using standard microbial procedure to ensure that the water is microbiologically safe. It was screened for the presence of coliforms and other pathogenic microorganisms. The total heterotrophic bacterial count for bottle, sachet and borehole water are 16.50-123.50 x 10^3CFU/ml, 65.00-73.00 x 10^3CFU/ml and 0.00-72.00 x 10^3CFU/ml respectively while the total heterotrophic fungal count for bottle, sachet and borehole water are 5.00-54.50 x 10^3CFU/ml, 11.00-27.50 x 10^3CFU/ml and 6.00-16.16.00 x 10^3CFU/ml respectively. Most probable number was determined using membrane filtration method and it ranged from 15MPN/100ml, 22MPN/100ml, and 27MPN/100 ml for bottle, sachet and borehole water respectively. The mean total coliform per 100ml ranged from 22-30 x 10^3CFU/ml while fecal coliform ranged from 4-11 x 10^3CFU/ml. The isolated organisms were Salmonella paratyphi, Shigella flexneri, Proteus vulgaris, Pseudomonas aeroginosa, Escherichia coli, Citrobacter freudii, Salmonella paratyphi, Aspergillus candidus, Aspergillus niger, Aspergillus sulphureus and Penicillium corylophilum. Most of the bacteria isolated showed multidrug resistance to Augmentin, Gentamycin, Pefloxacin, Tarivid, Streptomycin, Septrin, Chloramphenicol and Amoxacillin and showed susceptibility to Ciprofloxacin. The study therefore concludes that these water samples do not meet the WHO standards for potable water; hence they can be potential sources of waterborne diseases.

Keywords: Antibiotic resistance, microbiological, pathogenic, membrane filtration

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FUNCTIONAL AND RHEOLOGICAL CHARACTERISTICS OF ARABINOXYLANS EXTRACTED FROM DIFFERENT CULTIVATORS OF PSYLLIUM HUSK

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ABSTRACT
The objective of current study was to observe the effect of psyllium husk arabinoxylans on end use quality of flour. For the purpose, arabinoxylans was isolated through enzymatic method from different varieties (PAK-1 and IND-2) of psyllium husk. In 1st phase, nutritional profile of psyllium husk was explored and arabinoxylans was isolated. In 2nd phase, the psyllium husk arabinoxylans was added into flour (T_0, T_1, T_2, T_3, and T_4) to observe its effects on the rheological characteristics of flour. Results showed that total dietary fiber content of psyllium husk in the range of 49.56±0.34 to 52.56±0.14%. The arabinoxylans in psyllium husk varieties were 34.52±0.06 g/100g and 38.92±0.05g/100g in PAK-1 and IND-2 respectively. Moreover, incorporation (5%) of arabinoxylans significantly improved the rheological properties of wheat flour. The water absorption (68.04±0.23%), dough stability (4.68±0.06 min), peak height (67.02± 0.13BU), and mixing tolerance index (69.02±0.07%) were high in wheat flour with the addition of arabinoxylans followed by 2.5% arabinoxylans. Furthermore, dough development time (6.69±0.14min) was the highest in control sample and the lowest mixing time was observed in T_2 (5.38±0.04min). Conclusively, arabinoxylans contained different bioactive moieties that have numerous positive effects on rheological and functional properties of wheat flour.
Keywords: Psyllium husk, Arabinoxylans, Nutritional profile, Rheological properties

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PLANT DERIVED PROTEINS: A COMPLETE NUTRITION

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Abstract
The world's population will reach around 10bn by 2050, estimates United Nations. Adequate nutrition is important for proper physical and mental growth of humans. The large mass of land is required to feed the population in future. Conventional sources of proteins e.g. meat, dairy, eggs and fish are able to meet 40% of the world's demand for protein and 18% of calories requirement. The conventional sources of proteins have a greater impact and put large carbon footprint on environment. The 35 hectare of land is required to produce one tonne of protein, as compared to only 10 hectare is required to produce same quantity from plants (corn, wheat, pulses etc.) derived protein. The commonly used sources of proteins are: soyabean, wheat, corn, barley, maize, pea, rapeseed, fava, bean, chickpea, lupine, azuki, coconut, etc. On sustainability factor, these plants require less water and fertilizer that can grow in wide range of climatic conditions. The developed nation has adapted effective measures to overcome these challenges. Most part of the malnourished population is living in developing and underdeveloped nations. The climate change has made the situation much worse in these countries and poses new challenges. The plant derived proteins will be a game changer in providing balanced diet and overcome malnutrition among the large population in a sustainable manner to make our planet nourished.
Keywords: nutrition, population, protein, malnourished, developing

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VARIATION OF MOSQUITOES' GENERA AROUND POLAC ENVIRONMENT

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ABSTRACT
The survey of adult mosquitoes in four selected sites in Nigeria Police Academy (Polac), Wudil, Kano, Nigeria in July, 2019 was subjected to a two-factor analysis model in order to test for significance differences among sample means. A total of one thousand and sixty (1060) mosquitoes comprising of 3 genera; Anopheles, Aedes and Culex were identified in the girls' hostel, girls' hostel staircase, quarter guard, and clinics. Anopheles mosquitoes was higher in terms of abundance with a total number of 632 samples, about 36.79% followed by Culex mosquitoes with a total number of 223 samples, about 21.04% and Aedes mosquitoes with a total number of 214 samples, about 20.19%. Also, 170 of the mosquitoes were males; about 16.04% and 890 of the mosquitoes were females; about 83.96%. The population of mosquitoes in girls' hostel was 228, about 21.51%; the staircase of the girls' hostel is 454, about 42.83%; the quarter guard 340, about 32.08%; and the clinic is 38, about 3.58%; thus, abundance of mosquitoes is prevalent in the staircase of the girls' hostel followed by the girls' hostel, quarter guard and the clinic. The interaction plot publicized that the differences between levels of one factor for Aedes will depend on the level of the other factors of Anopheles and Culex mosquitoes. Fishers' significant difference test disclosed that the mean of observation of the staircase is significantly different from the mean of observation of the clinics and girls' hostel; but, not significantly different from the means of the observation of the quarter guard. The Tukey's honestly significant difference test showed that no significant differences were observed between site surveyed sample means of girls' hostel and clinic, quarter guard and girls' hostel, girls' hotel staircase and girls' hostel as well as girls' hotel staircase and quarter guard; but significant differences transpired between site surveyed sample means of quarter guard and clinic, girls' hotel staircase and clinic. Also; significant differences transpired between sample means of Anopheles and Aedes.
Mosquitoes transfer diseases that afflict human health, and communicate quite a few illnesses and parasites; as such, operative mosquito control tools that they can use without posing unreasonable risk to human health and the environment are indispensable.
Keywords: Disease, Polac Environment, Human health, Infections, Mosquitoes-Genera, Two-Factor Model

INTRODUCTION

Mosquitoes are the most important vectors of public health due to their roles in the transmission of diseases such as Malaria, Lymphatic filariasis and others. Apart from their role in the transmission of diseases, the sound they make to announce their presence is also annoying. Different species of this insect have been identified as the vector transmitting these diseases. The females of most species have piercing and sucking mouth parts for sucking blood. Malaria is a life-threatening disease caused and spread by Plasmodium parasite and female mosquito vectors, respectively with 92% of malaria cases and 93% of malaria deaths occurring in the African region (WHO, 2018). According to WHO, 2015 the transmission of diseases by mosquitoes is more intense in places where the mosquito life span is longer (so that the parasite has time to complete its development inside the mosquito) and where it prefers to bite humans rather than animals. According to WHO, 2019 World Malaria Report, Nigeria had the highest number of global malaria cases (25 % of global malaria cases) in 2018 and accounted for the highest number of deaths (24 % of global malaria deaths). The mature female anopheles mosquito needs a blood meal for its reproduction.

Two-way analysis of variance enables us to look at the individual and joint effects of two independent variables on one dependent variable; thus, it tells us about the main effect and the interaction effect. Regularly, ANOVA is used to test equality among several means by comparing variance among groups relative to variance within groups (random error). Moreover, the design affords natural replications that result from overlapped factors. Tests of main effects are tests of one factor averaged over levels of the other factors (Bland & Altman, 1996c; Fisher, 1925; Fujikoshi, 1993). Absence of interaction between two factors implies that the additive effect of one factor is identical across all levels of the other factor. In that situation, tests and interpretation of main factors are straightforward. If interactions exist, one must interpret main effects carefully, because relations among mean levels of one factor differ according to levels of the second factor (Fisher, 1925; Kleinbaum, et al., 1988; Winer et al., 1991; Fujikoshi, 1993; Bland & Altman, 1995c; Zar, 1999; Gelman, 2005; Sit, 2007; Kass, 2011).

MATERIALS AND METHODS

Study Area and Sites

Nigeria Police Academy, Wudil Kano, Nigeria lies on latitude 11°49`N and longitude 8°51` E and falls within the semi-arid Sudan savannah zone of West Africa about 840 kilometers from the edge of the Sahara Desert as shown in figure 1. Kano has a mean height of about 472.45m above sea level. The temperature of Kano usually ranges between a maximum of 33°C and a minimum of 15.8°C although sometimes during the harmattan, it falls down to as low as 10°C. Kano has two seasonal periods, which consist of four to five months of wet season and a long dry season lasting from October to May. The rainfall in this area ranges between 1016mm and 1524mm with a relative humidity between 60% and 80%. The guinea savannah is divided into two vegetation zone; the northern and southern guinea savannah. The temperature of this area is highly influenced by the Niger Benue trough where heat is trapped.



Figure 1: Map of Nigeria Police Academy Wudil Kano, Nigeria

Study Design

The study was carried out in four selected sites in some parts of the Nigeria Police Academy, Wudil Kano, Nigeria. These sites are Girls' hostel, staircase, Quarter guard (a building used mainly for the detention of offenders in the Academy premises), and the clinic.

Sample Collection

In the month of May, 2019 mosquitoes were collected indoors between 05:30pm and 06:00am using the pyrethrum-base aerosol spray (Raid). Mosquitoes were collected on white clothes spread on the floors of the four (4) selected sites: Girls hostel, staircase, quarter guard, and clinic. All knocked down mosquitoes were collected into sample bottles and taken to the laboratory for morphological identification as described by (Amusan, et al., 2007; Gillies & Coetzee, 1987).

Mosquitoes were picked with forceps, dropped on a clean slide and then observed under a light microscope with × 40 objectives. Features such as size of antennae, color and size of the maxillary palps, length of proboscis, colour and shape of abdomen, colour and length of legs, colour of wings etc., were observed and compared. Individual mosquitoes were identified into species level, counted and recorded.

Statistical Analysis Technique

The dataset comprises of three insects (mosquito); Anopheles, Culex, and Aedes being surveyed at different sites (Girls Hostel, Girl's hostel staircase, Quarter Guard, and Clinic) of Nigeria Police Academy, Wudil, Kano State. The insects have male and female as interaction.

A two-way ANOVA test analyzes the effect of the independent variables on the expected outcome along with their relationship to the outcome itself (Yates, 1934; Kass, 2011). All these variables are varying independently and normally around a mean. Let Y_{ijk} denote the response random variable in k-th measure for treatment (i,j); $k = 1,\ldots,n_{ij}, i = 1,\ldots,I$ indexes the levels of the first factor, and $j = 1,\ldots,J$ indexes the levels of the second factor, then:

$$Y_{ijk} = \mu_{ij} + \varepsilon_{ij} \qquad (1)$$

Besides the variation explained by the factors, there remains some amount of unexplained variation ε_{ijk}, random error. The mean of the response variable is modeled as a linear combination of the explanatory variables (Gelman, 2005; Gelman and Hill, 2006):

$$\mu_{ij} = \mu + \alpha_i + \beta_j + v_{ij} \qquad (2)$$

where μ is the population group means, α_i is the additive main effect of level i from the first factor (i-th row in the contigency table), β_j is the additive main effect of level j from the second factor (j-th column in the contingency table) and v_{ij} is the non-additive interaction effect of treatment (i,j) from both factors (cell at row i and column j in the contingency table) (Fujikoshi, 1993).

A two-way ANOVA partitions the total sum of squares into within sum of squares and between sum of squares. Carrying out hypothesis test on an appropriate test statistic requires the assumption of normality for the ANOVA model that is; $Y_{ijk} \sim N\left(\mu_{ij}, \sigma^2\right)$ (homoscedasticity) or equivalently $\varepsilon_{ijk} \sim N\left(0, \sigma^2\right)$ and the homogeneity of variance among groups being compared is expected to be similar across all groups. If one of these assumptions is not met, we might need to transform the data using a logarithmic or exponential transformation to reduce the variability in the data, or you may be able to use a non-parametric alternative.

The mean corresponds to mosquitoes (Anopheles, Culex, Aedes) by gender groups (female, male) that are defined by the combination of the two independent variables surveyed at girls hostel, girls' hostel staircase, quarter guard, and clinics has the following hypotheses adopted at 0.05 level of significance. The dataset was analyzed using R programming language.

Hypothesis (I): Main effect insects

H_0: insect group means are all equal versus
H_A: at least one insect group mean is different from the others

Hypothesis (II): Main effect of site surveyed

H_0: surveyed site group means are all equal versus
H_A: at least one surveyed site group mean is different from the others

RESULTS AND DISCUSSION

Descriptive statistics of table 1 revealed that, a total of one thousand and sixty (1060) mosquitoes comprising of 3 genera; Anopheles, Aedes and Culex were identified during the month of July, 2019 in the girls' hostel, girls' hostel staircase, quarter guard, and clinics. The population of mosquitoes in girls' hostel is 228, about 21.51%; the staircase of the girls' hostel is 454, about 42.83%; the quarter guard 340, about 32.08%; and the clinic is 38, about 3.58%; thus, abundance of mosquitoes is prevalent in the staircase of the girls' hostel followed by the girls' hostel, quarter guard and the clinic. Also, Anopheles mosquitoes was higher in terms of abundance with a total number of 632 samples, about 36.79% followed by Culex mosquitoes with a total number of 223 samples, about 21.04% and Aedes mosquitoes with a total number of 214 samples, about 20.19%. More so, 170 of the mosquitoes were males, about 16.04% and 890 of the mosquitoes were females, about 83.96% in Nigeria Police Academy.

Table 1: Descriptive Statistics

	Anopheles		Culex		Aedes		
Sites surveyed	Male	Female	Male	Female	Male	Female	Total(mean)
Girls' hostel	15	182	4	22	1	4	228
Staircase	45	111	28	74	39	157	454
Quarter guard	17	223	14	74	2	10	340
Clinic	4	26	1	6	0	1	38
Total (mean)	81	542	47	176	42	172	1060

The F test on table 2 for the main effect of insect with p-value=0.163 indicates that the insects group means are all equal. Also, the F test for the main effect of the sites surveyed with p-value=0.237 indicates that surveyed site group means are all equal.

Table 2: Analysis of Variance for the month of July (original data)

Response data	df	SS	MS	F-value	Pr(>F)
insect	2	13640	6820	2.012	0.163
Sites_surveyed	3	15707	5236	1.545	0.237
residuals	18	61002	3389		

To validate the inferences made for the ANOVA in table 2, we need to check for normality and homogeneity of variances assumptions of its residuals.

Normality Assumption of the Dataset

It can be seen in figures 2 below that the residuals of the original data are not distributed symmetrically around the centre of all scores.

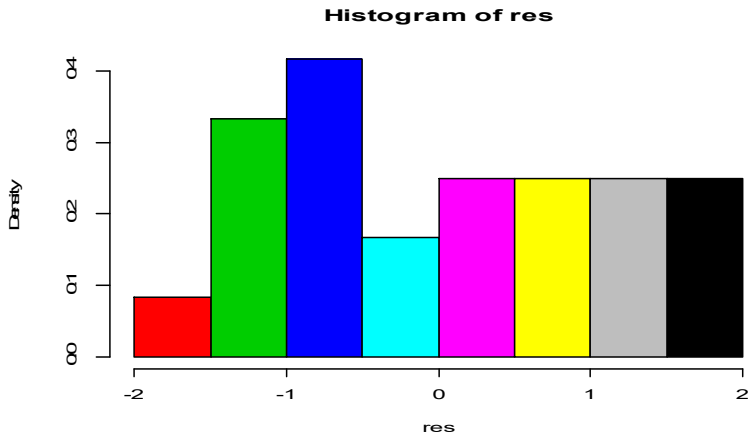


Figure 2: Histogram of the original data

It can be seen from the plot of sample quantiles in figure 3 that the datasets are not normally distributed since the points seem to deviate markedly away from the straight line with outliers' points at the ends of the line, distanced from the bulk of the observations.

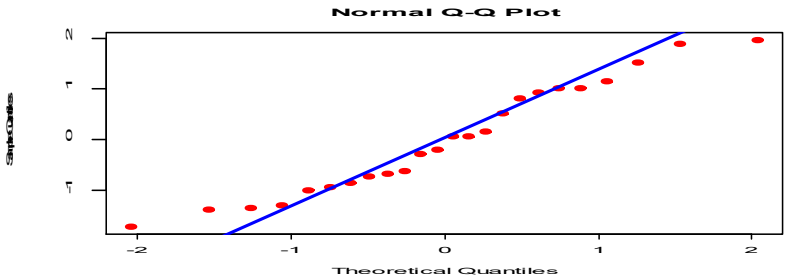


Figure 3: Quantile to quantile plot

Table 3: Normality test for the month of July (original data)

Tests	Statistics	P-value
Shapiro-Wilk	0.8746	0.00649
Jarque-Bera	14.2451	0.0008067

Shapiro-Wilk and Jarque-Bera tests revealed that the residuals of the model are not normally distributed with p-values of 0.00649 and 0.0008067 less than significance level, 0.05.

Homogeneity of Variances Assumption

The results of table 4 revealed that variances are not equal across groups or samples, since the p-value of 0.00265 is less than significance level, 0.05.

Table 4: Homogeneity of Variances test for the month of July (original data)

K-squared	df	p-value
14.1959	3	0.00265

The residual of the original data did not satisfy the assumptions of normality and homogeneity of variance; so, the inferences made from table 2 are not valid. We have to transform the data using a logarithmic transformation. The F test on table 5 for the main effect of insect with p-value=0.00946 indicates that the insects group means are all not equal. Also, the F test for the main effect of the sites surveyed with p-value=0.00195 indicates that surveyed site group means are all not equal, that is, they are different from the others.

Table 5: Analysis of Variance for the month of July (transformed data)

Response data	df	SS	MS	F-value	Pr(>F)
insect	2	16.44	8.218	6.105	0.00946
Sites_surveyed	3	29.96	9.986	7.418	0.00195
residuals	18	24.23	1.346		

To validate the inferences made for the ANOVA in table 5, we check for normality and homogeneity of variances assumptions of its residuals as done previously. The null-hypothesis that the population residuals are normally distributed in table 6 cannot be rejected for Shapiro-Wilk and Jarque-Bera tests with p-values of 0.1764 and 0.518 greater than significance level, 0.05.

Table 6: Normality test for the month of July (transformed data)

Tests	Statistics	P-value
Shapiro-Wilk	0.9415	0.1764
Jarque-Bera	1.3156	0.518

The results of table 7 revealed that variances are equal across groups or across samples, since the p-value of 0.2301 is greater than significance level of 0.05. Thus, after the transformation of the data the basic assumptions of ANOVA were satisfied. Hence, the inferences made about table 5 are valid and we conclude that insect group means and the surveyed site group means are all not equal, that is, they are different from the others.

Table 7: Homogeneity of Variances test for the month of July (transformed data)

K-squared	df	p-value
4.3074	3	0.2301

The design plot of figure 4 showed that Aedes mosquitos' has a low mean of yields; Culex mosquitos' mean of yields is slightly below the overall mean, while Anopheles mosquitos' mean of yields is above the overall mean of the samples. Thus, Anopheles mosquito is more in Polac for the month of July. Furthermore, the staircase and quarter guard have the highest mean of yields for mosquitoes, while the girls hostel's and the clinics' mean of yields fall below overall mean of the sample. Thus, the staircase and quarter guard are breeding places for mosquitoes in Polac for the month of July.

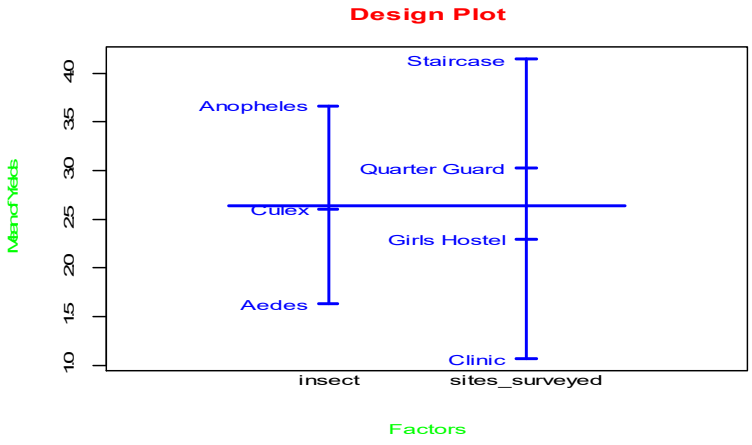


Figure 4: Design plot for mean of yields against the factors

The line that connects the means of data in figure 5 for Culex and Anopheles are quite parallel; thus, the interaction effects are very small compared to main effects or they are only apparent in a small number of treatments; so, they are probably unimportant. Also, the mean of data for Aedes crisscross the mean of data for Anopheles and Culex; thus, the differences between levels of one factor for Aedes will depend on the level of the other factors of Anopheles and Culex mosquitoes.

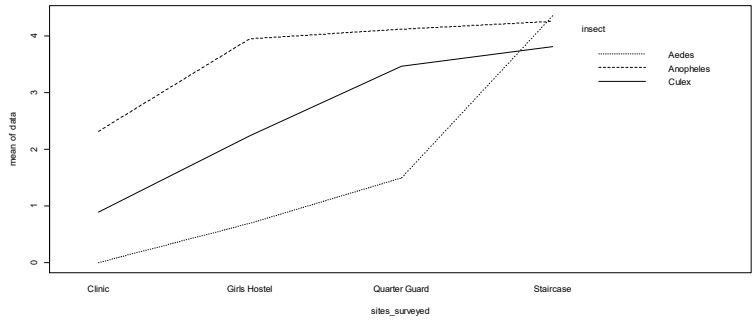


Figure 5: Interaction plot for mean of data against site surveyed

In figure 6 below, the interaction plots' lines for staircase, quarter guard, girls hostel and clinic are close to parallel; thus, the interaction effects will be very small compared to main effects or only apparent in a small number of treatments; so, they are probably unimportant.

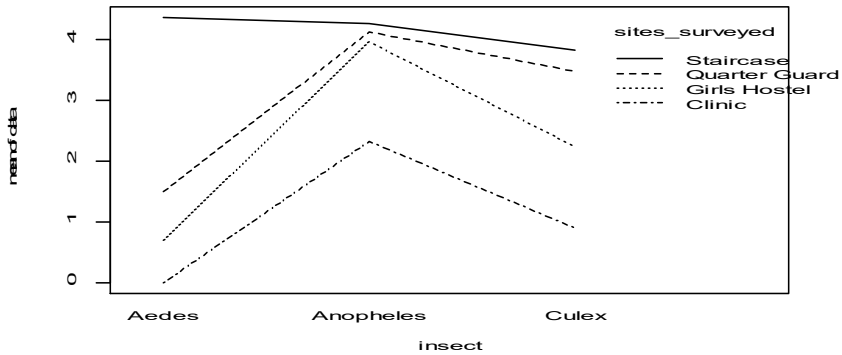


Figure 6: Interaction plot for mean of data against the insects

It can be seen from table 8 that, the mean of observation of the girls' hostel is not significantly different from the mean of observation of the clinics. Also, the mean of observation of quarter guard is significantly different from the mean of observation of the clinic; but, insignificantly different from the mean of the observation of the girls' hostel. More so, the mean of observation of the staircase is significantly different from the mean of observation of the clinics and girls' hostel; but, not significantly different from the means of the observation of the quarter guard.

Table 8: Fisher's Least Significant Different (LSD) Test

	Clinic	Girls Hostel	Quarter Guard
Girls Hostel	0.1529	-----	-----
Quarter Guard	0.0275	0.3833	-----
Staircase	0.0013	0.0361	0.1905

Tukey's honestly significant difference (HSD) test is used to test differences among sample means for significance. It tests all pairwise differences while controlling the probability of making one or more Type I errors; i.e., the probability of rejecting the null hypothesis (no significance difference) given that the null hypothesis is true.

This post-hoc analysis will provide greater insight into the differences or similarities between specific groups. In figure 7; the between groups of all insects sample means' plots for Culex and Aedes as well as Culex and Anopheles crossed the boundary line to the left; thus, no significant differences between groups of their sample means. But, significant differences transpired between sample means of Anopheles and Aedes.

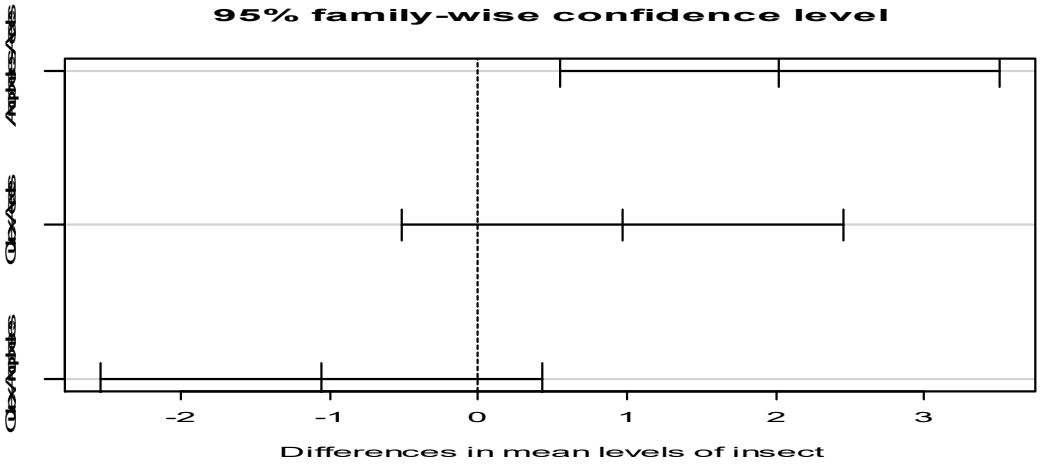


Figure 7: Tukey HSD confidence interval plot of insects

In figure 8 below, the plots of the 95% confidence interval for the differences in the sample means of site surveyed. It can be seen that the girls' hostel and clinic, as well as the girls' hostel staircase and quarter guard crossed the boundary line to the left, while the remaining site surveyed did not cross the boundary line and remained at the right side. Thus, no significant differences were observed between site surveyed sample means of girls' hostel and clinic, quarter guard and girls' hostel, girls' hotel staircase and girls' hostel as well as girls' hotel staircase and quarter guard. Succinctly, significant differences between site surveyed sample means of quarter guard and clinic, girls' hotel staircase and clinic were detected.

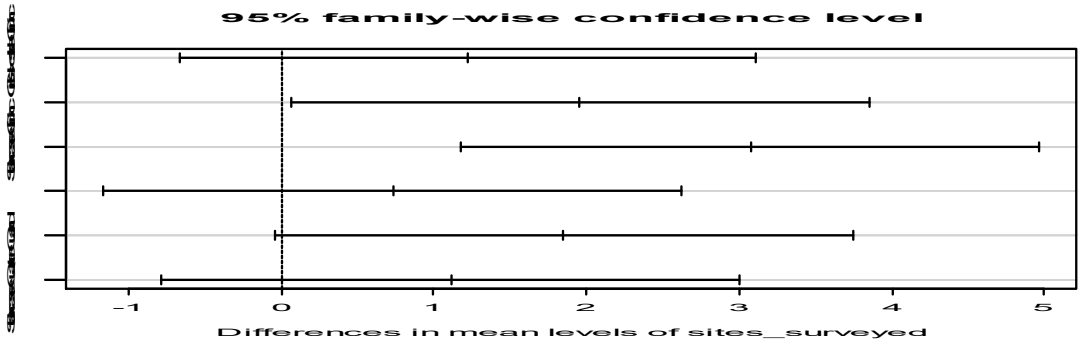


Figure 8: Tukey HSD confidence interval plot of sites surveyed

CONCLUSION

The survey of adult mosquitoes in four selected sites in Nigeria Police Academy (Polac), Wudil, Kano, Nigeria in July, 2019 was subjected to a two-factor analysis model in order to test for significance differences among sample means.

A total of one thousand and sixty (1060) mosquitoes comprising of 3 genera; Anopheles, Aedes and Culex were identified in the girls' hostel, girls' hostel staircase, quarter guard, and clinics. Anopheles mosquitoes was higher in terms of abundance with a total number of 632 samples, about 36.79% followed by Culex mosquitoes with a total number of 223 samples, about 21.04% and Aedes mosquitoes with a total number of 214 samples, about 20.19%. Also, 170 of the mosquitoes were males; about 16.04% and 890 of the mosquitoes were females; about 83.96%. The population of mosquitoes in girls' hostel was 228, about 21.51%; the staircase of the girls' hostel is 454, about 42.83%; the quarter guard 340, about 32.08%; and the clinic is 38, about 3.58%; thus, abundance of mosquitoes is prevalent in the staircase of the girls' hostel followed by the girls' hostel, quarter guard and the clinic. The interaction plot publicized that the differences between levels of one factor for Aedes will depend on the level of the other factors of Anopheles and Culex mosquitoes. Fishers' significant difference test disclosed that the mean of observation of the staircase is significantly different from the mean of observation of the clinics and girls' hostel; but, not significantly different from the means of the observation of the quarter guard. The Tukey's honestly significant difference test showed that no significant differences were observed between site surveyed sample means of girls' hostel and clinic, quarter guard and girls' hostel, girls' hotel staircase and girls' hostel as well as girls' hotel staircase and quarter guard; but significant differences transpired between site surveyed sample means of quarter guard and clinic, girls' hotel staircase and clinic. Also; significant differences transpired between sample means of Anopheles and Aedes.

Mosquitoes transfer diseases that afflict human health, and communicate quite a few illnesses and parasites; as such, operative mosquito control tools that they can use without posing unreasonable risk to human health and the environment are indispensable.

REFERENCES

Amusan, A.A.S., Mafiana, C.F. & Oke, O.A. (2007). A survey of adult mosquitoes in the hostels of the University of Agriculture, Abeokuta, Ogun State, Nigeria. The Nigerian Journal of Parasitology, 24:167-172.

Altman, D. G. & Bland, J. M. (1996). Comparing several groups using analysis of variance. British Medical Journal, 312: 1472-1473.

Bland, J. M. & Altman, D. G. (1995c). Multiple significance tests: the Bonferroni method. British Medical Journal, 310: 170.

Bland, J. M. & Altman, D. G. (1996c). The use of transformation when comparing two means. British Medical Journal, 312: 1153.

Fisher, R.A. (1925). Statistical Methods for Research Workers. Edinburgh, United Kingdom: Oliver & Boyd.

Fujikoshi, Y. (1993). "Two-way ANOVA models with unbalanced data". Discrete Mathematics. 116 (1): 315–334. DOI:10.1016/0012-365X(93)90410-U.

Gelman, A. (2005). "Analysis of variance? why it is more important than ever". The Annals of Statistics. 33 (1): 1–53. arXiv:math/0508526. doi:10.1214/009053604000001048.

Gelman, A. and Hill, J. (2006). Data Analysis Using Regression and Multilevel/Hierarchical Models. Cambridge University Press. pp. 45–46. ISBN 978-0521867061.

Gillies, M.T. & Coetzee, M. (1987). A supplement of the African Anopheline Mosquitoes South of Sahara. South African Institute for Medical Research, 55. DOI.org/10.1186/s12936-018-2189-5.

Kass, R. E (2011). "Statistical inference: The big picture". Statistical Science. 26 (1): 1–9. arXiv:1106.2895. DOI:10.1214/10-sts337. PMC 3153074. PMID 21841892.

Kleinbaum, D.G., Kupper, L.L. and Muller, K.E. (1988). Applied Regression Analysis and Other Multivariable Methods. 2nd ed. Boston, Mass: PWS-Kent Publishing.

Sit, V. (2007). Analyzing ANOVA Designs: Biometrics Information Handbook No. 5. Province of British Columbia, Ministry of Forests Research Program. Working paper 07/1995. Available at: http://www.for.gov.bc.ca/hfd/pubs/docs/Wp/Wp07.pdf.

Winer, B. J., Brown, D. R. & Michels, K. M. (1991). Statistical Principles in Experimental Design, McGraw-Hill, New York, NY.

World Health Organization, WHO (2015). World malaria report 2015. World Health Organization. ISBN: 9789241565158.

World Health Organization, WHO (2018). World Malaria Report 2018. World malaria report 2018. World Health Organization. ISBN: 9789241565653

World Health Organization, WHO (2019). World malaria report 2019. World Health Organization. ISBN: 9789241565721.

Yates, F. (1934). The analysis of multiple classifications with unequal numbers in the different classes. Journal of the American Statistical Association. 29 (185): 51–66. doi:10.1080/01621459.1934.10502686. JSTOR 2278459.

Zar, J.H. (1999). Biostatistical Analysis. Upper Saddle River, NJ: Prentice Hall. 20. BLAND, J. M. & ALTMAN, D. G. (1996b). Transforming data. British Medical Journal, 312: 770.

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INVESTIGATION OF PHYSICO-CHEMICAL PROPERTIES AND ANTIOXIDANT ACTIVITY OF ELEVEN MEDITERRANEAN POMEGRANATE (PUNICA GRANATUM L.) CULTIVARS

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Abstract
The aim of this study was to investigate the physcio-chemical characteristics and antioxidant activity of eleven pomegranate cultivars grown in Morocco. This study showed that there were significant differences among the cultivars in all measured factors except the length/diameter ratio of fruit. The fruit weight, skin percentage, aril percentage and juice percentage were within the range of 196.89–315.28 g, 32.28–59.82%, 37.59–65% and 26.95–46.55%, respectively. The total soluble solids content varied from 13.31 (◦Brix) to 17.06 (◦Brix), pH values from 2.84 to 4.11, titratable acidity content from 0.25 g 100 g^{-1} to 2.29 g 100 g^{-1} and total sugars content from 73.78 g GE l^{-1} to 143.36 g GE l^{-1}. The results also showed that the values of the total anthocyanins content was observed in pomegranate cultivars between 61.62 mg GlyE l^{-1} and 178.39 mg GlyE l^{-1}. The level of total phenolics was varied from 0.69 g GAE l^{-1} to 3.20 g GAE l^{-1}. The antioxidant activity of pomegranate cultivars was found between 26.60% and 66.28%. These data demonstrated that the cultivar was the main parameter which influences the physico-chemical properties and antioxidant activity in pomegranates.
Keywords: Punica granatum., L., Cultivar, Physico-chemical, Total phenolics, Antioxidant activity

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PROPAGATION OF RASPBERRIES VIA TISSUE CULTURE TECHNIQUES

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ABSTRACT
Raspberries are belonging to the Rubus genus of the Rosaceae family. Its berries are popular in human diet as known their health benefits and rich in useful phytochemicals such as phenolic compounds, and their antioxidative effects. The consumption of raspberry fruit as fresh is increasing recently and consumed especially in the food industry such as juices, jams, syrups, also. In addition, its cultivation can be done in a both small and big family business and farmers prefer this fruit crop because of the having highly adapted various soil and climatic conditions. However, one of the stinting elements for its expansion is the being without approved(virus/pathogen-independent) planting sample as a prerequisite providing fit, intimate, and direct raspberry nurseries that provide tall and steady performances. In vitro technique provide mass multiplication oppurtunity in very short time specifically using meristems as an explant sources, eliminates viruses and enables mass production of genetically identical and healthy plant material in a limited space without any seasonal variation. For this purpose in this study, it was aimed to summarized the propagation of raspberry plants by tissue culture methods for mass propagation.
Keywords: Tissue culture, raspberry, propagation, mass propagation

1. Introduction

1.1. General information on Rubus idaeus

Rubus is a wide species of the *Rosaceae* family which contains hundreds of species and many natural hybrids. The genus *Rubus is e*xtensive in Europe, North America, and Western Asia (Jennings et al., 1991) and *Rubus idaeus* is known as the most widespread. Generation spans Europe, America, and Asia, with more than 70% of manufacturing taking place in Europe (FAO, 2018). Berries are sweet and enthuastic flavor and is considered one of the healthiest fruits (Kaume et al., 2012, Simonovic et al., 2019). Raspberrries are popular fruits due to having health related beneficial compounds such as antioxidants, anthocyanins, and other polyphenols (Moyer et al., 2002). Consumption of raspberry fruits is important for health and decrease of chronic diseases (Seeram et al. 2006, Zafra-Stone et al. 2007, Chen et al. 2016, Lavefve et al. 2020; Hancock et al., 2007, Boone, 2013). It is one of the greatest causes why raspberries have attracted attention and risen in popularity in recent years. Raspberries are highly preferred fruits both fresh and processed consumption such as fruit juices, jams, syrups, etc. (Moyer et al., 2002). World raspberry production has doubled in the last 20 years, from around 420.000 mt in 2000 and increased to 870 000 mt in 2018 (FAO, 2018). The increase in demand for raspberries may due to the known as functional food, largely due to the antioxidant activities of the berries. Raspberry fruits are rich in anthocyanins, phenolics, ellagitannins, and vitamin C (Schulz and Chim, 2019, Lavefve et al., 2020).

Raspberries are also a good source of various nutrients such as vitamins K, B2, B6, and A, as well as potassium, magnesium, calcium, and iron, all of which are bioactive composites that supply main and major health benefits (Bobinaitė et al., 2016, Schulz and Chim, 2019). The popularity of raspberry is increasing day by day and efficient mass production is needed. Explants should be pathogen-free and uniform, and raspberry micropropagation presentations a viable solution.

1.2. The History of Raspberry cultivation

Even though the genus Rubus has been foraging for thousands of years, entry point to cultivation inception by the English botanist Turner in the 14th century (Hendrick, 1925) and checked breeding beginning in the 1920s (Graham and Brennan, 2018). The commercial cultivars that began to emerge in the 1980s is reproduced among hybridizations of European red raspberry and American red raspberry (Sobczykiewicz, 1984) and are included in two subgenera Idaeobatus and Eubatus (Graham and Brennan, 2018).

Because of the vigorous ability of Rubus to be vegetatively extended, it has traditionally been reproduced owing to wild or root cuttings. After growing on a plantation, the propagation are delivered to plantations, where they may continually fruit for 10-15 years. This gives a statement to the large geographic dispersion of systematic illness, and so the top illness printing in raspberry growing (Dolan et al., 2018).

Therefore, plant propagation by *in vitro* culture important for time-consuming and provide mass and true-to-type plant materials. In the past, berries including raspberies were comprising wide geographic regions in the mount and sub-mount zones of European regions. But raised requisition for these little fruits led to unchecked reaping, which conclusion in the destruction of these native zones. Berry generation did strongly reduce over the 1990s, but the requisition is constantly uphill not only between house horticulturists and little growers but also for trading manufacture. However, some berry cultivars recently familiarized into Europe are potently lucrative alternatives to non-conventional berry products. Large-scale growth of chosen growings of these types can largely help resolve the problem of the destruction of a native population of wild kinds and subscribe to biodiversity renovation.

1.3. Micropropagation of raspberries

The purpose of reproducing *in vitro*, except for producing disease-free plants, is to develop the intelligence of growth elements, protect cultivars and reproduce plants that have been genetically changed. Many plants can be cultured from a small number of resource materials, in small areas.

Besides the growth elements, the performance of micropropagation is linked to explant material and the pathway of regeneration. The explant can breed by obtaining a pluripotent bulk named the callus, of which a little part offers cause to a shoot via de novo shoot organogenesis. This is a sample of remote organogenesis (Shin et al., 2020). Direct organogenesis occurs as a conclusion of the reprogramming of an already present organ (Sugimoto et al., 2019)

Raspberries can be conventionally multiplied by the usual process of vegetative propagation methodologies such as hardwood and softwood shearings, by staging, and bush separation. However, there are some limitations, time-consuming, can assistance the extended of pathogens, and do not ensure effective rooting of the plantlets (Najaf-Abadi and Hamidoghli, 2009).

For this reason, in vitro propagation techniques can provide mass propagation facilities in a short time mostly genetically consistent (Gajdošová et al., 2006). However, it is difficult that micropropagation supposes a lot of empirical study for optimization of all its phases (initiation, multiplication, rooting) based on the varieties. A few reports have been published for Rubus spp. micropropagation, either from shoot tips (Bobrowski et al., 1996), or nodal sections (Gonzales et al., 2000). In an other previous study dormant axillary and apicals buds were use as explants material (Ružić and Lazić, 2006).

The first provings for micropropagation culture of raspberry were carried out in 1970 (Stelkunova and Popov, 1970,1973). There is data about using this method in Bulgaria too (Izvorska, 1979, Katchannazov et al.,1995). In recent years enterprises have been made to work out systems for regeneration of somatic tissues of *in vitro* propagated kinds of raspberry (Fiola J.A. et al., 1990). An accomplished genetic transformation of Rubus was obtained as well (Graham J. et al., 1990).

The best extensively utilized basal culture media in the micropropagation of raspberries are diverse changes of Murashige & Skoog (1962); Linsmaier & Skoog (1965); Snir (1981); Sobczykiewicz (1987), and importantly less densely those of Anderson (1980); James et al. (1980) and Avitia Garcia et al. (1985).

Welander (1985) reported on propagation of "'Veten' red raspberry cultivar using meristem and single-node explants to identify an optimum regeneration/proliferation medium. The same author also studied the effects of two basal salt formulations on explant establishment and four different cytokinins on microshoot proliferation. The same authors reported that there were no differences among the obtained when use different cytokines.

Developing protocols for micropropagation of dissimilar raspberry growths is a warranty for containment in the manufacturing process. Plant tissue cultures discover a common practice of speeded production in the raspberry planting material because of the capability of this procedure to supply healthy or disease-free plants (Muster & Lance, 2002; Kondakova et al., 2005).

Micropropagation methods for raspberry have been improved over the last 50 years, with the first paper on accomplished renewal by Anderson (1980). The most spreadly utilized cytokinins for the production of raspberries is BAP (0.1–3.0 mg l-1) only or in composite with IBA (0.1–1.0 mg l-1) and GA_3 (0–0.1 mg l-1). Desjardines & Gosselin (1987) and Klokonos et al. (1987) recorded that MS basal culture medium addition with 0.5–1.0 mg l-1 BAP is the most convenient for the propagation of dissimilar raspberry cultivars. The increased capability severely be attached to the style and concentration of cytokinin utilized, the time of subcultivation, and recent however very on the genotype (Donnelly et al., 1980; Pyott & Convers, 1981; Isac & Popescu, 2009; Zaprianova & Ivanova, 2016; Zaprianova et al., 2018).

Raspberry is especially recalcitrant to *in vitro* propagation. There is a plurality of cultivars, and a great difference among cultivars in their needs for increase and regeneration (Reed, 1990, Zawadzka and Orlikowska, 2006b, Wu et al., 2009). *In vitro* stocks as explants have efficiency far higher augmentation rates than greenhouse-grown plants (Cousineau and Donnelly, 1991), yet they have thin leaves which desiccate fastly. Raspberry also has high manufacture of phenolic compounds in the leaves which collect, oxidize, and reason browning of the tissue, finally lowering the regeneration rate (Benson, 2000). Thus, optimization of micropropagation protocols is required in order to improve our efficiency in cultivating this product.

In a previous reports, (Sobczykiewicz, 1980; Vysotsky, 1984; Welander, 1985) the micropropagated raspberry plants were radicaled straight in a soil-peat mixed without warning root creation in vitro. The enhrichment of the medium by activated carbon (Anderson, 1979; 1980) or 10 mM phloroglucinol (James et al., 1980; Sobczykiewicz, 1987) developes the rootcreation in raspberries.

Stoevska et al. (1995) studied the 1. 0 - 2. 0 mm buds of one-year shoots as a first explant material. Appropriate states for disinfection of the plant material have been established and two nutrient media have been tested. Medium V1 was initiated to be more suitable. The first improvement of the explants and their reproduction was reached on MS medium + 1 mg/1 VAP. Well-developed shoots after reproduction were rooted on 112 MS medium+ 0.5 mg/1 IBA.

Stoevska et al. (1995), who improved an efficient tract for in vitro propagation of Bulgarian raspberry cultivars Shopska Alena and Samodiva. They have saved a multiplication capability of 6.86 shoots per for Shopska Alena and 5.53 respectively for Samodiva, improving explanting the culture medium with cytokinin (1.0 mg l-1 BAP).

Isac and Popescu (2009) reported that morpho-anatomical integral of the biological material, especially organs, tissues, and cells, is one of the factors which can influence the establishment of tissue cultures. In the work applied on raspberry, primocane shoots were gathered as explants from mature plants grown under area requirements. Shoots were cut in such a style so that each of 2-3 cm long parts contained a bud from the base of which the first leaf was excised. The research purposed at evaluating the effect of explant size on the capability of morphogenesis and renewal of whole raspberry plants proffered that irrespective of the used culture medium, the proportion of explants that maintained the differentiation ability was directly correlated with their size. When cultured on a solid medium containing Murashige and Skoog (1962) mineral salts and vitamins, 0.5 mgl-1 gibberellic acids (GA_3), 0.1 mg/l N6 benzylaminopurine (BA), 10 mg l –L-Ascorbic acid, 32 mg l -1 NaFeEDTA, and 30 g l -1 sucrose, the highest rate of shoot regeneration was observed in meristem explants 0.3–0.5 mm long, particularly in those formed from the meristem dome and four to six-leaf primordia. The rate of viable shoots regenerated from 0.3–0.5 mm meristem explants was importantly higher in all experimental raspberry varieties cultured *in vitro* in their laboratory as paralleled to those regenerated from 0.1–0.3 mm explants. Hence, the same authors reported that 0,1-0.3 mm and 0.3–0.5 mm long explants gave 40%- 60% and 48.3%- 93.3 % regenerated shoots respectively.

Stoevska et al. (1995) obtained the maximum rooting rate on ½ MS, support to with 0.5 mgl-1 IBA, as for Shopska Alena the rate was detected as 100%, and 93.3% for Samodiva.

Isac and Popescu (2009) studied the rhizogenesis in 26 raspberry cultivar materials, testing distinct kinds and combinations of auxins, and established that IBA at concentrations of 0.5, 1, or 2 mg l-1 was the best for root induction. In the Willamette cultivar, they got 69.9% rhizogenesis, supplementing the culture medium with 2.0 mg l-1 IBA and 162 mg l-1 PG (phloroglucinol).



Fig. 1. Raspberry Micropropagation Stages

Results and Discussion

Micropropagation techniques have provide rapidly produce large quantities of disease free raspberry planting materials. Factors affecting organogenesis such as explant type and basal medium components and efficiacy of various plant growth regulators and their doses on raspberry invitro multiplication were reviewed in this paper.

References

Anderson, W. C. (1979). Tissue culture propagation of red raspberry. In vitro, 15, 177 Abstract 46.

Anderson, W. C. (1980). Tissue culture propagation of red and black raspberries, Rubus idaeus and R. occidentalis. Acta Hort., 112, 13-20, 124-132.

Avitia Garcia, E. & Barrientos Perez, F. (1985). Cytokinins and red raspberry (Rubus idaeus L.) shoot proliferation in vitro. Hortie Mex., 1 (1), 41-49.

Bobrowski, V. L., Mello-Farias, P., Petters, J. (1996) Micropropagation of blackberries (Rubus sp.) cultivars. Current Agricultural Science and Technology, 2 (1), 17-20. DOI: 10.18539/cast.v2i1.146

Boone, L. 2013. Powerful Plant-Based Superfoods: The Best Way to Eat for Maximum Health, Energy, and Weight Loss, Fair Winds Press (MA)

Bobınaıtė, R., VIŠKELIS, P. & VENSKUTONIS, P. R. 2016. Chapter 29- Chemical Composition of Raspberry (Rubus spp.) Cultivars. In: SIMMONDS, M. S. J. & PREEDY, V. R. (eds.) Nutritional Composition of Fruit Cultivars. San Diego: Academic Press.

Blomhoff, R. 2002. Tabell over antioksidantnivå [Online]. Avdeling for ernæringsvitenskap: Institutt for medisinske basalfag, Det medisinske fakultet, Universitetet i Oslo. Available: http://folk.uio.no/runeb/sort-frap_no.htm [Accessed 15.07 2019].

Chen, W., Su, H. M., Xu, Y., Bao, T. & Zheng, X. D. 2016. Protective effect of wild raspberry (Rubus hirsutus Thunb.) extract against acrylamide-induced oxidative damage is potentiated after simulated gastrointestinal digestion. Food Chemistry, 196, 943-952.

Desjardines, Y. & Gosselin, A. (1987). The effect of hormonal concentration, culture medium and anantioxidant on the shoot-doubling time for the raspberry cultivar Madawaska grown in vitro. Can. J. Plant Sci., 67 (3), 763-869.

Dolan, A., Macfarlane, S. & Jennıngs, S. N. 2018. Pathogens in Raspberry and Other Rubus spp. Raspberry. Springer.

Donnelly, D. J., Stace-Smith, R. & Mellor, F. C. (1980). In vitro culture of three Rubus species. Acta Hort., 112, 69-84.

FAO. 2018. Crops: Raspberry (Visualize) [Online]. Available: http://www.fao.org/faostat/en/#data/QC/visualize [Accessed 13.04.2020]

Fiola J.A. et al. (1990) Plant Cell. Tiss. Org. Cult., 20, 223-228.

Gajdošová, A., Ostrolucká, M. G., Libiaková, G., Ondrušková, E., Šimala, D. (2006) Microclonal propagation of Vaccinium sp. and Rubus sp. and detection of genetic variability in culture in vitro. Journal of Fruit and Ornamental Plant Research, 14 (Suppl. 1), 103-119.

Gonzales, M. V., Lopez, M., Valdes, A. E., Ordas, R. J. (2000) Micropropagation of three berry fruit species using nodal segments from field – grown plants. Annals of Applied Biology, 137 (1), 73-78. DOI: 10.1111/j.1744- 7348.2000.tb00059.x

Graham J. et al. (1990) Plant Cell. Tiss. Org. Cult., 20,35-39.

Graham, J. & Brennan, R. 2018. Introduction To The Rubus Genus. In: Graham, J. & Brennan, R. (eds.) Raspberry: Breeding, Challenges and Advances. Cham: Springer International Publishing.

Hancock, R. D., Mcdougall, G. J. & Stewart, D. 2007. Berry fruit as 'superfood': hope or hype. Biologist, 54, 73-79.

Hendrıck, U. P. 1925. The small fruits of New York, Albany, J. B. Lyon.

Isac, V. & Popescu, A. (2009). Protocol for in vitro micropropagation of raspberry, and plant regeneration by organogenesis, A guide to some in vitro techniques, Small fruits, COST863: Euro Berry research: from Genomics to Sustainable Production, Quality & Helth, 14-23.

Izvorska N. (1979) Physiol. na rasteniata, 4, 36-39.

James, D. J., Knight, V. H. & Thurbon, I. J. (1980). Micropropagation of red raspberry and the influence of phloroglucinol. Scientia Hort., 12, 313-319

Jennings, D. L., Daubeny, H. A., Moore, J. N. (1991) Blackberries and raspberries (Rubus). Genetic Resources of Temperate Fruit and Nut Crops, 290, 331- 392. DOI: 10.17660/actahortic.1991.290.8

Katchannazov V., Kondakova V. (1995) Gradinarska i Lozarska Nauka, 6.

Kaume, L., Howard, L. R. & Devareddy, L. 2012. The blackberry fruit: a review on its composition and chemistry, metabolism and bioavailability, and health benefits. J Agric Food Chem, 60, 5716-27.

Klokonos, N. P. & Soloveva, I. I. (1987). Propagation of raspberry by the tissue culture method. Ref. Zh. I., 55, 623.

Kondakova, V., Todorovska, E., Boicheva, R., Hristova, E., Badjakov, I., Todorova, M., Domozetova, D. & Atanassov, A. (2005). Genetic resources of small fruits, present and future development. Biotechnology and Biotechnological Equipment, 19, 4-12.

Lavefve, L., Howard, L. R. & Carbonero, F. 2020. Berry polyphenols metabolism and impact on human gut microbiota and health. Food & Function, 11, 45-65.

Linsmaier, E. M. & Skoog, F. (1965). Organic growth factors requirements of tobacco tissue cultures. Physiologia Plantarum, 18, 100-126.

Moyer, R. A., Hummer, K. E., Finn, C. E., Frei, B., Wrolstad, R. E. (2002) Anthocyanins, phenolics, and antioxidant capacity in diverse small fruits: Vaccinium, Rubus and Ribes. Journal of Agricultural and Food Chemistry, 50 (3), 519-525. DOI: 10.1021/jf011062r

Murashige, T. & Skoog, F. (1962). A revised medium for rapid growth and bioassays with tobacco tissue cultures. Physiol. Plant., 15, 473-487

Muster, G. & Lankes, C. (2002). Effect of conventional and in-vitropropagation on selected characteristics of raspberry plants. Acta Horticulturae, 585, 589.

Najaf-Abadi, A. J., Hamidoghli, Y. (2009) Micropropagation of thornless trailing blackberry (Rubus sp.) by axillary bud explants. Australian Journal of Crop Science, 3 (4), 191-194.

Pyott, J. L. & Converse, R. H. (1981). In vitro propagation of heat-treated red raspberry clones. Hort. Science, 16, 308-309.

Ružić, D., Lazić, T. (2006) Micropropagation as means of rapid multiplication of newly developed blackberry and black currant cultivars. Agriculturae Conspectus Scientificus, 71 (4), 149-153

Seeram, N. P., Adams, L. S., Zhang, Y. J., Lee, R., Sand, D., Scheuller, H. S. & Heber, D. 2006. Blackberry, black raspberry, blueberry, cranberry, red raspberry, and strawberry extracts inhibit growth and stimulate apoptosis of human cancer cells in vitro. Journal of Agricultural and Food Chemistry, 54, 9329-9339.

Schulz, M. & Chım, J. F. 2019. Nutritional and bioactive value of Rubus berries. Food Bioscience, 31.

Simonovic, M., Sımonovıc, B. R., Ostojıc, S., Pezo, L., Mıcıc, D., Stanısavljevıc, N. & Pejın, B. 2019. A contribution to the estimation of berry fruits quality. Scientia Horticulturae, 258.

Sobczykiewicz, D. (1980). Preliminary note on mass production of raspberry plants through placing unrooted plantles obtained from meristem cultures directly in the soil. Fruit Science Reports, 1, 1-3

Sobczykıewıcz, D. 1984. Mass production of raspberry plantlet through micropropagation and rooting them directly in sand-peat mixture.

Sobczykiewicz, D. (1987). Mass propagation of raspberry plants by meristem culture. Acta Hort., 212, 607-609.

Stelkunova S.E., Popov lu.G. (1970) Physiol. na rasteniata, 17, 618-622.

Stelkunova S.E., Popov Iu.G. (1973) Botan. Joum., 58, p. 10

Stoevska, T., Trifonova, A. & Karadocheva, D. (1995). Micropropagation of raspberries (Rubus idaeus). Biotechnology and Biotechnological Equipment, 9(2), 27-30.

Isac V., Popescu A. (2009) Chapter I- Protocols for In Vitro Micropropagation of Strawberry, Raspberry, Blackberry, Black Currant, Blueberry and Lingonberry. Research Institute for Fruit Growing Marului Street 402, Pitesti, 117450 Maracineni, Arges, Romanıa

Welander, M. 1985. In vitro culture of raspberry (*Rubus idaeus*) for mass propagation. J. Hort. Sci. 60:493-499.

Vysotsky, V. A. (1984). Improving methods for producing raspberry plants from isolated meristematic tips. Strawberries in Nechernozemie, M., 3-8.

Welander, M. (1985). In vitro culture of raspberry (Rubus ideaus) for mass propagation. J. Hortic. Sci., 60(4), 493-499.

Zafra-Stone, S., Yasmin, T., Bagchıı, M., Chatterjee, A., Vınson, J. A. & Bagchı, D. 2007. Berry anthocyanins as novel antioxidants in human health and disease prevention. Molecular Nutrition & Food Research, 51, 675-683.

Zaprianova, N. & Ivanova, I. (2016). Multiplication of Lilies (Lilium) in vitro conditions. Journal of Mountain Agriculture on the Balkans, 19(1), 246-255.

Zaprianova, N., Ivanova, V. & Panchev, V. (2018). Micropropagation of Angelonia angustifolia from stem explants. International Agricultural, Biological & Life Science Conference, 2-5 September, Edirne, Turkey, 526-531.

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HEALTH BENEFITS OF BLACK MULBERY (Morus nigra L.) FRUITS

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ABSTRACT
Recently, the importance given to fruit growing has increased due to the positive effects of nutraceutical-rich foods for healthy life. Black mulberry fruit, which is popular berry fruit due to rich in phenolic and anthocyanin components needed by the human body and also important functional foods that took part in human nutrition while consumed either fresh or processed. Fruits of black mulberries have an important place in the food industry with their attractive color, taste and aroma. Due to the booming industrial demand of black mulberry processing black mulberry plantation areas increasing year by year. Black mulberry, which has a wide assortment in food industry such as jam, marmelade, molasses, fruit juice, yoğurt, pestil, sausage, vinegar, ice cream, cake, syrup and pharmaceutical purposes and as consumed as fresh fruit. Black mulberry is a rich source of organic acid, sugar, vitamins and minerals that it contains and occupies an important place in nutrition. In addition, black mulberry fruits contain most of the vitamins specifically B and C vitamin, minerals such as iron and calcium that should be taken daily. Moreover, fruits of black mulberry also contains essential fatty acids that cannot be synthesized by the human body. Consumption of black mulberry fruit gives the body energy, strength and coolness. Black mulberry also has purifying and nourishing properties against to toxins in the body.
Keywords: Black mulberry, health, phytochemical properties

INTRODUCTION
It is known that fruits and vegetables are very useful products for human health and have been indicated by scientific studies. Fruits and vegetables contain many nutritional elements as well as taste, aroma or smell and have a protective effect against diseases with the elements they contain antioxidants, phytochemicals such as phenolic substances and acids (Rossi, 2000). Phytochemicals are biologically active substances in the formation of specific colors, odors and flavors of plants. These substances are herbal compounds that are naturally found in fruits, vegetables, cereals and other plant foods and are responsible for reducing health problems such as cancer, cardiovascular, hypertension, hormonal disorders and diabetes that threaten human health in daily life (Liu, 2003). The leaves and fruit of the mulberry plant, which is among the berry fruits are evaluated in various fields. Mulberry leaf is widely used in silkworm breeding and it is also preferred in the field of pharmacology. In addition, mulberry leaves are consumed in the form of tea. Its fruit is consumed in fresh or processed form (jam, marmalade, syrup, molasses, fruit pulp, vinegar) or frozen (Meral and Dogan, 2012; Ercisli and Orhan, 2007; Gundogdu et al., 2011; Sánchez, 2000).

Apart from this, black mulberry is sold to companies that process ice cream, fruit juice, fruit yoghurt by freezing in freezing facilities under 0°C under commercial conditions (Ozgen et al., 2009). Therefore, it has a very special place among other fruits.

History of Black Mulberry (Morus nigra L.)

The mulberry plant is in the Morus genus of the Moraceae family of the Urticales order. About 100 species of the genus Morus have been described in temperate climates of the world (Elmacı and Altug, 2002). Mulberry is a type of fruit that can be grown in temperate, tropical and subtropical climates due to its high adaptability to different climatic and soil conditions (Gungor and Sengul, 2008). Although mulberry is mainly used in silkworm cultivation in India and China, it is mostly grown for its fruits in Europe (Pawlowska et al., 2008). Mulberry species that are frequently encountered and cultivated today are Morus alba (white mulberry), Morus nigra (black mulberry) and Morus rubra (purple mulberry) (Gundogdu et al., 2011). While the homeland of Morus nigra is Turkey, Iran, Arabia, Russia and Syria; Morus alba is native to China, Japan, Thailand, Malaysia, and Burma. The gene center of Morus rubra is North America (Bellini et al., 2000). As with many fruit species Anatolia is the homeland of mulberry fruit and one of the oldest cultural areas. Since the growing conditions are very suitable in most agricultural regions of our country, high quality mulberry fruit is obtained (Gungor and Sengul, 2008). Middle East Anatolia and Black Sea Regions take the first place in production. It is known that mulberry cultivation has been carried out in Turkey for more than 400 years. However, since this fruit has not been adequately evaluated industrially mulberry production has remained at a limited level (Akbulut et al., 2006).

Nutritional Content and Health Effect of Black Mulberry

Black mulberry is a rich source of organic acids, sugars, vitamins and minerals in terms of nutritional value and has an important place in nutrition. Black mulberry fruit can meet most of the vitamins B and C, iron and calcium minerals that need to be taken daily (Hepsag et al., 2012). Consumption of black mulberry fruit gives energy and strength to the body. It also has detoxifying and nourishing properties (Ozgen and Scheerens, 2006) and contains essential fatty acids (omega-3, omega-6 etc.) that the human body cannot synthesize. These fatty acids are known as long chain polyunsaturated fatty acids and are necessary for the formation of healthy cell membranes, the proper functioning of the brain and nervous system, and the production of hormone-like substances called "eicosanoids" (Simopoulos and Salem, 1996). The bioactivity of mulberry fruits such as antioxidant content (Yang et al., 2010), hypolipidemic effect (Liu et al., 2009) and macrophage activating effect (Kim et al., 2013) are associated with the presence of phenolics in mulberry fruit. Antioxidant compounds (for example, anthocyanins, water-soluble pigments) found in fruits have potential effects in reducing the risk of cardiovascular disease and cancer with their anti-inflammatory, antitimetastasis and chemical protective properties (Huang et al., 2008; Lazzè et al., 2004). It has these biological effects due to the phenolic compounds it contains especially anthocyanins (Bae and Suh, 2007). Due to the fact that black mulberry fruit is especially rich in anthocyanins it has protective and therapeutic effects in digestive system cancer types such as larynx, stomach and colon cancer as well as reducing fever and blood pressure, protecting the liver from harmful factors, protecting against cardiovascular diseases, strengthening immunity has been detected (Chen et al., 2006; Sernikli, 2015).

Epidemiological studies conducted in recent years have revealed that black mulberry has a very important role in the protection of health and the prevention of diseases, as well as its nutritional properties (Guo et al., 1997). Studies on selected species of the mulberry plant show bioactivities where the plant is used as a folk remedy, for example, mulberry juice is used for asthma, colds, cough, diarrhea, indigestion, edematous tumors, fever, headache, hypertension and wounds. Roots and bark are laxative, anthelmintic, astringent, and mulberry leaves play an important role in silkworm breeding (Datta, 2000; Sánchez, 2000; Stalikas, 2007). Black mulberry leaves are used for their mild blood sugar lowering effect (Asımgil, 1997). Although little is known about the biological and pharmacological properties of mulberry, the importance of beverages obtained from the leaves of the mulberry tree is increasing in the beverage market (Bae and Suh, 2007). Various studies have shown that mulberries can have positive effects on human health especially in people with type 2 diabetes, these effects are mainly related to their phenolic composition (Wang et al., 2013). Similarly, mulberry leaves have shown promising biological effects (Jeszka-Skowron et al., 2014; Wu et al., 2013).

Bioactive Compounds in Black Mulberry

Fruits are important sources of compounds that are beneficial for health. Mulberry fruit, contain alkaloids (Asano et al., 2001), carotenoids and flavonoids (isoquercetin) (Hassimotto et al., 2007; Sohn et al., 2004), vitamins, oils (mainly linoleic acid, palmitic acid, oleic acid). It is also rich ib many bioactive components such as sugars (glucose and fructose), organic acids (tataric acid and citric acid) (Sohn et al., 2004) and minerals (Ercisli and Orhan, 2007). Black mulberry is also very rich in terms of phenolic compounds and anthocyanins among bioactive components (Simopoulos and Salem, 1996). In fact, mulberry is a rich source of phenolic compounds including anthocyanins in black and red mulberry fruits, as well as flavonols and phenolic acids (Juan et al., 2012; Ozgen et al., 2009; Pawlowska et al., 2008). Anthocyanin pigments have two very important roles in mulberry fruit. The first is that it contains various forms that affect the properties of the final product and play a complementary role in the formation of the sensory properties of the product and the second is its effects on health (Bae and Suh, 2007). According to the studies carried out in black mulberry fruit, cyanidin-3-O-glucoside, cyanidin-3-O-rutinoside, pelargonidin-3-O-rutinoside and pelargonidin-3-O-glucoside were determined (Pawlowska et al., 2008; Zhang et al., 2008; Song et al., 2009; Stefănuţ et al., 2011; Tomas, 2013). As flavonols in black mulberry rutine, quercetin; p-hydroxybenzoic, p-coumaric, gallic, vanillic acids as phenolic acids; apigenin as flavone; naringenin as the flavonon; cyanidin and pelargonidin derivatives as anthocyanins; contains resveratrol as stilbene. In addition to these, there are more various phenolic compounds in their structures (Tokusoglu, 2017). The phytochemical composition of mulberry berries remains an interesting and useful task especially for finding promising new sources of natural antioxidants.

CONCLUSION

Consumption of fruits rich in nutritional value and phytochemical content for a healthy life, which are of great importance for human health in our country as well as all over the world, and the interest in the products produced from these fruits is increasing. Epidemiological studies conducted in recent years have revealed that black mulberry has a very important role in the protection of health and the prevention of diseases as well as its nutritional properties.

Black mulberry (Morus nigra L.) has been a plant that has maintained its importance and value globally since the beginning of its consumption. As its use and benefits are known, the interest in black mulberry is increasing. Since black mulberry can be consumed as a raw and processed product it has many different uses today. Black mulberry fruits were investigated in terms of their biochemical properties and the properties of anthocyanin compounds which are abundant in these fruits which will contribute to their use in the food industry. The high antioxidant capacity of black mulberry as well as its high anthocyanin and phenolic content, increase its popularity among other mulberries and even other fruits in general. Black mulberry is considered a natural functional product thanks to its rich in bioactive compounds and health-promoting properties resulting from its antioxidant activities. Therefore, maintaining the nutritional content of black mulberry and developing new varieties will become more important day by day.

REFERENCES

Akbulut, M., Coklar, H., Cekic, C. (2006). Determination of Some Chemical Properties and Mineral Content of Different Mulberry Varieties. Food Technology, Detail Publishing, s. 20-24, Ankara.

Asano, N., Yamashita, T., Yasuda, K., Ikeda, K., Kizu, H., Kameda, Y., Ryu, K. S. (2001). Polyhydroxylated Alkaloids İsolated from Mulberry Trees (Morus alba L.) and Silkworms (Bombyx mori L.). Journal of Agricultural and Food Chemistry, 49(9), 4208-4213.

Asımgil, A., (1997). Medicinal Plants. Timas Publications, Istanbul.

Bae, S. H., Suh, H. J. (2007). Antioxidant Activities of Five Different Mulberry Cultivars in Korea. LWT-Food Science and Technology, 40(6), 955-962.

Bellini, E., Giordani, E., Roger, J. P. (2000). The Mulberry for Fruit. Informatore Agrario, 56(7), 89-93.

Chen, P. N., Chu, S. C., Chiou, H. L., Kuo, W. H., Chiang, C. L., Hsieh, Y. S. (2006). Mulberry Anthocyanins, cyanidin-3-rutinoside and cyanidin 3-glucoside, Exhibited an Inhibitory Effect on the Migration and Invasion of a Human Lung Cancer Cell Line. Cancer Letters, 235(2), 248-259.

Datta, R. K. (2000). Mulberry Cultivation and Utilization in India. FAO Animal Production and Health Paper, 45-62.

Elmacı, Y., Altug, T. (2002). Flavour Evaluation of Three Black Mulberry (Morus nigra) Cultivars Using GC/MS, Chemical and Sensory Data. Journal of the Science of Food and Agriculture, 82(6), 632-635.

Ercisli, S., Orhan, E. (2007). Chemical Composition of White (Morus alba), Red (Morus rubra) and Black (Morus nigra) Mulberry Fruits. Food Chemistry, 103(4), 1380-1384.

Gundogdu, M., Muradoglu, F., Sensoy, R. G., Yilmaz, H. J. S. H. (2011). Determination of Fruit Chemical Properties of Morus nigra L., Morus alba L. and Morus rubra L. by HPLC. Scientia Horticulturae, 132, 37-41.

Guo, C., Cao, G., Sofic, E., Prior, R. L. (1997). High-Performance Liquid Chromatography Coupled with Coulometric Array Detection of Electroactive Components in Fruits and Vegetables: Relationship to Oxygen Radical Absorbance Capacity. Journal of Agricultural and Food Chemistry, 45(5), 1787-1796.

Gungor, N., Sengul, M. (2008). Antioxidant Activity, Total Phenolic Content and Selected Physicochemical Properties of White Mulberry (Morus alba L.) fruits. International Journal of Food Properties, 11(1), 44-52.

Hassimotto, N. M. A., Genovese, M. I., Lajolo, F. M. (2007). Identification and Characterisation of Anthocyanins from Wild Mulberry (Morus nigra L.) Growing in Brazil. Food Science and Technology International, 13(1), 17-25.

Hepsag, F., Hayoğlu, İ., Hepsag, B. (2012). Anthocyanin Content of Black Mulberry Fruit and Usage Possibilities of Anthocyanins as Color Agent in Food Industry. Electronic Journal of Food Technologies, 7(1), 9-19.

Huang, H. P., Shih, Y. W., Chang, Y. C., Hung, C. N., Wang, C. J. (2008). Chemoinhibitory Effect of Mulberry Anthocyanins on Melanoma Metastasis Involved in the Ras/PI3K Pathway. Journal of Agricultural and Food Chemistry, 56(19), 9286-9293.

Jeszka-Skowron, M., Flaczyk, E., Jeszka, J., Krejpcio, Z., Król, E., Buchowski, M. S. (2014). Mulberry Leaf Extract Intake Reduces Hyperglycaemia in Streptozotocin (STZ)-Induced Diabetic Rats Fed High-Fat Diet. Journal of Functional Foods, 8, 9-17.

Juan, C., Jianquan, K., Junni, T., Zijian, C., Ji, L. (2012). The Profile in Polyphenols and Volatile Compounds in Alcoholic Beverages from Different Cultivars of Mulberry. Journal of Food Science, 77(4), C430-C436.

Kim, S. B., Chang, B. Y., Jo, Y. H., Lee, S. H., Han, S. B., Hwang, B. Y., Lee, M. K. (2013). Macrophage Activating Activity of Pyrrole Alkaloids from Morus alba Fruits. Journal of Ethnopharmacology, 145(1), 393-396.

Lazzè, M. C., Savio, M., Pizzala, R., Cazzalini, O., Perucca, P., Scovassi, A. I., Bianchi, L. (2004). Anthocyanins Induce Cell Cycle Perturbations and Apoptosis in Different Human Cell Lines. Carcinogenesis, 25(8), 1427-1433.

Liu, L. K., Chou, F. P., Chen, Y. C., Chyau, C. C., Ho, H. H., Wang, C. J. (2009). Effects of Mulberry (Morus alba L.) Extracts on Lipid Homeostasis In Vitro and In Vivo. Journal of Agricultural and Food Chemistry, 57(16), 7605-7611.

Liu, R. H. (2003). Health Benefits of Fruit and Vegetables are from Additive and Synergistic Combinations of Phytochemicals. The American Journal of Clinical Nutrition, 78(3), 517S-520S.

Meral, R., Dogan, I. S. (2012). Antioxidant Activity and Phenolic Composition of Black Mulberry (Morus nigra) Added Bread. Journal of the Institute of Science and Technology, 2(4), 43-48.

Ozgen, M., Scheerens, J.C. (2006). Determination of Antioxidant Capacity of Some Red and Black Raspberry Cultivars by Modified TEAC Method and Discussion of Their Anticancer Properties. II. Berries Symposium, Tokat.

Ozgen, M., Serçe, S., Kaya, C. (2009). Phytochemical and Antioxidant Properties of Anthocyanin-Rich Morus nigra and Morus rubra Fruits. Scientia Horticulturae, 119(3), 275-279.

Pawlowska, A. M., Oleszek, W., Braca, A. (2008). Quali-quantitative Analyses of Flavonoids of Morus nigra L. and Morus alba L. (Moraceae) Fruits. Journal of Agricultural and Food Chemistry, 56(9), 3377-3380.

Rossi, A. (2000). Phytochemical-Vitamins of the Future. Family and Consumer Sciences. Ohio State University Extension Fact Sheet, 1787 Neil Avenue, Columbus, Ohio 43210. (http://ohioline. osu. edu/hyg-fact/5000/5050. html).

Sánchez, M. D. (2000). World Distribution and Utilization of Mulberry, Potential for Animal Feeding. FAO. In Electronic Conference on Mulberry for Animal Production. (Morus L.) (Vol. 111).

Sernikli, C. (2015). Thermal Degradation Kinetics of Total Phenolic Matter and Water-Soluble Vitamins in Black Mulberry (Morus nigra) Juice. Master's Thesis. Pamukkale University Institute of Science and Technology.

Simopoulos, A. P., Salem Jr, N. (1996). Fatty Acids and Lipids from Cell Biology to Human Disease.

Song, W., Wang, H. J., Bucheli, P., Zhang, P. F., Wei, D. Z., Lu, Y. H. (2009). Phytochemical Profiles of Different Mulberry (Morus sp.) Species from China. Journal of Agricultural and Food Chemistry, 57(19), 9133-9140.

Sohn, H. Y., Son, K. H., Kwon, C. S., Kwon, G. S., Kang, S. S. (2004). Antimicrobial and Cytotoxic Activity of 18 Prenylated Flavonoids Isolated from Medicinal Plants: Morus alba L., Morus mongolica Schneider, Broussnetia papyrifera (L.) Vent, Sophora flavescens Ait and Echinosophora koreensis Nakai. Phytomedicine, 11(7-8), 666-672.

Stalikas, C. D. (2007). Extraction, Separation, and Detection Methods for Phenolic Acids and Flavonoids. Journal of Separation Science, 30(18), 3268-3295.

Stefănuţ, M. N., Căta, A., Pop, R., Moşoarcă, C., Zamfir, A. D. (2011). Anthocyanins HPLC-DAD and MS Characterization, Total Phenolics, and Antioxidant Activity of Some Berries Extracts. Analytical Letters, 44(18), 2843-2855.

Tokusoglu, Ö. (2017). Bioactive Effective Substances of Black Mulberry Fruit: Anticarcinogenity, and Health Effects.

Tomas, M. (2013). Changes in Antioxidants and In Vitro Bioavailability of Black Mulberry During Juice and Jam Processing. PhD Thesis. Istanbul Technical University Institute of Science and Technology, Istanbul.

Wang, Y., Xiang, L., Wang, C., Tang, C., He, X. (2013). Antidiabetic and Antioxidant Effects and Phytochemicals Of Mulberry Fruit (Morus alba L.) Polyphenol Enhanced Extract. PloS One, 8(7), e71144.

Wu, C. H., Chen, S. C., Ou, T. T., Chyau, C. C., Chang, Y. C., Wang, C. J. (2013). Mulberry Leaf Polyphenol Extracts Reduced Hepatic Lipid Accumulation Involving Regulation of Adenosine Monophosphate Activated Protein Kinase and Lipogenic Enzymes. Journal of Functional Foods, 5(4), 1620-1632.

Yang, X., Yang, L., Zheng, H. (2010). Hypolipidemic and Antioxidant Effects of Mulberry (Morus alba L.) Fruit in Hyperlipidaemia Rats. Food and Chemical Toxicology, 48(8-9), 2374-2379.

Zhang, W., Han, F., He, J., Duan, C. (2008). HPLC-DAD-ESI-MS/MS Analysis and Antioxidant Activities of Nonanthocyanin Phenolics in Mulberry (Morus alba L.). Journal of Food Science, 73(6), C512-C518

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CRISPR/CAS9 APPLICATIONS IN HORTICULTURAL CROPS

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Abstract
Horticultural plants are an important part of products serving mankind by providing a food source for the increasing population such as fruits, vegetables, materials for the food, and pharmaceutical industry. They are also the basic logistics of landscape architecture by acting as ornamentals. Therefore, the improvement in quantity and quality of these plants such as their appearance for marketing besides their healthy contents is of interest to researchers. To achieve this, a range of breeding strategies have been applied from conventional techniques to a series of molecular breeding methods. Although conventional techniques such as mutation breeding and crossbreeding are still used, the attention in new strategies in molecular breeding including marker-assisted selection (MAS), transgenic technology, and genome editing (CRISPR/Cas9) techniques has been increased due to their advantages. Among new technologies, clustered regularly interspaced short palindromic repeat (CRISPR) technology paves the way toward a new horizon for horticultural plants improvement. Owing to CRISPR/Cas9 technology, mutations in genes occur which lead to a number of alleles with different phenotypes by generating the regulatory regions of the promoter. These variable phenotypes can be considered as an outstanding genetic resource in the breeding program. This paper was aimed to review the mechanism and optimization of the CRISPR system and its application in breeding programs in horticultural plants for improving traits of interest. Challenges and future aspects of this technique are discussed as well.
Keywords: Biotechnology, CRISPR/Cas9, genome editing, horticultural plants

Introduction
Horticultural crops include two main groups, vegetable and fruit crops as food and ornamental plants, for landscape applications (Ravichandra, 2014). Horticultural crops are the main sources of vitamins, fibers, and minerals due to their phytochemical contents. Agriculture is undoubtedly one of the largest fields of study of biotechnology. Genetic modifications have gone beyond traditional agricultural activities in growing and developing crops in agricultural activities. In the last half-century, it has become possible to transfer genes from one organism to another to obtain the desired characteristics with biotechnological developments (Uzogara, 2000; Mucci and Hough, 2003). Along with biotechnological applications, many agricultural products gain industrial value thanks to the alkaloids, oils, and proteins they contain.

CRISPR "Clustered Regularly Interspaced Short Palindromic Repeats", as one of the biotechnological applications, is the new generation genome editing (GE) tool that has been widely used in medicine, molecular biology, and plant breeding in recent years. CRISPR-based genome editing technology has had a radical innovation in the field of plant breeding. CRISPRs are one of the new generation genome editing techniques that makes it possible to edit the genome by binding to the targeted region in the DNA. Thanks to the CRISPR technique, a mutation occurs in the genes leading to the silencing of target genes or a change in desired nucleotides by cutting from the genome.

CRISPRs (Clustered Regularly Interspaced Short Palindromic Repeats)

In recent years, the introduction of programmable nucleases has greatly increased the efficiency of targeted GE. Programmable nucleases can be classified into four main classes: "Meganucleases (MN), Zinc finger nucleases (ZFN), ranscription activator-like effector nucleases (TALE) and CRISPR-Cas". The function of all these tools involves identifying and binding specifically to the target DNA and then creating a two-strand cut (DSB) in it. In the first three classes, the DNA identification part is made of protein. As a result, the use of these systems is very difficult, time consuming and costly due to the need for protein design and engineering in any experiment. While in the Cas-CRISPR, the target DNA identification part is RNA. As a result, this system is very fast, simple and cheap. Cas-CRISPR is an acquired bacterial immune system protect their genomes from invading nucleic acids through cutting the foreign DNA and was first discovered in the genome of Escherichia coli in 1987(Jinek et al. 2012; Hwang et al. 2013). However, the biological characteristics of CRISPRs were remained vague until 2005. The working principle of CRISPRs, which accelerated genome engineering studies and revolutionized plant biotechnology, is based on RNA-mediated nucleases (Bortesi and Fischer, 2015). CRISPR/Cas9 as an efficient GE tool (Corte et al., 2019; Kaur et al., 2021) is the most widely used system discovered in Streptococcus pyogenes (Rani et al. 2016; Nejat et al. 2016).

The CRISPR/Cas9 gene-editing method has been used in approximately 20 plant species for various properties, especially yield improvement and biotic and abiotic stress management (Ricroch et al., 2017). Most of the papers in this concept are proof-of-concept studies because they suggest that the CRISPR/Cas9 system is implemented by disabling certain genes that play significant roles in biotic or abiotic stress tolerance mechanisms.

In the CRISPR system, there is a single RNA called "single guide RNA", which is formed by combining the 3' region of the CRISPR-RNA and the 5' end of the trans-activating CRISPR-RNA (Bortesi and Fischer, 2015). In this way, to advantage of CRISPR technology, DNA endonuclease called Cas9 and a 20 nucleotide RNA sequence designed according to which region in the genome will be targeted is sufficient. By binding Cas9 and sgRNA to the target region in the DNA, a protein (Cas 9) - RNA (SgRNA) - DNA (genomic DNA) complex is formed and lead to occurring double-strand breaks in the target region (Fichtner et al. 2014; Schaeffer and Nakata, 2015). The only prerequisite for the recognition of the target region and for the Cas9/sgRNA complex to cut on DNA is the necessity of the presence of an NGG sequence named PAM at the 3' end of the target region (Gasiunas et al. 2012; Mahfouz et al. 2014).

The existence of three different types of CRISPR/Cas systems is derived from having different CAS proteins.

The most widely used system is Type II of CRISPR/Cas (e.g. from Streptococcus pyogenes) which requires only a single protein, the CRISPR associated protein 9 (Cas9), while, the other type systems, need a multi-CAS protein for binding (Nam et al., 2012; Rouillon et al., 2013).
The most important advantages of the method are the ease of the preparation of CRISPR vectors and no need for Cas9 nuclease to be dimerized for the cutting process. Cas9 recognizes the target DNA according to the Watson-Crick base pairing between the guiding sgRNA and the target sequence (Ding et al. 2016). In this way, there is no need to prepare two separate structures as in ZFN (Zinc Finger Nucleases) and TALEN (Transcription Activator Like Effector Nucleases).
To date, the genomes of many plants have been modified using CRISPR technology. Among these plants, there are modified horticultural plant species such as tomato (Cermak et al., 2015; Pan et al., 2016;), cucumber (Chandrasekaran et al. 2016), grapevine (Wang et al. 2016; Ren et al. 2016; Malnoy et al.. 2016), apple (Nishitani et al. 2016; Malnoy et al. 2016), sugar orange (Jia and Wang, 2014), lemon (Jia et al. 2017), watermelon (Tian et al., 2017), citrus (Zhang et al., 2017), banana (Chen et al., 2016), kiwifruit (Wang et al., 2018), pear (Charrier et al., 2019) which are important agricultural products.
There are also studies to increase the quality of products through CRISPR. Ito et al. (2015) successfully created mutations in the RIN gene in tomatoes using CRISPR in their study. Silencing the RIN gene, which is associated with fruit ripening, increased shelf life in tomatoes. To achieve more precise and effective genome editing, the studies on the optimization of CRISPR technology continue, and every day, a new study is added to the genome engineering studies using the CRISPR system.
Some application areas and advantages of CRISPR technology can be listed as follows:
a) By using more than one sgRNA with CRISPR, more than one gene can be targeted simultaneously in the genome (multiplex genome engineering). (Cong et al. 2013; Wang et al. 2015; Schaeffer and Nakata, 2016; Weeks et al. 2016; Zhang et al. 2016a).

b) Deletions can be created in the genome of the organism with the CRISPR system (Jia and Wang, 2014; Zhou et al. 2014).

c) Although it is possible to add a DNA fragment via HDR (Homology Directed Recombination) to the desired region in the plant genome with the CRISPR system (Schiml et al. 2014), the number of studies in which this has been achieved is very few (Ma et al. 2016). In the reported publications, attempts were made to silence a gene in the plant's own genome by destroying it.

d) Owing to the CRISPR system biallelic can be provided in the genome of the organism which can be transferred to the next generations and heterozygous and homozygous mutations can be created without undergoing any changes in the first generation (Zhang et al. 2016b). This makes it possible to obtain phenotypic mutations in the first generation, especially in woody plants with a long juvenile period (Ma et al. 2016).

e) The CRISPR system can be used to improve desired traits such as yield, nutrient content, structure, disease resistance, and adaptation to stress conditions in plants. For example, a wheat mutant was obtained to be resistant to Downy mildew through simultaneous knock-out of TaMLO homologs "in A, B, and D genomes" by TALENs (Ma et al. 2016; Schaeffer and Nakata, 2016).

f) Achieving information about the plant genes involved in metabolic and developmental pathways can be applied by CRISPR technology (Mao et al. 2013; Weeks et al. 2016).

g) Owing to the CRISPR the manipulating metabolic pathways and consequently controlling the gene expression in plants is possible (Qi et al. 2013; Alagöz et al. 2016).

h) Since the CRISPR system is insensitive to DNA methylation, genomic regions under epigenetic regulation can also be edited (Lowder et al. 2015).

i) Oils containing MUFA/PUFA were obtained from various horticultural crops such as tomatoes, olives, and cucumbers with CRISPR/Cas technology. This modern technology makes it possible to change the nutrient content of plants.

In 2017, the FDA approved the marketing of CRISPR-modified camelina plant (Camelina sativa) and dry-tolerant soybean (Gylicine max) plants, thereafter, studies suggested that plants edited with CRISPR/Cas are not considered as GMO plants (Waltz, 2018, Kim and Kim, 2016). Studies have shown that thanks to the ability of Cas9 and sgRNA to be sent into the cell as protein and RNA, interorganismal gene transfer and possible problems caused by this, which is one of the main causes of concern in GMOs (Genetically Modified Organisms), can be prevented (Akbudak and Kontbay, 2017). However, human-environment relations must be subjected to the necessary tests to minimize the likely risks of all products obtained by gene modification.

Applications of CRISPR-Cas9 in fruit crops

In the breeding of fruit crops, both induced and spontaneous mutations have been usually used to achieve genetic resources with diverse attributes (Boglioli et al., 2015). Model systems and staple crops have been recently used in most genome-editing studies on plants (Nekrasov et al., 2013; Shan et al., 2013), however, the application of GE in horticultural crops is quickly increasing (Karkute et al., 2017). Marker/reporter genes are commonly used as targets in horticultural crops to improve qualities through CRISPR/Cas9 system. The mutations on Phytoene desaturase (PDS) results in an albino phenotype such as apple (Nishitani et al., 2016; Charrier et al., 2019), grapes (Nakajima et al., 2017), banana (Kaur et al., 2018), kiwifruit (Wang et al., 2018), strawberry (Wilson et al., 2019), and pear (Charrier et al., 2019). The PDS gene was applied in Lilium with effective alteration of LpPDS gene into two Lilium populations leading to three mutants, entirely albino, albino green, and pale-yellow (Yan et al., 2019).

CRISPR-Cas9 has also been successfully applied to several horticultural crops, including tomato, strawberry, banana, grape, apple, watermelon, kiwifruit, and citrus.

The first study on the application of the CRISPR-Cas9 system in tomatoes knocked out argonaute 7 and lead to wiry phenotypes, in which the first leaves had leaflets without petioles and next formed leaves lacking laminae (Brooks et al., 2014). In another study in tomato, different developmental genes such as short root (Ron et al., 2014), blade on the petiole (Xu et al., 2016), self-pruning (SP), and SP5G (Soyk et al., 2017) were targeted by CRISPR/Cas9 to validate their function. CRISPR/Cas9 was applied for regulating the tomato fruit ripening via desired mutations in RIN gene (Ito et al., 2015).

In strawberry, Zhou et al., (2018) it was targeted to auxin biosynthesis gene TAA1 and auxin response factor 8 (ARF8) mutate which were successfully done by high-efficiency GE in the wild strawberry Fragaria vesca.

A successful mutation is also reported by Kaur et al., (2018) phytoene desaturase (RAS-PDS) of banana cv. Rasthali using the CRISPR/Cas9 system. In another study in bananas, the MaGA0ox2 gene was induced to be mutated to achieve dwarfism via gene editing tools (Chen et al., 2016).

In the first study in the grape (Vitis vinifera L., cv. Neo Muscat), successful mutagenesis using the CRISPR/Cas9 system was reported by Nakajima et al., (2017). Later, Wang et al., (2018) knockout the VvWRKY52 via this system to increase the resistance mutant to Botrytis cinerea.

In apple, the CRISPR/Cas9 system was used to induce a targeted gene mutation in the endogenous apple phytoene desaturase (PDS) (Nishitani et al., 2016). Later, Charrier et al (2019) used two different single guided RNAs to edit the apple TFL1 via the same method. The precise GE tool is also led to obtaining new mutants in watermelon by CRISPR/Cas9 system (Tian et al., 2017).

Achieving to albino phenotype in kiwifruit became easy by CRISPR/Cas9 system via inducing mutations in plantlets regenerated from the G418-resistance callus lines (Wang et al., 2018). Successful mutagenesis in the PDS gene with 100% efficiency is also reported in citrus by YAO promoter of Arabidopsis using CAS9 (Zhang et al., 2017).

The insufficient information of genome in some ornamental species and their less economic importance are the reason for limited studies on the application of CRISPR/Cas9 system (Kishi-Kaboshi et al., 2018), however, CRISPR/Cas9 technique has the potential to be applied for improving the genetic quality in the ornamental plant. Multiple MADS genes in the Phalaenopsis orchid were targeted using CRISPR/Cas9 techniques (Lin et al., 2016). The flower longevity in the petunia (Petunia hybrida cv. Mirage Rose) was targeted by modifying PhACO1 gene using CRISPR/Cas9 which led to superior mutants compared to wild-type lines (Xu et al., 2019).

Conclusions

The increasing development of any new technology such as the CRISPR system requires more careful attention. Over the last two years, research on the CRISPR system has taken important steps in the evolution of the genome engineer. Optimizing the various components of the CRISPR system has made it possible to reduce misplaced cuts without altering the specific cutting activity. The use of new generation genome editing techniques in plant breeding, which we can describe as the third revolution, offers a faster, cheaper, and safer alternative to conventional breeding methods and currently used biotechnological methods.

Considering that the new generation genome editing techniques have a short history, it is obvious that they have a high development capacity and a wide innovation potential in the field of breeding. The CRISPR method allows the desired arrangements to be made in the genome without the need for any gene transfer to increase yield and quality and to provide resistance to diseases, pests, and abiotic stresses. CRISPR/Cas-driven genome editing has opened up new horizons in sciences especially in horticultural research leading to exceptional and rapid successes in crop biotechnology. Increasing yield and crop quality by improving nutritional content profile in horticultural crops can be achieved by using gene-editing techniques inducing efficient, precise, and targeted mutagenesis. The studies confirmed that CRISPR/Cas9 is a multipurpose genome-editing tool and can be potentially applied in plant breeding programs. Due to the advantages of this system, the number of studies based on genome editing in horticulture has extremely increased and become dominant in applied science. The genes which are targeted by genome editing have very different functions, however, the focus of most studies are on targets affecting development, followed by targets affecting metabolism and stress responses. Consequently, CRISPR/Cas9 system as an important technique is of interest for researchers to achieve improvements in plant breeding by targeting the desired genes.

References

Akbudak, M. A., & Kontbay, K. (2017). Yeni Nesil Genom Düzenleme Teknikleri: ZFN, TALEN, CRISPR'lar ve Bitkilerde Kullanımı. Tarla Bitkileri Merkez Araştırma Enstitüsü Dergisi, 26(1), 111-126.

Alagoz, Y., Gurkok, T., Zhang, B., & Unver, T. (2016). Manipulating the biosynthesis of bioactive compound alkaloids for next-generation metabolic engineering in opium poppy using CRISPR-Cas 9 genome editing technology. Scientific reports, 6(1), 1-9.

Boglioli, E., & Richard, M. (2015). Rewriting the book of life: a new era in precision gene editing. Boston Consulting Group (BCG).

Bortesi, L., & Fischer, R. (2015). The CRISPR/Cas9 system for plant genome editing and beyond. Biotechnology advances, 33(1), 41-52.

Brooks, C., Nekrasov, V., Lippman, Z. B., & Van Eck, J. (2014). Efficient gene editing in tomato in the first generation using the clustered regularly interspaced short palindromic repeats/CRISPR-associated9 system. Plant physiology, 166(3), 1292-1297.

Cermak, T., Baltes, N. J., Čegan, R., Zhang, Y., & Voytas, D. F. (2015). High-frequency, precise modification of the tomato genome. Genome biology, 16(1), 1-15.

Chandrasekaran, J., Brumin, M., Wolf, D., Leibman, D., Klap, C., Pearlsman, M., ... & Gal-On, A. (2016). Development of broad virus resistance in non-transgenic cucumber using CRISPR/Cas9 technology. Molecular plant pathology, 17(7), 1140-1153.

Charrier, A., Vergne, E., Dousset, N., Richer, A., Petiteau, A., & Chevreau, E. (2019). Efficient targeted mutagenesis in apple and first time edition of pear using the CRISPR-Cas9 system. Frontiers in plant science, 10, 40.

Chen, J., Xie, J., Duan, Y., Hu, H., Hu, Y., & Li, W. (2016). Genome-wide identification and expression profiling reveal tissue-specific expression and differentially-regulated genes involved in gibberellin metabolism between Williams banana and its dwarf mutant. BMC plant biology, 16(1), 1-18.

Cong, L., Ran, F. A., Cox, D., Lin, S., Barretto, R., Habib, N., ... & Marraffini, L. A. 2013) Multiplex genome engineering using CRISPR/Cas systems. Science, 339(6121), 819-823.

Corte, E. D., M Mahmoud, L., S Moraes, T., Mou, Z., W Grosser, J., & Dutt, M. (2019). Development of improved fruit, vegetable, and ornamental crops using the CRISPR/Cas9 genome editing technique. Plants, 8(12), 601.

Ding, Y., Li, H., Chen, L. L., & Xie, K. (2016). Recent advances in genome editing using CRISPR/Cas9. Frontiers in plant science, 7, 703.

Fichtner, F., Castellanos, R. U., & Ülker, B. (2014). Precision genetic modifications: a new era in molecular biology and crop improvement. Planta, 239(4), 921-939.

Gasiunas, G., Barrangou, R., Horvath, P., & Siksnys, V. (2012). Cas9–crRNA ribonucleoprotein complex mediates specific DNA cleavage for adaptive immunity in bacteria. Proceedings of the National Academy of Sciences, 109(39), E2579-E2586.

Hwang, W. Y., Fu, Y., Reyon, D., Maeder, M. L., Tsai, S. Q., Sander, J. D., ... & Joung, J. K. (2013). Efficient genome editing in zebrafish using a CRISPR-Cas system. Nature biotechnology, 31(3), 227-229.

Ishino, Y., Shinagawa, H., Makino, K., Amemura, M., & Nakata, A. (1987). Nucleotide sequence of the iap gene, responsible for alkaline phosphatase isozyme conversion in Escherichia coli, and identification of the gene product. Journal of bacteriology, 169(12), 5429-5433.

Ito, Y., Nishizawa-Yokoi, A., Endo, M., Mikami, M., & Toki, S. (2015). CRISPR/Cas9-mediated mutagenesis of the RIN locus that regulates tomato fruit ripening. Biochemical and Biophysical Research Communications, 467(1), 76-82.

Jia, H., & Wang, N. (2014). Targeted genome editing of sweet orange using Cas9/sgRNA. PloS one, 9(4), e93806.

Jia, H., Zhang, Y., Orbović, V., Xu, J., White, F. F., Jones, J. B., & Wang, N. (2017). Genome editing of the disease susceptibility gene Cs LOB 1 in citrus confers resistance to citrus canker. Plant biotechnology journal, 15(7), 817-823.

Jinek, M., Chylinski, K., Fonfara, I., Hauer, M., Doudna, J. A., & Charpentier, E. (2012). A programmable dual-RNA–guided DNA endonuclease in adaptive bacterial immunity. science, 337(6096), 816-821.

Karkute, S. G., Singh, A. K., Gupta, O. P., Singh, P. M., & Singh, B. (2017). CRISPR/Cas9 mediated genome engineering for improvement of horticultural crops. Frontiers in plant science, 8, 1635.

Kaur, H., Pandey, D. K., Goutam, U., & Kumar, V. (2021). CRISPR/Cas9-mediated genome editing is revolutionizing the improvement of horticultural crops: Recent advances and future prospects. Scientia Horticulturae, 289, 110476.

Kaur, N., Alok, A., Kaur, N., Pandey, P., Awasthi, P., & Tiwari, S. (2018). CRISPR/Cas9-mediated efficient editing in phytoene desaturase (PDS) demonstrates precise manipulation in banana cv. Rasthali genome. Functional & integrative genomics, 18(1), 89-99.

Kim, J., & Kim, J. S. (2016). Bypassing GMO regulations with CRISPR gene editing. Nature biotechnology, 34(10), 1014-1015.

Kishi-Kaboshi, M., Aida, R., & Sasaki, K. (2017). Generation of gene-edited Chrysanthemum morifolium using multicopy transgenes as targets and markers. Plant and Cell Physiology, 58(2), 216-226.

Lin, C. S., Hsu, C. T., Liao, D. C., Chang, W. J., Chou, M. L., Huang, Y. T., ... & Shih, M. C. (2016). Transcriptome-wide analysis of the MADS-box gene family in the orchid E rycina pusilla. Plant biotechnology journal, 14(1), 284-298.

Lowder, L. G., Zhang, D., Baltes, N. J., Paul III, J. W., Tang, X., Zheng, X., ... & Qi, Y. (2015). A CRISPR/Cas9 toolbox for multiplexed plant genome editing and transcriptional regulation. Plant physiology, 169(2), 971-985.

Ma, X., Zhu, Q., Chen, Y., & Liu, Y. G. (2016). CRISPR/Cas9 platforms for genome editing in plants: developments and applications. Molecular plant, 9(7), 961-974.

Mahfouz, M. M., Piatek, A., & Stewart Jr, C. N. (2014). Genome engineering via TALENs and CRISPR/Cas9 systems: challenges and perspectives. Plant biotechnology journal, 12(8), 1006-1014.

Malnoy, M., Viola, R., Jung, M. H., Koo, O. J., Kim, S., Kim, J. S., ... & Nagamangala Kanchiswamy, C. (2016). DNA-free genetically edited grapevine and apple protoplast using CRISPR/Cas9 ribonucleoproteins. Frontiers in plant science, 7, 1904.

Mao, Y., Zhang, H., Xu, N., Zhang, B., Gou, F., & Zhu, J. K. (2013). Application of the CRISPR–Cas system for efficient genome engineering in plants. Molecular plant, 6(6), 2008.

Mucci, A., & Hough, G. (2004). Perceptions of genetically modified foods by consumers in Argentina. Food Quality and Preference, 15(1), 43-51.

Nakajima, I., Ban, Y., Azuma, A., Onoue, N., Moriguchi, T., Yamamoto, T., ... & Endo, M. (2017). CRISPR/Cas9-mediated targeted mutagenesis in grape. PLoS One, 12(5), e0177966.

Nam, K. H., Haitjema, C., Liu, X., Ding, F., Wang, H., DeLisa, M. P., & Ke, A. (2012). Cas5d protein processes pre-crRNA and assembles into a cascade-like interference complex in subtype IC/Dvulg CRISPR-Cas system. Structure, 20(9), 1574-1584.

Nejat, N., Rookes, J., Mantri, N. L., & Cahill, D. M. (2017). Plant–pathogen interactions: toward development of next-generation disease-resistant plants. Critical reviews in biotechnology, 37(2), 229-237.

Nekrasov, V., Staskawicz, B., Weigel, D., Jones, J. D., & Kamoun, S. (2013). Targeted mutagenesis in the model plant Nicotiana benthamiana using Cas9 RNA-guided endonuclease. Nature biotechnology, 31(8), 691-693.

Nishitani, C., Hirai, N., Komori, S., Wada, M., Okada, K., Osakabe, K., ... & Osakabe, Y. (2016). Efficient genome editing in apple using a CRISPR/Cas9 system. Scientific reports, 6(1), 1-8.

Pan, C., Ye, L., Qin, L., Liu, X., He, Y., Wang, J., ... & Lu, G. (2016). CRISPR/Cas9-mediated efficient and heritable targeted mutagenesis in tomato plants in the first and later generations. Scientific reports, 6(1), 1-9.

Qi, L. S., Larson, M. H., Gilbert, L. A., Doudna, J. A., Weissman, J. S., Arkin, A. P., & Lim, W. A. (2013). Repurposing CRISPR as an RNA-guided platform for sequence-specific control of gene expression. Cell, 152(5), 1173-1183.

Rani, R., Yadav, P., Barbadikar, K. M., Baliyan, N., Malhotra, E. V., Singh, B. K., ... & Singh, D. (2016). CRISPR/Cas9: a promising way to exploit genetic variation in plants. Biotechnology letters, 38(12), 1991-2006.

Ravichandra, N. G. (2014). Horticulture and its role in the national economies. In Horticultural Nematology (pp. 1-3). Springer, New Delhi.

Ren, C., Liu, X., Zhang, Z., Wang, Y., Duan, W., Li, S., & Liang, Z. (2016). CRISPR/Cas9-mediated efficient targeted mutagenesis in Chardonnay (Vitis vinifera L.). Scientific reports, 6(1), 1-9.

Ricroch, A., Clairand, P., & Harwood, W. (2017). Use of CRISPR systems in plant genome editing: toward new opportunities in agriculture. Emerging Topics in Life Sciences, 1(2), 169-182.

Ron, M., Kajala, K., Pauluzzi, G., Wang, D., Reynoso, M. A., Zumstein, K., ... & Brady, S. M. (2014). Hairy root transformation using Agrobacterium rhizogenes as a tool for exploring cell type-specific gene expression and function using tomato as a model. Plant physiology, 166(2), 455-469.

Rouillon, C., Zhou, M., Zhang, J., Politis, A., Beilsten-Edmands, V., Cannone, G., ... & White, M. F. (2013). Structure of the CRISPR interference complex CSM reveals key similarities with cascade. Molecular cell, 52(1), 124-134.

Schaeffer, S. M., & Nakata, P. A. (2015). CRISPR/Cas9-mediated genome editing and gene replacement in plants: transitioning from lab to field. Plant Science, 240, 130-142.

Schaeffer, S. M., & Nakata, P. A. (2016). The expanding footprint of CRISPR/Cas9 in the plant sciences. Plant Cell Reports, 35(7), 1451-1468.

Schiml, S., Fauser, F., & Puchta, H. (2014). The CRISPR/C as system can be used as nuclease for in planta gene targeting and as paired nickases for directed mutagenesis in A rabidopsis resulting in heritable progeny. The Plant Journal, 80(6), 1139-1150.

Shan, Q., Wang, Y., Li, J., Zhang, Y., Chen, K., Liang, Z., ... & Gao, C. (2013). Targeted genome modification of crop plants using a CRISPR-Cas system. Nature biotechnology, 31(8), 686-688.

Soyk, S., Müller, N. A., Park, S. J., Schmalenbach, I., Jiang, K., Hayama, R., ... & Lippman, Z. B. (2017). Variation in the flowering gene SELF PRUNING 5G promotes day-neutrality and early yield in tomato. Nature Genetics, 49(1), 162-168.

Tian, S., Jiang, L., Gao, Q., Zhang, J., Zong, M., Zhang, H., ... & Xu, Y. (2017). Efficient CRISPR/Cas9-based gene knockout in watermelon. Plant Cell Reports, 36(3), 399-406.

Uzogara, S. G. (2000). The impact of genetic modification of human foods in the 21st century: A review. Biotechnology advances, 18(3), 179-206.

Waltz, E. (2018). With a free pass, CRISPR-edited plants reach market in record time. Nature biotechnology, 36(1), 6-8.

Wang, C., Shen, L., Fu, Y., Yan, C., & Wang, K. (2015). A simple CRISPR/Cas9 system for multiplex genome editing in rice. J Genet Genomics, 42(12), 703-706.

Wang, Y., Liu, X., Ren, C., Zhong, G. Y., Yang, L., Li, S., & Liang, Z. (2016). Identification of genomic sites for CRISPR/Cas9-based genome editing in the Vitis vinifera genome. BMC plant biology, 16(1), 1-7.

Wang, Z., Wang, S., Li, D., Zhang, Q., Li, L., Zhong, C., ... & Huang, H. (2018). Optimized paired-sgRNA/Cas9 cloning and expression cassette triggers high-efficiency multiplex genome editing in kiwifruit. Plant biotechnology journal, 16(8), 1424-1433.

Weeks, D. P., Spalding, M. H., & Yang, B. (2016). Use of designer nucleases for targeted gene and genome editing in plants. Plant Biotechnology Journal, 14(2), 483-495.

Wilson, F. M., Harrison, K., Armitage, A. D., Simkin, A. J., & Harrison, R. J. (2019). CRISPR/Cas9-mediated mutagenesis of phytoene desaturase in diploid and octoploid strawberry. Plant methods, 15(1), 1-13.

Xu, C., Park, S. J., Van Eck, J., & Lippman, Z. B. (2016). Control of inflorescence architecture in tomato by BTB/POZ transcriptional regulators. Genes & development, 30(18), 2048-2061.

Xu, J., Kang, B. C., Naing, A. H., Bae, S. J., Kim, J. S., Kim, H., & Kim, C. K. (2020). CRISPR/Cas9-mediated editing of 1-aminocyclopropane-1-carboxylate oxidase1 enhances Petunia flower longevity. Plant biotechnology journal, 18(1), 287-297.

Yan, R., Wang, Z., Ren, Y., Li, H., Liu, N., & Sun, H. (2019). Establishment of efficient genetic transformation systems and application of CRISPR/Cas9 genome editing technology in Lilium pumilum DC. Fisch. and Lilium longiflorum White Heaven. International journal of molecular sciences, 20(12), 2920.

Zhang, F., LeBlanc, C., Irish, V. F., & Jacob, Y. (2017). Rapid and efficient CRISPR/Cas9 gene editing in Citrus using the YAO promoter. Plant cell reports, 36(12), 1883-1887.

Zhang, F., LeBlanc, C., Irish, V. F., & Jacob, Y. (2017). Rapid and efficient CRISPR/Cas9 gene editing in Citrus using the YAO promoter. Plant cell reports, 36(12), 1883-1887.

Zhang, Y., Liang, Z., Zong, Y., Wang, Y., Liu, J., Chen, K., ... & Gao, C. (2016a). Efficient and transgene-free genome editing in wheat through transient expression of CRISPR/Cas9 DNA or RNA. Nature communications, 7(1), 1-8.

Zhang, Z., Mao, Y., Ha, S., Liu, W., Botella, J. R., & Zhu, J. K. (2016b). A multiplex CRISPR/Cas9 platform for fast and efficient editing of multiple genes in Arabidopsis. Plant cell reports, 35(7), 1519-1533.

Zhou, H., Liu, B., Weeks, D. P., Spalding, M. H., & Yang, B. (2014). Large chromosomal deletions and heritable small genetic changes induced by CRISPR/Cas9 in rice. Nucleic acids research, 42(17), 10903-10914.

Zhou, J., Wang, G., & Liu, Z. (2018). Efficient genome editing of wild strawberry genes, vector development and validation. Plant biotechnology journal, 16(11), 1868-1877.

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SECONDARY METABOLITES IN TEREBINTH (Pistacia terebinthus L.) AND THEIR APPLICATIONS

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Abstract
Terebinth (Pistacia terebinthus L.,) is a deciduous plant that belongs to Pistacia genus from the Anacardiaceae family. Terebinth has been applied aromatic plant in folk medicine as well as a food source from time immemorial to the present. The roasted fruits have been consumed by people as a snack or as a coffee. Terebinth is a unique source of vitamins, minerals, crude proteins, organic acids, fiber, and antioxidants. The leaf extract of terebinth has antioxidant, antimicrobial, and cytotoxic properties. These healthy aspects of terebinth derive from its secondary metabolites such as flavonoid, phenolic, and alkaloid contents. The main flavonoid compounds such as luteolin, luteolin-7-glucoside, and apigenin-7-glucoside were detected in the methanolic extract of terebinth. The fruits of terebinth are rich in terpenes including alpha-pinene tocopherols and carboxylic phenol acids. Caffeoylquinic acids a group of phenolic compounds found in high content in terebinth shows antioxidant, antibacterial, anticancer, and antihistaminic properties. However, the antioxidant activity of phenolic compounds proved owing to the presence of hydroxyl groups reacting with free radicals. Phenolic compounds are also involved in plant physiology pathways such as lignification, regulation of growth, and interactions with certain microorganisms or parasites. Terebinth fruits are also characterized as a good source of unsaturated fatty acids which are a part of a healthy diet aiding to reduce the risk of heart disease and lowering cholesterol levels.
Keywords: Terebinth (Pistacia terebinthus L.), phenolics, antioxidant activity

Introduction
Pistacia terebinthus L., as a member of Pistacia genus, belongs to the Anacardiaceae family. P. terebinthus is one of the 20 Pistacia species distributed throughout the Mediterranean region and Asia (Guney et al., 2021). This plant is known with different vernacular names as Çitlenbik, sakizlak, menengiç and çedene in the Southern and Western parts of Turkey (Yesilada et al. 1995; Tuzlacı and Aymaz 2001). P. terebinthus is a shrubby and deciduous species with a small tree structure. Wild Pistacia species are mainly cultivated as rootstocks (P. integerrima, P. mutica, and P. terebinthus) or pollinators for cultivated pistachio (P. terebinthus) in orchards.

Terebinth coffee with the local name of ‘‘menengic coffee’’ is one of the most proffered herbal coffees in Turkey. Terebinth coffee is an oily brown-colored powder obtained from the dried and roasted fruits of the terebinth or turpentine tree (Bellifa et al., 2021). Fresh or cooked leaves of the tree are also consumed (Ulukanli et al., 2012). The fruit of terebinth tastes sour and is dark green and is applied in making pickles and buttermilk and animal oil fragrant. Terebinth as an alternative medicinal plant and food is a rich source of vitamins, minerals, crude proteins, organic acids, fiber, and antioxidants. The plant also is used in industry as dye materials, textiles, cosmetics, pharmaceuticals, food, paper, and plastics (Guney et al., 2021). The acceptable levels of A, B, and D vitamins make the terebinth a good nerve tonic. The fruits of terebinth have a strong antioxidant effect due to the high content of vitamin E and possibly prevent cancer risks by naturalizing free radicals energy (Kavak et al., 2010). Moreover, the antibiotic characteristic of fruits disturbs the destructive effects of bacteria on the body and maintenance the health (Kaveh et al., 2015;2018).
Different parts of the P. terebinthus L. are consumable and have several biological activities and ethnopharmacological utilizations and contribute critical benefits with priceless potentialities to the Mediterranean life (Yesil et al., 2019). The terebinth had a significant place in traditional medicine since Antiquity and yet is used in the treatment of many diseases and has stimulants, diuretics, and astringent properties. The oil of dried fruits also has medicinal applications. The fruits are both used in a fresh and mixed form to prepare certain pastries, dishes (Red Tirshyat) coffees, and drinks, especially in Turkey (Karacan and Cagran, 2009). Menengic extract is in demand as a soap raw material as well as in the preparation of foods in southern regions of Turkey. Since the resin of the tree is fragrant, it is prepared as a folk medicine in the content of perfumes, stomach disorders, and respiratory system diseases due to its germ-breaking properties (Baytop, 1999). All these miraculous effects of terebinth owe to phytochemical content called secondary metabolites.

Secondary metabolites in P. terebinthus

Secondary metabolites are low-molecular-weight organic compounds synthesized by plants that commonly have biological activities and are valuable as pharmaceuticals, fragrances, flavorings, and insecticides (Goossens et al., 2003). Secondary metabolites usually are secreted in plants during critical conditions as a self-defense mechanism against pests, diseases, environmental stresses such as cold, heat, and dehydration besides normal metabolism pathways for daily life such as lignifications and regulation of growth. Plants produce three main classes of secondary metabolites including terpenoid/isoprenoid, phenolic, and nitrogen/sulfur-containing compounds. Secondary metabolites are constructed from primary metabolisms like TCA cycle, amino acids, glycolysis, pentose phosphate, and shikimate pathways (Pott et al., 2019). However, the presence of secondary metabolites in horticultural plants plays a significant role in the quality of crops such as color, taste, aroma, and healthy nutritional content; consequently, affects their marketability (Urek et al., 2021). Therefore, secondary metabolites are important targets for breeding programs in horticulture and medicinal plants, and their biosynthetic pathways are a topic for many studies. P. terebinthus as a good source of these valuable content involves in biological activities and is used traditional treatment of asthma, bronchitis, and burns. The best way for detecting secondary metabolites in plants and determination of their quantities are chromatographic methods by using HPLC (High-Pressure Liquid Chromatography) and different techniques of gas chromatography.

The fruits of terebinth contain flavonoids detected by HPLC such as apigenin, luteolin, luteolin 7-O-glucoside, quercetin, and kaempferol which may play a significant role in enzyme activities. Luteolin-7-glycoside and its aglycon, luteolin, inhibit DNA topoisomerase I by binding to it (Galvez et al., 2003; Chowdhury et al., 2002). Tadera et al., (2006) also reported that the luteolin content of P. terebinthus was a potent inhibitor of α-glucosidase because of the –OH group and the hydroxyl substitution on the ring in its structure. Luteolin and luteolin-7-glucoside in terebinth also have strong anticarcinogenic properties (Kavak et al., 2010). High antioxidant, antimicrobial, anti-inflammatory, and cytotoxic properties of terebinth are due to rich secondary compounds such as a resin (Topcu et al., 2007). The richness in phenolic compounds explains the use of this plant in traditional medicine. However, the presence of secondary metabolites makes the terebinth a good antiviral, antispasmodic, anti-mitotic, hypocholesterolemic, anti-inflammatory, anti-hypertensive, and antimicrobial source (Bellifa et al., 2021).

Phenolic compounds and antioxidant capacity of P. terebinthus

To date, limited studies have been done on the antioxidant activity of the terebinth fruits. Kavak et al., (2010) reported that the leaf extract of P. terebinthus showed significantly higher, approximately 12-fold, antioxidant activity than other synthetic and natural antioxidants such as BHA and ascorbic acid, higher. This high rate may be probably due to the high flavonoid and phenolic compounds content of the crude extract. However, researchers also reported that antioxidant activity of extract also was 10-fold higher than (+)-catechin since the extract also exhibits. The presence of antioxidant compounds in the leaf extract of terebinth may play an effective role in the prevention of cancer by neutralization free radicals which lead to protect cells from their damage (Zarifikhosroshahi et al 2020).

Bellifa et al., (2021) reported that terebinth is very rich in phenolic acids detected in the thin layer chromatography plate which confirms previous studies. Karacan and Cagran (2009), reported that the extract of terebinth fruit contains high levels of terpenes including alpha-pinene tocopherols and carboxylic phenol acids which may be two phenol acids, caffeoylquinic acids. Caffeoylquinic acids are in different forms: 3,5-caffeoylquinic and 4,5-caffeoylquinic, however, NMR analysis is necessary to confirm the exact Structure (Karacan and Cagran, 2009; Ulukanli et al., 2014).

Antimicrobial activity of P. terebinthus

The extracts of different parts of P. terebinthus L.show strong antimicrobial activity against some pathogen microorganisms derived from secondary metabolites content. Coban et al., (2017) reported that the methanolic extract of P. terebinthus L. fruits was effective against tested bacterial pathogens such as Escherichia coli, Staphylococcus aureus, Salmonella typhimurium, Mycobacterium smegmatis, Corynebacterium Xerosis. However, the ethyl acetate extract of P. terebinthus L. fruits was more effective on a wider spectrum than methanolic extracts for releasing secondary metabolites like tannins, alkaloids, and flavonoids (Coban et al., 2017).

Kavak et al., (2010) also reported that the leaf extract of P. terebinthus had an antimicrobial effect on gram-positive bacteria S. aureus while did not affect gram-negative E. coli. Durak and Ucak (2015) also reported that the fruits of P. terebinthus L. were more effective on Listeria monocytogenes and Salmonella typhimurium were more than E. coli and S. aureus.

Pulaj et al., (2016) also reported that P. terebinthus essential oils were effective against Staphylococcus aureus.

The inefficiency of P. terebinthus on gram-negative bacteria such as E. coli is related to the structure of the cell wall. In gram-negative bacteria outer membrane is lipopolysaccharide, and molecules are transferred through the porins in the cell membrane. The alterations in an outer membrane porin decrease the ability of antimicrobial in penetrating the outer plasma membrane and reaching the site of action (Kacar, 2008). The flavonoids present in leaf extract possibly could not pass from the cell membrane (Kavak et al., 2010).

Erturk et al., (2020) also reported that essential oil extracts of 7 different commercially produced P. terebinthus plants collected from different regions of Turkey showed a remarkable antimicrobial effect on bacteria and fungi. The essential oils of these menengic plants had antibacterial effects against S. enterictidis and B. cereus bacteria with zone diameters of 12.57-9.23 and 10.86-8.08 mm, respectively, while it showed little effect against A. niger and C. albicans fungi (Erturk et al., 2020).

Conclusions

Molecules involved in defense mechanisms in plants are known as secondary metabolites. Secondary metabolites are categorized into three groups including terpenoids, phenolic acids, and nitrogen/sulfur-containing compounds. The antioxidant capacity of horticultural crops is positively correlated with the total phenolic compounds and anthocyanin content. Terebinth is a good source of secondary metabolites especially phenolic compounds and tannin. Many studies have been done on antimicrobial, antifungal, and antioxidant activities of terebinth which is widely used in folk medicine. However, the exact profile of phenolic compounds and the compounds responsible for these unique properties need to be more studied. There is also a lack of study on breeding programs to increase the quality of secondary metabolites in terebinth and extract these unique compounds for pharmacological application.

References

Baytop T. 1999. Turkiye'de Bitkilerle Tedavi. 2. Baskı. İstanbul: Nobel Tıp Kitabevi, 302-304.

Bellifa, N., Benhaddou, A. I., Ferkous, H. E., Selka, M. A., Toumi, H., & Achouri, M. Y. (2021). Antioxidant activity and polyphenol composition of Pistacia terebinthus fruit from Tessala (Western Algeria). The North African Journal of Food and Nutrition Research, 5(11), 30-34.

Chowdhury, A. R., Sharma, S., Mandal, S., Goswami, A., Mukhopadhyay, S., & Majumder, H. K. (2002). Luteolin, an emerging anti-cancer flavonoid, poisons eukaryotic DNA topoisomerase I. Biochemical Journal, 366(2), 653-661.

Coban, E. P., Bıyık, H. H., & Törün, B. (2017). Investigation of Antimicrobial Effects in Different Solvents of Pistacia terebenthus L. Fruits Collected from Aydın. Journal of Applied Biological Sciences, 11(3), 20-22.

Durak, M. Z., and Ucak, G. (2015). Solvent optimization and characterization of fatty acid profile and antimicrobial and antioxidant activities of Turkish Pistacia terebinthus L. extracts. Turkish Journal of Agriculture and Forestry, 39(1), 10-19.

Erturk, O., Aydin, G., and Ayvaz, M. C. (2020). Correlation between in vitro antioxidant and antibacterial activities against some pathogenic bacteria of some essential oils. Acta Biologica Turcica, 33(2), 88-99.

Galvez, M., Martın-Cordero, C., Lopez-Lazaro, M., Cortes, F., & Ayuso, M. J. (2003). Cytotoxic effect of Plantago spp. on cancer cell lines. Journal of ethnopharmacology, 88(2-3), 125-130.

Goossens, A., Häkkinen, S. T., Laakso, I., Seppänen-Laakso, T., Biondi, S., De Sutter, V., ... & Oksman-Caldentey, K. M. (2003). A functional genomics approach toward the understanding of secondary metabolism in plant cells. Proceedings of the National Academy of Sciences, 100(14), 8595-8600.

Guney, M., Kafkas, S., Zarifikhosroshahi, M., Gundesli, M. A., Ercisli, S., & Holubec, V. (2021). Genetic diversity and relationships of terebinth (Pistacia terebinthus L.) genotypes growing wild in Turkey. Agronomy, 11(4), 671.

Kacar, D. (2008). Screening of some plant species for their total antioxidant and antimicrobial activities (Master's thesis, İzmir Institute of Technology).

Karacan, M. S., & Çağran, F. (2009). Multielement Determination in Fruit, Soaps and Coffee of Pistacia Terebinthus L. by ICP-OES. Turkish Journal of Biology, 33(4), 311-318.

Kavak, D. D., Altıok, E., Bayraktar, O., & Ülkü, S. (2010). Pistacia terebinthus extract: As a potential antioxidant, antimicrobial and possible β-glucuronidase inhibitor. Journal of Molecular Catalysis B: Enzymatic, 64(3-4), 167-171.

Kaveh, M., Abbaspour-Gilandeh, Y., Chayjan, R. A., Taghinezhad, E., & Mohammadigol, R. (2018). Mass transfer, physical, and mechanical characteristics of terebinth fruit (Pistacia atlantica L.) under convective infrared microwave drying. Heat and Mass Transfer, 54(7), 1879-1899.

Kaveh, M., Amiri, R. C., & Esna-Ashari, M. (2015). Thermal and physical properties modelling of terebinth fruit (Pistacia atlantica L.) under solar drying. Research in Agricultural Engineering, 61(4), 150-161.

Pott, D. M., Osorio, S., & Vallarino, J. G. (2019). From central to specialized metabolism: an overview of some secondary compounds derived from the primary metabolism for their role in conferring nutritional and organoleptic characteristics to fruit. Frontiers in plant science, 10, 835.

Pulaj, B., Mustafa, B., Nelson, K., Quave, C. L., & Hajdari, A. (2016). Chemical composition and in vitro antibacterial activity of Pistacia terebinthus essential oils derived from wild populations in Kosovo. BMC complementary and alternative medicine, 16(1), 1-9.

Tadera, K., Minami, Y., Takamatsu, K., & Matsuoka, T. (2006). Inhibition of α-glucosidase and α-amylase by flavonoids. Journal of nutritional science and vitaminology, 52(2), 149-153.

Tadera, K., Minami, Y., Takamatsu, K., & Matsuoka, T. (2006). Inhibition of α-glucosidase and α-amylase by flavonoids. Journal of nutritional science and vitaminology, 52(2), 149-153.

Topcu, G., Ay, M., Bilici, A., Sarıkurkcu, C., Ozturk, M., & Ulubelen, A. (2007). A new flavone from antioxidant extracts of Pistacia terebinthus. Food chemistry, 103(3), 816-822.

Tuzlacı, E., & Aymaz, P. E. (2001). Turkish folk medicinal plants, part IV: Gönen (Balıkesir). Fitoterapia, 72(4), 323-343.

Ulukanli, Z., Karabörklü, S., Öztürk, B., Çenet, M., & Balcilar, M. (2014). Chemical Composition, Antibacterial and Insecticidal Activities of the Essential Oil from the P istacia terebinthus L. Spp. Palaestina (B oiss.) (A nacardiaceae). Journal of Food Processing and Preservation, 38(3), 815-822.

Urek, U., Kafkas, S., Zarifikhosroshahi, M., Ozongun, S., Atay, A. N., Aras, S., & Kafkas, N. E. (2021). Characterization of Some Fruit Quality Traits on Apple 'Kaşel-41'×'Williams Pride'F1 Population. Erwerbs-Obstbau, 1-10.

Yesil, Y., Celik, M., & Yilmaz, B. (2019). Wild edible plants in Yeşilli (Mardin-Turkey), a multicultural area. Journal of ethnobiology and ethnomedicine, 15(1), 1-19.

Yesilada, E., Honda, G., Sezik, E., Tabata, M., Fujita, T., Tanaka, T., ... & Takaishi, Y. (1995). Traditional medicine in Turkey. V. Folk medicine in the inner Taurus Mountains. Journal of ethnopharmacology, 46(3), 133-152.

Zarifikhosroshahi, M., Murathan, Z. T., Kafkas, E., & Okatan, V. (2020). Variation in volatile and fatty acid contents among Viburnum opulus L. fruits growing different locations. Scientia Horticulturae, 264, 109160.

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ELECTROENTEROGRAPHY IN EVALUATION MOTOR ACTIVITY OF THE GASTROINTESTINAL TRACT IN PATIENTS WITH INTESTINAL OBSTRUCTION AND PERITONITIS

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ABSTRACT

The results of examination of 114 patients aged 16-70 years (men - 71, women - 43) in the early postoperative period for paralytic ileus that developed after surgery and against the background of generalized peritonitis were analyzed. The motor activity of the stomach and small intestine was monitored using peripheral bioelectrography - using a modified electrogastrograph "EGS-4M". Bioelectrical activity of the stomach (electrogastrography - EGG) and various parts of the small intestine (electroenterography - EEG), which makes it possible to predict the effectiveness of the treatment used and the clinical course of the postoperative period.

Early postoperative treatment included 59 patients in continuous epidural blockade (ThVIII-XII) with fentanyl and local anesthetics in combination with heparin (main group). The control group consisted of 33 patients (conventional methods of treatment).

The results of the studies showed that in the patients of the control group, infrequent motor impulses appeared on the 3-5th day, and on the 8-9th day, the intestinal motility was normalized. On the EEG, the average amplitude of tonic waves (A-tonic) was 0.28-0.34 mV, and sectional waves (A-section.) - 0.056-0.28 mV. The increased EEG voltage was accompanied by a moderate decrease in the frequency of oscillations (RP) per minute: for tonic waves (RP-tonic) - 0.32 - 0.36, for sectional (RP - sec.) - 3., 8-4.68 oscillations in minute. With peritonitis, clear changes in these data were observed on the 15-18th day of treatment. In patients of the main group, pronounced positive changes in the EGG and EEG were noted, followed by their normalization on the 3rd day: A-tonic 0.31-0.33 mV, A-section. - 0.052-0.055 mV.

Thus, the OF-tonic was 0.36-0.37, the OF-section. - 4.2-4.4 vibrations per minute. In patients with peritonitis, normalization of motor activity occurred on the 6th day. This early normalization of the motor functions of the gastrointestinal tract reduces postoperative complications and mortality.

Keywords: paralytic ileus, electroenterography, epidural blockade, fentanyl, local anaestetics

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EFFECT OF IRON DEFICIENCY ANEMIA ON INTELLIGENCE QUOTIENT IN SCHOOL GOING CHILDREN OF PESHAWAR CITY

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ABSTRACT
Iron deficiency anemia (IDA) is a hematological disorder especially in children. Many studies have found association between IDA and cognitive function, but not enough studies were found in children of Peshawar city, Pakistan. Therefore, this study aims to estimate the prevalence of IDA and its effect on intelligence quotient (IQ) in school going children of Peshawar city. 153 children (male and female) of age 7-11 years were included in study. Socio-demographic questionnaire was designed for the collection of data. Blood specimens were collected in ethylenediaminetetraacetic acid (EDTA) and gel tubes. Complete blood count (CBC) was analyzed using fully automatic hematology analyzer (Model Sysmex XP-100, serial no.B2444) in EDTA blood. Ferritin levels were analyzed using chemistry analyzer (Model: Cobas e-6000), by Electro Chemolumensis Immunosorbent Assay (ECLIA) in serum. Raven Colored Progressive Matrices (RCPM) was used for finding IQ of children. Statistical analysis was done using SPSS-22. The prevalence of IDA was found to be 11.7% in children of specified age. The mean IQ, hemoglobin (Hb) and ferritin levels for children having IDA are found to be 9.1±8.01, 11.2±0.33, and 9.6±1.2 respectively. The IQ, Hb, ferritin, hematocrit (HCT), Mean Corpuscular Hemoglobin (MCH), Mean Corpuscular Hemoglobin Concentration (MCHC) decreases significantly with decreasing body mass index (BMI). The IQ reduces with decrease in Hb. The effect of IDA on intelligence of children was found significant in this study.
Keywords: Iron Deficiency Anemia, Intelligence Quotient, Anemia, School Going Children, Peshawar

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THE FINANCIAL PERFORMANCE OF BANKS AND EXTERNAL GOVERNANCE MECHANISMS

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Abstract
It cannot be denied that banks enjoy a dominant position in all economies and that they are the main driver of economic growth. This only serves to reinforce the challenges that supervisors may face, especially in the context of disintermediation, intense competition, excessive risk-taking, deregulation and diversification in which banks operate. Today, this new banking context is also characterized by internationalization fueled by technological progress and recent financial innovations that have been behind better risk management. Added to this is a new banking reality marked by the decommissioning of credits, the liberalization of foreign exchange, the open markets and the increasingly volatile rates that have led to an unprecedented vulnerability of market activities. In addition, the erosion of margins combined with economic deterioration have only increased the risks for these banks. The latter face the enormous challenge of realizing profits from their traditional activities, maintaining their solidity and achieving a satisfactory level of profitability, which explains their increasing risk taking both for intermediation and market activities. The objective of this research is to assess the effect of prudential regulation issued by international regulators on bank performance in a Tunisian context. Empirical validation from a sample of all listed Tunisian commercial banks, observed over a period stretching from 2001 to 2016, shows that the prudential rules applied in the context of the Tunisian banking sector and measured by the solvency ratio and liquidity ratio improve the accounting performance of banks as measured by the return on assets (ROA). We have also shown from a robustness test that prudential regulation measured by the solvency ratio favors accounting performance measured by return on equity (ROE).
Keywords: prudential regulation, banking performance, Tunisian commercial banks
JEL Classifications: C61, F65, G21

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DOES HRIS INCREASES THE ORGANIZATIONAL EFFICIENCY THROUGH EMPLOYEES' PERFORMANCE: THEORETICAL PERSPECTIVE

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Abstract
Organizations have to constantly changing due to the changes around their internal and external environment in order to compete and sustain the business in the competitive conditions of industries. The important factor that can manage this change in the most efficient way is Strategic Human Resources Management, which is one of the human resources and key strategic management processes of the organizations. Information and qualified human resources and related information which are recognized as fundamental and strategic production factors for businesses and organizations in the Big Data age are obtained, produced, arranged, shared and used in strategic management processes through information technologies. This study reviews factors such as growing importance of information and information management systems used to process such information, and its spreading usage in human resources management and increasing efficiency of human resources management information in strategic management processes; and focuses on their impacts on management understanding and human resources management process in big data age. The impacts of emerging new conditions on employee performance are particularly investigated in terms of the usage of Human Resources Information Systems (HRIS). This study recommended that organizations should focus on human resource information system applications in the work environment to achieve positive outcome and maximize employees as well as organizational performance at all levels of operations.
Keywords: Human Resource Information System (HRIS), Employee Performance, Information Management, Organizational Efficiency

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COMPENSATION MANAGEMENT PRACTICES AND FIRM PERFORMNACE: SMALL AND MEDIUM SCALE RICE MILLERS PERSPECTIVES

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Abstract
The objective of this study is to determine how the existing compensation management practices in small businesses could be improved to enhance small business performance especially of Rice millers in Ampara District of Sri Lanka. This study is important to both academic research and policy development because of the significant contribution these businesses could make to economic development, the growth of employment and the generation of new innovations. In most parts of the world small businesses make a sizeable contribution to economic growth and are seen as the means to create jobs for the unemployed. Small businesses account for a significant proportion of world businesses and these small businesses sector is the largest contributor in Gross Domestic Product in Sri Lanka as well. But they perform more in a way that is entirely different from that of the large firms in economy. Among them Human resource practices also taking crucial part. Because the practices and policies adopted by larger firms does not fits perfectly to the small and medium sized enterprises. When considering about the firm performance, compensation practices directly influence and helps the firm to grow. Though there are number of studies aimed towards investigating the relationship between compensation practices and firm performance, there is a research gap with regards to this area. This study was conducted with a sample of 20 SME firms in the district using a questionnaire. Compensation measured through direct and indirect forms. Direct forms of compensation include basic pay, merit pay and incentive pay. Indirect forms include pay for employee vacation, insurance cover, pension plans, and national social security benefits. Firm performance was measured in terms of organizational outcome, such as productivity and quality and financial performance. Correlational and multiple regression analysis were applied to analyzed the data. This study found that there is a significant impact of compensation management practices on SME performance. Human resource is a key success factor behind the SMEs to survival in long run, therefore consider them as a source of competitive advantage and give value according to their real perceived. Firm can use industry benchmarks and competitor market rates when designing compensation system practices for more perofrmnace.
Keywords: Firm Performance; Compensation Management Practices; SMEs; Market Survey

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TRAILBLAZERS: THE ALTERATION OF FREELANCING IN THE NEW NORMAL

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ABSTRACT
The impacts of the COVID-19 pandemic are still being felt across the world, including the non-regular employees. It also had a significant impact, resulting in a severe decrease in economic activity. People became more interested in freelancing throughout the epidemic. However, even before the pandemic, this phenomenon was already gaining ground in the Philippines. The purpose of this paper is to explore the changes produced by the COVID-19 pandemic to freelancers' lives. The phenomenological approach was employed in this study's qualitative research design. Ten people willingly agreed to take part in the interview. They were freelancers before and throughout COVID-19 pandemic. The results indicated that the alterations they encountered were in their routine, financial situation, and number of projects/contracts. The adjustments created to adapt those changes include sensible planning, work engagement, and positive mental attitude. The highlighted themes were routine, financial situation, number of projects/contracts, sensible planning, work engagement, and positive mental attitude. Based on the findings, it appeared that the alterations to freelancers' lives during the pandemic were well coped with. Freelancing creates alternative employment opportunities for Filipinos, both professionals or not. The implication of the study points to the need of dedication, ability, and perseverance to get the freelancers to where they want to be, especially during pandemic.
Keywords: Freelancers, Freelancing, COVID-19, Alterations, Adjustments, Changes

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REVOLUTION 4.0 WITH BEHAVIOR ECONOMY

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ABSTRACT
This study intends to describe the era of the industrial revolution 4.0 with economic behavior. The industrial revolution 4.0 affects various sectors, such as the trade sector, tourism, education, and others. Technological developments in computer networks led to a rapid increase in the telecommunications sector which was marked by the emergence of the internet. The internet also boosts the economy with the current rise of trade via the internet. This research method uses library research. Based on the analysis of various literatures, this study concludes that the formal economy includes business status assisted by permanent workers and workers/employees/employees, the rest includes informal workers. Meanwhile, informal workers are those who are self-employed and independent workers in the agricultural and non-agricultural sectors. Examples of informal workers: street vendors, angkot drivers, and pedicab drivers. The Industrial Revolution 4.0 has fundamentally changed the way people think, live, and relate to one another. This era will disrupt various human activities in various fields, not only in the field of technology, but also in other fields such as economics, social and politics. With the birth of digital technology today in the industrial revolution 4.0, it has an impact on human life throughout the world.
Keywords: Industrial Revolution 4.0, Internet, Formal Economy, Economic Behavior

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ONE INVENTION, ONE PATENT, ONE SAFEGUARD

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ABSTRACT
The Patent Act, 1970 of India clearly states that only one patent can exist for one invention. A single formulation is not qualified to get protected under two distinct patents having diverse period of validity. Nobody can be restrained from carrying research in the field of an inventor merely on the ground of inventor's research, work or earlier art. Patentees should be careful about the expiry of validity of their patent. The careless attitude of the Patentees unnecessarily increases the burden of the Courts. They need not file suits in the Courts unnecessarily if they remain vigilant. Recently, in the case of Astrazeneca Ab & Anr v Nine Pharmaceuticals, the Division Bench of the Delhi High Court has pronounced an outstanding judgement declaring that a pharmaceutical product shielded by a patent right of a "genus" patent is incapable of being asserted afresh in a "species" patent by reason that it leads to obtaining two patents relating to the same product lacking proof of any supplementary efficiency. AstraZeneca is a British-Swedish multinational pharmaceutical and biotechnology company. Its headquarters are located at the Cambridge Biomedical Campus in Cambridge, England. It manufactures a wide range of products for most important diseases in the sphere of gastrointestinal, oncology, inflammation, infection, neuroscience, respiratory, and cardiovascular. AstraZeneca AB, Sweden and AstraZeneca Pharma India Ltd were the appellants.
Keywords: Patent, Invention, Patentees, Genus patent, Species patent

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TEHRI DAM: ENVIRONMENTAL AND SOCIAL LEGAL ISSUES

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ABSTRACT

Tehri Dam project is the world's fifth and Asia's largest multi-dimensional dam project. This project was started by the Government of India in 1969. The construction of Tehri dam was completed in 2006. Tehri dam is constructed in a situated in Central Himalayan Seismic Gap. This is a major geologic fault zone. This area recorded 6.8 magnitude earthquake in October 1991, with 53 km from dam. The construction of dam destroyed whole flora and fauna of the fully submerged villages of Tehri. The flora and fauna of partially affected villages also depleted to a great extent. This has resulted in occurrence of heavy rainfall, landslides and other calamities at Tehri. Tehri Lake submerged 24 villages and affected 88 villages partially. 5429 fully affected families of Tehri were relocated to New Tehri. 3810 families were partially affected by the Tehri Dam Project. The villagers from the affected villages and Town of Tehri were rehabilitated in the new places like Rishikesh, Dehradun etc. A new town named "New Tehri" was also set up by the government in Tehri. The people of fully affected and partially affected villages experienced many troubles and miseries after the submergence of villages of Tehri. Most of the displaced families did not receive proper compensation awarded by the government due to corruption. Displaced families are not able to exercise their voting rights in the areas of resettlement. They are not even given the proper land titles from such a long time of resettlement. Most of the displaced people are not able to avail the benefits of government schemes. The villagers of nearby the Tehri lake have lost the basic facility of road connectivity after the construction of the dam. The affected villages of Tehri sacrificed their native land, culture and heritage for the upliftment of our country. They have gone through a lot of troubles and difficulties since the construction of the Tehri dam. Many recommendations for the betterment and upliftment of affected villages were suggested by the Hanumant Rao Committee but unfortunately none of them have been implemented in reality. The government must ensure to fulfil all the promises which were made to the displaced people of Tehri.

Keywords: Tehri, Tehri Lake, Tehri Dam, New Tehri

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PRO-CHILD PROVISIONS UNDER LABOUR LAWS IN INDIA

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Abstract
Children constitutes an important component of the population of the world. Along with, their lives as students, many of them are also engaged in work. To protect their rights as workers, government around the world have made laws. In India, a number of legislative provisions exist for their protection. On the lines of the mandates of the Constitution, there exists legislation to prohibit child labour and regulate the employment of the adolescent labour. In addition to the Child and Adolescent Labour (Prohibition and Regulation) Act, 2015, provisions are present under other labour laws such as the Factories Act, Mines Act, Plantation Labour Act etc. The present paper shall with reference to India – highlight constitutional philosophy as to rights of children; discuss the provisions prohibiting child labour; provisions regulating the employment of adolescents; lastly trace the evolution of these laws in the country. The study is doctrinal in nature. The researchers have consulted relevant books, laws, national and international reports. Only existence of the comprehensive provisions is not enough, strict implementation is required simultaneously. There must be limited hours of working of children, prohibition of labour by children in dangerous occupations etc. These basic principles have been embodied under the Indian legal framework.
Keywords: Child, Constitution, labour, hours, India

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A COMPARATIVE STUDY OF WOMEN'S INHERITANCE

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Abstract
Studying the human rights in a new and systematic way is one of the basic characteristics of the present age in which women's rights proves of special importance. The essence of all international and regional conventions dealing with women's rights concerns mainly removing sex-oriented discrimination against women in various aspects of life. Defending women's financial rights, especially their inheritance, is a prominent issue in this field.
The present article first compares men and women's inheritance in divine and non-divine religions as well as in some great civilizations and legal systems. The discussion compares deprivations and advantages of both men and women concerning their religions and customs. Finally, the article compares the average financial responsibilities and advantages of men and women. Then it shows to what extent legal justice has been observed in legal system; it also evaluates their financial responsibilities and rights in Islamic and Iranian legal systems.
Keywords: women's rights, inheritance, law, Islamic law, and Iranian law

1. Introduction

A) Significance of the problem; Speaking about human rights in a modern and systematic way can be considered the most honorable characteristic of the present era. Scholars of law and politics, people holding power, and teachers of ethics, all discuss human rights based on a variety of motivations and principles. Some of discourses, among thousand of others, seem to be more vital intriguing; women’s rights and human political rights, for instance, form an important discourse. The dominant part of all international and regional announcements and relating to women's rights is the removal of sex-oriented discriminations (CEDAW, article 6; UDHR, article 2.2; ICSECR, article 2.2; ICCPR, articles 2.1, 3 and 16; Brice, 1997, P: 229-243).
Women's civil rights have a special significance in this system, all because of its breadth and coverage. Defending the financial rights of women, and their benefit from inheritance, has made circles of defending women's rights deeply engaged, the major problem has been the basic role of economics in people's social and family spheres of life.
It is clear that in the first place, to support women's share of inheritance, it is inevitable to search in the regulations of women's inheritance in various religions, civilizations and legal systems around the world. This means that it is first necessary to report on the differences in men's and women's comparative share of inheritance so as to reveal how and where those sex-based differences lead on to discrimination and injustice. The answer to this query is the main concern of the present essay.

B) The necessity to pay equal attention to deprivations and privileges; Studying the comparative rights of men and women, one should not list only women's deprivations and compare them with those of men. It is also necessary to pay attention to the advantages as well. In the studies in which the whole nature of a religion, civilization, or a legal system concerning sex- based discrimination is discussed- as it is the case with the present essay- it is necessary to compare and contrast the balance of deprivations and privileges in the systems; therefore, in the comparative study of women's and men's tights, especially concerning inheritance, on is faced with, three choices: full or partial deprivation of women, full or partial privileges for women, and finally equality between men and women or the absence of sex-based difference. Clearly, the third choice does not require discussion, because it is based on common human nature. As it was mentioned, a just and anti-discrimination assessment of a social institution as a whole, aims at both the first and second choices. Through out the present essay, the former is termed "deprivations" and the later "advantages".

C) Discussion structure; logically, it is necessary, first and foremost, to compare man's inheritance with that of women in revealed and non-revealed religions. Then, among non-revealed religions, based on a geographical division, Indian, Chinese, and Japanese viewpoints are discussed. In spite of all researches done in well-known references to non-revealed religions, no well-documented views on differences between men and women's inheritance has been found. Only some of them have pointed to a few moral tips about women or to an overall judgment about female gender (Noss, 1995, Sec. 1-11). Consequently, we only consider the revealed religions.

Considering the divine religions, men and women's inheritance in Judaism, Christianity, Zoroastrianism, and Islam is reported. Also, the differences between woman (as mother, wife, daughter, or aunt) and man (as father, husband, san, or uncle) are emphasized and analyzed.

The next section deals with the comparative study of men and women's inheritance in major legal systems around the world as part of famous civilizations. The legal regulations of inheritance in both German and common law systems are also studied. Then, a comparative study of men's and women's inheritance in Iranian and Islamic legal systems is reported. First, the differences including both advantages and deprivations in women's inheritance in Islamic Law is discussed and their effects in the Iranian legal system is studied. In the final section, the average responsibilities as well as financial advantages of men and women are compared. Then, it assesses both the effects of legal justice in legal system and the financial responsibilities of men and women in the Islamic and Iranian legal system.

This section introduces a rationale and convincing defense of all fixed regulations rules and in the legal system of men and women's inheritance in Islamic and Iranian legal systems. Finally, based on previous sections and the differences between men's and women's inheritance in the above - mentioned religions and civilizations, an overall comparison of the differences is introduced. By showing the differences, we try to ponder the regulations of men and women's inheritance in Islamic and Iranian legal system as a whole.

2. Comparison of men and women's inheritance in revealed religions (except Islam)

Judaism, Christianity and Islam are the famous revealed, Abrahamic, religions. Since, as the Shiites believe, Zoroastrianism also has a holy book, hence it is considered as a revealed religion (Qur'an, 22: 14; tabatabi, 1972, Vol: 14, p: 358; Ámeli, 1980, Vol: 11, p: 98-100; Najafi, 1988, Vol: 21, pp: 228-230).

This section considered the views of three other religions, leaving Islamic and Iranian views for later sections.

2.1. Zoroastrianism

The major difference between male and female inheritance in Zoroastrianism is as follows:
A) According to their formal regulations of personal status, when a couple die together or when only on of them dies, children's gender is the main factor for inheritance. If the father dies, his sons will inherit twice as much as his daughters. If the mother dies, they inherit equally (Regulation of Iranian Zoroastrians, Art: 55&52). It is observed that woman suffer from partial deprivation of her father's inheritance. It is, however, shown that men inherit as equally as women from their mother's inheritance.

B) If the inheritors are only sisters and brothers and the deceased person is male, each brother inherits twice as much as his sister, if the deceased one is female, both brothers and sisters gain an equal share.

C) If the inheritors are only uncles and aunts (paternal and maternal) and the deceased person is male, uncles inherit twice as much as aunts. If the deceased one is female, both uncles and aunts gain an equal share.

D) If the deceased person is male, and his inheritors are only maternal aunt and uncle, maternal uncle inherits twice as much as the aunt. But in the same case, if the deceased person is female, both of them gain an equal share.

E) If the inheritors are only uncles, the paternal uncles are preferred and inherit the whole inheritance.

F) If the inheritors are grand parents and the deceased person is male, his grandfather inherits twice as much as the grand mother; if the deceased person is female, and both inherit equally (Ibid, Art: 53, 57, 61&65).

As it is evident in Zoroastrianism when the deceased person is male, woman is partly deprived of inheritance and inherits half as much as man. However, the parent, either man or woman, inherits equally.
Also, when a husband and wife are the only inheritors, they inherit an equal share of the property. But when the dead husband has children, his wife inherits one-sixth of the inheritance. When the dead wife has children, her husband inherits as much as the children (Ibid, Art: 52, 53, 62, 65 & 57).
In Zoroastrianism, there are also a few cases in which women have privileges over men concerning inheritance:

1) When the son, the daughter and the spouse are the only inheritors, the wife inherits one-sixth of the whole inheritance. To divide the rest, son inherits twice as much as the daughter. If the wife dies, her husband inherits one-eighth of the whole legacy and the rest of it is divided equally between the son and the daughter (Ibid, Art: 52 & 53).

As it is shown, in equal conditions women inherit one-sixth, whereas men inherit one-eighth of the whole inheritance.

2) The Zoroastrian civil law in the Sasanian period runs as follows:
"When a daughter is born after her father's death, the expenses of her wedding ceremony are financed from her father's property" (Sharzadi, 1986, P: 78; Damghani, 1955, p: 157).
The gender-based difference to divide the inheritance may be summarized in one principle: man and woman inherit an equal share from a deceased woman, whereas woman inherits half as much as a man when the deceased person is a man. Therefore, woman is partly deprived except in the two cases in which she has privilege.

2. 2. Judaism
The principal difference in inheritance between man and woman, especially women's deprivations in Judaism are as follows:
A) When the deceased's father and mother are alive, mother is considered among second-level inheritors whereas mother is totally deprived of inheritance. If the parents are the only inheritors, again father is regarded as the only inheritor and mother is totally deprived (Provisions the succession among the Jews of the world, 1976, Art: 7/1).

B) If the dead father has any son or even grandson, the daughters do not inherit anything (Torah, the numbers: 27/8; Kohan, 1969, P: 348; Behnud, 1990, P: 43&44; Aswad, 1980, p: 171).
However, the brothers are obliged to provide their unmarried sisters with education and also with dowry, which must not be less than one-tenth of a son's inheritance. Father may also choose to bequeath half as much as that of his sons'.
Later these rules were changed; a daughter, married or single, inherits half as much as his brother.

C) Although the wife is considered among first-level inheritors, it is fulfilled when she has not any child. If she has children, she owns only marriage portion and dowry (which are actually her own properties); otherwise, she additionally inherits one-fourth of her husband's properties (Fahimi, 2002, p. 237-262).
The literal meaning of a phrase in the explanation of the Old testament however, suggests that wife is totally deprived of the inheritance, "These people inherit from their relatives, but the latter does not inherit from the former", among them it mentions "husband and wife"(Kohan, 1969, P: 348).

In the amended Code of Jewish inheritance, some rules have been charged to benefit the wife in the following ways:
1) When a wife has children, she inherits as much as a daughter provided that her inheritance portion is not more than that of the daughter's if so, she only gains her marriage portion. If her marriage portion is less than a daughter's share, the remainder is given to her.

2) If the deceased husband has parents, brother and sister, the wife's share is equal to that of a son, in addition to her marriage portion and dowry. If he has only parents, the wife's share is one-fourth of the total property, in addition to her dowry and marriage portion.

The husband's share, however, is half of her inheritance provided that she has children; if she has no children, he inherits nine-tenth of her inheritance, and the rest goes to her father or her father's inheritors. When the husband is the only inheritor, he inherits half of the inheritance, and the rest goes to her paternal relatives. When the wife is the only inheritor, she, as well as dowry inherit one-fourth of the husband's inheritance and marriage portion goes to her and the rest is the share of his father and his paternal relatives (Provisions of the succession among the Jews of the world, 1976, Art: 7&9).

D) If the grand parents are the only inheritors, the grandfather inherits everything. Furthermore, the paternal relatives are preferred to maternal ones as follows:

E) If maternal and paternal brothers are her only inheritors, paternal brothers inherit the whole inheritance.

F) If the uncles are the inheritors, only the paternal uncle inherits the whole inheritance.

G) If the aunts are the inheritors, only the paternal aunts inherit the whole inheritance.

H) If the paternal uncles and aunts are the inheritors, only the uncles inherit the whole inheritance.

I) If the maternal uncles and aunts are the inheritors, only the uncles inherit the whole inheritance (Fahimi, 2002, p. 237-262).

Therefore, in Judaism, there is a long list of women's deprivations in terms of inheritance which are based on the following:
1) Depriving maternal relatives;
2) Preferring men to women among maternal relatives;
3) Depriving mother totally and, the wife partially, of inheritance.
Although some of these rules have been modified, the situation has remained almost unchanged on the whole.

2.3. Christianity

In Christianity, no remarkable difference is observed between women and men in terms of their share of inheritance; son and daughter, brother and sister, father and mother, grandfather and grandmother, aunt and uncle, granddaughter and grandson inherit equally regardless of their gender. If they are the only inheritors, wife and husband also inherit equally.
If there are other inheritors, e.g. children, some differences are observable in their share from all the inheritance. This is not justifiable, due to the dominant procedure in Christianity concerning men and women's inheritance (Ibid, p. 238).

3. Comparison men and women's inheritance in Great Civilizations

The recorded history of the human being testifies the key role of the laws of inheritance in protecting and legal transferring of properties. Actually, it was through accepting the fact that the role of a person's property is not ended with his death that man has always tried to establish the legal procedure of the dead person's property.

The attempt can be seen in all of the world's great civilizations (Ghanbari, 191985, p: 7); it has not, however, let to the same result.

3.1. The Roman Civilization

According to Justinian's institutes (Codes), which are one of the oldest historical documents of Roman law, daughters and women were absolutely deprived of inheritance; it belonged only to the male children. Nobody was allowed to choose his only unmarried girl as his inheritor (Fustel, 1976, P: 66, 67 & 227).

If a father had several daughters, he should have married one of them to a man, and choose her husband as his inheritor. (Durant, 2001, vol. 4, pp. 44 & 194)

Women, in ancient Rome, were not only deprived of inheritance, but they were in principle considered incapacitated, and they had to be under the custody of one of their male relatives, e.g., brother, son, or husband (which was preferred to others) (Montesqieu, 1991, P: 230; Durant, 2001, vol. 7, p. 90).

3.2. Babylonian civilization

In Babylon, according to the Code of Hammurabi, a father was free to bequeath all of his immovable properties to his favorite son. And a daughter was considered as an inheritor, only if she had not gained her dowry. Also a wife was deprived of inheritance and received a small portion of her husband's properties as gift (Saleh, 2004, P: 99; Hashemi, 1970, P: 197-224).

3.3. The ancient Persia

In ancient Persia, a woman was actually part of a man's properties. The daughter's deprivation of inheritance was a principal rule among the Arians.

But an unmarried daughter could receive half as much as a son after her father's death. In this system, only one wife, out of a man's several wives, could be regarded as equal to a son and inherit from her husband ('Amid, pp: 14 & 15; Bartholomae, 1973, P: 27; tabatabi, 1972, Vol: 4, p: 226; Sharzadi, 1986, P: 78).

3.4. The Chinese and Japanese civilizations

In china and Japan, especially in the confusion's era, a man was considered the owner of his wife and children and could even kill them. To prove her loyalty, a wife was sometimes forced to commit suicide. Mothers always wished to give birth to a son; daughters were deprived of inheritance. If all of the children were female, the father chose a boy as his son and introduced him as his heir (Durant, 2001, vol.3, pp. 1066 & 1147).

3.5. Indian Civilization

According to Manoo legal system, the wife was deprived of inheritance and was under guardianship. In some Indian tribes, after her husband's death, the wife was inherited as a part of her husband's properties. Based on "sati" customs, she was burnt or choked and buried with her husband; it showed her fidelity to her husband. Even in some Indian tribes, she was treated as cattle and was divided among inheritors (Ibid, vol: 2, p: 706).

It seems that in major legal systems, especially the principal legal systems like those of France, England, the United States, German, etc. the gender-based difference in inheritance is not observed; the phenomenon has roots in following reasons:

A) The egalitarian law system in man and woman's inheritance.
B) Influence of religious rules of personal status in most of the legal systems.
C) The concordance between Christianity and the latest developments in matters of rights (Code Civil [de François], Art: 745-767).
People who follow the women's rights have not mentioned the gender-based differences in inheritance in these systems (Ben sadon, 2001, P: 65-78).

3.6. The Arab civilization before Islam

In the Arab civilization before Islam inheritance was based on chivalry and gladiatory. Some hold that the factors dominating inheritance were closeness, masculinity, puberty and the ability to carry weapon (Mehrpur, 1989, P: 20). It follows that, women and children were deprived of inheritance. After her husband's death, the wife was inherited as pant of the husband's properties; every male inheritor could own, marry, sell, or bury her by throwing a piece of cloth on her tent. The best reason to prove the reinforcement of the system in the Arab world is the event happened in the early Islam.
A man of the Helpers (who were inhabitants of Medina and gave protection and support to the prophet Mohammad) died, leaving behind a wife and a daughter. His brother owned the whole property and gave nothing to his wife and daughter. They complained to the prophet Mohammad. The man reasoned that since they could not ride horse and fight with enemy they couldn't inherit anything (Tabatabi, 1972, Vol: 4, p: 226).
This reasoning portrays well the case of inheritance in that time.
After the event, God abrogated that legal system and announced the following:
"To the men a share of what parents and kinsmen leave, and to the women a share of what parents and kinsmen leave, whether it be little or much, a share apportioned (Qur'an, 4: 7).
Now the present a brief comparative look at men and women's inheritance in famous world civilizations is over. It seems that it shows well enough the case of the women's financial rights, especially their inheritance in these civilizations**.**

4. Comparison men and women's inheritance in Islamic and Iranian law

Given the specifications of the present article, only the Shiite views on men and women's inheritance are in focus. Since the famous view of Shiite jurisprudence is elaborated in Iranian civil law, hence this section focuses on the Iranian civil law. The differences between men's and that of women's inheritance, (however variously designated), in both Shiite jurisprudence and Iranian civil law are as follows:
A) If the parents are both alive, and the deceased person has no children or grandchildren, mother and father inherit one-third and two-third of the property respectively. In case a deceased person has same child(ren), the deceased person's mother inherits one-sixth of his or her inheritance, and the rest, five-sixth goes to the father. If the mother is the only inheritor, she inherits the whole of the inheritance in the same way, as the father is the sole in heritor. If the mother or father or both of them along with some daughter form the inheritors, each of the parents inherits one-sixth of the inheritance equally (The Civil Code of Iran, Art: 906, 908 & 909).

B) If the parents are not alive and the deceased person has sons and daughters, the daughters inherit half as much as the sons. But in case a daughter is the only inheritor, she inherits everything, as does the only son.

C) The wife suffers from deprivation in two ways:
1) Concerning her share of the inheritance in case she has not any children, the wife inherits one-fourth, otherwise one-eighth of the inheritance. The husband, however, inherits half of the inheritance if his wife does not have any children or grandchildren, otherwise he gets one-fourth. Also, if the wife is the only inheritor, she inherits only a quarter, whereas the husband gains the whole of the inheritance.

2) Concerning the type and subject matter of the inheritance, although, the husband inherits from his wife's whole properties, the wife does not inherit her husband's lands. Also, concerning the trees, buildings and installations on the land, she inherits from their price with presumption of continuance merit without salary, but cannot own the properties as such (Ibid, Art: 907, 913, 927, and 938, 949, 946, 647).

D) If the deceased one has some brothers and sisters or some paternal half-brothers and half-sisters, the brothers inherit twice as much as the sisters. But if the inheritors are some maternal half-brothers and half-sisters, they inherit equally.

E) When the inheritors are paternal grand parents, the grandfather inherits as much as the grandmother. The same is true when the grandfather is paternal and the grandmother is maternal. When both of them are maternal, grandfather and grandmother inherit equally.
And if one of the grandparents (maternal or paternal) is the only inheritor, that person inherits the whole inheritance regardless of gender.

F) If the inheritors are paternal aunts and uncles, the uncles inherit twice as much as the aunts. But if all of them are maternal, both inherit equally.
Some people (of the same gender and status) are partly deprived of inheritance if they are related to the dead person through their mothers. The maternal uncle inherits half as much as the paternal uncle. Also, the maternal grandfather inherits half as much as the paternal one. The same is true regarding maternal grandmother and paternal grandmother.

G) The ring which the deceased used to wear, and also the Qur'an and the personal clothes and the sword of the deceased go to the elder son, without being reckoned as part of his portion, unless the estate of the deceased consists of nothing else (Ibid, Art: 920, 921, 923, 931, 933, 862, 114, 915).

Considering these points, it is concluded that in Islamic and Iranian system of civil rights:
1) In arranging the hierarchy of inheritance rooted in the principle of "the closer relatives first" there is no gender-based difference between man and woman. At every level, men and women are classified according to their titles and the degree of their closeness to the dead person.

2) Never is a woman deprived totally of inheritance regardless of her title as is she in Judaism.

3) Sometimes a woman inherits more than a man. According to article 891 of the Iranian Civil Law, a wife inherits by marriage. Also in articles 913, 927 and 938, the civil law clearly states the inclusion of wife along with the original relatives at the three levels of inheritance.

Enjoying such a situation, especially in large families with several children, a woman's inheritance as wife is more than the male members of the family. For example, if the dead person has five sons, two daughters, and his parents are both alive; his wife's inheritance will be more than each of the children. At the second and third level of inheritance, if the number of inheritors in horizontal line increases and the wife's amount of fixed portion of inheritance changes from a quarter to a half, hence the wife's advantage in inheritance is clarified more (Katouzian, 1996, pp: 96 & 97).

4) In some situations, there is no difference between man and woman; a woman, as mother, always inherits as much as the father. Also, a sister of the deceased from the mother's side inherits equal to the brother (Ámeli, 1980, Vol: 17, p: 463 & 465; tabatabi, 1972, Vol: 4, p: 229).

5) Sometimes a man or a woman is partly deprived of inheritance only because he or she is related to the dead man through mother. In this case, there is no difference between the male and female inheritors; put otherwise, the difference is not based on gender of the inheritor.

6) In Islamic and Iranian civil law, a special part of the legacy called as the ring which the deceased used to wear, and also the Qur'an and the personal clothes and the sword of the deceased ́is inherited only by the elder son. It is not, however, limited to Islam. In Judaism also the elder sons inherits from his father twice as much as (the other sons); but not from his mother (Kohan, 1969, P: 348).

7) Under different titles, a woman is deprived partly of inheritance, i.e., half as much as a man. These titles include mother, daughter, wife, sister, grandmother, and aunt.

8) According to Articles 946 and 947 of the Iranian Civil Code, in accordance to the Shiite jurisprudence, a woman as wife, does not inherit from the land proper and its price, the buildings and trees proper. She only inherits from the price of buildings and trees. This shows that a wife is deprived of some of the transferable properties proper and their price and of the properties proper in some other situations.
Scrutinizing the famous references and texts of the Islamic jurisprudence shows that there are five different views on a wife's inheritance from these properties: (Katouzian, ibid, p: 114).
a) A wife does not inherit from the land proper and its price and the buildings and trees proper. This view is accepted by a majority of jurisprudents and has found expression in the Iranian civil code (Najafi, 1988, Vol: 39, p: 2o7).

b) A wife, like a husband, inherits from all kinds of inheritance even from the land. The view was expressed by al-Iskafi, and is attributed to Ibn Junayd as well. Some other ulema of the past, e.g., sheikh al-Sadūq in Al-Muqna'ih, Sallar in Al-Marāsim, Ibn Babwayh, Ibn Aqil and others, kept silent on this issue. Their silence can be regarded as their agreement (Ibid, Vol: 39, pp: 207 & 208).

c) Others like sayyed mortada and Ibn Zohreh held that a wife inherits from the price of land and not from the land proper (Ibid, Vol: 39, pp: 214 & 215; Mortaza, 1993, P: 200).

d) Others like al-Muhaqiq al-Hilli the author of al-sharaye' and al-Shahid – al-Thāni held that, if a wife has children, she inherits from all of her husband's properties; otherwise, she does not inherit from his lands (Helli, 1982, P: 304).

e) According to a rare view, the wife does not inherit from house and residential places, but inherits from other parts of property (Tabatabi, 1994, vol: 2, p: 367).
The wife's deprivation of land as inheritance is rooted in some traditions; Qur'anic verses are rather general on this issue. Some reasons that have been introduced for this deprivation in some of these traditions means that, if the wife inherits land, she may leave her dead husband's tribe, marry a second husband, and he or his children would quarrel with the first husband's family over the inherited land (which is the determining factor of her former husband's sovereignty) (Ámeli, 1980, Vol: 17, p: 518-521).
Pointing to the different views among fiqh (Islamic jurisprudence) and the traditional documents about the subject, and based on the reasons introduced in traditions, same lawyers conclude that "a wife is derived [to avoid the possible] disturbance of the sovereignty of her former husband's tribe"; this clearly is rooted in tribal life (Shahidi, 1995, No: 125).
Others believe that, it is limited to the conquered lands forcibly (maftūh-al-'anwa) as the fighters' award and the wife can inherit from part of the other lands (Katouzian, ibid, p: 114).
In 2008, with the aim of further protecting women's rights, Articles 946 and 948 of the Iranian Civil Code were amended and Article 947 of this Code was deleted; and now in the Iranian legal system, the wife inherits from the land. Thus, in this legal system, there is no difference between men and women in Subject of inheritance (Act of amending articles of the Iranian Civil Code, approved in 2008).

9) If the husband is the only inheritor, he inherits the whole legacy (some of it as a fixed share of an heir [fard] and some as repayment [radd], but if the wife is the only inheritor she inherits only as fard (Articles 896 and 905 of the Iranian Civil Code). Needless to say, both inherit by marriage.
These points are neither the only present view in Islamic jurisprudence [Fiqh] nor accepted by all jurisprudents [faqihs]; it is only the famous one. There are some views in Islamic jurisprudence [fiqh] about the transference of inheritance as radd to relatives by marriage, which are as follows:
a) The famous view holding that if the inheritance is limited to the spouse, the husband inherits what remains besides fard as radd, but the wife inherits only her fard and the rest belongs to the Imam. (Mortaza, 1993, P: 200) Article 905 of the Iranian Civil Code has followed the same view.

b) The whole legacy is inherited by wife as it is by husband and they are equal in such a situation. The view is based on the tradition that related by Abi-Bassir from Imam al-Sadegh: I said to him: a man died and his wife is alive. The Imam then replied: "the property goes to her" (Ámeli, ibid, Vol: 17, p: 513).
And elsewhere, about a woman who died and her husband is alive, the Imam said that: All of her property is left to him. Then the relater of the hadith enquired about the case when a man dies and his wife is alive, then the Imam returned, "The whole property goes to her" (Ámeli, ibid, Vol: 17, p: 512).

c) In the period of Imam al-mahdi's occultation, radd is also given to wife. It is the least common denominator of different tradition, as believed by Sheikh al-Sadūq, sheikh al-Tusi, Allama al-Helli, and Shahid al-Awwal (Toosi, 1979, vol: 3, p: 210).

Given these three views and the two opposing ones against the dominant view expressed in the civil law, it is possible to amend the civil law to equalize the male and female inheritance, which will not be obviously against the Islamic law (sharia).

What is at issue here is to logically defend the female's half share of inheritance as much as that of male.

First and foremost, it should be emphasized that in a legal system, especially when comparing men's and women's rights, justice is defendable, and discrimination and oppression are not acceptable. To identify the manifestations of "injustice and oppression," it is necessary to know every difference will not necessarily lead on to injustice.

Sometimes the differences are those that are coupled with some advantages; sometimes the difference means enjoying some advantages and at the same time being deprived of some rights. Such deprivations being coupled with proportionate advantages could not be regarded as "injustice"; far from it, it is the true justice itself. Put otherwise, the criterion for justice and oppression should not be the quantity of advantages and the share of a woman and of a man; rather, it is the balance of their financial rights and their financial responsibilities. A worm's view or a detached one on financial life of man and woman in Islamic legal system is not enough to have a proper judgment is only possible when men's and women's share of inheritance in the legal system and their financial responsibilities are scrutinized.

Women's trivial deprivation as compared to that of men's in the legal system of inheritance in Islam is undeniable. But, has not the same system in other financial fields of life given women advantages proportionate to compensate those deprivations?

Studying the other financial rights granted to women in Islamic law shows that along with these trivial and relative deprivations, there are also some financial advantages for women.

The rights of marriage portion, dwelling, right of own alimony and exemption from paying the children's alimony, are the most important financial advantages recognized for a wife. Given these facts, it can be fairly claimed that women's financial rights are more than that of men's.

In Christianity and the Christian legal systems, however, wife is even responsible to support her husband if he is not financially independent. Otherwise put, providing the family's expenses is a mutual responsibility, and the husband and wife are mutually responsible for it (Reza, 1985, P: 226; Mazeaud, 1995, P: 593-627).

Secondly, marriage portion is not a basic element of marriage; without it a marriage is acceptable, too. However, the two sides may introduce it as a pre- condition for marriage (Tanaghoo, 1997, P: 295; Shaghfah, 1998, 325).

In Judaism, firstly marriage portion is necessary (Torah, the exoduse: 10; Shaghfah, 1998, 325). [50] Secondly, if both sides are financially independent, man should provide the woman's daily expenses (maintenance); if husband is impoverished, wife, if possible, should provide his daily expenses (Reza, 1985, P: 226).

In Zoroastrianism, too, as stated in act 23 of Zoroastrianism's Book of law, a husband is responsible for his wife's daily expenses: "If husband fails to provide his wife's expenses for three years, his wife may divorce him" (Sharif, 1997, P: 157).

Providing wife's residential expenses, however, in all three religions of Islam, Christianity and Judaism is considered the husband's responsibility (Shaghfah, 1998, 298; Reza, 1985, P: 206-217).

Comparison of the Islamic legal system and those of Christianity and Judaism shows that:

a) In Christianity, although man and wife inherit equally, man is not obliged to give marriage portion and, under some conditions, wife is obliged to provide her husband's daily expenses.

b) In Judaism, along with the partial and important deprivations, marriage portion is necessary, but sometimes wife is obliged to provide her husband's daily expenses.

In Islam, however, first of all, if wife is deprived partially of inheritance, it is necessary to give her marriage portion. Secondly, never is she responsible for her husband's daily expenses. Thirdly, women are exempted from other financial responsibilities or those responsibilities necessitating financial support. Therefore, by comparing women's financial rights and obligations in Islamic legal system, financial balance is not against them, even it might be in favor of them.

Most of the Muslem ulema believe that, Islam exempted women from life expenses in order to protect their physical and moral health and to defend the foundation of family; hence man's responsibility for life expenses. Furthermore, at the beginning of their marriage, women are granted a special right called marriage portion, which must be paid by man. It means that, man is the debtor and wife is the creditor from the beginning of their marriage; [it follows from the fact that] women, typically, have more expenses in life. In explication of the difference of a man and woman's inheritance, the infallible Imam al-Reda explained: "This is because a woman receives marriage portion upon getting married, and a man pays it, hence a greater portion of inheritance goes with men" (Toosi, 1960, vol: 9, p: 398).

Answering Ibn Abi'Aujā loodja, an atheist who aggressively asked why a woman, who is weaker, should inherit half as much as a man who is stronger, the infallible al-Imam Baqer said: "Such a division of inheritance between man and woman is justified because woman is exempted from jihad, man is responsible for maintenance, and because in case of an unintentional crime in which the relatives must pay the blood price, women are exempted from it" (Ameli, ibid, Vol: 17, p: 436-438). Therefore, women's special situation in Islamic legal system of inheritance is due to special financial advantages granted to her as marriage portion, alimony and maintenance.

In other words, a general assessment of the total rights and responsibilities of men and women, it is true to state that Islam has divided the whole wealth on earth into three shares. One share is possessed by women and two shares by men. But this division it true only of possession not of its consumption. Concerning consumption, women's expenses must be paid by men who are obliged to follow equality between themselves and their wives in consumption. So, women have their own share independently, and share half of men's share with their own agreement, too. Consequently, women actually may use two-third of possessions, and men one-third of it.

To justify why men are granted with the financial management of two-third of possessions, it is stated that it stems from the typical nature of men and women (not of individual men or women); woman is, typically, a rather emotional creature and the symbol of affection and delicate passions, whereas man typically and comparatively is a rational creature. Women's life is an emotional one, whereas men's is a rational one, the obvious effect of this natural characteristic is men's ability to manage properties and possessions.

Islam has given man two-third of riches on earth to let rationality keep the upper hand against emotionality. In consequence, the limitations emerging from women's typical emotional management are compensated for with men's typical sense of rationality (ṬabaṬabaĪ, 1972, Vol: 4, p: 226-231; Motahari, 1996, P: 251-253).

The Islamic legal system of inheritance is a fair and defendable one if the following facts are observed:

a) Naturally, a woman's expenses are more than those of a man.

b) Life expenses are inevitable and man must pay for them.

c) Making women responsible for her own expenses and those of her children's not only causes different problems, but also corrupts and devastates herself and her children's life and makes the financial management of their life shaky (Noori, 2006, 139-143).

5. Conclusion

Concerning religions, it can be concluded that, in Zoroastrianism a man inherits from a female dead person as equally as a woman does, whereas a woman inherits from a male dead person half as much as a man does. Therefore, she is relatively deprived.

To be considered an inheritor, in Judaism, one must enjoy paternal relation. Those with maternal relation are deprived of inheritance; even among maternal relatives, men are preferred to women. Mother is totally and wife is partly, deprived of inheritance. In Christianity, however, there is no remarkable difference between men and women's share of inheritance.

Concerning civilizations, in the ancient and well-known Roman, Babylonian, ancient Persian, Chinese, Japanese, Indian civilizations and in pre-Islam Arabia, woman is totally deprived. Even sometimes she is not recognized as a human being. In classification of the different levels of inheritance in Islamic and Iranian legal system, there is not any difference between man and woman; however, woman as mother, daughter, wife, sister, grandmother and maternal aunt is relatively deprived of inheritance compared with a man with the same situation.

To assess, and compare men's and women's inheritance in each of these religions and civilizations the comparative share of man's and woman's inheritance must be assessed according to women's financial advantages and responsibilities in the same system. Therefore, given the fact that a woman is deprived of marriage portion, equal inheritance for man and woman in Christianity should not be considered on advantage for women. Also, in Judaism and Zoroastrianism, if women's trivial or complete deprivation of inheritance is not coupled with marriage portion and alimony maintenance, it will undoubtedly be a manifestation of oppression and injustice.

In the Islamic legal system of inheritance, although woman receives some what less of inheritance, she will not suffer from injustice because she enjoys other financial advantages like marriage portion and alimony maintenance. Rather, this legal system provides women with material and spiritual benefits much more because the fulfillment of most of the granted financial advantages is indispensable (not probable). Of course, women's inhuman complete deprivation in some religions as well as major ancient civilizations is not justifiable at all.

Finally, it is necessary to emphasize the fact that even when the difference in men and women's inheritance is based on the Holy Qur'an's verses (Qur'an, 4: 11), there are some indirect ways to allow women to inherit more. For example, fathers or husbands are free to bequeath up to one-third of their property to their daughters and wives in their wills.

Also, a woman may ask for some financial advantages as a condition for marriage that has been mentioned in formal marital documents, too, as it is offered in Iranian official document of marriage. Even, some lawyers believe that the legislator, also, is free to complete this matter by making an assumption. This is by declaring that: "if the woman inherits the fixed portion of inheritance with the second or third class, it has been assumed that the husband, has made a will that one third of his property goes to his wife, except that the opposite case is understood by his testament or by other remained documents".
Believe that "in this manner, the will is not imposed on the husband and he is free to declare his opposite will by every possible means (as the will by private notice). This is because issuing such a will is not obligatory, but it is just presumed. On the other hand, as every person is assumed aware of the law after its publication, the silence of husband will be considered as his consent to this assumption (Art: 220, c.v). There is a clear background in the Islamic Fiqh like this) (Rashti, 1943, P: 184 & 185; and that is implied terms, implied consent, "customary (usual) conditions" and "assumed conditions" (Katouzian, ibid, p: 109).

References

1. “The (Holy) Qur’an”, Translated by: M.H.Shakir, (Qom, Ansarian, 1998).
2. “The (holy) Bible”, (Tehran, 1995).
3. Ámid .M, “Succession in the Iranian civil law”, [unpublished]).
4. Aswad. A.M, “Al-madkhal ela derasat al-adyan va al-mazaheb”, (Beirut, Dar al-arabiah le al-matbuat, 1985).
5. Ámeli . H, “Al-vasaʾal al-shii‘h” (Beirut, Torath Al- Arabi, 1980), Vol: 11&17.
6. Bartholomae.Ch, “Die frauim Sasanidis cheh recht, vonchi chri”, (Tehran, Iqbal, 1976).
7. Behnud.y, “Ahwale shakhsiah Iraniane gheire Shiah”, (Orumiah, Anzali, 1990).
8. Ben sédon. N, “Les droits de la femme: des origins a nos jours”, (Tehran, Kavir, 2001).
9. Code Civil [de François], (Paris, Dalloz, 2002).
10. Damghani. M.T, “Ahwale shakhsiah Zartoshtian”, (Tehran, Amir kabir, 1955).
11. Dickson, B., “Human rights and the European convention”, The 1950 European convention for the protection of human rights and fundamental freedoms, (London, Sweet & Maxwell, 1997).
12. Durant, W., History of Civilization, (Tehran: Eqbal, 2001) vol. 3, 4 & 7.
13. Fahimi, A., “A comparative study of the succession of religious minority in Islamic and Iranian law”, (Qom: Qom university press, 2002).
14. Fustel. C, “Numa Dinis”, (Tehran, Ibn Sina, 1976).
15. Ghanbari. M. R, “Historical foundations of the succession”, (Tehran, Gange danesh, 1985).
16. Helli. M, “Sharayʿ al-Islam”, (Beirut, Dar al-adwa, 1982).
17. Hashemi. J.R, “Nezam al-Á¸lah fi al-Áhd al-babeli al-qadim”, (Jam´ah al-Baghdad, 1970).
18. “International Convention on civil and political rights [ICCPR], (UN, 16 December, 1966).
19. “International Convention on Economic, Social and Cultural rights [ICESCR], (UN, 16 December, 1966).

20. Katouzian. N, “Value of tradition and attractiveness of justice”, (Tehran, university of Tehran, 1996).
21. Kohan. R. A, “Ganginehee as Talmud”, Tr: Gorgani.A.F, (Tehran, 1969).
22. Mazeaud. H, “Leçons de droit civil”, (Paris Montchrestien, 1995), Tome: 1, Volume: 3.
23. Mortaza. S, “Al-intesar”, (Qom, Daftere intesharate Islsmi, 1993).
24. Motahari. M “Nezame hoqooqe zan dae Islsm”, (Qom, Sadra, 1996).
25. Montesqieu.ch.l, “The spirit of the laws”, (Tehran, Amir kabir, 1991).
26. Najafi. M.H, “Javaher Al-Kalam”, (Tehran, Dar Al-kotob Al-islsmiah, 1988), Vol: 21 & 39.
27. Noss, J.B., “Man’s Religions”, (Tehran: Elmi & Farhangi, 1995).
28. Noori. y, “Hoqooq zan dar Islsm va jahan”, (Tehran, Nawid noor, 2006).
29. “Provisions of the succession among the Jews of the world”, (1976).
30. Rashti. H, “Al-ijarah”, (Tehran, 1943).
31. Reza. H. T, “Al-ahwal al-shakhsiah le al-mesrieen ghaeir al-moslemin”, (Qaherah, Dar al-nahzah al-arabiah, 1985).
32. “Regulation of Iranian Zoroastrians”, (Tehran, Rasti).
33. Saleh. A.P, “The story of Law”, (Tehran, university of Tehran, 2004).
34. Shahidi, M, “Succession”, (Tehran, Samt, 1995).
35. Sharzad. R, “Ghanoon madani Zartoshtian dar zamane Sasanian”, (Tehran, Anjomane Zartoshtian, 1986).
36. Shaghfah. M. F, “Ahkame ahwal al-shakhsiah le al-moslemin va al-nasara va al-yahud”, (Damascus, noori, 1998).
37. Sharif. A, “Nafaqeh va tamkin dar hoqooqe khanevadeh”, (Tehran, Besharat, 1997).
38. ṬabaṬabaĪ, M.H, “Al-Mizan”, (Qom, Esmaeelian, 1972, Vol: 14 & 14).
39. Tabatabi, S. A, “Riaz Al-masael”, (Qom, Daftere nashre Islami, 1994), Vol: 2.
40. Tanaghoo. S. A, “Ahkam al-osrah le al-mesrieen ghaeir al-moslemin”, (Iskandariah, Al-m‘āref, 1997-1998).
41. The Civil Code of Iran, (Tehran: Daneshvar, 2001).
42. “The Convention on the Elimination of all forms of discrimination against women [CEDAW]”, (UN, 18 December, 1979).
43. Toosi. M, “Tahzib al-ahkam”, (Tehran, Dar Al-kotob Al-islsmiah, 196o), Vol: 9.
44. ----------, “Al-nehayah”, (Beirut, Dar al-kotob al-arabi, 1979).
45. “Universal Declaration of Human rights [UDHR]”, (UN, 10 December, 1948).

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RECONFIGURING ORIENTALISM: MOROCCO AS DEPICTED BY FOUR FRENCH WRITERS

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ABSTRACT
The aim of this paper is to examine how Morocco is represented in five select books from the works of the Tharaud brothers (Jean and Jérome), Henry de Montherlant and Jean-Marie Gustave Le Clézio. More specifically, the paper attempts to develop a more nuanced vision of how Morocco is viewed in French travel writing than what previous studies (mainly those adopting the Saidian approach) suggest. Indeed, since Edward Said's Orientalism came into being in 1978, French literary representations of Morocco have generally been examined in terms of their engagement with the French imperial establishment. This paper focuses on the images of Morocco in the works of the four selected writers to offer a new conceptualization of French Orientalism, one that can be considered as both an application and a criticism of Said's Orientalism. The outcome of the analysis shows clearly that while the Tharauds' views of the Sherifian kingdom are marked by the same racism and imperialism Said talks about, Montherlant's and Le Clézio's views of the country seem to subvert traditional clichés and stereotypes, providing two paradigms of a Western portrayal of the Orient that go against Said's study of Orientalism. It is therefore argued that the French literary construction of the Orient (Morocco in this case) is neither completely racist and imperialist as Said and the saidists pretend, nor completely objective and innocent as the Orientalists would have us believe. French Orientalism, as conceptualized in this paper, contains a mixture of different views and attitudes.
Keywords: Orientalism, Edward Said, discourse, power-knowledge nexus, cultural hegemony, Morocco, French colonialism

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JEWISH PEOPLE AND HOW ISRAEL WAS FOUNDED THERE 1944-1948

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ABSTRACT
The island of Cyprus always seems to be out of the war during the WWI and WWII. On the other hand, due to its strategic position, and the security interest of the colonialist countries, the island itself turns to be the very centre of the conflict and the war. During the last period of Second World War, the Jews who all managed to survive and escape from Nazi tyranny and holocaust have started trying to find out the ways to go to Palestine, then being a British mandate. Taking a voyage to Palestine was not so easy because of the terrific conditions, and mostly of British restrictions. The Jews making mostly use of the very insufficient and primitive transportation means could have arrived in Turkey. Having got Turkish support and the assistance, these people were once more stopped by British warships in the open seas and taken to the concentration camps in Cyprus since active steps and measurements were taken against the Jewish immigration, from trying to prevent the acquisition of ships for refugees to deploying naval craft that otherwise could have been used in the war effort to patrol the coast of Palestine. The poor conditions and, terrifying management of British authority there made the life unbearable for these people, causing lots of death. This scientific research will mainly focus on the Jewish survivors trying to go to (Palestine-then Israel), and their lives on the island just before the foundation of Israel in Cyprus clandestinely.
Keywords; Cyprus, Jews, Second World War, Exodus, Concentration Camp

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NAHÇIVAN'DA TEKSTİL SANATININ ÖZEL ÖZELLİKLERİ

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ÖZET
Makalede Azerbaycan ve Nahçıvan Tebriz'in eski çağlardan kaldırım dokumacılığına kadar olan özellikleri incelenmiştir. Nahçıvan'da halı üretimi, Orta Çağ'ın başlarından beri yeni, daha yüksek bir gelişme aşamasına girmiştir. Dış pazarlarda bu ürüne olan talebin keskin bir şekilde artması, özellikle XIX yüzyılda bu sanat alanının genişlemesine yol açmıştır. Bu dönemin kaynaklarından biri, Nahçıvan'da kumaş dokuma ile birlikte çeşitli halı türlerinin üretiminin yaygın olduğunu belirtmektedir. XIX yüzyılın ortalarına ait istatistiklerden bu dönemde Nahçıvan'ın çok sayıda kazıklı ve kazıksız ürün ürettiği açıktır. Nahçıvan'da halı üretimi, Orta Çağ'ın başlangıcından bu yana yeni, daha yüksek bir gelişme aşamasına girmiştir. Özellikle 19. yüzyılda dış pazarlarda bu ürüne olan talebin keskin bir şekilde artması, bu sanat alanının genişlemesine yol açmıştır. Bu dönemin kaynaklarından biri, Nahçıvan'da kumaş dokuma ile birlikte çeşitli halı türlerinin üretiminin yaygın olduğunu gösterir. 19. yüzyılın ortalarına ait istatistiklerden Nahçıvan'ın bu dönemde çok sayıda kazıklı ve kazıksız ürün ürettiği anlaşılmaktadır. Bağımsızlık yıllarında Nahçıvan halı ekolünü incelemek için başka önemli önlemler de alındı. Böylece meslek yüksekokullarında halı dokuma kursları açılmış, Nahçıvan Kız Lisesi'nde "Dikiş, dokuma ve halı dokuma" çemberi açılmış, "Nahçıvan İş Merkezi" Limited Şirketi'nin halk sanatları atölyesinde halı dokumacılığı düzenlenmiştir. Günümüzde modern sanat ve estetik zevke sahip halılar, halk sanatları atölyesi ve çevrelerinde milli bezemeler temelinde dokunmaktadır.

Eski Gence'de farklı tür ve renklerde halıların dokunduğu bilinmektedir. Araştırmacılara göre Azerbaycan'da halı dokumacılığının tarihi Tunç Çağı'na kadar uzanıyor Teymur Bünyadov, Erken Tunç Çağı halkının dini toplantılarına da bazı önemli özelliklerin yansıdığını yazıyor. İnançlarına göre insan ölümsüzdür, ebedidir.Bir dünyadan diğerine öylece geçer ve o dünyada hayatlarını sürdürürler.Doğa nasıl değişmezse insan da öyledir. Bazı halı unsurlarında yaşadığı düşünülür.

Anahtar Kelimeler: Azerbaycan, Nahçıvan, Tebriz, halı, Tebriz-Nahçıvan okulu

SPECIFIC FEATURES OF TEXTILE ART IN NAKHCHIVAN

ABSTRACT
In the article, the characteristics of Azerbaijan and Nakhchivan Tabriz from ancient times to pavement weaving were examined. Carpet production in Nakhchivan entered a new, higher stage of development since the early Middle Ages. The sharp increase in demand for this product in foreign markets led to the expansion of this art field, especially in the XIX century. One of the sources of this period states that the production of various types of carpets along with fabric weaving was common in Nakhchivan. It is clear from the statistics of the middle of the XIX century that Nakhchivan produced a large number of piled and pileless products in this period. Carpet production in Nakhchivan has entered a new, higher stage of development since the beginning of the Middle Ages. Especially in the 19th century, the sharp increase in the demand for this product in foreign markets led to the expansion of this art field.

One of the sources of this period indicates that the production of various types of carpets was common in Nakhchivan, together with cloth weaving. It is understood from the statistics of the middle of the 19th century that Nakhchivan produced a large number of piled and pileless products in this period. During the years of independence, other important measures were taken to examine the Nakhchivan carpet school. Thus, carpet weaving courses were opened in vocational schools, a "Sewing, weaving and carpet weaving" circle was opened in Nakhchivan Girls' High School, and carpet weaving was organized in the folk arts workshop of the "Nakhchivan Business Center" Limited Company. Today, carpets with modern art and aesthetic taste are woven on the basis of national decorations in the folk arts workshop and its surroundings.

It is known that carpets of different types and colors were woven in Ancient Ganja. According to researchers, the history of carpet weaving in Azerbaijan dates back to the Bronze Age. Teymur Bunyadov writes that some important characteristics were reflected in the religious gatherings of the Early Bronze Age people. According to their beliefs, human beings are immortal and eternal. They simply pass from one world to another and continue their lives in that world. Just as nature does not change, so does man. It is thought to live in some carpet elements.

Keywords: Azerbaijan, Nakhchivan, Tabriz, carpet, Tabriz-Nakhchivan school

GİRİŞ

Antik çağlardan beri halı dokuma sanatı, ulusal bir benlik bilinci ve ulusal kendini ifade etme aracı olarak önemli bir değere sahiptir. Araştırmacılara göre, belirli sorunları olan uzun bir geçmişe sahip olan halı dokumacılığının tarihi çok eskidir.İlk vatanı Mısır olmasına rağmen bu sanat Azerbaycan'da zirveye ulaşmıştır (3). Azerbaycan'da kurulan çok sayıda halı dokuma okulu ve köklü gelenekler de araştırmacıların Azerbaycan halıcılığının tarihinin halkımızın tarihi kadar eski olduğu sonucunu doğrulamaktadır (3).

Halkımızın halı dokumada ifade ettiği düşünce tarihi, halkın arkaik etnik tarihi ile örtüşmektedir ve bunun çok önemli bir parçasıdır.Mitolojik anlam dünyasının ve folklorik imgelerin halıdaki ana çekim merkezlerinin olması tesadüf değildir. resimler. Bu görüntülerin karakteristik özelliklerinin halı çizimlerinde genelleştirilmesine tanık oluyoruz.

Halı dokuma sanatı, ilk söz sanatının dönüştürücü evriminin ve etnik düşüncenin gelişiminin bir göstergesi olarak ilgi görmektedir.

Bu alanlarla ilgili iki alan dikkat çekicidir:

1) Halılarda mitolojik dünya ve folklor imgeleri;

2) Folklor metinlerinde halı.

Rüyada gördüğün halının yol anlamına geldiği söylenir (1, s. 10).

Masallarımızda uçan halılardan sıkça bahsedilir.Uçmak da yol ve seyahat ile bağlantılıdır.İnsanlar arasında, bir çocuk sürekli halı üzerinde yürürse gözlerinin parlayacağına ve görebileceğine dair bir inanış vardır. uzak. Köroğlu destanında da aynı inancın izleri vardır.

Nahçıvan'dan toplanan bayatlar şöyle der:
Karışımda altın var,
Çalı var, altın var.
Nahçıvan halısının
Ev gibi.
Halı sal,
Çiçek, bütan desenli.
baktım ve kendimi kaybettim
Ne gizem, ne inceleme.

Ünlü bilim adamı Kamil Valiyev şöyle yazıyor: "Halkımızın farklı halıları var, her birinin ayrı deseni, ayrı güzelliği: Karabağ halısı, Şirvan halısı, Nahçıvan halısı, Tebriz halısı, Guba halısı..." (2, s.l03)
Bu halıların dokunduğu okulların gelenekleri birbirinden farklıdır. Doğu'nun en eski ve zengin kültür merkezlerinden biri olan Nahçıvan'da sanat, diğer alanlarla birlikte büyük bir tarihsel gelişim göstermiştir. Dekoratif-uygulamalı sanat türlerinden biri olan halı dokumacılığı da bu sanatlar arasında yerini almıştır. Nahçıvan halıları sadece Azerbaycan'da değil, el yazısı, arsa kompozisyonu, süslemeleri, desenleri kısacası kendine has özellikleri ile tüm dünyada farklılık göstermektedir. X-XIII yüzyıl kaynaklarının, Azerbaycan'ın birçok bölgesi ile birlikte Nahçıvan'ı halı dokumacılığının ana merkezi olarak nitelendirmesi tesadüf değildir. Bu dönemde, Nahçıvan şehri, çan ve kilim üretimi ve satışı için ana merkezlerden biri olarak ün kazanmıştır. Araştırmacı Rauf Mammadov, ilk kez Nahçıvan'da shadda ve verni gibi halıların üretimine başlandığını öne sürüyor. Ancak Azerbaycan'ın diğer bölgelerinde olduğu gibi Nahçıvan'da da halı dokuma sanatı en yüksek gelişme düzeyine XVIII-XX yüzyılın başlarında ulaşmıştır. Nahçıvan'da halı dokumacılığının gelişmesinde zengin gelenekler ve yüksek profesyonelliğin yanı sıra işgücünün bolluğu da önemli rol oynamıştır.

YÖNTEM

Nahçıvan'da halı dokuma geleneği eski çağlardan beri oluşmuştur. Böylece kızlar küçük yaşlardan itibaren halı dokumaya alışmışlardır. 8-10 yaşından itibaren bu sanatın sırlarını deneyimli kadın halı dokumacılarından öğrendiler. Özellikle dağlık bölgelerde, sert kış koşullarında ekim ve hasadın durmasının yarattığı boş zaman, başta halı olmak üzere çeşitli ürünlerin üretimine harcandı.
Nahçıvan'da halı dokuma sanatının gelişimi, her şeyden önce, bu sanatın ana hammadde kaynağı olan koyun yetiştiriciliği ile yakından bağlantılıdır. Tarihsel olarak albas ve mazex koyun ve keçi yünü ile ipek, halı üretiminde yaygın olarak kullanılmıştır.
"Nahçıvan halıları" sanatsal ve teknolojik özelliklerine göre iki gruba ayrılabilir.

İlk grup.
Bu grup, Nahçıvan ustalarının farklı zamanlarda oluşturduğu geometrik desenli halıları içerir. Yüzyıllar boyunca sanatsal bakış açısını mükemmelleştirdiler ve tonları daha da güzelleşti. Açıklamaları çok orijinal. Orta alan, Orta Çağ'ın tuval parçalarını anımsatan gelir - hassas çizgilerden oluşur. Bu halıların bir zamanlar Nahçıvan'da üretilen kumaşlardan desenler alıntıladığı varsayılabilir. Unutulmamalıdır ki çizgili desenler eski çağlardan beri Nahçıvan sanatının özelliği olmuştur. 10. yüzyılda Nahçıvan'da çok popüler olan tesmaslar üretilmiştir. Sanatsal yapısı çizgilerden oluşuyordu.

İkinci grup.

İkinci grup "Nahçıvan halıları", XVII-XVIII yüzyıllarda dokunan büyük halıları içerir. Bu halıların bir kısmı İstanbul'daki "Türk ve İslam Eserleri Müzesi"nde muhafaza edilmektedir. Bu halılar XIV-XVI yüzyıllarda halı dokuma tekniğini çok iyi bilen profesyonel sanatçıların eskizlerine dayanarak dokunmuştur. Ana üretim merkezleri Nahçıvan, Barda ve daha sonra Şuşa idi.

Halı üretimi, Orta Çağ'ın başlarından beri yeni ve daha yüksek bir gelişme aşamasına girmiştir. Dış pazarlarda bu ürüne olan talebin keskin bir şekilde artması, özellikle XIX yüzyılda bu sanat alanının genişlemesine yol açmıştır. Bu dönemin kaynaklarından biri, Nahçıvan'da kumaş dokuma ile birlikte çeşitli halı türlerinin üretiminin yaygın olduğunu belirtmektedir. XIX yüzyılın ortalarına ait istatistiklerden bu dönemde Nahçıvan'ın çok sayıda kazıklı ve kazıksız ürün ürettiği açıktır. Araştırmacı Vidadi Muradov, 1845 istatistiklerine dayanarak, o yıl burada 1.050 halı, 3.000 at nalı, 2.500 keçe, 5.000 çuval, 460 hasır, 10.000 yün çorap, 20.000 arşın, mahud dokunduğunu gösteriyor.

Onuncu yüzyılın ikinci yarısında (982) Hudud al-Alam'da gösterildiği gibi, Mugan palazı ve çuvallarıyla, Nahçıvan, Hoy ve Salmas çanları ve halılarıyla, Şirvan'ı ise parçalarıyla tanınırdı. Nahçıvan'da halı dokumacılığının yaygınlaşması ve ilerlemesi, halkın ev ve estetik ihtiyaçlarından kaynaklanmıştır. Tipik olarak, bu alanda üretilen kalın dokumalı 2-3 metreden büyük havlı ve keçe halılar evlerde yer kaplamak ve odaları süslemek için kullanılmıştır. O dönemde Nahçıvan'ın Şarur, Şahbuz, Ordubad ve Culfa bölgelerinde halı sanatı daha yaygındı. Bu bölgelerde halı dokumacılığının gelişmesinde komşu ülkelerle olan ticari ilişkilerin de önemli etkisi olmuştur. Dokuma halıların yoğunluğu 35x35 ile 40x40 arasında değişiyordu ve iplik, iplik ve yüz ipliği nispeten kalındı.

Nahçıvan'da dokunan halılar, sanatsal ve teknolojik özellikler açısından Karabağ grubunun geleneklerine yakın olmasına rağmen, benzersiz bir şekilde gelişmiştir. Ordubad bölgesi tarihsel olarak halı dokuma türlerinin dikey şeritlerle süslenmiş jecim khovsuz halılarının ana üretim merkezi olmuştur. Ağırlıklı olarak ipek liflerinden dokunan bu halılar, beyaz, yeşil, kırmızı, sarı, mavi ve diğer renklerin değişen şeritleri ile süslenerek zarafet açısından kumaş izlenimi yaratmaktadır.

Nahçıvan'da havlı halıların süsü haline gelen "buta" unsuru, kendine özgü sanatsal yapısı ve teknik üslubu nedeniyle "Nahçıvan butası" olarak adlandırılmaktadır. Aynı zamanda Nahçıvan halıları hayvan motifleri de dahil olmak üzere farklı geometrik desenlerle süslenmiştir. Kendine özgü dokusu ve sanatsal yapısı ile öne çıkan tüysüz halı türü, olay örgüsü anlambilimi açısından oldukça ilgi çekicidir. Bazen binicilerin ve develerin dönüşümlü olarak sıralanması ve sarvan veya chul ile süslenmiş deve kervanının sonsuz yaşamın, sürekli dönen yaşam kervanının sembolü olduğunu belirtmek ilginçtir.

Nahçıvan'ın bu zarif halılarının korunması, muhafaza edilmesi ve gelecek nesillere aktarılması için son 30 yılda birçok önemli önlem alınmıştır. Bu olaylardan biri de Nahçıvan Devlet Halı Müzesi'nin kurulmasıydı. Nahçıvan Özerk Cumhuriyeti Yüksek Meclisi Başkanı'nın dikkat ve özeni sayesinde müze 1998 yılında kurulmuş ve 2010 yılında yeni binasına taşınmıştır. Müzenin web sitesinin üç dilde lansmanı, bu kültür kurumunu dünya çapında sanal olarak ziyaret etmeyi, sergideki sergiler hakkında bilgi edinmenin yanı sıra tarihi geçmişimiz hakkında bilgi edinmeyi mümkün kıldı. Bugün, özerk cumhuriyetimizin birçok ziyaretçisi müzeyi ziyaret ediyor ve Nahçıvan Halı Dokuma Okulu'nun zarif halılarıyla tanışıyor. Şu anda müzede 3429 sergi var.

Bağımsızlık yıllarında Nahçıvan halı ekolünü incelemek için başka önemli önlemler de alındı. Böylece meslek yüksekokullarında halı dokuma kursları açılmış, Nahçıvan Kız Lisesi'nde "Dikiş, dokuma ve halı dokuma" çemberi açılmış, "Nahçıvan İş Merkezi" Limited Şirketi'nin halk sanatları atölyesinde halı dokumacılığı düzenlenmiştir. Günümüzde modern sanat ve estetik zevke sahip halılar, halk sanatları atölyesi ve çevrelerinde milli bezemeler temelinde dokunmaktadır.

Eski Gence'de farklı tür ve renklerde halıların dokunduğu bilinmektedir (4, s.79). Araştırmacılara göre Azerbaycan'da halı dokumacılığının tarihi Tunç Çağı'na kadar uzanıyor Teymur Bünyadov, Erken Tunç Çağı halkının dini toplantılarına da bazı önemli özelliklerin yansıdığını yazıyor. İnançlarına göre insan ölümsüzdür, ebedidir.Bir dünyadan diğerine öylece geçer ve o dünyada hayatlarını sürdürürler.Doğa nasıl değişmezse insan da öyledir (4, s. 46). Bazı halı unsurlarında yaşadığı düşünülür.

İlk yerleşim yerlerinden biri olan Nahçıvan'da halı dokumacılığının eski bir tarihe ve zengin geleneklere sahip olması oldukça doğaldır.1, s.5).

Bugün bu gelenekler hala hassasiyetle işlenmektedir.Devlet Halı Müzesi Nahçıvan'da Şubat 1998'den beri faaliyet göstermektedir. Toplam 377 sergi ile faaliyete başlayan müzede, bugün 3.700'ün üzerinde maddi ve kültürel örnek bulunuyor.

Müzenin sergilenmesi, XVIII-XIX yüzyıllardan günümüze kadar 300 yıllık bir dönemi kapsamaktadır. Burada halı dokumacılığının gelişimi kronolojik olarak izlenir: Keçe bu alandaki ilk örneklerden biridir.

Bildiğimiz gibi yün dövülerek yapılır. Yün yere serilir, su serpilir, ilave edilir, katlanır ve dövülür. Daha sonra dokuma sanatı şekillendi. Örgü teller birlikte dokunmuştur.

Halılar sahip oldukları teknolojiye göre havlı ve havsız olarak ikiye ayrılır.

Halı müzesinde ayrıca palaz, jecim, kilim, sumakh, shadda ve diğer dokuma olmayan ürünlerden oluşan bir koleksiyon bulunmaktadır.

Palaz'ın kemerleri ve kemerleri basittir. Süsler şekil olarak basittir. Yün, pamuk ve bazen ipekten dokunur. Dikey şeritlerin genişliği ve genişliği jecim için tipiktir, bazen üzerlerine geometrik elemanlar yerleştirilir.

Halının boyutu ile ayırt edilir. Çiçek motifli çiçekler, eşkenar dörtgen kanca elemanları, neşeli renkler kilim için tipiktir.

Sumax, bot denilen bir teknikle dokunmaktadır. Madalyonlar hayvan ve kuş resimleriyle süslenmiştir. Dış sınırla çevrilidir.

Halı dokumacılığında çeşitli hayvan imgelerine hitap edilmesi kuşkusuz dünya görüşü ile bağlantılıdır. Örneğin Yusif Vezir Chamanzaminli Kızların Baharı adlı romanında koçun kutsal bir hayvan olarak kabul edildiğini ve itaat edildiğini vurgulamıştır.

Çeşmeye geldik,
Su içmek.
Ağaç koçlarına
Boyun eğmek

Ayrıca kurt, ejderha ve kuş resimleri de halılarda anlamlı birer unsur olarak özel bir işleve sahiptir.

Nahçıvan Halı Müzesi'ndeki sergiler, tüm bunların canlı bir resmini veriyor.

Unutulmamalıdır ki Tebriz-Nahçıvan okulu Azerbaycan'daki 4 ana halı dokuma okulundan biridir. Coğrafi konum, bu ekole ait sanat örneklerinin desen, kompozisyon, renk ve teknik özelliklerini önemli ölçüde etkilemiş ve kendine has özelliklerini belirlemiştir.

Nahçıvan halıları işleme tekniği ve sanatına göre geometrik ve çiçek desenli olmak üzere iki gruba ayrılır.
Birinci grup halılarda geometrik şekiller, eşkenar dörtgenler, güneş biçimli imgeler, koç boynuzları başlıca yerlerdir.
tutar.
İkinci grup halılar ise çiçek desenleri, çiçek desenleri, büta motiflerine dayanmaktadır.
Ordubad, tarih boyunca çecim başta olmak üzere dokumasız halı üretiminin ana merkezi olmuştur. Eşkenar dörtgen ve kanca şeklindeki geometrik desenler tarlaları ve bolluğu simgeliyordu. Bütün bunlar Ordubad'ın hayatıyla yakından bağlantılıydı.
Kaynaklara göre Ordubad, Kafkasya'da yüksek kaliteli ipeğiyle ünlüydü. Ordubad ipeği İran, Suriye, Venedik, Fransa, Küçük Asya ve diğer yerlere ihraç edildi. Kuşkusuz Ordubad ipeğinden yapılan jecimler de güzelliği ve kalitesiyle ünlüydü.
Tebriz-Nahçıvan ekolüne ait halılar ağırlıklı olarak XVIII-XIX-XX yüzyılları kaplar ve bu halılar bölgenin düşünce tarzını ve tarihini yansıtır.Bu açıdan bakıldığında Halı Müzesi'nde sergilenen "Abbas Mirza" havlı halıdır. ilgi duyuyor. O zamanlar Nahçıvan'da muhteşem bir kale olan Abbasabad kalesinin koruyucusu Veliaht Prens Abbas Mirza'nın onuruna dokunan halının bir arsası vardır.Minyatür formdaki bu halı ilgi çekicidir.
teknolojik olarak dokunmuştur. Halının üzerine yazılır.
Tanrıya şükür,
Ölü ruhlar
Yeniden canlandı,
sonsuzluğun Veliaht Prensi
Azerbaycan'a geldi.
"Alamlı" havlı halı XVIII. yüzyıla aittir. Halının sağında ve solunda dünya ağacı tasvir edilmiştir. Halının alt ve üst kısımlarında siyahla betimlenmiş dünyalar vardır. Halı, İslam dünyasında kabul görmüş beş evliyanın (Peygamberimiz, Ali, Fatıma, Hasan ve Hüseyin) isimleriyle ilişkilendirilmiştir.
Halının ortasında bir artar-çapraz işareti bulunur. Haçın kutsallaştırılmasının bir nedeni var. Yaşlı adam iki ağacı birbirine sürterek ateşe verdi. Yükselen haç bir ateş işaretidir. Eski insan ateşi sandığı, ağacı ve haçı kutsal sandığından kutsadı. Yığın "Ordubad halısı" yapısıyla da dikkat çeker.Bu halı XX yüzyıla aittir ve Ordubad'da dokunmuştur. Halı çiçek desenleri ile dekore edilmiştir. Ordubad doğasının büyüleyici güzelliği halıyı bakımlı kılıyor.
"Av" halısı XVIII. yüzyıla aittir, desenlerle süslenmiştir. Poligonal görüntüler, keçi ve av görüntüleri, ortadaki koç boynuzları etkiyi önemli ölçüde artırır.
Nahçıvan Halı Müzesi'nde de işlemeler korunmaktadır. Ganovuz, daray, mahud, kadife, keten, pamuklu kumaşlar üzerine ipek ve yün ipliklerden yapılan işlemelerdeki zengin desen motifleri, flora, fauna ve günlük yaşam tasvirleri büyük ilgi görmektedir.
Nahçıvan'da gulabetin, tekelduz, dolma, örtü, jinagi, julma, toz boncuk, file ve diğer işleme çeşitleri yaygındır.
Halıların üzerindeki desen ve resimlerin kendi anlamlarının olduğu bilinmektedir.Ayrıca renklerin farklı anlam tonlarına sahip olduğu da bilinmektedir.Araştırmacılara göre:

Beyaz renk- saf kalp, samimiyet, masumiyet, masumiyet, neşe, mutluluk;
Kırmızı-tutku, aşk, aynı zamanda utangaçlık;
Sarı- şöhret, lüks, sadakatsizlik;
Mavi- dindarlık, bilgelik, bilgelik;
Siyah- keder, yas, keder, keder;
Açık-kırmızı-güç, güç, ihtişam;
Pembe- gençlik, zarafet;
Yeşil- umut;
Mor- saf aşk;
Leylak rengi- bilgelik, samimiyet, ihtişam;
Turuncu- hırs;
Gri- üzüntü, hayal kurma, hayal kurma;
Koyu pembe- derin üzüntü;
Soluk sarı- yaşlılık anlamına gelir ve ifade eder.

Bu renklerin halılarımızda büyük bir ustalıkla kullanıldığını belirtmek gerekir. Bu açıdan kılıfların boyanması da önemli bir durumdur. Kamil Valiyev şöyle yazıyor: "Resim ülkemizin kadim sanatlarından biridir. Halının güzel görünümü ressamın rengine bağlıdır. Eski zamanlardan beri ressamın evi bir misafirhane, bir nimetler evi idi (2, s. 102).

Eski zamanlardan beri çiçekler, ağaç kabuğu, dut kökü ve boya otu boyama için kullanılmıştır. Doğup büyüdüğüm köyde evlerin çoğuna hana yapmışlar, halı, kilim, gabas ve jecim dokumuşlar. Şimdi bile bu güzel sanatı devam ettiren çok kişi var.

Koyunları kırkıyorlar, yünü yıkadılar, taradılar, yüze büktüler, iplik demetleri yaptılar ve boyadıktan sonra kilim, kilim, kilim ve halı demetlerini ayırdılar.

Daha sonra ipleri boyamak için sadece farklı cevherler kullanıldı, ayrıca boya kapları da var. İplikler tencerede boyandıktan sonra güneşin önüne serilir.

Bütün bunlar, gelenek ve pratiğin özel rolü hakkında konuşmanın gerekli olduğu halı teknolojisinde çok önemli aşamalardır.

Unutulmamalıdır ki, halı dokumacılarımız dokuma sırasında el sanatlarının üzerine güzel bir fon oluşturur ve fon üzerine ilmeklerle kelimeler yazarlar. Halıyı dokuyan kişinin adını ya da adını, halının dokuma tarihini, yaşadıkları bölgenin adını anmalarının farklı amaçları vardır. Bunun bir önemi de halı dokumacılarımızın isimlerinin farklı yerlerde bilinmemesi, onların oluşturdukları gelenek ve özelliklerin hızlı bir şekilde tespit edilmesidir.

Bu el sanatları Nahçıvan'da bir sanat abidesi olarak kabul edilir. Dokumalarının yeri ve tarihi de bu açıdan ilgi çekicidir.

Nahçıvan'da meşe ağacından hanas dokuma halılar yapılır.İki ana ağaç kullanılır. Ana ağaçlardan biri üstte, diğeri altta bulunur.

İpleri birbirine bağlayan kuçu ağacı, halı dokumacılığında da önemli rol oynar.

Halatları kaldırmak ve indirmek için kullanılan ağaca dal denir.

Halı dokumacıları bıçak ve makas kullanır.

Dokuma sırasında farklı gelenekler takip edilir, bu bizim inancımızdan kaynaklanmaktadır. Örneğin, örmeye başladığınızda başarılı bir kişinin size gelmesi önemlidir. Eve halı dokuyan komşular sabahlık ya da şeker getirirler.

Görüldüğü gibi Azerbaycan'da halı dokuma sanatına her zaman çok değer verilmiş ve burada dokunan halılar gerçek sanatın çekirdeği haline gelmiştir. Azerbaycan halılarının korunduğu ve dünyanın birçok müzesinde sergilendiği yadsınamaz bir gerçektir.

Bütün bunlar, kadim geleneklere sahip halı dokuma sanatının bugün Nahçıvan'da yeni bir gelişme aşamasına girdiğini bir kez daha teyit etmektedir. Anneannelerimizin emeğinin, sanat zevkinin ve hayal gücünün ürünü olan bu kadim sanatı korumak ve geliştirmek için devletimizin attığı adımlar, tarihi geçmişe, milli ve manevi değerlere verilen büyük önemin ifadesidir. bizim insanlarımızdan.

Araştırma, Tebriz-Nahçıvan ekolüne ait sanat örneklerinin halı dokumacılığında oldukça değerli olduğunu göstermiştir.

KAYNAKLAR

Azerbaycan folkloru antolojisi. Nahçıvan folkloru.I c. Nahçıvan, Acemi, 2010, 512 s.

Valiyev K. Halkın hafızası, dilin hafızası. Bakü, Gençlik, 1987, 280 s.

Zeynalova L. Azerbaycan halıcılığının tarihi, halkımızın tarihi kadar eskidir. "Doğu Kapısı" gazetesi, 16 Aralık 2009

Bunyadov T. Cesur kaleler, sert kayalar. Bakü, Azerbaycan Devlet Yayınevi, 1986, 139 s.

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INVESTIGATING FOLLOW-UP IN THEATRE FOR DEVELOPMENT: AN EXAMMINATION OF THE UNIVERSITY OF ABUJA 2019 AND 2021 GWAGWALADA PROJECT

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Abstract
Theatre for Development as a communication strategy is based on the theory that people, especially underprivileged communities in rural or semi-urban areas relate more to development programs in which they become and are seen as active participants, rather than passive recipients of development assistance. Theatre for Development thus, relocates indigenous cultures from the periphery to the very centre of the community and makes it an integral part of the communal planning and decision -making process. Over the past two decades, the department of Theatre Arts of the University of Abuja has theoretically and practically engaged its staff and students in the field; experimenting community-based theatre through drama. However, a major constraint that has bothered the practice of Theatre for Development in the University of Abuja, like most tertiary institutions Nigeria is the issue of follow-up. It is always considered a herculean task since the entire Theatre for Development field work must operate within the parameters of curriculum and the time it takes. This paper explores the 2019 and 2021 Theatre for Development experiment carried out in 8 communities located in Gwagwalada Area Council of the Federal Capital Territory, Abuja; Nigeria, which was an attempt to break the jinx about the difficulty in following up Theatre for Development projects to know the level of success or weaknesses if any. This paper is descriptive as it exposes how the University of Abuja team experimented and followed up their Theatre for Development practice in same communities consecutively in 2019 and 2021. It concludes that, follow-up mechanism is as important as the entire Theatre for Development stages and should be treated as such.
Keywords: Investigating, Follow-up, Theatre, Development, University, Abuja

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REFLECTION OF LEARNERS RELATED TO ONLINE INSTRUCTION

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ABSTRACT
Online instruction has been claimed to offer flexible, interactive, and intellectually stimulating learning environments. However, it is a relatively new concept in the field of education. In addition, the advantages of online instruction could be overrated, and the real needs of learners may be ignored. If educators want to facilitate student-centered, authentic, and lifelong learning, then it is necessary to design their instructional methods together with learners. The primary goal of this study is to determine the reflection of freshmen university students on their online courses they had during the shutdowns of epidemic in the year of 2020 and 2021. The setting of the study is a translating and interpreting program in a small university in the east west of Turkey. The number of the participants are 30 and the average age of participants ranges between 18-22 years. To collect information regarding students' reflections about their online instruction experience, semi-structured interviews and classroom discussion are administered and subsequently analyzed via content analysis. The qualitative data was organized by theme under the categories of perceived weaknesses and strengths of online instruction. The study aims to explore the various possibilities for implementing blended instruction and obtain significant insight from learners regarding which features of online are useful. It is hoped that the results would contribute into understanding of online instruction so that educators could continue to benefit from the strengths of the online mode in the traditional face-to-face classes while trying to working out the weakness of it.
Keywords: Online instruction, reflection, blended instruction

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DRAMA INTEGRATED LANGUAGE CLASROOMS

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ABSTRACT
The approach of integrating drama in the language teaching and learning process has gained much attention from researchers, educators, and instructors as it provides a meaningful and active learning environment. According to Holden (1982) “drama is concerned with the world of ‘let’s pretend’; it asks the learner to project himself imaginatively into another situation, outside the classroom, or into the skin and persona of another person’ (p. 1). The use of drama or dramatization in language teaching can promote the creativity and imagination skills of learners; therefore, they might have the opportunity to experience the context where they can use language effectively. There are many advantages and techniques to use drama language learning. However, when it comes to integrating drama into the classroom effectively and efficiently, some points should be taken into account. Hence, this study will deal with some practical considerations to design an effective language learning environment through drama. It starts with how to set the drama classroom and environment. Then it covers the key issues such as language level of the students, time, and lesson plan to prepare an effective drama integrated teaching. In addition, it focuses on the process-oriented approach that is the base for drama classes followed by the effective role of teachers and the students.
Keywords: integrating drama, language learning and teaching, drama oriented language classroom

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TRADITIONAL HEALING IN GREATER SEKHUKHUNE DISTRICT MUNICIPALITY, LIMPOPO PROVINCE IN SOUTH AFRICA: CULTURAL BELIEFS AND PRACTICES OF BAPEDI PEOPLE

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Abstract
Much of traditional healing in Greater Sekhukhune District Municipality still has not been studied or described. A great deal of traditional healing around Bapedi people is associated with religion and rituals, especially with ritual dancing. In the Bapedi society, music more than any other activity, defines life in a specific way. Cultural beliefs and practices develop and can be expressed differently in various situations. Rituals are performed to cure health related problems or ailments, reveal the future, remove impurity, change people's social status, defeat enemies and increase fertility. Various methods of divination are used by Bapedi traditional healers (dingaka), and the most common method is the utilization of a set of divination bones. This study aimed at investigating the local wisdom of the Bapedi people who still retain cultural values and traditions of their ancestral heritage. To achieve this aim, the following research question therefore guided this study: Are Bapedi people still able to maintain and preserve cultural values and tradition of their ancestral heritage? This study employed historical, descriptive and interview methods to collect data. Most of the interviews were informal and spontaneous. All the interviews were conducted in Sepedi language and audio-recorded. The findings have shown that healing is common to African Traditional Religions and whenever Bapedi people have an element of doubt in their daily lives, they do not only consult with traditional healers, but also consult with prophetical diviners. The findings of this study also highlight that in the Bapedi society, the use traditional medicines by traditional healers in particular, and Bapedi people in general is effective in preventing and curing different health related problems or ailments, and Bapedi people still retain cultural values and tradition of their ancestral heritage.
Keywords: Bapedi people, ancestral heritage, cultural beliefs and practices, rituals, Bapedi society, Greater Sekhukhune District Municipality, Limpopo Province, South Africa

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COMMUNICATION STRATEGY TO CONTAIN COVID-19 PANDEMIC IN NIGERIA

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Abstract
This paper identifies an effective various communication strategy that can be utilized to contain Covid-19 Pandemic in both urban and rural Nigeria. The study utilizes secondary data on COVID-19 to analyze and draw conclusion on communication plan to contain the virus. The study adopts Agenda Setting Theory of the press to explain how the media draw public attention on the dangers posed by the disease to socio-economic development of Nigeria. The study found that media can contribute towards the fight against COVID-19 in the area of creating awareness and educating the public through coverage. This can be achieved through news reports, editorials, commentaries, television and radio health programs (both live and recorded). Others include radio and television jingles, spots announcements and drama to illustrate safety measures. It also identifies misinformation as the major threat to anti-COVID-19 communication strategy because it incites fear into the minds of the public and thus creates apathy towards the disease and its vaccines. The study recommends that government should increase budgetary allocation to public enlightenment on how to curb the spread of the disease. Also, media workers and other stakeholders in the health sector should work hand in hand to develop a more comprehensive communication strategy that will contain the pandemic at both rural and urban Nigeria
Keywords: COVID-19, Strategy, Communication, Pandemic, Contain

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SOCIO ECONOMIC BENEFITS AND RURAL HEALTH CARE SERVICES: A CASE STUDY OF ASSAM

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ABSTRACT
After independence, health activities of the Indian state were initiated through five year plans and organizing different committees. The aim of the health care system is to improve the quality of the care provided, improving patient outcomes, and reducing the cost of cares. The health care infrastructure has been developed in rural areas on the basis of population norms as a part of three tier system in India. These three tiers of health system in rural areas comprises of Sub Centre at the grass root level, Primary Health Centre (PHC) at the intermediary level and Community Health Centre (CHC) at the top level. In the hierarchy of health care, District Hospital is at the apex and provides specialized services at district level.
The paper attempts to study the impact of rural health care services and the socio-economic development of the rural people of Assam. Taking into account the socio-economic variables, the study is based on both primary and secondary data. Primary data was collected through simple random sampling survey done in the Nagaon district (highest rural population) of Assam. Secondary data was gathered from various health reports and sample registration system data available. The results and analysis have been done with the help of statistical software. The study finds out that more than 40 per cent of population is living in the most peripheral and difficult terrains with least access to certain minimum health care facilities. Many villages in Nagaon district still lack in proper sanitation, safe drinking water, drainage and transportation facilities which are the basic requirement for the socio-economic development of a society.
Keywords: socio-economic variable, health facilities, rural Assam

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IS-LM ANALYSIS: IS-LM MODEL AND IS_LM ISLAMIC PERSPECTIVE

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ABSTRACT
Economic activity is basically determined (determined) by income. When income changes, consumption will also increase so that total demand can be obtained. It can be seen in Islamic economics that there is a balance between the goods market and the money market. The balance in the goods market is denoted by the s curve, and the balance in the money market is denoted by the lm curve. The purpose of this study is (1) to find out the history of s-lm, (2) to find out the balance of goods market and money market, (3) to know the balance of money market and goods market in an Islamic country. perspective and impact of policies on the balance of s-lm. The research method used is literature study related to the object of research. The results of this study refer to human activities in daily life which are depicted in curves. graphically, the money balance and the capital market are expressed by the lm curve. This lm curve shows the lines of the various combinations of interest and income flows that create a money market equilibrium. And the s-lm balance is the general economic balance between the real sector and the financial sector of a country.
Keywords: IS-LM analysis, IS-LM models, Islamic perspective

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MONEY IN ISLAMIC ECONOMIC PERSPECTIVE

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ABSTRACT
To meet the needs of their lives, people cannot do everything alone. Long before western nations used money in every transaction, the Islamic world had known the means of exchange and measuring value, even the Qur'an explicitly stated that the instrument for measuring value was in the form of gold and silver in various verses. So this study intends to describe money in the perspective of Islamic economics. This research method uses literature review. Based on the analysis of various literatures, this study concludes that in Islam, money is seen as a medium of exchange, not a commodity. The role of money is intended to eliminate injustice, dishonesty, and exploitation in the economy of exchange (barter). Because in the barter system there is an element of injustice which is classified as usury al Fadl, which is prohibited in Islam. In Islam, it is known as the time value of money, which is known as the economic value of time. The implication of the concept of time value of money is the existence of interest. While interest is closely related to usury, and usury is haram and zulm, and religion forbids it. So that it is considered not in accordance with justice where "al-al-qhumu bi qhurni" (getting results without taking risks), and "al-khraj bil adhaman" (getting results without incurring costs).
Keywords: Money, Islamic economics, and value

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REVITALIZATION of RELIGIOUS CULTURAL TOURISM DESTINATION DEVELOPMENT

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ABSTRACT
The dynamics of accelerating tourism growth increase the demand for alternative forms of tourism, strengthening the diversity of products and tourist destinations. One form of community empowerment in the village is the Tourism Village. Village development is the basis of national development. Each village is expected to be able to carry out development independently so that community welfare will be easily realized and increase the people's prosperity index. The policy of revitalizing tourism development has an impact on the development of beautiful and livable rural areas with natural resources and beautiful scenery has become a trending topic on social media. The shift in tourist visits to the village is the reason for the revitalization of special tourism developments called tourist villages which are thick with cultural attractions and living together with local residents. With the development of tourist villages, it can add more diverse tourist attractions that are able to attract tourists, so as to increase community economic activities, so as to create equitable development that can compete with other tourism. Revitalization of tourism development as an alternative development approach that aims to increase economic growth, overcome unemployment, to eradicate poverty, and to improve people's welfare. Tourism development is an effective way to revitalize tourist destinations. Tourism revitalization involves the community as an important component, because the community has great authority and responsibility for tourism management. Tourism can be used as a strategic medium in economic empowerment by providing opportunities for the community to develop and empower tourism.
Keywords: Tourism, Revitalization, Cultural

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ISLAMIC MARKET MECHANISM: PRICE SETTING THEORY AND THE ROLE OF GOVERNMENT

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ABSTRACT
One of the important decisions in the marketing mix is "price" namely pricing, because in this pricing the company must set goals, calculate costs, demand levels, market prices and other achievements that the company wants to get for its products or services. Although the pricing method used is the same for each company, it is based on cost, competition, demand, and profit. But the optimal combination of these factors differs according to the nature of the product, its market, and the objectives of the company. This study intends to describe the Islamic Market Mechanism: Pricing Theory and the Role of the Government. Based on the analysis of various literatures, this study concludes that the relationship with the product cannot be separated from the issue of price, to be successful in marketing a product or service, every company must set the price correctly, there are several pricing. In setting prices, there are various methods that can be used. Pricing is usually done to add value or the amount of production costs that are calculated against the costs incurred and the sacrifice of energy and time in processing goods or services. In determining the selling price of a product, a company must pay attention to various parties such as end consumers, distributors, competitors, suppliers of funds, workers, and the government. Because the price level is inseparable from the purchasing power of consumers, the reactions of competitors, the type of product and the elasticity of demand and the level of company profits. methods, namely choosing a pricing objective, determining demand, estimating the cost of competitors' prices and offers, selecting a pricing method and selecting a final price.
Keywords: Price, Product and Market

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THE INFLUENCE OF AN UNSTABLE ECONOMY ON THE UNEMPLOYMENT RATE IN PEKALONGAN

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ABSTRACT
Unemployment is one of the problems in the economy caused by, by the labor imbalance which indicates that the number of workers who supplied exceeds the number of workers the number demanded. The high unemployment rate what happens will reflect the good and bad of the economy of a country or a region. In addition, one of the most important issues for a country or country to pay attention to is area is the problems of unemployment, this will have an impact on various crimes, sosial politics and poverty. In the city of Pekalongan the unemployment rate is relatively high compared to the other regencies and cities in Central Java Province. This can be seen from the development of the unemployment rate in the city Pekalongan in 2018-Present which always above 5,05% and this year it increased to 6,13%. In contrast to other districts and cities which are sometimes able reduce the unemployment rate to below 5%. Unemployment that occurs is in theory, of course, there are several indicators that influence it, including growth population and inflation rate. From the above background, the problems in this research is whether population growth and inflation affect the unemployment rate in cities Pekalongan in 2018-Present? And what is the view of Islamic Economics on unemployment that occurs in the city of Pekalongan? The purpose of this research is to analyze the effect of population growth and inflation on the views of Islamics Economics on the level of unemployment in Pekalongan City. The type of this research is quantitative research with regression analysis method multiple linear. Data obtained from secondary data published by the Central Agency Statistics in 2018-Present. Based on the results of the study, it can be cocluded, firstly, population growth has a positive and significant effect on the unemployment rate in Pekalongan. This is evidenced by the results of the individual parametric significance test (t-test) with t-count value of 8,520 is greater than t-table of 2,3646. While inflation is not significant influence on the movements in the city of Pekalongan. Thing this is evidenced from the results of the t-test with a value of the t-test with a value of t-count of 1,328 which is greater than t-table of 2,3646, secondly, in terms of Islamic Economics, unemployment is impossimble recommended and ordered. From the results of the research conducted, the movemebt in the City Pekalongan is significantly affected by population growth. As put forward by Dr. Yusuf Qardhawi that there are two types of movement, namely: the jabbariyah movement (forced) and the khiyariyyah movement (caused by motivation).

So that the population increases, if there is no additional motivation, quality of human resources and additional employment opportunities will have an impact on growing mountains.

Keywords: Significant, Problem, Unemployment Rate, Unemployment Effect, Islamic Economics

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INTEREST RATE AND BEHAVIOR

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ABSTRACT
According to Mankiw (2003:58), the interest rate adjusts until the number of companies that want to invest is equal to the number of households that want to save. In other words, the amount of loanable funds demanded exceeds the amount supplied. According to Mankiw (2003:58), the interest rate adjusts until the number of companies that want to invest is equal to the number of households that want to save. In other words, the amount of loanable funds demanded exceeds the amount offered. This study intends to describe the level and behavior of interest rates. This method uses the literature review method. Based on the analysis of various literatures, this study concludes that interest rates are income (for creditors) or expenses for (debtors) received or paid by creditors or debtors. According to the complete dictionary of economics, the interest rate is the compensation paid by the borrower of funds to the borrower. For borrowers, the interest rate is the cost of borrowing or the price paid for money lent, which is the exchange rate of current consumption for future consumption. It is usually expressed as an annual percentage charged on money borrowed or lent. The elements that determine the interest rate are the cost of funds, overhead costs, risk costs, desired profit, and taxes. Conventional banking activities cannot be separated from the interest rate factor. The interest rate is the cost of borrowing (income from credit) expressed as an annual percentage.
Keywords: Interest Rates, Borrowing Costs, and Money

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GOVERNMENT'S ROLE IN OVERCOMING THE IMPACT OF THE COVID-19 PANDEMIC FOR MSMES IN INDONESIA

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ABSTRACT
The Covid-19 pandemic that has occurred throughout the world, including in Indonesia, has brought many impacts in various sectors of human life, including the economic sector. This study aims to explain the role of the Indonesian government as a policy maker regarding the handling of the Covid-19 pandemic for MSMEs. The method in this research is a phenomenology empirical study in the form of library research using a qualitative research approach. In this study, used secondary data obtained from previous research studies and other literature with similar research topics. The research results explain that the Covid-19 pandemic has had a significant impact on MSMEs. These include the impact on income, the impact on the workforce, the impact on credit repayment, and the impact on the availability of capital. All of these impacts are a blow to the domestic economic sector, especially for MSMEs in Indonesia, so the government needs to provide solutions to these various impacts. However, the government is trying to overcome these impacts to save the sustainability of MSMEs. These include support priority policies, credit restructuring, working capital loans, digitalizing MSMEs, tax intensification, and social assistance. Hopefully, with these steps, MSMEs in Indonesia can be saved from the impact of this pandemic.
Keywords: Government’s Role, Pandemic & MSMEs

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INFLATION IN ISLAMIC AND CONVENTIONAL PERSPECTIVE

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ABSTRACT
World economic inflation has a negative impact on the purchasing power and welfare of the entire community. This is because inflation will cause a decrease in economic efficiency and productivity, an increase in investment costs, capital, and uncertainty of future expenses and income. In order to control inflation, the government needs to develop various theories, methods and policies. This study intends to describe inflation in Islamic and Conventional Perspective. The method in this research uses literature review from various books and journals. Based on the analysis of various literatures, this study concludes that the definition of inflation according to Islamic and conventional economics is the same. Inflation is a continuous increase in prices over a certain period of time. The Islamic perspective views that inflation is divided into two based on the causes, namely natural inflation and human error inflation. Meanwhile, in the conventional economic perspective, inflation is divided into three (3) namely based on the rate of inflation, its causes and origins. To overcome the impact of inflation on the Islamic economy, it is recommended to replace paper currency (fulus) into gold and silver again and prohibit excessive imports so as not to strangle domestic producers. The solutions offered by conventional economics include implementing monetary, fiscal and non-monetary policies.
Keywords: Inflation, Islamic, and Conventional

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BUYING DAN SELLING CONTRACTS IN THE SHOPEE MARKETPLACE IN TERMS OF MURABAHAH, SALAM, AND ISTISNA' CONTRACTS

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ABSTRACT
This online shopping trend is increasingly widespread and loved by the public, especially after a pandemic that requires us to stay at home, to suppress the Covid-19 outbreak in Indonesia. Many sites or platforms provide community needs, from primary, secondary, and tertitary needs so that this makes it easier for the community to meet their needs. Including shopee, where shopee is one of the market places that are loved by the people of Indonesia. This application offers various promotions such as free postage vitur, shopee pay, shopee pay later, and various interesting games to get coins and additional vouchers. Therefore, various online marketplaces flock to provide attractive features for both sellers and buyers. But how is the law of buying and selling online in an Islamic perspective? Is the buying and selling contract system usd by the Shopee marketplace in accordance with Islamic sharia principles? Considering the majority of citizens in Indonesia are muslims. This research intends to describe buying and selling contracts in the Shopee marketplace in terms of Murabahah, Salam, and Istisna' contracts. This research method uses literature review. Based on the analysis of various literatures, this study concludes that found irregularities in the Salam contract that were not in accordance with the existing contract practices at Shopee. But transactions in Shopee are considered valid because they do not violate the contract in Islamic buying and selling, namely with the Murabahah and Istisna' contracts.
Keywords: Buying and Selling, Murabahah, Salam, Istisna', and Marketplace Shopee

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ECONOMIC VALUE OF LNG TRANSPORT FROM THE EASTERN MEDITERRANEAN TO EUROPE

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ABSTRACT

The exclusive economic zone (EEZ) utilization conflicts in the Eastern Mediterranean triggered liquefied natural gas (LNG) transport alternative from Leviathan and Greek Cypress basins to Europe. Thus, Greek Cypress is funded for a liquification plant at Vassilikos with a projected annual capacity of 6.8 billion cubic meters per year (bcmy). Israel and Egypt signed long term agreement to transport spot LNG from Egypt to Europe with an average of 5.7 bcmy of natural gas (NG) for 15 years. Egas and Eni announced a deal agreed to restart of the 5mnty (6.8 bcmy) capacity Segas LNG export terminal at Damietta. Both combined makes a total of 12.5 bcmy. Both capacities meet about 10 percent of Europe's LNG demand. Europe is a net importer of gas which is supplied via NG pipeline and LNG carriers. Following a record of 115 bcm of LNG imports in 2019, an oscillation is expected in a range of 90-110 bcmy through the medium term.

WEO 2016 NG import price forecasts for EU are used for LNG revenues which are estimated using (NG price $/Million British Thermal Units(MMBtu))/23,12*(volume of gas transport) where LNG liquid cubic meter is 23.12 MMBtu. LNG transport cost including charter costs, fuel costs, port costs, agents and broker fees plus insurance is estimated using Dual Fuel Diesel Electric (DFDE) carrier. Break-even values of feedgas, liquification and regas&grid are adopted from the Oxford Institute for Energy Studies to calculate costs ($/MMBtu) of LNG supply from Leviathan to Europe. Total cost of feedgas, liquification, transport and regas&grid is calculated.

Based on these values, this article estimates net present value, economic internal rate of return and benefit/cost ratio of LNG transport and compares it with economic value of pipeline transport.

Keywords: LNG transport, Economic value, Israel, Cyprus, Europe

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TESTING THE EFFECT OF THE CHANGING SAVINGS DYNAMICS ON THE GROWTH TREND IN TURKEY OVER THE YEARS: USING THE ARDL APPROACH

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ABSTRACT
In this study, the long-term effect of domestic savings on economic growth in Turkey examined and the relationship between domestic savings and growth was tested with the ARDL test. The growth corresponding to the quantitative increase in the production of final goods and services is developing at the origin of the savings used to finance investments and the increase of production factors. On the other hand, the vast majority of the savings are covered by households and they finance some of the public sector and private sector investments from here. Especially after the 2000s, it has been observed that consumption has increased and savings have decreased due to changing consumer behavior in Turkey and the world, and therefore it raises external dependence and therefore chronic interest rate problems at the point of finding financing. This is considered to be an element that increases the costs of countries and firms. In the economic literature, testing the existence of the relationship between savings and economic growth that has been going on for many years and measuring its severity is an important element in guiding consumer behavior and policy-making of countries.
In this context, within the scope of this study, both current data will be used to answer the discussions in the literature and policies that can be implemented in the light of the results in which the positive effect of an increase in savings on growth has been observed are listed. In this way, the contribution and influence of the growth dynamics in which many macro-economic data interact directly and indirectly on other parameters will also be revealed. In addition to the numerical dimension of the interaction that occurs with the help of cointegration analysis as a result of econometric analysis, the social meaning and cost of figures due to the nature of economic science were emphasized and the policies that should be applied in the study were listed in this context. In the following studies, the basis was prepared for the analysis by taking into account the structural fractures.
Keywords: ARDL Test, Savings, Economics Growth

INTRODUCTION
The effect of savings growth on economic growth in terms of capital accumulation and, moreover, transformation into investments has an important place in the growth theory of the neoclassical model. Since growth is the most important building block of an economy, the factors that affect growth endogenously or exogenously are also important as a whole or in a singular way. In this study, the effect of savings of these parameters on growth was investigated.
In this aspect, there are studies that mention a positive relationship between saving and growth (Lucas, (1988); Decaratto, (1999); Mankiw etal. (1992); Barro and Sala-i-Martin, et.al. 1995); Romer, (1986); Rebelo, (1991); Romer, (1987)).

On the contrary, studies that savings have a negative relationship with economic growth are also included in the literature Cass, (1965); Koopmans, (1965); Ramsey, (1928). One of the important issues that leads to the difference here may be related to the fact that savings are endogenous and/or exogenous variables, as well as may be related to the economic structure of countries (Tarlog, (2010)).

In the studies examined for Turkey (Çetinkaya and Türk (2014); Peace and Space (2015); Yentürk et al. (2009); Ekinci and Gül, (november007); Kasa et al., (2018)) found the positive effect of savings on growth, (Çağlayan (2006); Abdioğlu and Berber, (2007)) found the positive relationship of growth on savings. The results of Gül and Acar et. al. (2018) however, in their study causality test in 2016, no causality relationship was found (Gül and Acar (2018)).

METHODOLOGY AND EMPİRİCAL FİNDİNGS

In the analysis in which the effect of savings on per capita income calculated by purchasing power parity was examined, annual data covering the period 1990 – 2020 were used for Turkey. In this context, it is aimed to determine the cointegration relationship with the help of ARDL. First, it is necessary to decide whether the series are stationary or not.

In order for a time series to be stationary, it's mean and variance must not change over time, and the covariance between two periods must depend on the distance between the two periods, and not on the period for which it was calculated (Gujarati, 2005: 713). In this study, the stationarity of the variables was analyzed using the Dickey-Fuller (1979) and Phillip-Perron (1988). The Dickey-Fuller (DF) test is performed based on three regression equations:

No constant or trend : $\Delta Y_t = \gamma Y_{t-1} + \mu_t$

Constant : $\Delta Y_t = \alpha_0 + \gamma Y_{t-1} + \mu$

Constant and trend both : $\Delta Y_t = \alpha_0 + \alpha_1 t + \gamma Y_{t-1} + \mu_t$

if the error term 'ut' is cohesion, the equation is to be defined as follows:

$$\Delta Y = \alpha_0 + \alpha_1 t + \gamma Y_{t-1} + \beta_i \sum_{i=1}^{m} \Delta Y_{t-i} + \mu_t$$

Where 'm' denotes the lag length, 'Δ' denotes the difference operator. The number of delays depends on obtaining the incohesion model. In this way, the test is known as the Augmented Dickey-Fuller (ADF) test.

Tablo 1: Unit Root Test Result

Variables	Test statistics	
GDP-g	**ADF**	**PP**
I(0)	-6.436***	-6.435***
I(1)	-7.528	-18.942
	Critical Value	
%1	-4.309824	-3.581
%5	-3.574244	-2.926
%10	-3.221728	-2.601
Sv		
I(0)	-2.405	-2.199
I(1)	-9.183***	-9.309***
	Critical Value	
%1	-3.584	-3.581
%5	-2.928	-2.926
%10	-2.602	-2.601

Note: ***, ** ve * respectively, %1, %5, and %10

The null hypothesis of H0 for PP and ADF tests are that it possesses a unit root. Because the test statistic is greater than the critical values at the level values, it is considered. That is, the serial has a unit root and is nonstationary. GDP-g has no unit root at I(0) for both tests. Sv has a unit root at I(0). However, when the difference of the series is taken, the null hypothesis can be rejected. As a result, series are both stationary at I(1).

It was concluded that the variables were not stationary at the same level. Cointegration tests such as Engle-Granger (1987) and Johansen (1988), which are often used in the literature, require variables to be integrated at the same degree. However, variables can be tested through the ARDL model proposed by Peseran et al. (1999), which tests the relationship between integrated variables of different degrees.

Tablo 2: Bound Test Result

k	F istatistiği	Kritik Değer
1	9.820	[7.74 I(0) – 8.65 I(1)] %1 [1]

According to the results, the F statistic (9.820) is greater than the upper value (8.65). Therefore, the Ho hypothesis is rejected. Thus, it is concluded that there is cointegration.

[1] 'k' is the number of independent variable. The critical values were determined by Pesaran et al. The Table in (2001:300) is taken from CI (iii).

Tablo 3: Estimated Long Term Spillover Coefficent

Variables	Coefficent	T statistics	P value
GDPGR(-1)	0.054	0.343	0.733
GDPGR(-2)	-0.028	-0.199	0.843
GDPGR(-3)	-0.057	-0.392	0.697
GDPGR(-4)	-0.329	-2.217	0.033
SV	0.024	0.112	0.910
SV(-1)	-0.074	-0.302	0.763
SV(-2)	-0.027	1.160	0.254
SV(-3)	-0.067	-2.730	0.010
SV(-4)	0.289	1.283	0.208
C	7.438	1.903	0.065

In the model, the dependent variable is LNGDPP. Expressions in parentheses (4,4) means that the dependent expression is first, gives the lag length of dependent and independent variables.

Tablo 4: Estimated Long Term coefficent result

Variable	Coefficient	t-Statistic	Prob.
SV	-0.1139	-3.318938	0.0036

Note: EC = LGDPg - (-0.1139*LNSV). There is no trend.

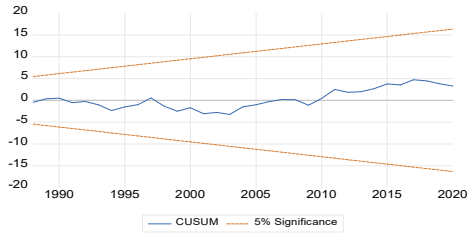
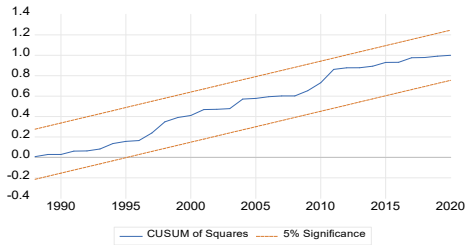
When the long-term coefficients obtained from the ARDL model are examined, the following conclusions can be reached. The coefficient of savings rates is negative and statistically significant. The decrease in the savings rate (LSV) by 1% causes to an increase in the gross domestic product calculated according to purchasing power parity by 0.11% over the long term.

Tablo 5: Diagnostic Test Results

Variable	Results
X^2_{BG}	1.22(0.31)
X^2_{Norm}	1.65(0.43)
X^2_{Lm}	0.22(0.79)
X^2_{Ramsey}	1.19(0.28)

The diagnostic test results of the model provide strong evidence that the prediction was successful. The statistics obtained from autocorrelation, heteroscedasticity, normality and error corelation model tests are acceptable.

Şekil 1: Stability Tests (Short Term)

CUSUM	CUSUMQ
	

According to the CUSUM and CUSUMQ test results, the parameters provide the estimated stability condition over a long period of time.

Tablo 6: Error Correlation Model Test Results

Variable	Coefficent
CointEq(-1)*	-1.36 (0.001)

Finally, the error correction term (ect) is statistically significant and, as expected, is negative. Therefore, the error correction term of the model (-1.36) is working. The series that move together in the long term disappear with deviations that occur in the short term. The series converges again to the long-term equilibrium value. According to Narayan and Smyth, the fact that the error correction term is greater than 1 as an absolute value indicates that the model converges at the equilibrium level in a fluctuating long term (Peker and Göçer, 2010: 1192). According to the table, a mislalignment that will occur in the short term reaches a long-term balance after 0.75 years.

RESULT

In this study, the long-term effect of the total domestic savings rate on economic growth was investigated for Turkey. Economic growth is consistently influenced by savings in the neoclassical sense, and refers to the long-term effects of savings on income. But depending on the economic structure of countries and other dynamics, practically different results can be obtained in terms of the direction of the relationship savings and economic growth. This difference can be both in terms of the direction and violence of the relationship.

According to the results obtained in this study, it was concluded that the relationship between savings and growth is negative and weak. Theoretically, when we consider the investment dynamics, there will certainly be savings among the driving forces of growth. The vast majority of savings come from household companies and public sectors use household savings to meet investment requirements and finance resource gaps. Motivation and incentive-based measures to encourage savings and savings income based measures to strengthen the capacity increase productivity with a two-way approach to achieve higher revenue and savings and will be useful to strengthen the momentum of growth. However, volatility in savings rates and attractive force in capital movements in developing countries require the use of different parameters to explain growth.

In this study, savings, which are the only independent variables in explaining growth, have a negative effect on growth. In other words, the corresponding 10% increase in savings reduces growth by 1%. It is concluded that growth can occur in Turkey during periods when income justice is impaired, purchasing power is reduced, and therefore the possibility of saving is reduced. This result leads to the conclusion that the only way for Turkey to have a high growth rate despite its weak savings structure and high consumption in recent years is through external borrowing. External dependence, on the other hand, restricts the sustainability of this growth dynamic and brings economic and political uncertainties. In subsequent studies, the inclusion of different parameters in the model along with savings in explaining growth will carry the results of this study forward.

REFERENCES

Alptekin, V., Kasa, H., & Uygun, E. (2018). Yurtiçi Tasarruflar Ile Ekonomik Büyüme Arasındaki Ilişki: Türkiye Örneği. International Journal Of Academic Value Studies, 4(20), 621-630.

Barış, Serap Ve Uzay, Nısfet (2015), Yurtiçi Tasarruflar Ve Ekonomik Büyüme Arasındaki İlişki: Türkiye Örneği, Erciyes Üniversitesi İktisadi Ve İdari Bilimler Fakültesi Dergisi, Sayı: 46, Temmuz-Aralık 2015, Ss:119-151.

Barro, R. J., & Mccleary, R. M. (2003). Religion And Economic Growth.

Cass, D. (1965). Optimum Growth İn An Aggregative Model Of Capital Accumulation. The Review Of Economic Studies, 32(3), 233-240.

Cesaratto, S. (1999). Savings And Economic Growth İn Neoclassical Theory. Cambridge Journal Of Economics, 771-793.

Çetinkaya, Ahmet Turan Ve Türk, Emrah (2014), Tasarruf Ve Yatırımların Ekonomik Büyümeye Etkisi Türkiye Örneği

Dickey, D. A., & Fuller, W. A. (1979). Distribution Of The Estimators For Autoregressive Time Series With A Unit Root. Journal Of The American Statistical Association, 74(366a), 427-431.

Ekinci, Aykut Ve Gül, Ekrem (2007), Türkiye'de Yurtiçi Tasarruflar Ve Ekonomik Büyüme Arasındaki İlişki: Uygulamalı Bir Analiz (1960-2004), Dumlupınar Üniversitesi Sosyal Bilimler Dergisi, Sayı:19, Ss:67-184.

Ekrem, G. Ü. L., & Samet, A. C. A. R. (2018). Tasarruflar İle Ekonomik Büyüme Arasındaki İlişkinin Gelişmiş Ve Gelişmekte Olan Ülke Grupları Örneği İle İncelenmesi. Sakarya İktisat Dergisi, 7(3), 54-78.

Gujarati, N.D. (2005), Temel Ekonometri, Üçüncü Basımdan Çeviri, Çevirenler: Ümit Şenesen Ve Gülay Günlük Şenesen, Literatür Yayınları, İstanbul.

Kaygısız, Ayşe Durgun, Kaya, Dilek Göze Ve Kösekahyaoğlu Levent (2016), Türkiye'de Tasarruf, Yatırım, Cari Açık Ve Büyüme: 1980-2014 Dönemi Üzerine Bir Nedensellik İlişkisi Analizi, Çankırı Karatekin Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, Cilt:7, Sayı:1, Ss:273-300.

Koopmans, T. C. (1963). On The Concept Of Optimal Economic Growth.

Lucas Jr, R. E. (1988). On The Mechanics Of Economic Development. Journal Of Monetary Economics, 22(1), 3-42.

Mankiw, N. G., Romer, D., & Weil, D. N. (1992). A Contribution To The Empirics Of Economic Growth. The Quarterly Journal Of Economics, 107(2), 407-437.

Peker, O., & Göçer, İ. (2010). Yabancı Doğrudan Yatırımların Türkiye'deki İşsizliğe Etkisi: Sınır Testi Yaklaşımı. Ege Akademik Bakış, 10(4), 1187-1194.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds Testing Approaches To The Analysis Of Level Relationships. Journal Of Applied Econometrics, 16(3), 289-326.

Ramsey, F. P. (1928). A Mathematical Theory Of Saving. The Economic Journal, 38(152), 543-559.

Rebelo, S. (1991). Long-Run Policy Analysis And Long-Run Growth. Journal Of Political Economy, 99(3), 500-521.

Romer, P. M. (1986). Increasing Returns And Long-Run Growth. Journal Of Political Economy, 94(5), 1002-1037.

Romer, P. M. (1987). Growth Based On İncreasing Returns Due To Specialization. The American Economic Review, 77(2), 56-62.

Singh, T. (2010). Does Domestic Saving Cause Economic Growth? A Time-Series Evidence From India. Journal Of Policy Modeling, 32(2), 231-253.

Yentürk, Nurhan, Ulengın Ve Çimenoğlu, Ahmet (2009), An Analysis Of The Interaction Among Savings, Investments And Growth İn Turkey, Applied Economics 41:6, Ss:739-751.

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EXAMINING THE FACTORS AFFECTING THE REVENUES OF HOT AIR BALLOON OPERATORS

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ABSTRACT

In Cappadocia, which is one of the most popular destinations in the world where hot air balloon rides are made, 27 hot air balloon operators are operating in 2021, and the majority of those who experience hot air balloon rides are foreign tourists. For this reason, international tourist expenditure per capita and Nevşehir and Kayseri airports serving in the region are of great importance in terms of sales revenues of hot air balloon operators.

In this study, the effects of international tourist expenditure per capita and the number of international passengers arriving at Nevşehir and Kayseri airports on net sales were investigated with Johansen cointegration analysis and Vector Error Correction Model for Voyager Balloons, a hot air balloon company operating in Cappadocia. The data set of the study includes 60 observations on a monthly basis between 2014 and 2018.

In the study, number of international passengers arriving at Nevşehir and Kayseri airports and international tourist expenditure per capita were determined as independent variables, while Voyager Balloons' net sales were determined as dependent variables. According to the findings obtained in the study, a cointegration relationship, which expresses a long-term balance between dependent and independent variables, was determined. According to the empirical results, it has been revealed that a 1% increase in the number of international passengers arriving at Nevşehir and Kayseri airports between 2014 and 2018 caused an increase of 3.29% in the net sales of Voyager Balloons. In addition, it was determined that the 1% increase in the international tourist expenditure per capita positively affected the net sales of Voyager Balloons by 6.38%.

After the Johansen cointegration analysis, an error correction model was established to examine the deviation in the coefficient of the long-run relationship between the variables. In the error correction model, the coefficient was determined as -0.05, and it was revealed that the relationship between the variables would stabilize in the long run even if there were short-term fluctuations.

Keywords: Cappadocia, Hot Air Balloon Rides, Johansen Cointegration Analysis

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İŞLETMELERİN GLOBAL KRİZLERDEN ETKİLENME DURUMU: TÜRKİYE'DEKİ KOBİ'LER ÖRNEĞİ

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ÖZET
Teknolojik gelişmelerin hızla ilerlemesi, kolay ve hızlı ulaşım imkânlarına erişilmesi, iletişim alanında yapılan inovasyon ve değişimler Dünyamızı bir köy haline getirdi. Dünyanın dört bir tarafından işletme sahipleri ve yöneticileri siparişlerini daha kolay bir şekilde vermeye başladılar. İşletmeciler Dünyanın neresinde olursa olsun her üründen ve gelişmeden anında haberdar olmaya başladılar. Elbette bunlar çok güzel gelişmelerdi. Ancak madalyonun birde arka yüzü vardı. Dünyanın neresinde bir problem meydana gelse, nerede bir kriz olsa anında bu öğreniliyordu. Kriz haberi artık ülkeyle veya bölgeyle sınırlı kalmıyor tüm Dünyayı etkiliyordu. Buna en iyi örnek olarak ABD'de başlayan 2008 ekonomik krizi ile Çin'de Covid-19 pandemisi ile başlayan 2019 ekonomik krizi gösterilebilir. Bu iki krizde çok kısa bir sürede tüm Dünyayı etkisi altına almıştır. Çalışmada, bu krizlerden etkilenen ülkelerden birisi olan Türkiye'de faaliyet gösteren küçük ve orta ölçekli işletmeler (KOBİ) incelemeye alınmıştır. Literatür taranarak KOBİ'lerin krizlerden etkilenme durumlarını inceleyen araştırmalara yer verilmiştir. Bu araştırma makalelerinden KOBİ'ler üzerinde uygulama yapan 17 özgün araştırma makalesi kapsama alınmıştır. İşletmelerin krizden ne şekilde, nasıl, ne derecede etkilendikleri konusunda analizler yapılmıştır. KOBİ'lerin tüm Dünya ülkelerinde olduğu gibi Türkiye içinde işgücü sağlama ve ekonomik katkı sağlama açısından çok önemli olduğu gerçeği ortaya çıkmıştır. Analiz sonuçlarına göre KOBİ'lerin büyük bir çoğunluğunun krizlerden etkilendiği, ürün talepleri ile müşteri sayılarında azalma olduğu ve satış azalması yaşadıkları görülmüştür. Artan maliyetler, tedarikte sıkıntı, kredi ve vergileri ödeyememe gibi zorluklar yaşadıkları görülmüştür. Birçok işletmenin borçlarını ödeyememe, alacaklarını tahsil edememe nedeni ile yaşadıkları mali kriz neticesinde iflas ettikleri görülmüştür. İşletmelerin kriz planları yapmaları, kriz ekipleri oluşturmaları, kriz zamanları için nakit ayırmaları gerektiği sonucuna ulaşılmıştır. Yine devletin ise bu zor günlerde, hibe, kredi desteği, vergiler, sigorta, kira gibi konularda KOBİ'lerin yanında olması gerektiği sonucuna ulaşılmıştır.
Anahtar Kelimeler: Kriz, Ekonomik Kriz, İşletme, KOBİ, Türkiye

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THE STATUS OF ENTERPRISES AFFECTED BY GLOBAL CRISES: THE SAMPLE OF SMEs IN TURKEY

ABSTRACT

The rapid progress of technological developments, access to easy and fast transportation opportunities, innovations and changes in the field of communication have turned our world into a village. Enterprise owners and managers from all over the world have started to place their orders more easily. Enterprises began to be instantly informed about every product and development wherever they are in the world. Of course, these were very good developments. However, the coin also had a reverse side. Wherever there was a problem in the world, wherever there was a crisis, it was immediately learned. The news of the crisis was no longer limited to the country or the region, it was affecting the whole world. The best examples of this are the 2008 economic crisis that started in the USA and the 2019 economic crisis that started with the Covid-19 pandemic in China. These two crises have affected the whole world in a very short time. These two crises have affected the whole world in a very short time. In the study, small and medium-sized enterprises (SMEs) operating in Turkey, one of the countries affected by these crises, were examined. By reviewing the literature, applied studies examining the situation of SMEs being affected by crises are included. Among these research articles, 17 original research articles that applied to SMEs were included. Analyzes were made on how, how, and to what extent enterprises were affected by the crisis. It has emerged that SMEs are very important in terms of providing labor force and providing economic contribution in Turkey, as in all countries of the world. According to the results of the analysis, it was seen that the majority of SMEs were affected by the crises, there was a decrease in product demands and the number of customers, and they experienced a decrease in sales. It has been observed that they experience difficulties such as increasing costs, difficulties in supply, inability to pay loans and taxes. It has been observed that many enterprises went bankrupt as a result of the financial crisis they experienced due to the inability to pay their debts and collect their receivables. It has been concluded that enterprises need to make crisis plans, create crisis teams, and allocate cash for crisis times. Again, it has been concluded that the state should be with SMEs in these difficult days in matters such as grants, loan support, taxes, insurance, rent.

Keywords: Crisis, Economic Crisis, Enterprise, SME, Turkey

GİRİŞ

Dünya'da birbiri ardına gelen krizler, ekonomik, psikolojik, sosyolojik, siyasal sorunları da beraberinde getirdi. Sosyal bir varlık olan insanın hem salgın hastalıklar hem de ekonomik yönden kayıplara uğraması onların bunalıma girmesine sebep oluyordu. İşyeri kapanan, işten çıkarılan, ekonomik sıkıntı çeken, bir de üstüne özgürlükleri kısıtlanan insanlar problem üstüne problem yaşıyorlardı. Kriz belki sadece o bölge veya ülkeyle sınırlı kalsa acı sonuçları da sınırlı olacak ve yaralar çok çabuk sarılacaktı. Ancak zaman gösterdi ki artık krizler de değişmiş ve yerel olmaktan ziyade hızlı bir şekilde tüm ülkeleri ve dolayısıyla tüm insanları etkisine almaktaydı. Teknolojik yenilenmenin çok hızlı kaydedilmesi, iletişim ve ulaşım ağlarının süratli bir şekilde buna ayak uydurması bunun başlıca nedenleri arasında sayılabilirdi.

Ülkelerin ekonomik gelişimlerini sağlayan işletmelere, teknolojik yenilikler doğrultusunda hızla gelişen iletişim sayesinde ithalat ve ihracat gibi alanlarda Dünyanın en ücra köşeleri bile pazar yeri olmuş, çok kolay getir-götür işlemleri ile alım-satım yapılabilir olmuştu. Ancak bu küresel Pazar, hızlı iletişim sayesinde Dünya'da gelişen olumsuz olayları da çok hızlı bir şekilde muhataplarına aktarıyordu. Bu problemler sonucunda oluşan büyük krizler işletmeleri de derinden etkiliyor, hazırlıksız yakalananlara acımıyordu. Krize yakalanan işletmeler kendi çabalarıyla kurtulmaya çalışıyor ancak yetkili otoritelerin desteği olmadan bunu başarmaları neredeyse imkânsız bir hâl alıyordu.

İşte bu krizlerden biri Amerika Birleşik Devletleri'nde 2008 yılında ortaya çıkan ekonomik krizdi. Diğeri ise 2019 yılında Çin Halk Cumhuriyeti'nde salgın hastalık sonrası ortaya çıkan ekonomik krizdi. Her iki krizde çok kısa bir sürede tüm Dünyayı kapsama alanına alan ve tüm işletmeleri vurup yıkıma yol açan krizlerdi. Bu iki büyük kriz esas alınarak yapılan inceleme sonuçlarına göre krizden etkilenen işletmelerin sayısı hiçte azımsanacak düzeyde değildi. Özellikle ülkeler için istihdamın ve ekonomik göstergelerin seyrine katkıda bulunan KOBİ'lerin krizden etkilenme durumu oldukça ileri düzeydeydi. Aslında KOBİ'ler esnek yapı ve hızlı adaptasyonları sayesinde daha dayanıklı yapıda idiler. Ancak diğerlerine göre sermayesi düşük olan bu işletmelerin kriz sürecinin uzaması nedeniyle, varlıklarını sürdürebilmeleri yönünden zorluklar çektikleri görüldü.

Küçük ve orta ölçekli işletmeler Dünyada olduğu gibi Türkiye ekonomisinde de önemli bir yer tutmakta ve istihdama katkı sağlamaktaydı. Tüm Dünyayı saran bu krizlerin etkisi kısa zamanda Türkiye'de bulunan KOBİ'ler üzerinde de aynı etkiyi gösterdi. Türkiye'de bulunan birçok işletme ya kapandı ya da oldukça zarar etti ve hasarlı bir şekilde ayakta kalma mücadelesine devam ediyor. Zaten kriz nedeniyle devam eden arz ve talep azlığı, satışların azalması, artan maliyetler, ürün tedarik sıkıntıları gibi birçok krizi tetikleyici etkenlerin varlığı finansal açıdan yeterince zorluk çıkarıyordu. Görünen o ki KOBİ'lerin bu sıkıntıları bir süre daha devam edecek ve en çok desteği alanlar ile nakit ihtiyacı az olanlar, yenilik ve değişimi yaşayarak yollarına devam edeceklerdir.

Bu nedenle bu çalışma, KOBİ'lerin kriz dönemlerinde yaşadıkları sıkıntıları ve çözüm yollarını ortaya koymak açısından analiz yapılarak müşterek bir sonuca ulaşmak açısından önemli olma özelliğine sahip olacaktır. Diğer tüm Dünya ülkelerinde olduğu gibi benzer bir şekilde Türkiye'de bulunan KOBİ'lerinde zorunlu olarak istihdamı azaltıcı işten çıkarma, ücretsiz izine gönderme, eleman almama, küçülmeye gitme gibi olumsuz yöntemlere başvurdukları görülmüştür. Yine KOBİ'lerin, Devlet ve yetkili otoriteler tarafından finansal yönden desteklenmelerinin elzem olduğu da açıkça görülmektedir.

ÇALIŞMANIN AMACI VE YÖNTEMİ

Çalışma, ekonomik olarak Dünya'daki tüm ülke işletmelerini etkisi altına alan krizlerin, Türkiye'de bulunan işletmeleri ve özellikle ekonomi ve istihdam yönünden büyük önem taşıyan KOBİ'leri etkileme durumunu ortaya çıkarmak için yapılmıştır. Yapılan analiz sonucunda çalışmanın yetkili otoritelere ve işletmelere bir derleme bilgi sunacağı, krize hazırlıklı olmaları konusunda yol göstereceği değerlendirilmektedir. Çalışma için literatür taraması kullanılmış, 2008 ve 2019 yıllarında ortaya çıkan ve büyük ekonomik krize yol açan krizlerle ilgili yazılmış olan tüm makaleler incelemeye alınmıştır. Türkiye'nin değişik bölge ve illerinde KOBİ'lerle ilgili yapılan araştırmaların içerisinden çalışmamız için uygun olacağını değerlendirdiğimiz 17 özgün araştırma makalesi analiz kapsamına alınmıştır.

Yapılan analizler sonucunda titizlikle incelenen makalelerin ortak problem ve çözüm önerileri birleştirilerek sonuç bölümüne yansıtılmıştır.

YAPILAN ARAŞTIRMALAR, BULGULAR VE SONUÇLARI

Çalışmada incelemesi yapılan 17 özgün makale tek tek değerlendirilmiş, elde edilen sonuçlar ve öneriler her bir çalışma bir paragraf olacak şekilde özet paragraflar halinde sunulmuştur.

Kriz adı verilen olaylar, ani bir şekilde kendini gösteren, mevcut işletmelerin tüm unsurlarını felce uğratan ve onları sıkıntılı süreçlere iten bir durumdur. Ancak ani olarak ortaya çıkmadan önce birtakım sinyaller göndermeyi ihmal etmezler. İşte bu sinyalleri yakalayan yönetici ve liderler gerekli tedbirleri alırlar ve hatta durumu lehe çevirerek işletmeleri için yeni bir fırsat yaratabilirler. Bu nedenle işletmeler krizlere hazırlıklı olmalı ve stratejik kriz planları oluşturmalıdırlar. Bugün artık krizlerin varlığının kaçınılmaz olduğu herkes tarafından bilinmekte olup burada düşünülmesi gereken nasıl bir krizle karşılaşılacağı sorusuna yanıt aranması olmalıdır. Az ya da çok birçok işletmenin krizden etkilendiği düşünülecek olursa, kriz yönetim ekiplerinin realiteler doğrultusunda oluşturulması elzemdir. Bunun içinde işletmeler sadece kendi bilgi birikimi ile değil, üniversitelerden, yetkili kurumlardan, uzman kuruluşlara kadar deneyimli bilgi sahibi yerlerden destek alarak kriz planlarını hazırlamalı ve kriz ekiplerini kurmalıdır (Gültekin ve Aba, 2011: 223-225).

KOBİ'ler ülkelerin ekonomilerinde önemli bir konuma sahiptirler. Bulundukları ülke ekonomilerine üretim alanından ihracata, yatırımlardan istihdama kadar birçok konuda katkı sağlarlar. KOBİ'lerin problemlerinin başında ise çektikleri finansal sıkıntılar gelmektedir. Batman ilinde faaliyet yapan 404 KOBİ üzerinde anket yoluyla yapılan uygulama sonuçları bunu doğrular niteliktedir. Çalışma sonuçları göstermiştir ki KOBİ'lerin önemli bir kısmı özellikle kriz dönemlerinde finansal sıkıntılarla karşılaşmaktadır. Zor ve sıkıntılı zamanlarında yetkili otoriteler tarafından yapılacak desteklerin onları ayakta tutacağı ve olumlu yönde etkileyeceği, dolayısıyla ülke ekonomisine de pozitif yönde katkıda bulunacağı araştırma sonuçlarında görülmüştür (Atalay ve Çayın, 2020: 46-47).

Kobiler rekabet gücünü artırmanın yanında girişimcilik ve inovasyon alanlarında bulundukları ülkelerde politika üzerinde önemli bir yere sahip olmaya artan bir ivmeyle devam etmektedirler. Yapılarının esnek olması ve hızlı bir şekilde gelişen durumlara ayak uydurabilmeleri sayesinde stratejik hale gelmektedirler. Krizlerde oldukça dirençli olmalarına rağmen özellikle büyük krizlerde etkilenme oranları da oldukça yüksek seviyededir. Kriz gibi olumsuz durumlardan kurtulabilmek, en az zararla atlatabilmek için işletmelerin inovasyon, güncel koşullara uyum, iş süreç değişikliği gibi anlamlara gelen stratejik çevikliğe ihtiyaçları bulunmaktadır. Krizler ülkeler üzerinde ekonomik yıkımın yanı sıra sosyal yıkımlara da yol açmakta olup toplumsal kuralları tanımlayan sosyal sermayenin de iyi yönetilmesi gereklidir. Madem ki stratejik çeviklik kriz anlarında önemlidir, onu etkileyen sosyal sermayenin yönetilmesi de önemlidir. Sosyal sermayenin stratejik çeviklik üzerinde olumlu yönde etkilerinin bulunduğu tespit edilmiş olup bu durum kriz anlarında alınacak tedbirler ile yapılması gerekenler konusunda liderlere yol gösterici bir imkân sunabilecektir (Işık, 2020: 195-196).

İşletmelerin bir kısmının kriz durumlarına hazırlık yaptıkları görülmüştür. Ancak kriz zamanlarında çalışma sürelerini azaltma çabası içerisinde olmadıkları, bunun yerine çalışanların bir kısmını ücretsiz izine ayırmak suretiyle çalışanların sayısını azaltıp çalışma saatlerini artırmak suretiyle yollarına devam etmeye gayret gösterdikleri görülmüştür.

Yine işletmelerin başka krizlere önlem almak maksadıyla kriz sonrası yaptıkları çalışmalarda daha dikkatle ve önemle üzerinde durdukları görülmüştür. KOBİ'lerin çoğunluğunun büyük işletmeler gibi uzman kişiler tarafından yönetiliyor olmaması sadece finansal kaynakların yetersizliği değil var olan kaynakların verimli ve yerinde kullanılabilmesi için bir engel teşkil etmektedir. KOBİ'lerin düzenli aralıklarla işletmelerinin durumu hakkında güçlü ve zayıf yönleri ile fırsat ve tehditleri kapsayan analizleri yapmaları ve eksikliklerini zamanında gidermeleri gerekmektedir. Kriz yönetim ekipleri mutlaka olmalı, personelin endişe ve kaygıları giderilerek moral düzeyleri üst seviyede tutulmalı, kriz iyi bir şekilde yönetilmelidir (Sarsıcı, 2020: 13-19).

Krizlerden etkilenen diğer ülkeler gibi Türkiye'de bu krizlerden nasibini alan ve negatif durumlarla karşılaşan bir ülke konumundadır. İşletmelerin rakiplerine karşı rekabet edebilme, onlar hakkında bilgi sahibi olma, teknolojik gelişim ve değişimlere ayak uydurma vb. stratejik uygulamalar geliştirme gücüne sahip olabilmelerine bağlı olup işletmelerin krizleri en az zararla atlatabilmesi için önemlidir. Bu, işletmeleri yöneten yönetici ve liderlerle doğrudan bağlantılıdır. Nitekim araştırmalar işletmelerin büyük bir çoğunluğunun krizlerden etkilendiğini, ancak yöneticilerin bu konudaki eğitim durumlarının krizden etkilenme derecelerini belirlediğini ortaya koymuştur (Oğrak vd., 2018: 27-33).

Kriz dönemlerinde çok ağır ekonomik darbeler alan işletmeler kendilerini bu durumdan kurtarmak için çözüm yolları ararlar. Kriz dönemlerinde kırılganlık yaşayan piyasalar ve talepteki azalmalar tüm sektörü vuracaktır. Tüm süreçlerdeki aksamalar ve sıkıntılar işletmelere doğrudan yansıyacak ve finansal sıkıntılara yol açacaktır. Eğri ve Doğaner yaşanan bu sorunları ve alınması gereken tedbirleri belirlemek maksadıyla değişik alanlarda faaliyet gösteren işletmelerle yarı yapılandırılmış mülakat yöntemi kullanılarak bir uygulama gerçekleştirmişlerdir. Yapılan görüşme sonuçlarında yetkili otoritenin özellikle finans desteği konusunda yönlendirici rol üstlenmesi gerektiği ve işletmelere kurumsal yapıya kavuşmaları konusunda eğitim ve danışmanlık gibi destekler vermesi gerektiği tespitine ulaşılmıştır (2019: 141-143).

Covid-19 sürecinin ilk dönemlerini atlattıktan sonra insanlar bu salgın koşulları altında yaşamlarını sürdürmeye başlamışlar ve eski alışkanlıkların yerini yeni alışkanlıklara bıraktığı bu döneme "Yeni Normal" ismi verilmiştir. Bu yeni normal kapsamında getirilen sınırlamalar, yarı kapasiteli ve sınırlı zamanlı açılmalar işletmeleri oldukça sıkıntılı duruma sokmuştur. İşletme kârı bir tarafa en önemli düşünce işletmenin sürdürülebilirliği olmuştur. Kriz ortamında yetkili otoritelerin emir ve talimatlarını yerine getiren bu işletmeler gelecek kaygısıyla finansal sıkıntılara düşmüşler ve kendilerine uzatılacak yardım elini beklemeye koyulmuşlardır. Bu sektörlerde bulunan yöneticilerin birçoğunun krizi yönetmekte sıkıntı çektikleri ve başarılı olamadıkları bir tarafa, hibe, kredi, vergiler, sigorta primleri, teşvikler gibi finansal yardımlara ihtiyaç duydukları aşikârdır. Yaşanmış olan bu durumların ileride tekrar olabilmesi ihtimali karşısında krizlere hazırlıklı olmak gerekliliği konusunda hem bireylere hem işletmelere hem de yetkili otoritelere önemli görevler düşmektedir. İşletmeler ve devlet tarafından güven ortamı oluşturulması, tüketicilerin talepleri doğrultusunda ürün ve iş yenilenme sürecine gidilmesi, kriz analizinin iyi yapılması gerekmektedir (Okat vd., 2020: 215-216).

İşletmelerin kriz anında sergiledikleri yönetim tarzları, kriz stratejileri, krize nasıl yaklaşım gösterdikleri ve beklentileri oldukça önem taşımaktadır. Meydana gelen kriz sonrası işletmelerin yarıya yakınının krizden etkilendiği, yöneticilerin profesyonel yönetimin faydalı olacağı görüşünün olduğu ortaya çıkmıştır.

Yine bu süreçlerde finansal yardımlardan birçok işletmenin faydalanamadığı, büyük bir oranda maliyetlerin arttığı, tersi istikamette satışların ise düştüğü, borçlarını ödemede zorlandıkları veya ödeyemedikleri tespit edilmiştir. Yine bazı işletmelerin mümkün olduğunca personel azaltmak yerine kârlarının düşmesine göz yumdukları ve işletme itibarlarına önem verdikleri tespit edilmiştir (Tunçsiper vd., 2009: 1840-1841).

Kriz durumlarında işletmelerin yaptıkları finansal yönetim uygulamaları krizin seyrini de etkileyecektir. Bulundukları ülkeler açısından kritik öneme sahip olan KOBİ'ler kriz zamanlarında oldukça büyük finansal sıkıntılar yaşamaktadır. Finansal sıkıntılar kadar finansın yönetilmesi de ayrı bir öneme sahiptir. Uluyol KOBİ'ler üzerinde yaptığı araştırmasında işletmelerin, finansal yönetim açısından yaptıkları yönetimsel uygulamaları kısmen yerine getirdikleri, finans yönetiminde zafiyetler yaşadıkları ve uygulama eksikliklerinin bulunduğu, böylece problemli bir sürecin yaşandığı sonucuna ulaşmıştır (2013: 92-103).

Özellikle küçük ve orta ölçekli işletmeler kurumsallaşma konusunda problemler yaşamaktadır. KOBİ'lerin krizleri fırsata çevirebilmeleri için proaktif bir yapıda olmaları, amaç ve hedeflere ulaştıracak stratejik planları uygulamaları, başarılı bir şekilde yönetime yol açacak esnek ve devamlı kriz yönetimi uygulamalarını başarılı bir şekilde yerine getirmeleri demek olan kurumsal bir yapı oluşturmalarına bağlıdır. Çalışmalar göstermiştir ki, işletmelerin en çok zorluk yaşadığı problem ekonomik sıkıntılardır. Araştırma sonuçları, kriz zamanlarında işletmelerin kriz gelmeden önce onu öngören proaktiften çok, kriz kendini gösterdikten sonra uygulanan reaktif politika izledikleri yönünde olduğunu göstermiştir. İşletmelerin kriz yönetim uygulamalarının birçoğunu yerine getirmedikleri tespit edilmiştir. Ancak durum değerlendirmesi, yeniden yapılanma, değişim ve küçülme gibi kriz sonrası yönetim uygulamaların birçoğunu yerine getirdikleri görülmektedir. Yani sonuç olarak işletmelerin kurumsallaşma gayretinin olduğu ancak bunun profesyonellik ve bilimsellikten uzak bir şekilde amatörce yapıldığını tespit etmişlerdir. Ayrıca analiz sonuçlarında itibar ve güven kaybı, endişe ve stresli yaşam, azalan satışlar, çalışanlarda moral ve motivasyon düşüklüğü, işlemeyen karar süreçleri gibi kriz etkilenme sonuçları olduğu görülmüştür. Bu kapsamda işletmeler tarafından, kriz sinyallerinin alınması için bilgi sistemlerinin oluşturulması, kriz yönetim ekiplerinin oluşturulması, kriz danışman ve uzmanlardan faydalanılması, krize bütçe kaynağı ayırılması gerekmektedir. Yine araştırma ve geliştirme faaliyetlerine ağırlık verilmeli, çalışanların moral ve motivasyonları artırılmalı, maliyetlerde tasarrufa gidilmeli, iyileştirme çalışmalarına ağırlık verilmelidir (Soysal vd., 2009: 443-444).

Teknolojik yenilik ve gelişmeler işletmeleri birbirlerine yakınlaştırmakla birlikte birbirlerinden etkilenme, bağımlı olma gibi durumları da beraberinde getirmektedir. Daha önce yaşanan krizlerden ders çıkarıp hazırlıklı olanlar krizi fırsata çevirebilmekte, hazırlıksız yakalananlar ise iflasa kadar giden bir sürece girebilmektedirler. Araştırmalar krizlerin işletmeleri etkilediğini, koordinasyonu bozduğunu, moralleri alt-üst ettiğini, satışların azaldığını, ancak krize bütçe ayırmak, hazırlık planları yapmak, değişim ve yenilenmeye hazır olmak gibi birtakım tedbirlerle bunun atlatılabileceğini göstermiştir (Kızıltan ve Sarıhasan, 2016: 32-39).

2008 yılında Amerika Birleşik Devletleri'nde meydana gelen, "Morgage" krizi olarak bilinen, öncelikle finansal piyasalardaki sıkıntılarla baş gösteren ve çok kısa bir zaman diliminde tüm Dünyayı etkisi altına alan ekonomik kriz, işletmeleri derinden etkilemiştir. KOBİ'lerde bu süreçte ekonomik krizden payına düşeni almıştır.

Karaatlı ve arkadaşları Türkiye'de göller bölgesinde bulunan KOBİ'ler üzerinde yaptıkları çalışmada, işletmelerin satışlarının azaldığı, istihdam durumlarında düşüş olduğu, kapasitelerini tam olarak kullanamadıkları görülmüştür. İşletmelerin krizi iyi yönetemedikleri ve gerekli önlemleri almadığı gerçekliği ortaya çıkmakla birlikte ayrıca işletmelerin finansal kredilere erişim ve faydalanma durumlarının sektörlere göre değişiklik gösterdiği tespit edilmiştir. Yine araştırmada daha önce meydana gelmiş krizlerden ders çıkarılmadığı, yeterli tedbirlerin alınmadığı, krizin iyi yönetilemediği, krizden çıkma becerisinin düşük seviyede olduğu tespit edilmiştir (Karaatlı vd., 2009: 151-160).

Esnek bir yapıya sahip olmaları nedeniyle avantajlı konumda bulunan KOBİ'ler yapısal problemleri nedeniyle bu avantajlarını kaybetmektedirler. 2008 ekonomik krizi ile birlikte tüm Dünyada olduğu gibi Türkiye'de bulunan işletmelerde bundan etkilenmiştir. Ancak bu etkilenme seviyesinin işletme sektörleri ve faaliyetlerine göre farklılık gösterdiği tespit edilmiştir. İşletmelerin, müşteri araştırması, devamlılık arz eden pazarlama harcamaları, yeniden gözden geçirilecek ürün portföyü, dağıtıcılara verilecek destek, taktiksel fiyat düzenlemeleri, pazardan hisse kapma gibi pazarlama faaliyetlerine ağırlık vermesi gerekmektedir. Küçük işletmelerin büyük işletmelere göre pazarlama faaliyetleri kapsamında çok daha hızlı bir şekilde yeniden ihtiyaç belirleme ve dizayn olma yoluna girebilecekleri görülmektedir. Yine proaktif bir şekilde inovasyonel ve stratejik yaklaşımlarla değişime hızlı ayak uydurabilir ve varlıklarını devam ettirebilirler (Kılıç ve Özdemir, 2011: 181-201).

Çok kısa sürelerde kendini yenileyen teknolojik gelişmeler ile ekonomik değişimler yönetsel karar mekanizmalarının etki ve önem derecesini ortaya koymuştur. Elde bulunan sermayenin durumu, kaynakların nasıl kullanılacağı gibi konularda alınacak kararlar en önemli konular olmuştur. Kriz zamanlarında artan maliyetler, sınırlı likidite, fazlaca yapılmış olan borçlanma durumu işletmeler için başarısızlığa giden yolda yapı taşları olmuşlardır. Talebin az seviyede olması, artan rekabet durumları, dalgalı seyreden piyasa tetikleyici rol üstlenmede kritik neden teşkil etmiştir. İşletmelerin kriz dönemlerinde en önemli strateji olarak ekstra borçlanma yapmamaları, duran varlıkların alımlarının yapılmaması, nakit satışlara yönlenmesi gerektiği, kontrollü ve düzenli olarak bunun takibinin yapılmasının uygun ve verimli olacağı sonucuna ulaşılmıştır (Erol ve Atmaca, 2016: 175-176).

Alkan 2011 yılında İzmir ilinde bulunan 180 KOBİ üzerinde yapmış olduğu araştırmasında, küresel mali krizlerin Türkiye'de bulunan KOBİ'leri derinden etkilediği, kâr oranlarının ve kapasite oranlarının azaldığını, bunu gidermek maksadıyla personel masraflarını azaltma, ücret artırımlarını öteleme, çalışma sürelerini düşürme, ücretsiz izin veya iş sonlandırmasına gitme gibi uygulamalar yaptıklarını tespit etmiştir. Ancak bu olumsuz durumların önlenmesi için bu gibi durumlarda işletmelerin finansal olarak desteklenmesi, ileride tekrar edebilecek olması riskine karşı gerekli eğitimlerin verilmesinin faydalı olacağı değerlendirmesinde bulunmuştur (91-96).

Ülke ekonomisinde önemli yer tutan KOBİ'lerin gelişmiş ülkelerde aldıkları payın %50 civarında olduğu yapılan araştırmalarda tespit edilmiştir. Ancak Türkiye'de yapılan araştırmalarda bu payın %25 civarında olduğu belirlenmiştir. Bunun nedenlerini araştıran Metin ve arkadaşları araştırma sonucunda, Türkiye'de KOBİ'lerin aldığı payın gelişmiş ülkelere oranla düşük olduğunu tespit etmişlerdir. Bankacılık sistemi kaynaklı olarak, verilen kredi faizlerinin yüksek olduğu, düşük meblağlarda kredi verildiği, istenilen teminat ve kefalet bedellerinin çok yüksek olduğu, KOBİ'lerin uzun vadeli ihtiyaçlarının karşılanamadığı görülmüştür.

Amacı kâr elde etmek olan bankalara yetkili otoriteler tarafından borçlanma ve karşılık oranları, istisnai vergiler gibi konularda yolu açıcı özel uygulamaların getirilmesi ve haklar sağlanmasının KOBİ kredilerinde iyileştirme ve kullanım kolaylığı sağlayacağı görüşünü dile getirmişlerdir (2016: 72-83).

Kriz dönemlerinde en değerli sermayenin insan olduğu, krizi fırsata dönüştürmede en önemli faktöründe insan olduğu unutulmamalıdır. Krizi atlatabilmek amacıyla çalışanların bireysel yaratıcılıklarını ortaya çıkaracak yönde teşvik edilmeleri ve tatlı bir rekabet ortamı sunacak örgüt iklimi oluşturulması oldukça önem taşımaktadır. Bunun tüm örgütü kapsayacak bir bütünlük içerisinde değerlendirilmesi gerekmektedir. Hem bu araştırmada hem de yapılan diğer araştırmalarda kriz zamanlarında oldukça önemli olan proaktif kriz yönetiminin bireysel yaratıcılık ile pozitif yönlü ilişki içerisinde olduğu kanıtlanmıştır (Ülkü ve Bektaş, 2021: 21-22).

SONUÇ VE ÖNERİLER

Sonuç olarak 2008 ve 2019'da meydana gelen her iki büyük ekonomik krizinde KOBİ'leri önemli ölçüde etkilediği görülmüştür. Bu etki Dünyanın diğer ülkelerinde olduğu gibi Türkiye'de de aynı şekilde olumsuz vakalara yol açmıştır. İşletmelerin krize hazırlıksız yakalanması, kriz yönetim ekiplerinin olmaması, kriz yönetimi ve kararların iyi yönetilememesi, eldeki nakit ve sermayenin yetersizliği, krizin uzun süreli olması, yeterli desteğin alınamaması, yeterli satışların olmaması, ürün tedariği ve stoklarında sıkıntılar yaşanması, borçların alınamaması, alacakların ödenememesi, nakit sıkıntısının artması, işten çıkartmaların artması, işletmelerin iflası ve kapanması şeklinde birçok sonuçlarla karşılaşılmıştır.

KOBİ'lerin, istihdam yaratma, dolayısıyla işsizliğin artışını durdurma, ekonomik göstergeleri iyileştirme gibi ülke ekonomilerine azımsanmayacak katkılarının bulunduğu Devlet ve yetkili otoriteler tarafından önemle dikkate alınmalıdır. Bu doğrultuda imkânlar dahilinde ve kurumlarla iş birliği halinde kriz koordinasyon birimleri kurularak işletmelerin kriz yönetim ekiplerinin oluşturulmasına yardımcı olunmalıdır. Bu ekiplerle koordineli olarak güven ortamı oluşturmalı, bireylerin korku ve endişeleri giderilmeli, bireysel yaratıcılık ruhu canlandırılmalı, moral ve motivasyonun artırılması için tedbirler alınmalıdır. Yine işsizliği, işten çıkarmaları ve işyeri kapanmalarını önlemek, personel giderleri, kira giderleri gibi ücretlerin devamlı ödenebilirliğini sağlamak, işletmelerin borç yükünü hafifletmek, onlara işlerlik kazandırmak amacıyla her türlü kredi, hibe, vergi indirimi, sigorta, inovasyon, dönüşüm, eğitim desteği gibi tüm destekler ile uygun politik karar destekleri verilmelidir.

KAYNAKÇA

1. Alkan G. (2011). 2008 Küresel Mali Krizinin Kobi'lere Etkileri İzmir'de Faaliyet Gösteren Kobi'lere Yönelik Bir Araştırma. Muhasebe ve Denetime BAKIŞ, 33: 85-98.

2. Atalay E., Çayın M. (2020). KOBİ'lerin Finansman Sıkıntılarının Giderilmesi ile Yerel Ekonomik Kalkınma İlişkisi: Batman İli Örneği. Manisa Celal Bayar Üniversitesi İ.İ.B.F. Yönetim ve Ekonomi Dergisi, 27(1): 35-49.

3. Eğri T., Doğaner A. (2019). Covıd-19 ve Ekonomik Kriz: Kobiler Özelinde Bir Değerlendirme ve Politika Önerileri. İstanbul Ticaret Üniversitesi Sosyal Bilimler Dergisi Covid-19 Sosyal Bilimler Özel Sayısı, 37: 128-145.

4. Erol M., Atmaca M. (2016). Investigation Of SMEs Preventative Measures Against Financial Failures Under Economic Crisis Environment: A Research Study In TR22 Region. The Journal of Accounting and Finance, 71: 165-177.

5. Gültekin N., Aba E. (2011). Küçük ve Orta Ölçekli İşletmelerde Kriz Yönetimi: Şanlıurfa Örneği. Journal of Entrepreneurship and Development, 6(2): 205-226.

6. Işık, M. (2020). KOBİ'lerde Sosyal Sermayenin Stratejik Çevikliğe Etkisi. İzmir İktisat Dergisi. 35(1): 187-200.

7. Karaatlı M., Demiral F.M., Zeynel E., Pala Y. (2009). "2008 Küresel Krizinin KOBİ'lerde Yarattığı Etkiler ve Kriz Yönetimi: Göller Bölgesi Örneği". Süleyman Demirel Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 2(10): 143-161.

8. Kılıç S., Özdemir E. (2011). KOBİ'ler ve Küresel Ekonomik Kriz (2008- ?): Pazarlama Açısından Bursa İlinde Bir Alan Araştırması. Muhasebe ve Finansman Dergisi, 50: 181-202.

9. Kızıltan A., Sarıhasan İ. (2016). Finansal Krizlerin Kobiler Üzerindeki Etkisi Rize İli Ayakkabı Sektörü Üzerine Bir Araştırma. Recep Tayyip Erdoğan Üniversitesi Sosyal Bilimler Dergisi, 3: 22-42.

10. Metin E., Öztekin H., Çelik M., (2016). Türkiye'de KOBİ'lerin Kredi Kullanımından Düşük Pay Alma Nedenleri Üzerine Bir Değerlendirme. ICEB 2016 2'nci İnternetional Congress on Economics and Business, "New Economic Trends and Business Opportunities" 30 May-3 June 2016, Sarajevo/Bosna and Herzegovina, 73-83.

11. Okat Ç., Bahçeci V., Ocak E. (2020). Covid-19 (Yeni Koronavirüs) Salgınının Neden Olduğu Krizin Yiyecek İçecek İşletmeleri Üzerindeki Etkisinin Değerlendirilmesi. International Journal of Contemporary Tourism Research, 2: 201 – 218.

12. Oğrak A., Kibar S., Kızıldere C. (2018). Ekonomik Krizlerin Küçük ve Orta Boy İşletmeler (Kobi) Üzerindeki Etkileri: Van Örneği. Bolu Abant İzzet Baysal Üniversitesi, Sosyal Bilimler Enstitüsü Dergisi, 18(4): 19-36.

13. Sarsıcı E. (2020). Küçük ve Orta Ölçekli İşletmelerde Kriz: Adıyaman Organize Sanayi Sitesi Örneği. Finans Ekonomi ve Sosyal Araştırmalar Dergisi, 5(1): 8-21.

14. Soysal A., Karasoy A.H., Alıcı S. (2009). KOBİ'lerde Kriz Yönetimi: K.Maraş'ta Tekstil Sektöründeki KOBİ'lerde Bir Uygulama. Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 21: 431-446.

15. Tunçsiper B., Mutlu A., Ertem H. (2009). KOBİ'lerde Ekonomik Krizin Etkileri: Balıkesir İli Örneği. Malatya İnönü Üniversitesi, İktisadi ve İdari Bilimler Fakültesi, E Kitap Bölümü, DSpace@İnönü, http://abakus.inonu.edu.tr/xmlui/handle/11616/12182, 1826-1842.

16. Ulkü T., Bektas C. (2021). Individual Creativity Factor in Proactive Crisis Management in Micro and Small Enterprises. Global Journal of Business, Economics and Management: Current Issues, 11(1): 10-26.

17. Uluyol O. (2013). Küçük ve Orta Ölçekli İşletmelerde (KOBİ) Finansal Yönetim Uygulamaları. Muhasebe ve Finansman Dergisi, 60: 87-105.

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EV DIŞI TÜKETİM İÇİN KİT KAT SÜRÜLEBİLİR ÇİKOLATA GELİŞTİRİLMESİ

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ÖZET

Kit Kat, Avrupa'da multimarket kaldıraç oranına sahip tek şekerleme markasıdır ve çoğu pazarda güçlü marka bilinirliği ve çekiciliğine sahiptir. Son 4 yılda, çift haneli büyüyen Kit Kat malzemeleriyle başarılı bir iş kuruldu ve 2020'de Tatlı Üreticileri ile Kit Kat konseptlerinden oluşan bir fırın portföyü başlatıldı. Kit Kat perakendenin bölgede çift haneli büyümesiyle birlikte portföyümüzü güçlendirmek ve yeni ve çekici bir Kit Kat markalı deneyimle pazarda pay sahibi olmak için Nestlé'de çeşitli faaliyetler yürütülmektedir.

Pastacılık pazarında büyük paya sahip Oreo ve Nutella markalı ürünler pazara yön vermesine rağmen müşteriler menü tekliflerini düzenli olarak farklılaştırmak için çeşitli ve alternatif markalı çözümler ve çekici konseptler oluşturmak için kullanıma hazır çözümler aramaya devam etmektedir. Ev dışı tüketimde geniş tüketici kitlesine sahip pastacılık ürünlerinin hazırlanmasında ürünlerin daha pratik, daha kolay uygulanabilir ve her alanda kullanılabilir olması önem taşımaktadır. Bu çalışmada dünyada büyük oranda tüketiciler tarafından sevilen ve tüketilen Kit Kat çikolatasının ev dışı tüketimde pastanelerde çeşitli fırın ürünlerinde tüketicilerin kullanımına uygun hale getirilmesi amaçlanmıştır.

Kit Kat markasının ev dışı tüketim kanallarında ve profesyonel mutfaklarda, yurt içi ve yurt dışında, farklı lezzetleriyle hotel, restoran, kafe, ulaşım gibi birçok farklı kanalda beğeniyle tüketilmesi amaçlanan Nestlé Profesyonel Kit Kat Sürebilir Çikolata, waffle, krep, birçok pastacılık ürünlerinde sos ve dolgu malzemesi olarak kullanımı için özel şekilde geliştirilmiştir. Bu kapsamda, dünyada sevilerek tüketilen Kit Kat çikolata tadından ve Kit Kat markasının gücünden faydalanarak, Kit Kat deneyimini pastacılık sektöründe de tüketicilerin kullanımına uygun bir ürün haline getirmeyi ve pazar liderine karşı pazar payı kazanmak hedeflenmiştir. Kit Kat sürülebilir çikolata; hem AOA hem de EMENA marketlerinin yasal gerekliliklerine uygun, helal, sürdürebilir ve doğal hammadde içeriğiyle, sürebilir yada dolgu kreması olarak kullanılabilen bir ürün olarak tasarlanmıştır.

Nestle Profesyonel Çikolata ürünleri, şekerleme markalarının büyümesini hızlandırmak için stratejik bir büyüme ayağıdır. Kit Kat bir numaralı öncelikli markadır ve Kit Kat sürülebilir çikolata, markayı doğrudan Nutella'nın bölgesine (pasta, krep, dürüm, unlu mamuller, kekler...) yerleştirmemize olanak tanıyan, eksiksiz bir markalı çözüm olacaktır. Bu ürün, kafeler ve pastaneler ve pizza gibi önemli kanallarda varlığımızı ve marka görünürlüğümüzü artırmamızı sağlayacaktır.

Anahtar Kelimeler: Nestlé, Global Market, Pastacılık, Kit Kat, Müşteri Memnuniyeti

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DEVELOPMENT OF KIT KAT SPREADABLE CHOCOLATE FOR OUT-OF-HOME CONSUMPTION

ABSTRACT

Kit Kat is the only confectionery brand in Europe which has multimarket leverage. And Kit Kat has strong brand awareness and appeal in the market. Over the past 4 years, a successful business has been established with double-digit growing Kit Kat ingredients, and in 2020, a bakery portfolio of Kit Kat concepts was launched with Dessert Manufacturers. With the double-digit growth of Kit Kat retail in the region, various activities are underway at Nestlé to strengthen our portfolio and gain market share with a new and attractive Kit Kat branded experience.

Oreo and Nutella branded products, which have a large share in the pastry market, dominate the market. Despite this, customers continue to seek diverse and alternative branded solutions to differentiate their menu offerings on a regular basis, and ready-to-use solutions to create attractive concepts. It is important that the products are more practical, easier to apply and can be used in every field in the preparation of pastry products with a large consumer mass for out-of-home consumption. In this study, it is aimed to make Kit Kat chocolate (which is loved and consumed by consumers in the world) suitable for the use of consumers in various bakery products in patisseries for out-of-home consumption.

Nestlé Professional Kit Kat can be used as a sauce and filling in chocolate, waffles, pancakes, many pastry products, which is intended to be consumed with pleasure in many different channels such as hotels, restaurants, cafes, transportation, with its different flavors in domestic and abroad, in out-of-home consumption channels and in professional kitchens. It has been specially developed for use as a spreadable material. In this context, it is aimed to turn the Kit Kat experience into a product suitable for the use of consumers in the pastry industry, by making use of the taste of Kit Kat chocolate, which is loved and consumed in the world, and the power of the Kit Kat brand, and to gain market share against the market leader. It contains halal, sustainable and natural raw ingredients that comply with the legal requirements of both AOA and EMENA markets. It is designed as a product that can be used as a spreadable or filling cream.

Nestle Professional Chocolate products are a strategic growth pillar to accelerate the growth of confectionery brands. Kit Kat is the preferred brand and Kit Kat chocolate spread will be a complete branded solution, allowing us to place the brand directly in Nutella's area (cake, pancakes, wraps, baked goods, muffins...). This product will enable us to increase our presence and brand visibility in key channels such as cafes and bakeries and pizza.

Keywords: Nestlé, Global Market, Pastry, Kit Kat, Customer Satisfaction

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A QUALITATIVE STUDY OF THE FACTORS AFFECTING THE INTENTION TO PAY FOR PREMIUM SERVICES[1]

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ABSTRACT
The continuous evolution of digital technology is not only changes the way individuals communicate but also fundamentally changes the way companies generate income. Most service providers are successfully implementing the freemium business model, where simultaneous free and premium versions are offered. There are fewer functions in the free version to create the need for users to pay. Many online content providers are increasingly adopting the freemium revenue model. Generating long-term revenue by converting free users to premium users is one of the main challenges for freemium service providers. The success of this model is largely dependent on users' intention to pay for the premium version. Despite its practical importance, studies investigating why users are willing to pay for a service that can also be used for free are limited. This study aims to learn about the factors that affect the intention of users of Spotify, a music streaming service provider that has adopted the freemium business model, to pay for the premium version. In this direction, focus group interviews were conducted with 26 Spotify users as qualitative research. In this context, the intention of users to pay for the premium version has been tried to be determined. The obtained data were coded and interpreted by making content analysis with the MAXQDA qualitative data analysis program. In the current study, content analysis was made using focus group interviews, one of the data collection methods in qualitative research. It aimed to reveal the factors affecting the intention to pay for premium music services. Consumers' intention to pay for the premium version was analyzed under eight main themes: attitude towards the free version, perceived content quality, habit, music involvement, perceived usefulness, perceived ease of use, price value, and social influence. In line with this information revealed, suggestions were made to entrepreneurs and practitioners.
Keywords: Freemium, Premium, Music as a Service, Spotify

[1] This study is derived from the doctoral thesis written by E. Başak TAVMAN, conducted under the supervision of Professor Mehmet TIĞLI at Marmara University, Institute of Social Sciences, Marketing PhD Program.

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PREMİUM HİZMETLER İÇİN ÖDEME YAPMA NİYETİNİ ETKİLEYEN FAKTÖRLER ÜZERİNE NİTEL BİR ÇALIŞMA

ÖZET

Dijital teknolojinin sürekli gelişimi, yalnızca bireylerin iletişim kurma şeklini değiştirmekle kalmayıp, aynı zamanda şirketlerin gelir elde etme şeklini de temelden değiştirmektedir. Günümüzde çoğu hizmet sağlayıcısı, eşzamanlı ücretsiz ve ücretli premium sürümlerin sunulduğu freemium iş modelini başarıyla uygulamaktadır. Kullanıcılarda ödeme yapma gereksinimini yaratmak için ücretsiz sürümde daha az fonksiyon bulunmaktadır. Birçok çevrimiçi içerik sağlayıcısı giderek artan bir şekilde freemium gelir modelini benimsemektedir. Ücretsiz kullanıcıları premium kullanıcılara dönüştürerek uzun vadeli gelir sağlama, freemium hizmet sağlayıcıların temel zorluklarındandır. Bu modelin başarısı büyük ölçüde kullanıcıların ücretsiz sürümden ücretli premium sürüme geçme niyetine bağlı olmaktadır. Pratik önemine rağmen, kullanıcıların ücretsiz olarak da kullanılabilecek bir hizmet için ödeme yapmaya neden istekli olduklarını araştıran çalışmalar sınırlı sayıdadır. Bu çalışmanın amacı, freemium iş modelini benimseyen müzik akış hizmeti sağlayıcısı Spotify kullanıcılarının premium sürüm için ödeme yapma niyetlerine etki eden faktörler hakkında bilgi edinmektedir. Bu doğrultuda 26 Spotify kullanıcısı ile odak grup görüşmeleri gerçekleştirilmiştir. Bu bağlamda, kullanıcıların premium sürüme ödeme yapma niyetleri tespit edilmeye çalışılmıştır. Elde edilen veriler, MAXQDA nitel veri analiz programı ile içerik analizi yapılarak kodlanmış ve açıklanmıştır. Mevcut çalışmada kalitatif araştırmalardaki veri toplama yöntemlerinden odak grup görüşmeleri kullanılarak içerik analiz yapılmış, böylece premium müzik hizmetlerine ödeme yapma niyetine etki eden faktörlerin ortaya konulması amaçlanmıştır. Tüketicilerin premium sürüme ödeme yapma niyetleri ücretsiz sürüme yönelik tutum, algılanan içerik kalitesi, alışkanlık, müzik ilgilenimi, algılanan fayda, algılanan kullanım kolaylığı, fiyat değeri ve sosyal etki olmak üzere sekiz ana tema altında incelenmiştir. Açığa çıkarılan bu bilgiler doğrultusunda girişimcilere ve uygulayıcılara öneriler sunulmuştur.

Anahtar Kelimeler: Freemium, premium, Müzik Akış Hizmeti, Spotify

1. INTRODUCTION

Innovations in information technologies are shaping many sectors and changing the revenue models of content providers. Today, many online applications are available for free. Freemium is a popular business model preferred by content providers, offering both a paid and free version at the same time. In the freemium model, premium users finance non-paying users (Anderson 2009; Doerr et al., 2010). The success of the freemium business model is to convert non-paying users into paying customers. Today's popular music streaming service Spotify, by using the freemium model allows it’s premium users to access unlimited and ad free songs. In the free version, the music is interrupted by ads. The premium version offers users various additional features such as ad-free music listening, offline listening, and unlimited song skips (Doerr et al., 2010). The success of the freemium business model relies on free users paying for the premium version. Despite its practical importance, few studies have examined the question of why customers are willing to pay for a service even though they can get essential functions for free (Oestreicher-Singer & Zalmanson, 2009). It is aimed that the present study will make a significant contribution to the literature within the framework of the freemium business model.

The study aims to identify the factors that influence the intention to pay for the paid version, focusing on Spotify, a music content provider offering free and premium paid versions to its users. With focus group interviews which used in qualitative research, factors that affect intention to pay for the premium version will be sought.

2. LITERATURE

The freemium term dates back to the 1980s. Wilson (2006) brought the concept of freemium to the literature by combining the words free and premium. The freemium concept has become a vital revenue model for online digital-based products and services in recent years. Most of the apps available on Apple App Store and Google Play today are offered as freemium. Freemium has become a popular revenue model used in various industries such as music streaming services, software, and mobile games. Its everyday use in software services is a free trial for a limited time or a limited functionality. Most of the online service providers such as DropBox, LinkedIn, Candy Crush, Zoom, Skype, Spotify, and Youtube use the freemium model (Kumar, 2014). The freemium business model provides free access to core features and content while charging for more advanced, premium additional features. For example, users of the free version of Youtube are interrupted by advertisements, while subscribers using the premium version can watch videos without ads and watch videos while the screen is locked. To be successful, online service provider must successfully retain premium users and convert non-paying free version users into paying customers (Kumar, 2014).

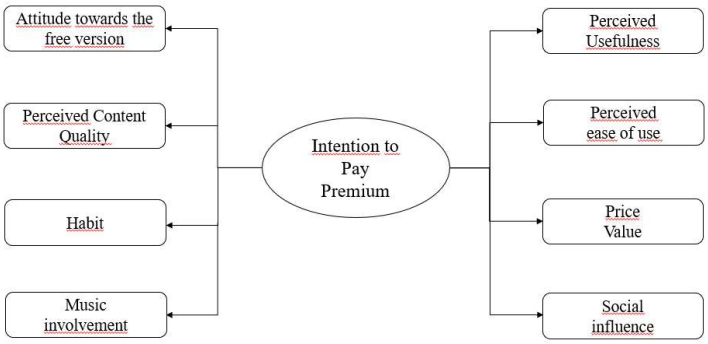
3. METHOD

This study aims to determine the factors that affect the intention of paying for premium. A focus group interview was used as a data collection technique in the study. Focus group studies aim to obtain in-depth information about a specific topic and provide information about the participants' personal experiences, beliefs, perceptions, and attitudes (Kitzinger, 1994; Morgan, 1988). Since focus group relies on the participants' abilities and capacities to provide relevant information (Morgan, 1988), the purposive sampling method was used in the study. Focus group interviews were held on 8-9 May 2021 over Zoom due to Covid-19, and the interviews, held in four sessions, lasted approximately 4 hours. 26 people who are Spotify users participated in the meeting. Focus group discussions were recorded. The MAXQDA 18 program, one of the qualitative analysis software, was used to code the transcripts of the focus group interviews and find the meaningful topics in the texts.

4. FINDINGS

After analyzing the data, the factors affecting the intention to purchase the premium version were collected under 8 main themes: attitude towards the free version, perceived content quality, habit, music involvement, perceived usefulness, perceived ease of use, price value, and social influence. The theme model that emerged as a result of the research is in Figure 1 below.

Figure 1: Intention to Pay Premium Main Themes



4.1. Attitude towards the free version

Attitude towards behavior refers to how a person has a positive or negative evaluation of planned behavior (Ajzen, 1991). In the theory of planned behavior, attitude is seen as the determinant of behavioral intention. Most of the studies in behavior suggest that attitude is one of the most critical factors affecting behavioral intention (Cronan & Al-Rafee, 2008). According to Ajzen (1985), people's attitude towards a behavior determines their intention to perform that behavior. People's beliefs form an attitude towards a behavior about the consequences resulting from that behavior and evaluate these consequences. The prominent thoughts of the participants about their attitudes towards the free version are as follows:

'We used the free version because we liked it. We tried it, and then we paid to continue.'

'I tried the free version at first, then switched to Premium. When I tried it, I liked the features. I bought the premium version because I liked it.'

'It felt good when I used it; if that is the case, I will subscribe. Worth trying the basic version. First, you get used to the comfort with a free trial, and then you cannot give up and pay.'

4.2. Perceived content quality

Content is often defined as a structure with accuracy, relevance, and competence (Jung, Perez-Mira, & Wiley-Patton, 2009, p. 125). De Wulf et al. (2006, p. 436) define content quality as the consumer's assessment of the reliability, timeliness, adequacy, and relevance of the information provided a content provider. In studies on consumers' adoption of information technologies, it has been understood that the quality of the content is effective in consumers' evaluation of information technologies (Jarvenpaa and Todd, 1997; Palmer, 2002).

'I can find all the music and podcasts I am looking for. I use it because I can find different kinds of music.'

'All the songs I have been looking for so far are on Spotify. We have access to very different world music; there are podcasts, we have easy access to alternative music.'

'I passed because it was easy to access songs worldwide. Other apps do not have variety, and there is an extensive selection of music.'

'The most attractive thing is the richness of the content. I can listen to it unlimitedly in Premium, and there are many options.'

'New music is coming to Spotify every week. The content is very up-to-date.'

4.3. Habit

Habit has been an important factor in customer behavior studies (Ajzen & Fishbein, 2000). Habit is an essential factor for existing behaviors that have been repeated for a long time. Chen and Cheng (2012) stated that when the action turns into a habit, individuals tend to do it automatically, whether there is a need or not. The frequency of past experiences is a critical determinant of the future behavior of individuals (Ajzen, 2002). Venkatesh, Thong, and Xu (2012) found that habit is essential in determining consumers' mobile internet usage and intention to use it (Venkatesh, Thong, & Xu, 2012). The prominent thoughts of the participants about the habit are as follows:

'I don't plan to change it due to habit; I have been using it for a long time. I have been using it for 4-5 years. It was the first application that came out at that time, so it piqued my interest. Curiously, I started using the free version. I tried its full features using the trial version. It created a habit at that time.'

'The reason I continue is not to lose music I have created for years. I cannot rebuild the archive, hence my commitment. It has become my habit because it has become a daily necessity.'

'Having been using it for a long time makes it difficult to change. If I change it, I lose my music list. I don't want to deal with it again.'

4.4. Music involvement

Individuals' levels of involvement affect attitudes and behaviors, including decision processes, product knowledge, and innovation (Bloch, 1986). Product involvement has often been used in previous research as the key determinant of consumer behavior. Kinally et al. (2008) define music involvement as the level of importance given to music by consumers. Individuals with a high level of involvement are expected to consume more music in general (Styvén, 2010). An individual's frequency of music consumption has proven to be an essential indicator of music piracy (Coyle et al., 2009). Cesareo and Pastore (2014) found that consumers interested in music streaming services are more willing to use the subscription-based music service. The prominent thoughts of the participants about their interest in music are as follows:

'I use Spotify every day without exception. I also listen to many podcasts while doing housework and cooking.'

'The money you pay for it is not an expense item in your life. If you listen to music and it's a way of life, you can pay Premium. For people like me, it's not an expense; I cut it out of my other needs and pay it again.'

'I listen to music every day. I will use it no matter the price. If necessary, I will cut back on my other payments because I live with music from morning to night. If it's your priority, you can sacrifice your money.'

'Music is my priority. If you love to listen music, get it. It's about your field of interest. I pay to listen to quality music.'

4.5. Perceived usefulness

Perceived usefulness is defined as how an individual believes that using a system will increase job performance (Davis, 1989). The usefulness that users will receive in return for using technologies is vital in creating a positive attitude. Therefore, perceived usefulness plays a fundamental role in adopting new technologies (Taylor & Todd, 1995). The prominent thoughts of the participants about offline listening are as follows:

'For me, offline listening is beneficial because I listen to music a lot on the subway. It does not go with the internet package either. The additional features it offers are the reason why I switched to premium.'
'Unrestricted use is crucial to me. Cutting off the music disrupts the rhythm and creates problems while listening to music.'
'Spotify works simultaneously with many social media applications. Like Shazam and Instagram. It's easier to send songs on Spotify; it opens with other applications'
'I like being able to listen to music in the background. When you turn off the screen, the music continues. I can listen to it unlimitedly in Premium; there is no limit to skip songs.'
'The algorithm works very well. For example, according to the tracks you like, it then recommends the music you like.'
'I also use it to see my friends' lists. I can see what he is listening to on the side, one by one. My friends with similar tastes share their lists with me, and I can listen to them quickly. I can also share with them. It's hard to create playlists on Soundcloud; Spotify is more accessible than. You can't see the suggestions of friends there.'

4.6. Perceived ease of use

Perceived ease of use is defined as an individual's belief in difficulty using a particular system (Davis, 1989). Perceived ease of use related to information technologies affects system to use and perceived usefulness (Davis, 1989). The prominent thoughts of the participants about perceived ease of use are as follows:
'It was easy for me to use. I have been using it for 2-3 years. It is a user-friendly application.
'I think it is a practical application. I can immediately download other people's existing lists. Downloading music is very easy on Spotify.'
'The interface is easy to use. Apple Music is also hard to get used to, not as easy to use like Spotify, and it's complicated. I'm currently using it for convenience.'

4.7. Price value

The use of technology can bring more financial costs to customers. Therefore, customers can mentally compare the benefits of using new systems with the financial cost of using these systems (Venkatesh et al., 2012). Participants classified price value as perceived value, economical pricing, and package alternatives. The prominent thoughts of the participants about the perceived value are as follows:
'I think the price is very affordable. It's definitely worth the price. No matter how many times I use it.'
'The price is quite affordable. If you try to buy a cd, you will pay much more. You can listen to many songs here.'
'As it is a family plan, it is advantageous on an individual basis. I think this price is quite reasonable for this feature. In the family plan, it allows listening to music simultaneously for 5 people. Very cheap per person, I think it is quite appropriate.'
'It is nice to have individual, student, and family plans. I think the price is reasonable. It is convenient because it is shared; we pay by sharing with friends. I think it's affordable'.

4.8. Social influence

Social influence is defined as 'the degree to which an individual perceives the belief that important people should use the new system'. It is one of the main variables determining behavioral intention (Venkatesh et al., 2003). If a person tells 'the system is helpful' with his/her social environment (such as family or friends), that social environment might be influenced by him/her and they might show intention to use the system (Vankatesh et al., 2000).

'I started using it because my friend suggested it. The use of my friends and their descriptions of its features impressed me, so I switched to Premium. I think the people around him are very influential.'

'I used it on the recommendation. My colleague was listening, he suggested then I switched to Premium with his advice. I signed up immediately.'

'My girlfriend was using it; I switched the premium version thanks to her. My other friends also use it. I was wondering because they said they use it. Environmental factors are very influential.'

5. CONCLUSION

Over the past decade, the freemium business model has become the innovative business model used by start-ups and content providers. In the freemium business model, users can access basic features free of charge and access additional functions for a subscription fee. Generating long-term revenue by converting free users to premium users is essential to the success of the freemium business model. This study was conducted to determine the factors affecting the premium version purchase intention of freemium music streaming service users. The qualitative research method used to show an opportunity to detect purchase intentions. For this reason, this study, carried out through a professional qualitative data analysis program, is vital in presenting an alternative qualitative research example to quantitative research techniques, which are the dominant method in business areas. After the thematic analysis, the participants' topics mentioned; attitude towards the free version, perceived content quality, habit, music involvement, perceived usefulness, perceived ease of use, price value, and social influence. The study contributes to the literature in analyzing verbal data with modern qualitative research techniques, not haphazardly, by using Qualitative Data Analysis Programs (MAXQDA), which is used in the analysis of qualitative data very few in the national literature. Examination of music streaming services as a freemium business model in the study is the limitation of the research. Future studies may be performed on other freemium-based services (online games, cloud storage service, etc.) to generalize the results to all freemium business models. It is expected that this study will help the strategies of online service providers using the freemium business model by identifying the factors that affect users to purchase the paid version.

REFERENCES

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In Action control (pp. 11-39). Springer, Berlin, Heidelberg.

Ajzen, I. (1991). The theory of planned behavior. Organizational behavior and human decision processes, 50(2), 179-211.

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior 1. Journal of applied social psychology, 32(4), 665-683.

Ajzen, I., & Fishbein, M. (2000). The prediction of behavior from attitudinal and normative variables.

Anderson, C. (2009). Free—the future of a radical price. London: Random House.

Bloch, P. H. (1986). The product enthusiast: Implications for marketing strategy. Journal of Consumer Marketing.

Cesareo, L., & Pastore, A. (2014). Consumers' attitude and behavior towards online music piracy and subscription-based services. Journal of Consumer Marketing, 31(6/7), 515-525.

Chen, C. F., & Cheng, L. T. (2012). A study on mobile phone service loyalty in Taiwan. Total Quality Management & Business Excellence, 23(7-8), 807-819.

Coyle, J. R., Gould, S. J., Gupta, P., & Gupta, R. (2009). "To buy or to pirate": The matrix of music consumers' acquisition-mode decision-making. Journal of Business Research, 62(10), 1031-1037.

Cronan, T. P., & Al-Rafee, S. (2008). Factors that influence the intention to pirate software and media. Journal of business ethics, 78(4), 527-545.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS quarterly, 319-340.

De Wulf, Kristof, Niels Schillewaert, Steve Muylle, Deva Rangarajan. 2006. The Role Of Pleasure In Web Site Success. Information and Management. c. 43. s. 4: 434–446.

Doerr, J., Benlian, A., Vetter, J., & Hess, T. (2010, August). Pricing of content services–an empirical investigation of music as a service. In SIGeBIZ track of the Americas Conference on Information Systems (pp. 13-24). Springer, Berlin, Heidelberg.

Jarvenpaa, S., & Todd, P. A. (1997). Consumer reactions to electronic shopping on the world wide Web. International Journal of Electronic Commerce, 1, 59–88.

Jung, Y., Perez-Mira, B., & Wiley-Patton, S. (2009). Consumer adoption of mobile TV: Examining psychological flow and media content. Computers in Human Behavior, 25(1), 123-129.

Kinnally, W., Lacayo, A., McClung, S., & Sapolsky, B. (2008). Getting up on the download: college students' motivations for acquiring music via the web. New Media & Society, 10(6), 893-913.

Kitzinger, J. (1994). The methodology of focus groups: the importance of interaction between research participants. Sociology of health & illness, 16(1), 103-121.

Kumar, V. (2014). Making" freemium" work. Harvard business review, 92(5), 27-29.

Morgan, D. L. (1996). Focus Groups. Annual Review of Sociology, 22,

Oestreicher-Singer, G., & Zalmanson, L. (2009). " Paying for Content or Paying for Community?" The Effect of Social Involvement on Subscribing to Media Web Sites.

Palmer, J. (2002). Website usability, design, and performance metrics. Information Systems Research, 13, 151–167.

Styvén, M. E. (2010). The need to touch: Exploring the link between music involvement and tangibility preference. Journal of Business Research, 63(9-10), 1088-1094.

Taylor, S., & Todd, P. A. (1995). Understanding information technology usage: A test of competing models. Information systems research, 6(2), 144-176.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS quarterly, 425-478.

Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. MIS quarterly, 157-178.

Wilson, F. (2006). The freemium business model. A VC Blog, 23 Mart, 2006.

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ÇEVRİMİÇİ UYGULAMA PAZARINDA REKABETÇİ BİR STRATEJİ OLARAK FREEMIUM İŞ MODELLERİ

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ÖZET
Freemium iş modeli, son yıllarda sayıları gittikçe ivme kazanan çevrimiçi uygulama pazarında yaygın kullanılan bir iş modeli haline gelmiştir. Bununla birlikte, girişimciler ve yöneticiler, freemium iş modellerini kullanan şirketlerin başarısı veya başarısızlığı üzerine sınırlı bir anlayışa sahiptir. Bu çalışmanın amacı, stratejik bir bakış açısıyla çevrimiçi uygulama pazarında freemium iş modeli ile başarılı olmanın anahtar noktalarını vurgulamaktır. Freemium, belirli bir ürünün müşteriye ücretsiz olarak sunulduğu, ürünün daha gelişmiş sürümü için ek ücret ödemesinden gelir sağlayan bir iş modelini ifade etmektedir. Literatürde freemium iş modelini inceleyen çalışmaların oldukça kısıtlı olduğu görülmektedir. Mevcut çalışma, freemium iş modelinin farklılaştırıcı özellikleri için bir çerçeve oluşturarak uygulayıcıların karar verme süreçlerine yardımcı olmayı hedeflemektedir. Çalışmada, freemium iş modelini uygulamada önemli faktörlerin neler olduğunu belirlemek için, freemium modelini benimseyen başarılı şirketlerin iş modelleri incelenmiştir. Bu bağlamda, ikincil veri analizine dayanılarak 5 başarılı freemium iş modeli (LinkedIn, Spotify, Evernote, DropBox ve Zoom) örneği incelenmiştir. Analiz bulguları, kullanıcı ihtiyaçlarına göre planlanması gereken ücretsiz ve premium sürüm özelliklerinin net bir şekilde ayrılması gerektiğini ortaya koymaktadır. Pazarlama bakış açısından bakıldığında, ilk aşamada şirketler öncelikli olarak ücretsiz sürümü kullanan kullanıcılarına odaklanmalı, sonrasında ağızdan ağıza pazarlama ile mevcut müşteri tabanı genişletilmelidir. Ek olarak uygun bir ürün fiyatlandırması ve ek paket alternatifleri ile hedef segmentin ihtiyaçlarına uygun versiyonlar sunulmalıdır. Çalışmada sürdürülebilir bir freemium iş modeli geliştirmeyi başaran şirketler incelenerek, çevrimiçi uygulama pazarında freemium tekliflerinin nasıl konumlandırılacağı konusunda stratejik öneriler verilmiştir.
Anahtar Kelimeler: Freemium, İş modeli, Çevrimiçi uygulamalar

FREEMIUM BUSINESS MODELS AS A COMPETITIVE STRATEGY IN THE ONLINE APP MARKET

ABSTRACT
The freemium business model has become a widely used business model in the online application market, which has been gaining momentum in recent years. However, practitioners have limited understanding of the success or failure of companies using freemium business models. The aim of this study is to emphasize the key points of being successful with the freemium business model in the online app market from a strategic perspective. Freemium refers to a business model where a particular product is offered to the customer free, generating revenue from paying an additional fee for the more advanced version of the product. It is seen that the studies examining the freemium business model in the literature are limited. The present study aims to help practitioners' decision-making by establishing a framework for the differentiating features of the freemium business model.

In the study, the business models of successful companies that have adopted the freemium model are examined in order to determine what are the important factors in implementing the freemium business model. In this context, 5 successful freemium business models (LinkedIn, Spotify, Evernote, DropBox and Zoom) examples were examined based on secondary data analysis. The analysis findings reveal that there should be a distinct separation of free and premium versions, which should be planned according to user needs. From a marketing point of view, companies should first focus on users using the free version, then expand their existing customer base with word of mouth marketing. In addition, versions that meet the needs of the target segment should be offered with an appropriate product pricing and different subscription plans. In the study, companies that have managed to develop a sustainable freemium business model are examined and strategic suggestions are given on how to position freemium offers in the online application market.
Keywords: Freemium, Business model, Online applications

1. GİRİŞ

Son derece belirsiz dijital iş dünyası çağında, birçok işletme sektörde hayatta kalmaya ve rekabet avantajı sağlamaya çalışmaktadır. Johnson vd. (2008), örgütsel performansın kilit faktörünün yeni bir iş modeli olduğunu öne sürmüştür. Modern işletmeler arasındaki rekabet, ürünlerin değil, iş modellerinin rekabetidir. Yeni bir iş modeli inovasyonu rekabet avantajı sağlanmasında kritik önem taşımaktadır (Chesbrough, 2010; Huang vd., 2012). Çevrimiçi uygulama pazarında sayıları gittikçe artan uygulamalar arasında rekabet oldukça yüksektir. Bunun sonucu olarak tüketicilerin tercih ve beklentileri de sürekli değişmektedir. Start-up şirketlerin sayısının günden güne artması, iş modelinin önemini vurgulamaktadır. Son yıllarda çevrimiçi yazılım hizmeti veren birçok firma hizmetlerini ücretsiz sunmaktadır. Çeşitli çevrimiçi teknolojilerin geliştirilmesi ve yayılması, yenilikçi çevrimiçi tüketim davranışlarının ve iş modellerinin ortaya çıkmasına yol açmıştır (Niculescu ve Wu, 2014). Ortaya çıkan tüm bu değişimler sonucunda, çevrimiçi ürün veya hizmet sunan şirketler, sürdürülebilir olmak adına, geleneksel iş modellerinin aksine yeni ve alternatif bir iş modeli kullanmaya başlamışlardır. Bu iş modeline freemium iş modeli (ücretsiz + premium) adı verilmektedir. Geleneksel ücretli uygulamaların aksine, günümüzde birçok çevrimiçi şirket, freemium iş modeline göre operasyonları yönetmekte ve çevrimiçi kullanıcıların ihtiyaçlarına yönelik ürün veya hizmet sunmaktadır. Bu nedenle freemium iş modeli, iş dünyası ve akademi tarafından ilgi duyulan ve geniş çapta tartışılan önemli bir konu haline gelmiştir (Anderson, 2009; Lyons vd., 2012). Bu çalışma, freemium iş modelini uygulamada önemli faktörlerin neler olduğunu belirlemek için freemium iş modelini benimseyen başarılı şirketlerin stratejilerini incelemektedir. Çalışmanın amacı, freemium iş modelini kullanan şirketlerin başarı faktörlerini tespit etmektir.

2. TEORİK ÇERÇEVE

2.1. İş Modeli

Osterwalder ve Pigneur (2010, s.14) iş modelini, bir örgütün nasıl değer yarattığının, teslim ettiğinin ve elde ettiğinin mantığı olarak tanımlamaktadır. Bir başka deyişle iş modeli, teknik kapasiteyi ekonomik değer ile buluşturan sezgisel mantıktır (Chesbrough ve Rosenbloom, 2002). Literatürde birçok yönetim araştırmacısı "iş modeli" kavramını araştırmıştır.

Bu alandaki araştırmaların çoğu ekonomi, finans, firma performansı ve yenilik süreçlerine odaklanmaktadır (Chesbrough ve Rosenbloom 2002; Osterwalder ve Pigneur, 2010; Zott ve Amit, 2008). İş modeli, öncelikle gelir elde etmek ve müşteriler, tedarikçiler ve ortaklar için değer önerileri tanımlamak için yeni yollar bulmaya odaklanmaktadır (Casadeus-Masanell ve Ricart, 2010). Chesbrough ve Rosenbloom (2002), yenilikçi iş modellerinin iş başarısı ile bağlantılı olduğunu ifade etmişlerdir.

2.2. Freemium İş Modeli

Freemium, ücretsiz ve ücretli sürümlerin bir arada sunulduğu "free" ve "premium" terimlerinin birleşimi ile ortaya çıkmış bir kavramdır (Gassmann vd., 2015; Wagner vd., 2014). Freemium kavramı literatürde pazarlama aracı (Bekkelund, 2011), iş modeli (Osterwalder ve Pigneur, 2010) ve gelir modeli (Anderson, 2009) gibi farklı şekillerde tanımlanmıştır. Freemium iş modelinde ücretsiz olarak sınırlı bir değer teklifi alan ödeme yapmayan kullanıcılar (genellikle ücretsiz kullanıcılar olarak adlandırılmaktadır) ve premium sürüm için ödeme yapan müşteriler olmak üzere iki tüketici grubu yer almaktadır (Gassmann vd., 2015). Ücretsiz kullanıcılar daha sonra ödeme yapan müşteriler haline gelebilir ve bunun tersi de geçerlidir. Freemium iş modeli, günümüzde çevrimiçi şirketlerin, ürünlerinin reklamını yapmak için kullandıkları en popüler modellerden biri haline gelmiştir (Panda, 2019). Oldukça hızlı bir şekilde geniş kullanıcı tabanına ulaşmayı sağlamakta ve ağ etkileri nedeniyle etkili bir pazarlama aracı görevi görmektedir (Anderson, 2009). Freemium genellikle cazip bir seçenek olarak kabul edilmektedir, ancak günümüzde çoğu şirket başarısız olmakta ve faaliyetlerini sonlandırmaktadır. Freemium iş modelinin başarısı herhangi bir nedenle premium (ücretli) sürüm kullanıcılarına dönüşen ücretsiz sürüm kullanıcılarının yüzdesini ifade eden dönüşüm oranına bağlıdır.

3. METODOLOJİ

Büyüme ve belirli bir iş modeli arasındaki ilişkiyi incelemek ve açıklamak amacıyla araştırma yöntemi olarak vaka çalışması tercih edilmiştir. Vaka çalışması, tek bir ortamda mevcut dinamikleri anlamaya odaklanan bir araştırma stratejisidir (Yin, 2009). Çalışmanın amacı nedeniyle, freemium iş modeli hakkında derinlemesine iç görü elde edilmesine olanak sunan amaçlı örnekleme stratejisi (Patton, 2002) benimsenmiştir. Bu çalışma, freemium iş modelleriyle başarı sağlayan şirketlerin stratejilerini ortaya çıkarmayı hedeflemektedir. Bu bağlamda, profesyonel iş ağı hizmet sağlayıcısı (LinkedIn), müzik akış hizmeti (Spotify), bulut tabanlı veri depolama hizmeti (Dropbox), not alma uygulaması (Evernote) ve telekonferans (Zoom) alanlarında çevrimiçi uygulama pazarının liderlerini temsil eden 5 vaka seçilmiştir. Vakalar aşağıdaki kriterlere göre seçilmiştir:

- Faaliyet süresi: Şirket en az 10 senedir sektörde faaliyet göstermeli ve piyasada tanınmalıdır. Faaliyet süresi, ücretsiz sürüm teklifinin şirket büyümesini nasıl etkilediğinin anlaşılmasını sağlamak için belirlenmiştir. Dunne vd. (1989), şirket faaliyet süresi ile şirket başarısı arasında olumlu bir ilişki olduğunu tespit etmiştir. Benzer şekilde, Haltiwanger vd. (1999) ve Stam ve Wennberg (2009) de firma yaşının, verimlilik seviyeleriyle olumlu bir şekilde ilişkili olduğunu öne sürmüşlerdir.
- Büyüme oranı: Firma büyümesi, gelişen ekonominin önemli bir göstergesidir (Zhou ve Wit, 2009). Büyüme, firmaya özgü kaynak ve yeteneklerin birleşiminden ortaya çıkan örgütsel bir sonuçtur (Nelson ve Winter, 1982). Bir firmanın büyüme fırsatları, mevcut örgütsel üretim faaliyetleri ile yüksek oranda ilişkilidir (Coad, 2009).

Firma büyümesi, yönetim ve girişimcilik araştırmaları alanında incelenen önemli bir konudur. Son yirmi yılda, farklı disiplinler büyüme oranlarındaki farklılıkları açıklamak için firma büyümesinin belirleyicilerini incelemiştir.

- Çevrimiçi teklif: Çalışma yalnızca çevrimiçi ürün ve hizmetler sunan şirketlere odaklanmıştır.
- Fiyatlandırma: Araştırma amacı doğrultusunda, şirket ürün veya hizmetlerinin bir bölümünü kullanıcılarına ücretsiz olarak sunmalıdır. Dolayısıyla çalışmada yalnızca freemium fiyatlandırma yapan şirketler seçilmiştir. Sunulan ek özellikler için bir ücret gerektiren freemium uygulamalarda, ürünün temel sürümü ücretsiz olarak kullanılmakta ve hibrit fiyatlandırma planı geçerli olmaktadır (Anderson 2009; Pauwels ve Weiss 2008). Freemium fiyatlandırma, düşük maliyetle çok sayıda kullanıcı elde edilmesine olanak sağladığı için teknoloji şirketleri tarafından çevrimiçi uygulamalar için yaygın olarak kullanılmaktadır (Lee, Kumar ve Gupta 2015).

4. BULGULAR

Çevrimiçi uygulama pazarında başarılı olabilmek için freemium iş modelini benimseyen şirketlerin dikkat etmesi gereken faktörlerin neler olduğunu belirlemek için olarak LinkedIn, Spotify, Evernote, DropBox ve Zoom vakaları seçilmiştir. İş tanımı, kullanıcı sayısı, ücretsiz sürüm özellikleri, premium sürüm özellikleri ve hedef segment sırasıyla incelenmiştir. Bu özellikleri analiz ederek, özellikle freemium iş modelinde kritik önem taşıyan dikkat edilmesi gereken konular belirlenmiştir. İlk vaka örneği LinkedIn, çevrimiçi olarak profesyonel bir kimlik oluşturma, yönetme ve paylaşma, profesyonel ağlar oluşturma ve bunlarla bağlantı kurma, paylaşılan bilgilere erişme ve iş fırsatları bulma olanağı sağlayan bir iş ağı hizmetidir. Şirket 2002 yılında kurulmuştur. Dünya genelinde 200'den fazla ülke ve bölgede, 774 milyondan fazla üyesi ile dünyanın en büyük profesyonel ağıdır (https://about.linkedin.com/tr-tr?lr=1) İkinci vaka örneği Spotify, 2006 yılında kurulmuştur. Kullanıcılarına milyonlarca şarkıya erişim sağlayan bir dijital müzik akış hizmetidir. Spotify, freemium iş modelinin farklı sürümleriyle 187 ülkede kullanılmaktadır (https://support.spotify.com/tr/article/where-spotify-is-available/). Mevcut kullanıcı sayısı 381 milyondur (https://www.statista.com/statistics/367739/spotify-global-mau/). Üçüncü vaka örneği olan Evernote, 2004 yılında kurulan not alma uygulamasıdır. Dördüncü vaka örneği Dropbox, 2007 yılında kurulmuştur. Kullanıcılarına web sitesine yükledikleri bilgileri kaydetme ve saklama olanağı sağlayan çevrimiçi dosya paylaşımı ve bulut depolama hizmeti sunmaktadır. 3 milyondan fazla ücretli kullanıcısı bulunmaktadır (https://www.dropbox.com/). Son olarak Zoom, 2011 yılında kurulan iletişim teknolojisi şirketidir. Bulut tabanlı yazılım platformu aracılığıyla görüntülü telefon ve çevrimiçi sohbet hizmetleri sağlamakta ve telekonferans, Webinar, uzaktan çalışma, uzaktan eğitim ve sosyal ilişkiler için kullanılmaktadır (https://zoom.us/).

Tablo 7: Vaka Bulgularının Özeti

	LinkedIn	**Spotify**	**Evernote**	**DropBox**	**Zoom**
İş Tanımı	Profesyonel sosyal iş ağı ve paylaşım platformu	Müzik akış hizmeti	Not alma, düzenleme ve arşivleme uygulaması	Bulut depolama ve dosya paylaşım hizmeti	Video konferans platformu
Kullanıcı Sayısı	756 milyon	365 milyon	225 milyon	700 milyon	300 milyon
Ücretsiz Sürüm Özellikleri	İş arkadaşları ile iletişime geçme Tavsiye isteyip önerilerde bulunma Diğer LinkedIn üyelerinin profillerini araştırıp görüntüleyebilme	Reklamlı müzik Podcast'ler ve sesli kitaplar Yurt dışı seyahatlerinde müziklerine erişim (14 güne kadar)	Not alma En fazla 2 cihazda senkronizasyon 60 MB aylık yükleme 25 MB maks. not boyutu Ana Ekran kontrol paneli ile organize olma	Dropbox bulut yedekleme aracı 2 GB depolama alanı sağlar. Aynı hesabı üç farklı cihazdan kullanarak, dosyalara tanımlanan cihazlardan erişim sağlama	100 katılımcıya kadar ev sahipliği 40 dakikaya kadar sınırsız grup toplantısı Toplantı başına 30 saatlik bir zaman sınırı ile sınırsız bire bir toplantı Özel ve Grup Sohbeti
Premium Sürüm Özellikleri	Doğrudan mesajlaşma Profil görüntüleyenlere erişim Sınırsız erişim LinkedIn Learning Sınırsız kişi arama İş iç görüleri	50 milyondan fazla şarkıya yüksek kaliteli sesle sınırsız erişim Çevrimdışı müzik Reklamsız müzik Sınırsız atlama hakkı	Çevrimdışı erişim Takvim entegrasyonu Sınırsız sayıda cihazda senkronize 10 GB aylık yükleme 200 MB maksimum not boyutu Daha fazla yükleme Daha geniş notlar Kartvizit tarama	Bulut sistemi üzerinde 2 TB depolama alanı kullanım hakkı Uygulamayı sınırsız cihaz üzerinden kullanmak	100 katılımcıya kadar ev sahipliği Büyük Toplantılar eklentisi ile katılımcıları 1.000'e kadar artırma 30 saate kadar grup toplantıları Sosyal medya akışı 1 GB bulut kaydı
Hedef segment	Bireysel kullanıcılar ve İK işe alım şirketleri	Bireysel müşteriler	Bireysel müşteriler ve şirketler	Bireysel müşteriler ve şirketler	Bireysel müşteriler ve şirketler

Özetlemek gerekirse, vaka incelemelerine dayanan başarılı freemium iş modellerinin başarısında sürüm farklılıklarının önemi olduğu görülmektedir. Freemium içerisinde sunulan sürümlerin farklılaştırılması premium sürüme geçiş için oldukça önemlidir. Şirketlerin hepsi kapasite sınırlaması yaparak, ücretsiz sürümden premium sürüme geçişi artırmak istemiştir. Sınırlı kapasite ile tam işlevsellik sağlamak, kullanıcıların premium sürüm satın alma isteklerini artırarak freemium iş modelini desteklemektedir. Bir diğer önemli konu, müşteri segmentasyonudur. Spotify vaka örneğinde, hedef segmentin genç nüfus olduğu görülmektedir. İndirimli öğrenci paketi uygulaması genç kullanıcı sayısını artırmak için sunulmaktadır. Bunun dışında Spotify ve Evernote, ücretsiz temel sürümün işlevlerini genişleterek ücretsiz sürüme yeni işlevler geliştirmeye yatırım yapmışlardır.

Tüm bu yenilikler, freemium iş modelinin, dönüşüm oranını artırmak için geniş bir müşteri tabanının gerekli olduğu bakış açısını doğrulamaktadır. Bunların yanı sıra, ücretsiz ve premium sürümlerin farklılaştırması kullanıcı ihtiyaçlarına göre yapılmalıdır. Ek özellikler, premium sürümü satın alma isteğini yaratacak şekilde oluşturulmalıdır. Kullanım kolaylığı sağlayan ürün, hedef segmentin ihtiyaçlarına uygun olmalıdır.

5. SONUÇ

Sektöre özgü farklı özelliklerine rağmen LinkedIn, Spotify, Evernote, DropBox ve Zoom, freemium iş modellerini aşağıdaki stratejiler çerçevesinde gerçekleştirmiştir.

- Değer Teklifi: Freemium iş modelini benimseyen çevrimiçi uygulama şirketlerinin başarılı olmak için, ücretsiz ve premium kullanıcılara sundukları değer tekliflerini sürekli geliştirmeleri gerekmektedir. Ek özellikler ve faydalar, kullanıcı ara yüzünü geliştirmek, daha fazla yedekleme alanı vb. ile bu teklifler sürekli geliştirilmelidir. Dönüşüm oranını artırmaya devam etmek için premium hizmetlerin değeri artırılmaya devam edilmelidir. Örneğin Dropbox, 2008 senesinde piyasaya ilk çıktığında, yalnızca dosya yedekleme hizmeti sunmaktaydı. Daha sonra akıllı telefon ve diğer cihazların otomatik olarak senkronize edilmesi ve fotoğrafların otomatik olarak yüklenmesi gibi yeni özellikler eklenmiştir. Eklenen her yeni özelliğin, premium sürümün değerini artırdığı görülmektedir.
- İnovasyon: Yeni ürün geliştirmenin yanı sıra araştırma ve geliştirme faaliyetlerine sürekli yatırım yapılmalıdır. Örneğin, LinkedIn gelirlerinin yaklaşık beşte birini Ar-Ge'ye harcamaktadır. Bu yaklaşım, müşteri sadakatini artırarak, müşteri elde tutma maliyetlerini düşürmektedir.
- Sürümler arası farklılıklar: Ücretsiz ve premium sürümler arasındaki özellik farklılıklarını korumak, şirketler için çok önemlidir. Çok fazla özelliğin ücretsiz olarak sunulması, kullanıcıların ücretli sürümü satın alma niyetlerini azaltabilmektedir. (O'Malley, 2015).
- Ücretsiz kullanıcıların önemi: Ücretsiz kullanıcılar, müşteri tabanını genişletebilmek için bir pazarlama aracı olarak ele alınmalıdır (O'Malley, 2015). Ücretsiz sürüm kullanıcıları beğendikleri özellikleri etrafındakiler ile paylaşıp, ağızdan ağıza pazarlama iletişimi görevi üstlenmektedirler (Kumar, 2014).
- İç görü: Kullanıcı davranışları iç görü elde edebilmek için sürekli olarak izlenmelidir. Kullanıcıların çevrimiçi davranışlarını anlamak, rakiplere kıyasla önemli bir rekabet avantajı sağlamaktadır. Elde edilen bu iç görüler kullanıcı yönetimini optimize etmek ve premium teklif özelliklerini geliştirebilmek için önem taşımaktadır. Örneğin LinkedIn, ürün segmentasyonu için kullanıcılarının platform davranışlarını incelemiştir (Piskorski, 2007).
- Sosyal ağlar ile entegrasyon: Sosyal ağ siteleri, hızlı ve pratik olarak pazar penetrasyonu ve ürün farkındalığında artışlara olanak tanımaktadır. Örneğin, Spotify müşteri tabanını genişletmek için sosyal ağlarla entegrasyon yapmıştır. Instagram, Shazam ve Facebook gibi sosyal medyanın entegrasyonu ile kullanıcıların müzik ve etkinlikleri arkadaşlarıyla paylaşmasına olanak tanımaktadır. Ücretsiz kullanıcılar, yeni trendler, ücretsiz hizmeti, premium hizmeti veya her ikisini birden iyileştirmek için geliştirilebilecek ve uygulanabilecek yeni çözümler hakkında değerli bilgiler sağlamaktadır.
- Paket alternatifleri: Diğer vaka örneklerine kıyasla Spotify ve Evernote, kullanıcılarına öğrenci paketi sunmaktadır. Farklı paket alternatiflerinin, kullanıcı sayısını artırdığı görülmektedir.
- Kişiselleştirme: Spotify eşsiz algoritması sayesinde kullanıcıların dinledikleri müzik türlerine göre yeni müzik önerileri sunmaktadır.

- Büyüme stratejisi olarak uluslararasılaşma: Freemium iş modelini benimseyen şirketlerinin çoğu, lokal pazarda kurulduktan sonra, uluslararasılaşmaktadır. Uluslararasılaşma pazarı genişletmeye odaklandığından, kullanıcı sayısının artması için önem taşımaktadır. Örneğin, LinkedIn, 2015 yılında ABD'nin ardından en büyük ikinci pazar haline gelen Çin'de büyümeye odaklanmıştır. Benzer şekilde Spotify İsveç'te kurulduktan bir sene sonra İngiltere pazarına girmiştir.
- İnorganik büyüme: Freemium iş modelini kullanan şirketlerin çoğu rekabetçi avantaj elde edebilmek, müşteri tabanını genişletmek ve yeni teknolojilere ulaşabilmek için inorganik büyüme yoluyla birleşme ve satın almalar gerçekleştirmiştir. Örneğin 2015 yılında LinkedIn, çevrimiçi öğrenme şirketi olan Lynda.com'u satın almıştır. Lynda.com'un yüksek kaliteli içeriği, üyelere iş bulmak ve kariyerlerinde ilerlemek için ihtiyaç duydukları profesyonel becerileri kolayca kazanma fırsatı sunmaktadır (https://news.linkedin.com/2015/linkedin-to-acquire-lyndacom). Benzer şekilde 2021 yılında Spotify, Locker Room'u satın alarak yeni bir canlı yayın deneyimi yaratmayı planlamaktadır. Bu yeni canlı deneyim sayesinde Spotify, bir dizi spor, müzik ve kültürel programlarının yanı sıra içerik oluşturucuların izleyicilerle gerçek zamanlı olarak bağlantı kurmasını sağlayan bir dizi etkileşimli özellik sunacaktır (https://newsroom.spotify.com/2021-03-30/spotify-acquires-locker-room-and-announces-plans-for-a-new-live-audio-experience/).

Özetlemek gerekirse, freemium iş modelleri, yeni bir sürdürülebilir iş modeli olarak karşımıza çıkmaktadır. Ücretsiz teklif, freemium iş modelini benimseyen şirketlere, maliyetlerine rağmen sayıca fazla bir kullanıcı tabanı sağlamaktadır. Freemium iş modeli, ücretsiz sürüm kullanıcılarının ödeme yapan müşteriler haline gelebilecek müşteri gruplarının belirlemesini ve segmentlere ayrılmasını sağlamaktadır. Freemium iş modelinin başarısı, kullanıcıların isteklerine yönelik sürümler geliştirerek müşteri sayısını artırmasına bağlıdır. Ancak diğer taraftan, ücretsiz kullanıcılar şirketlere maliyet yaratmaktadır. Şirketlerin ücretsiz kullanıcıları için sürekli olarak yenilik yapması ve hizmetlerini güncellemesi oldukça önemlidir. Dolayısıyla yöneticilerin pazar büyüklüğüne bağlı olarak maliyet-fayda dengesini göz önünde bulundurmaları gerekmektedir.

Çevrimiçi uygulama pazarında freemium iş modeli, şirketlerin büyümek ve başarılı olmak için kullandıkları etkili bir iş modelidir. Çalışma, freemium iş modelini benimseyen 5 şirket ile sınırlıdır. İleride yapılacak çalışmalarda, kriterlere uygun başarısız vakalar da incelenerek karşılaştırma yapılabilir. Freemium iş modeli akademik literatürde henüz çok az yer almakla birlikte, gelecek çalışmalar ile bu eksikliğin giderileceği umulmaktadır.

KAYNAKÇA

Anderson, C. (2009), Free: The Future of a Radical Price, Hyperion, New York, NY

Bekkelund, K. (2011). Crowdsourced Customer Acquisition: A Conceptual Framework for Freemium and Propositions for Future Research. Master Thesis: Norwegian University of Science and Technology, Department of Industrial Economics and Technology Management, Trondheim, Norway. Retrieved from http://ntnu.divaportal.org/smash/record .jsf?pid =diva2%3A473578&dswid=1667.

Chesbrough, H. (2010), "Business model innovation: opportunities and barriers", Long Range Planning, Vol. 43 Nos 2-3, pp. 354-363.

Coad, A. 2009. The Growth of Firms: A Survey of Theories and Empirical Evidence Northampton, MA: Edward Elgar.

Davidsson, P., Achtenhagen, L., & Naldi, L. (2005). Research on small firm growth: A Review. Queensland University of Technology. Retrieved from http://eprints.qut.edu.au/2072/
Dunne, T., Roberts, M. and Samuelson, L. (1989). The growth and failure of US manufacturing plants. Quarterly Journal of Economics 104(4), 671–98.

Gassmann, O., Frankenberger, K. and Csik, M. (2015), The Business Model Navigator: 55 Models that Will Revolutionise Your Business, Pearson Education, Harlow, UK

Haltiwanger, J., Lane, J. and Spletzer, J. (1999). Productivity differences across employers: The roles of employer size, age, and human capital. American Economic Review Papers and Proceedings 89(2), pp. 94-98.

Huang, H.C., Lai, M.C., Kao, M.C. and Chen, Y.C. (2012), "Target costing, business model innovation and firm performance: an empirical analysis of Chinese firms", Canadian Journal of Administrative Sciences, Vol. 29 No. 4, pp. 322-335.

Johnson, M.W., Christensen, C.M. and Kagermann, H. (2008), "Reinventing your business model", Harvard Business Review, Vol. 86 No. 12, pp. 50-59.

Kumar, V. (2014). Making" freemium" work. Harvard business review, 92(5), 27-29.

Lee, C., Kumar, V., & Gupta, S. (2015). Designing freemium: Balancing growth and monetization strategies. SSRN, 2767135.

Lyons, K., Messinger, P.R., Niu, R.H. and Stroulia, E. (2012), "A tale of two pricing systems for services", Journal Information Systems and E-Business Management, Vol. 10 No. 1, pp. 19-42.

Nelson, R. R., & Winter, S. G. 1982. An evolutionary theory of economic change. Cambridge, MA: Belknap Press of Harvard University Press.

Niculescu, M. F. and Wu, D. J. (2014), "Economics of free under perpetual licensing: Implications for the software industry", Information Systems Research, Vol. 25 No.1, pp. 173-199.

Oestreicher-Singer, G. & Zalmanson, L. (2013). Content or Community? A Digital Business Strategy for Content Providers in the Social Age. MIS Quarterly, 37 (2), 591-616.

O'Malley, S. (2015), "Free as a business", SAGE Business Researcher, http://businessresearcher.sagepub.com/sbr-1645-97593-2704547

Osterwalder, A., & Pigneur, Y. (2010). Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers. Hoboken, New Jersey: John Wiley & Sons

Panda, B. K. (2019). Application of business model innovation for new enterprises: A case study of digital business using a freemium business model. Journal of Management development.

Patton, M. Q. (2002). Qualitative research and evaluation methods (3rd ed.). Thousand Oaks, CA: Sage.

Pauwels, K., & Weiss, A. (2008). Moving from free to fee: How online firms market to change their business model successfully. Journal of Marketing, 72(3), 14-31.

Piskorski, M. J. (2007), "LinkedIn (A)", Harvard Business School case 707-406, Harvard Business School, Cambridge, MA.

Stam, E., & Wennberg, K. (2009). The roles of R&D in new firm growth. Small business economics, 33(1), 77-89.

Wagner, T. M., Benlian, A., & Hess, T. (2014). Converting freemium customers from free to premium—the role of the perceived premium fit in the case of music as a service. Electronic Markets, 24(4), 259-268.

Yin, R. K., (2009), Case Study Research, Design and Method, 4. Edition, London: Sage Publications Ltd.

Zhou, H., & De Wit, G. (2009). Determinants and dimensions of firm growth. SCALES EIM Research Reports (H200903).

Zott, C., & Amit, R. (2008). The fit between product market strategy and business model: Implications for firm performance. Strategic management journal, 29(1), 1-26.

Linkedin (2021). 20.10.2021 tarihinde https://about.linkedin.com/tr-tr?lr=1 adresinden alındı.

Linkedin (2015). 30.10.2021 tarihinde https://news.linkedin.com/2015/linkedin-to-acquire-lyndacom adresinden alındı.

Spotify (2021). 8.11.2021 tarihinde https://support.spotify.com/tr/article/where-spotify-is-available/ adresinden alındı.

Spotify (2021). 5.11.2021 tarihinde https://newsroom.spotify.com/2021-03-30/spotify-acquires-locker-room-and-announces-plans-for-a-new-live-audio-experience/ adresinden alındı.

Statista (2021).1.11.2021 tarihinde https://www.statista.com/statistics/367739/spotify-global-mau/ adresinden alındı.

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CHILD AS ADVERTISING AUDIENCE: "MOM, WILL YOU BUY ME THE THING IN THE ADVERTISEMENT?" EXAMPLE

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Abstract
The modern paradigm's'miniature adult,' the child, who is positioned as today's postmodern society's 'consuming and'consumed object,' takes on various meanings depending on the society and time in which he lives. Children are one of the most important target audiences for advertisements, which are defined as the promotion of a product, service, or idea in mass media for a predetermined price by a responsible person. Children are crucial in the field of marketing because they serve as a conduit for reaching adults and are the deciding factors in their parents' spending on them. As a result, advertising messages reach children who are unprotected by the media. Television is the most important medium for reaching children and adults with advertisements. In the lives of today's children, television has limitless potential as an educational and entertaining tool. Television, which is at least as important as family, school, and friend interaction for curious and perceptive children who act with the instinct of discovery, appears to be the primary learning tool for children. Advertisements are the contents that pass through the perception thresholds of children in the television stream, and they are perhaps the most unfiltered. Television has dominated the child's life almost from the moment he was born, owing to its multi-expression power. Based on this context, the research goal will be explained using two examples: one that has a positive impact on children saving money as ad viewers (Garanti Bank Mini Bank Project) and one that has a negative impact because they want to see themselves as a fairy girl (Elsa, the Snow Queen).
Keywords: Advertising, advertisement and child, child version of advertisement

Introduction

Children are one of the most significant consumers in the twenty-first century. The children's market offers a lot of potential from a business point. When data on the global children population and the share of the family budget allocated to children is evaluated, this enormous market potential becomes obvious. According to the 2015 data from the United Nations' "World Population Outlook" research, the world's population is 7 billion 700 million people (Worldometers, 2021). Children under the age of 15 accounts for 26% of the population (United Nations, 2015).

The child population in European countries is between 15% to 17%, which is lower than the world average. Children account for 18 % of the population in China, the world's most populous country, and 24 % of the population in the United States, the world's third most populous country (Newsfeed Time, 2021; Statista, 2021). India, the second most populated country in the world, has a ratio of children to the population is 39%, which is well above the world average (Childline India, 2021). When looking at data from 2020, it's clear that Turkey's population is 80 million 810 thousand people, with 22 million 883 thousand of them being children. In other words, children aged 0-17 account for 28.3 % of the population (TUIK, 2021).

According to these statistics, about three out of every ten consumers in the world and Turkey are children. In addition to the growing child population, the amount of money spent on children has risen dramatically in recent years. Children under the age of 14 in the United States spend $40 billion a year on their own, while children aged 7-17 in England spend an average of £13 per week (Pagla & Brennan, 2014). The share allocated to children from the family budget does not increase only in developed countries. We can say that expenditures for children have increased in developing countries as well. When we make an evaluation in terms of Turkey, we observe that many products that were not considered essential for children in the past 20-25 years are products that are highly demanded by parents today. Different goods and service categories such as furniture, clothing, toys, stationery, education, and leisure activities appear as categories that meet the primary needs of children (Atak, 2016).

So, how did this market, which was formerly a niche market controlled by the book, toy, furniture, and clothing sectors in the United States at the beginning of the twentieth century (Cook, 2009), come to be where it is now? It coincides with the 1960s, particularly in American society, when children became recognized as a target audience in the marketing field. This field has piqued the curiosity of researchers since the 1950s and 1960s. In this topic, studies on brand loyalty in children, conspicuous consumption, and children's views about money appear to be pioneering. However, in the mid-1970s, researchers' interest in this topic increased. With the growth of public concerns and contrasting opinions regarding the effects of advertisements and marketing activities on children, the idea of "consumer socialization" found its way into academic literature. Furthermore, with the United Nations' "Children's Rights" regulation in 1989, it was recognized that children are individuals with free rights to their own thoughts, tendencies, and beliefs. Children, who had previously been considered incompetent, have now become active participants in social structures (Chaudhary & Gupta, 2012; Basu & Sondhi, 2014). Changes in the socio-cultural context during the 1970s and 1980s contributed significantly to this rise. Parents' perspectives on childhood have shifted as well. Children today are treated as individuals who are listened to, asked for their thoughts, encouraged to speak up, and pampered. The relationship between parents and children has almost liberalized. This relationship, which 20-30 years ago was based on 'authority, obedience, and respect,' is now based on 'negotiation' between the parties. An egalitarian attitude dominates in family relations, rather than the 'head of the family' phenomena, which holds the authority in parent-child relationships. Children are seen as individuals who can make their own decisions. Parents want their children to have a say in major or everyday family decisions (such as vacation destinations, leisure activities, and home/car decisions). Children now hold and manage more money than in past years. They can go to the movies with their friends, have a snack or drink, and buy small toys without their parents' permission. They're also overwhelmed with too many product groups and messages from these groups, ranging from clothing to ready-to-eat foods, toys to high-tech gadgets. These messages are well-known to them. For this reason, they are seen by parents as innovative, product-informed family members. Therefore, we can say that today's children, who are always busy with communication tools such as television, the internet, have turned into individuals who can easily access information and make consumption decisions by using the information they have acquired. For all these reasons, children constitute an important audience in terms of marketing (Somesfalean, 2012; Anna, 2012; Valkenburg & Cantor, 2001; De La Ville, 2005; Hunter-Jones, 2014; Ağlargöz, 2017).

Based on this context, the aim of the research is interpreted through two examples, which have a positive effect on children's saving money on television as ad viewers (Garanti Bankası Mini Bank Project) and which have a negative effect since they want to see themselves as a fairy girl (Elsa, the Snow Queen).

Today's Child Consumers: Impatient, Deeply Emotional, Multi-Decision-Making, Tech Enthusiast

Children who first opened their eyes to the world in the year 2000 and after are today's child consumers. The late 1990s and early 2000s were a period of significant technological, economic, social, and cultural change around the world. This situation caused children born in 2000 and later to experience a time of fast change, which showed itself in the form of fractures (Altuntuğ, 2012). Children nowadays have been exposed to a world that includes personal computers, the internet, and mobile devices (Jain, Vatsa, & Jagani, 2014). Almost all of their current attitudes and characteristics are vastly different from those of previous generations. We are faced with a faster-growing, more involved, and knowledgeable generation. They have more personal power, money, influence, and attention than any previous generation (Lindstrom, 2004). These children, called the Z generation, are the first generation whose characteristics are defined long before they are born. This generation, which follows the Y generation, are the grandchildren of the baby boomer generation. Their parents are predominantly X generation (Jain, Vatsa, & Jagani, 2014).

Gen Z loves instant satisfaction and experiences, as well as instant purchases. The majority of the time, their relationship with the products they choose in a matter of seconds in a store or market is very brief. After a short period of time, they may discard the products they bought on a whim as uninteresting. They might even forget about some of the things they bought on their way to the store. Parents remove these products from their grocery bags and give them to their children (Calvert, 2007; Gülerarslan, 2011; Bayraktar & Uçkaç, 2015).

Z's are a more aware and perceptive generation when it comes to brands. They are aware of the brand's significance. There are a lot of people that have a lot of materialistic tendencies. Children in Generation Z have easy access to their parent’s credit cards, can quickly spend money, and receive expensive gifts from their families. Their clothing is not childlike at all; instead, they prefer adult human clothing that is scaled down. Girls, for example, may prefer sequined or leather-like clothing to what adults like. Furthermore, with the help of the family, this generation's perception of boy-blue and girl-pink is shifting. A generation that is reliant on advanced technological products because they cannot live without the comfort that technology provides. They may prefer green products because they are fully aware of social issues. This generation's buying decisions are heavily influenced by their friends (Jain, Vatsa, & Jagani, 2014). They set up a profile that can be described as a pure consumer by focusing on individualized, unique, and image-based consumption in all areas. For pexample, it's critical for Z’s to be able to watch whatever program they want, whenever they want, and to listen to their favorite music in the order that they desire. They want to buy everything they want, consume it right once, and then move on to new consumption experiences since they are better educated and economically equipped than previous generations. For this reason, it is very important to gamify the product presentations to the Z generation and act quickly. In the Z generation, the distinction between rich and poor consumers is evident, but children who are described as poor draw a consumer profile that does not want to miss any consumption experience. This experience can be provided to them through cheap market brand products.

Although they do not gain prestige because they consume cheaper products with the same content at the same time as wealthy consumers, they are satisfied (Altuntuğ, 2012; Kaplan, 2013; Uzun, 2014).

The use of visual language trends in advertising and other marketing communication activities, as well as a short, simple, and compelling story, appeal to today's child consumers. They carefully follow the practices of brands on social media as the generation born with a chip. Digital communication campaigns are the most effective technique to communicate with this generation. This generation's children utilize the internet not only to communicate with brands but also to make purchases. Indeed, according to a research done in the United Kingdom, 84 % of children aged 8 to 11 shop online. They choose advertisements that allow them to totally engage themselves in the brand. Being a part of communication campaigns, social responsibility projects, and production processes, producing together and collaborating seems very exciting for Generation Z (Bassiouni & Hackley, 2014).

Advertising and the Child: The Child as Advertising Audience

Sexuality, happiness, sadness, returning home, longing, entertainment, showing off, adventure, and even the dark side of death, that is, every aspect of life, can be represented in advertising by using a wide range of social and cultural resources to draw the target audience's attention (Vodinali, 2016). In addition, advertising use aspects such as color, light, sound, movement, and a variety of technological developments. Children are drawn to advertising that contains appealing aspects. Advertisements in any area can help parents keep their children entertained if they are aware of this. With a small search on the internet, the series of children's favorite advertisements brought together with the titles 'loved advertisements for children', 'ads for children who are fond of advertising', 'most popular advertisements', 'ads that Damla, Taha, Nehir ... love' has taken its place in the internet world. Therefore, it is sufficient to have a screen to watch and watch advertisements, whether they are film screens or television (Uğurlu & Uğurlu, 2017).

Children are communicated with through advertisements in two ways. These ways are direct message transmission and indirect message transmission. Advertisements that transmit their message in a clear and straightforward manner without ambiguity are distinguished from those that do so indirectly (Kılıçgün Yurtsever, 2016). The manner in which a message is communicated has a considerable impact on how advertising is perceived. Product-related characteristics and promises are presented directly to consumers through direct phrase commercials, which use a harmonious combination of words and visuals and simple language. Indirect advertisements, on the other hand, focus on the product's brand rather than the product itself. The aim of such advertising is to use attractive elements to create a lasting emotional relationship with the brand (Moses & Baldwin, 2005; cited in Kılıçgün Yurtsever, 2016). Children's developmental stages are highly effective in the direct or indirect usage of messages. According to many studies on children's persuasion skills, kids cannot distinguish ads from television programs until they are five years old, and hence perceive advertisements as entertainment. Although they begin to differentiate between advertising and entertainment at the age of five, this ability is also linked to perceptual differences. Around the age of eight, children begin to grasp the content of the advertisement, but it is not possible for them to make a clear distinction about the persuasion function. It is only around the age of 12 that they begin to fully grasp the persuasive effect of advertising.

However, in this process, children develop many critical attitudes towards advertisements (John, 1999; Kunkel et al. 2004; Cited in Rozendaal et al., 2013).
Children's advertising messages are not only in traditional channels such as television, cinema, radio, and open-air, but also through product placements in television programs and movies, mobile phone messages, toys for movie characters, brands' children's clubs, experience-based sponsorships, brand events and interactive games (Gülerarslan, 2014). However, television is without a doubt the most essential medium through which commercials reach children and adults. In the lives of today's children, television has limitless possibilities as an educational and amusing instrument, and it appears that television has taken the lead in the child's life, owing to its multi-expression power. Television has taken the first plan in family pictures drawn by children in applications related to the "Draw Family Picture Test," which tries to analyze children's personality problems. Television has now become a family member in the life of a child (Samurçay, 1983). It is the major guest and an essential feature of our living rooms. Television has practically the same meaning as a playmate, especially for children. Moreover, most of the time, we do not even realize what kind of content they are exposed to while they are watching TV. They see and perceive more than we do.

Buy me from the piggy bank in the advertisement, I will save money, Mom!: The Example of Garanti Bank Mini Bank Project

Although it is commonly believed that a critical perspective is dominant when it comes to commercials and children, some say that stigmatizing advertisements as content with completely negative aspects for children is exaggerated and incorrect. For today's children who grow up relatively far from classical fairy tales, commercials, like fairy tales or mystical stories, have an influence that reassures, entertains, and relaxes the child, as long as the standards of advertising ethics are followed. Commercials are frequently used as intervals between dramatic films, series, and programs that focus on the positive side of life. It is said that the tales told by grandfathers, grandmothers, and lovers were replaced by television, the narrator of modern myths, in the corners of our homes today. Television advertisements inform and entertain especially young children about the outside world and contribute to the social development of the child (Engin, 2013). Children socialize as consumers by watching advertisements.
In fact, advertising is a tool, and the outcomes it yields are determined by how it is used in different hands. Advertisements, for example, can teach children to wash their teeth and to remind them that milk is good for them (Engin, 2013). Alternatively, the role of the piggy bank, which meant so much to children in the past, can be explained to today's children through commercials, as can saving behavior. On the one hand, commercials can be used to assist in the transfer of established cultural values to children. When religious holidays approach, for example, brands in various product categories appear in front of the audience with commercials emphasizing being a family, being together, and visiting elders. Advertisements, on the other hand, express values that are foreign to a particular society or are only embraced by a small portion of the target audience. For example, in an advertisement, while the child of the house learns to say 'Thank You', a new value is transmitted by buying the product from the elders and giving it to the little ones and contributes to its acceptance in society over time (Elden & Ulukök, 2006).

In addition, advertisements targeting children can be used to achieve positive results for their health and well-being. Many countries use advertising to promote behavior change, including exercise and healthy eating (Carlson & Clarke, 2014).

Advertisements help children adapt to the adult world. Since commercials provide children with more than just information about their own environment. Advertisements provide them with information such as product details, consumption information, and benefits. They are able to distinguish between a good and a bad product, as well as determine whether or not the advertisement is honest. They also learn to be consumers by familiarizing themselves with the symbolic meanings of the products. Through advertisements, children also gain information from different ways, such as remembering the information presented in the advertisement, being aware of new products, recognizing brands, choosing the appropriate information for their purchasing situation, comparing advertisements in line with their purposes, seeing the real thing, comparing brands, grasping the strengths of brands and learning the function of money (Gülerarslan, 2014; Ersoy Quadir, & Akaroğlu, 2009).

Advertising's impact on children is not limited to the time spent watching the commercial. In the context of consumption and purchasing, it also influences future judgment and behavior. Advertisers' techniques influence the purchase habits of today's children as well as future people and their parents in this regard. As a result, we can see how a child's image is used or messages are sent to children in advertisements for products that don't seem to have anything to do with children (Büttner, Florack, & Serfas, 2014). We can give an example of this situation with Garanti Bank's Mini Bank project. Within the framework of Garanti Bank's Mini Bank project in the banking sector, it is possible to come across a message for children, which is a sector that we do not believe will not identify children as a target audience in the Turkish market. A 10-year-old child is encouraged to open a bank account with the help of his parents for a very small amount as part of the Warner Bros characters license agreements, thereby teaching the concept of money. This method can give the bank a chance to establish itself in the minds of children for the first time by using appealing cartoon characters. Perhaps the acceleration of that first sympathy over the years will be effective in terms of brand perception and preference. The main target for marketers is to plant the seeds of these positive emotions at such an early stage (Engin, 2013). The earlier a brand can be involved in a child's life through the brand images and mythology used in the advertisement, the more chance it has to settle and root in the life of the individual.

I'm a Fairy Girl, Mother': The Example of Elsa, the Snow Queen

The transfer of values is one of the most significant functions of advertisements. Cultural values, consumption patterns, gender roles, lifestyles, family relations, and role distributions are all examples of transferred values (Elden & Ulukök, 2006: 5). The transmission of gender identity roles is perhaps the most crucial of these values. These shifted responsibilities have an impact on the child's identity as a consumer, as well as their future roles in family and business.

The newborn baby has a biological sex, but does not yet have a gender. The society offers him/her gender-appropriate behavior patterns as he/she grows. Family, social environment, school, friend groups, and the media all affect a child's gender identity. Conditioning, modeling, and identification are effective learning methods in this process. All factors present roles to the individual, which are internalized, yet they are not the same for everyone.

Advertisements use a variety of attractive elements to appeal to people's emotions. In ads, gender norms and stereotypes are frequently used for this aim (Kalan Gündüz, 2010).
The boy is identified with the strong father motif, who makes money, chases a job, fights outside the home, fights in the military, and brings bread to the family, according to the framework of gaining gender identity roles. Girls, on the other hand, can be directed to the motif of the sustaining mother, who plays with babies, cleans the house, raises children, appreciates beauty and care, and assures the home's continuance. The gender roles depicted in adult commercials can also influence children. Women are more likely to be consumers in commercials. A woman may be drawn to cosmetics to be well-groomed and beautiful, to cleaning products to keep her house clean, and to children's products to choose the best for her child, according to gender roles (Kalan Gündüz, 2010). Furthermore, the depictions of women who are faced with doing everything and shouldering all the burdens at the end of the day with the slogan "I can make children too, and I can have a career" stand out (Engin, 2013). The woman who solves every task shown in today's advertisements is just as troubled as the woman who overcomes every task depicted in the past in terms of gender identity. Imagination is a chaos that men and women have to overcome together. For this reason, just as women are motivated to be successful both at home and at work in advertisements, men should also be motivated and to be positioned as women's collaborators and biggest helpers in advertisements for products consumed at home. This change may also change the gender identity roles that children acquire through the media.
In one study, third-grade primary school students' drawings depicting the advertisement and its roles were evaluated. It is clear from these drawings that the advertisement's primary goal is to sell something. Children write phrases like "Mom, please take this toy," "Let's be quick, let's not miss it," and "It's wonderful" in bubbles on these drawings. Face expressions reveal the pleasure of consumption (Gülerarslan, 2014). In another study, it is stated that more than half of the children attending the 1st to 8th grades buy the products they see in the advertisement (Aktaş, Özüpek, & Altunbaş, 2011). According to certain studies, 58 % of children find the marketing persuasive, but 91 % want to buy the product advertised (Ersoy Quadir & Akarolu, 2009). Knowing something isn't what it seems, much like adults, doesn't stop you from wanting it anyway. While the child understands that Elsa, the Snow Queen, is an animated character in the film, she also understands that the clothes that appear inside her toy are only pictures in the closet's background, but this does not stop her from asking for the product despite the fact that it includes no clothes. She can say she knows that they are just pictures when her parents express why there are no clothes in them.

Conclusion and Evaluation

Advertising's most essential effect on children is to make them want products and direct them to sales. Advertisements for children can attract them with promises of fun, power, cuteness, being liked, and so on, and direct them to their parents if they do not have purchasing power, or to purchase points if any. Even if they don't appreciate the product's promise, sometimes just seeing it advertised is enough to make them want to buy it. The products advertised in a series on the children's channel he watches, for example, can grab children's attention even if they are not prominently displayed. Advertising scenarios in which children can reach their desires without effort trigger consumption in the minds of the audience (Rozendaal et al., 2013).

For interested and attentive children who act with the desire to discover, television is an invaluable medium. One of the narrative fields that is the key learning tool for children is television, which is as vital as family, school, and friend interaction. Advertisements are the contents that pass through the perception thresholds of children the most unfiltered in the television stream. With its aesthetic elements such as story, innovation, color, music, actor, place, and various attractive elements, advertising draws children's attention and interest and serves as the primary trigger of consumer culture and rituals (Engin, 2013). According to Jean Baudrillard, needs are now determined by the media. The consumer, who cannot even find the time to think about what is needed, can only find the time to give one of the 'yes-no' answers to the alternatives presented to him/her, and he/she can give more unconscious answers (Vodinali, 2016). Advertisements today advise us what we will eat, how we will dress, which houses we will live in, where we will go on vacation, in short, who we will be. Due to these features, their unprotected nature, which does not yet develop a tendency to skepticism, also develops ideal life beliefs in children.

Advertising's effect varies depending on how much attention children pay to advertisements, how well they recall the content, and how well they comprehend the advertiser's objective. Children's advertising understanding levels are graded on a scale of the weak, medium, and strong. The level of comprehension expressed in merely formal or emotional descriptions is referred to as weak understanding. For example, a child can describe the children playing in the advertisement in a purely formal sense, while the advertisement is entertaining in an emotional sense. At the intermediate level, there is the understanding that one gives information about something without comprehending the purpose of persuasion. In a strong understanding, the child comprehends the purpose of the sale, and sometimes even becomes aware of who this purpose belongs to, that is, who the advertiser is (Elden & Ulukök, 2006). These levels of understanding develop with the age of the child. While weak understanding can be in question even in infancy, strong understanding only occurs with school age. So, what are the consequences of the child's understanding of the persuasive function of the advertisement when he reaches the level of strong understanding? Here we can mention three results:

* The child's trust in advertisements is shaken and skepticism develops,
* Changes observed in attitude towards advertisements and
* The feeling of desire for the product that advertisements work for this

In conclusion, as children understand the persuasive purpose of commercials, they become less susceptible to advertising messages. Children who have learned that advertising is meant to persuade also understand that what is mentioned in advertisements does not represent the entire picture. In terms of advertisement attractiveness, the more the child comprehends the aim of persuasion, the less appealing the advertisements become. Understanding the commercial's However, while there is some filtering, this does not totally eliminate persuasion.

References

Aglargöz, F. (2017). Kuşaklararası sosyal medya. İçinde (H. H. Özkoç & F. Bayrakdaroğlu). Kuşak kavramına disiplinler arası bakış (pp.173-202). Ankara: Nobel Yayınevi.

Altuntuğ, N. (2012). Kuşaktan kuşağa tüketim olgusu ve geleceğin tüketici profili. Organizasyon ve Yönetim Bilimleri Dergisi, 4(1), 203-212.

Anna, G. (2012). The child in consumer culture: Kid empowerment and the role of consumer associations. Revista Porluguesa De Marketing, 27, 119-125.

Atak, N. Ü. (2016). X-Y-Z kuşakları ve kuşaklar arası farklılık yönetimi. Ankara: Nobel yayınevi.

Bassiouni, D. H., & Hackley, C. (2014). 'Generation Z'children's adaptation to digital consumer culture: A critical literature review. Journal of Customer Behaviour, 13(2), 113-133.

Basu, R., & Sondhi, N. (2014). Child socialization practices: Implications for retailers in emerging markets. Journal of Retailing and Consumer Services, 21,797-803.

Bayraktar, B., & Uçkaç, S. (2015). Kırgızistan Bişkek'te ailelerin satınalma kararlarında çocukların rolü. MANAS Sosyal Araştırmalar Dergisi, 4(5), 212-229.

Büttner, O. B., Florack, A., & Serfas, B. G. (2014). A dual-step and dual-process model of advertising effects: Implications for reducing the negative impact of advertising on children's consumption behaviour. Journal of Consumer Policy, 37,161-182.

Calvert, S. L. (2008). Children as consumers: Advertising and marketing. Future of Children, 18(1), 205-234.

Carlson, L.,& Clarke, B. (2014). Reassessing the current state of advertising to children. International Journal of Advertising, 33(3), 429-436.

Chaudhary, M., & Gupta, A. (2012). Exploring the influence strategies used by children: An empirical study in India. Management Research Review, 35(12), 1153-1169.

Childline India (2021). http://childlineindia.org.in/child-in-india.htm, Erişim Tarihi: 28.10.2021

Cook, D. T. (2009). Knowing the child consumer: Historical and conceptual insights on qualitative children's consumer research. Young Consumers, 10(4), 269-282.

De La Ville, V. (2005). Ihe invention of the child consumer: What is at stake for marketing practice and research. In, B. Tufte, J. Rasmussen & L. B. Christensen (Ed.) Frontrunners and copycats (pp.78-98). Denmark: Copenhagen Business School Press.

Elden, M., & Ulukök, Ö. (2006). Çocuklara yönelik reklamlarda denetim ve etik. Küresel İletişim Dergisi, 2,1-23.

Engin, H. B. (2013). Çocuk ve reklam: Çocuklar olması gerekenden erken büyüyor. 1. Türkiye Çocuk ve Medya Kongresi Bildiriler Kitabı (Cilt I), 217-234.

Ersoy Quadir, S., & Akaroğlu, G. (2009). Televizyon reklamlarının çocuk tüketiciler üzerine görsel etkilerinin bir incelemesi. Selçuk İletişim, 6(1), 78-98.

Gülerarslan, A. (2014). Reklamın çocukça anlamlandırılması. Selçuk İletişim, 8(2), 132-148.

Hunter-Jones, P. (2014). Changing family structures and childhood socialisation: A study of leisure consumption. Journal of Marketing Management, 30(15-16), 1533-1553.

Jain, V., Vatsa, R., & Jagani, K. (2014). Exploring generation Z's purchase behavior towards luxury apparel: A conceptual framework. Romanian Journal of Marketing, (2), 18-21.

John, D. R. (1999). Consumer socialization of children: A retrospective look at twenty-five years of research. Journal of Consumer Research, 26(3), 183–213.

Kalan Gündüz, Ö. (2010). Reklamda çocuğun toplumsal cinsiyet teorisi bağlamında konumlandırılışı: 'Kinder' reklam filmleri üzerine bir inceleme. İstanbul Üniversitesi İletişim Fakültesi Dergisi, 38,75-89.

Kaplan, N. (2013). Alışveriş merkezlerinde günlük yaşam ve tüketim kültürü (Elazığ-Akgün AVM örneği) (Daily life and consumption culture at shopping malls (The sample is Elazığ-Akgün Shopping Mall)) (Ubpublished Master Thesis). Fırat University Graduation of Social Sciences, Elazığ.

Kılıçgün Yurtsever, M. (2016). Television commercial preferences of children aged 3-6 years. Eurasian Journal of Educational Research, 65,165-180.

Kunkel, D., Brian, L. W., Joanne, C., Edward, P., Susan, L., & Peter, D. (2004). Report of the APA task force on advertising and children. Washington, DC: American Psychology Association.

Lindstrom, M. (2004). Branding is no longer child's play!. Journal of Consumer Marketing, 21, 175–182.

Moses, L. J., & Baldwin, D. A. (2005). What can the study of cognitive development reveal about children's ability to appreciate and cope with advertising?. Journal Of Public Policy & Marketing, 24(2), 186-201.

Newsfeed Time (2021). http://newsfeed.time.com/2011/07/13/aging-america-percentage-of-children-in-u-s-population-hits-record-low/, Erişim Tarihi: 30.10.2021

Pagla, M., & Brennan, R. (2014). Ihe development of brand attitudes among young consumers. Marketing Intelligence & Planning, 32(6), 687-705.

Rozendaal, E., Slot, N., Van Reijmersdal, E. A., & Buijzen, M. (2013). Childrens responses to advertising in social games. Journal of Advertising, 42(2-3), 142-154.

Samurçay, N. (1983). Televizyon reklamlarının çocuklar üzerine etkisi. Eğitim ve Bilim, 8(43), 14-22.

Somesfalean, V. (2012). Children as target market. Studies in Business and Economics, 7(2), 172-183.

Statista (2021) https://www.statista.com/statistics/270163/age-distribution-in-china, Erişim Tarihi: 28.10.2021

TUİK (2021). İstatistiklerle çocuk 2021. http://www.tuik.gov.tr/, Erişim Tarihi: 28.10.2021

Uğurlu, E. G., & Uğurlu, H. (2017). Reklamlarda çocuk karakterlerin kullanımı: Türkiye örneği. Gümüşhane Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 8(19), 18-36.

United Nations (2015). World population prospects: Key findings and advanced tables. Newyork: Department of Economic and Social Affairs Population Division.

Uzun, R. (2014). Çocukların medyadan ve medyada korunması: Çocuklara yönelik etik davranış kurallarının incelenmesi. Akdeniz İletişim Dergisi, 22, 152-167.

Valkenburg, P. M., & nCantor, I. (2001). The development of a child into a consumer. Applied Developmental Psychology, 22,61-72.

Vodinali, S. (2016). Tüketim kültürü bağlamında reklam ve çocuklar üzerindeki etkileri: Maret yoook lu? reklamı üzerine bir çözümleme. International Journal of Social Sciences and Education Research, 2(1), 197-222.

Worldmeters (2021). http://www.worldometers.inro/world-population/, Erişim Tarihi: 28.10.2021

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EBELİK ÖĞRENCİLERİNİN ANNE SÜTÜ İLE İLGİLİ BİLGİ, TUTUM VE DAVRANIŞLARI

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ÖZET

Amaç
Bu araştırma, ebelik öğrencilerinin anne sütü ile ilgili bilgi, tutum ve davranışlarının belirlenmesi amacıyla yapılmıştır.

Yöntem
Tanımlayıcı tipte olan çalışmanın evrenini, Gaziantep İslam Bilim ve Teknoloji Üniversitesi Ebelik bölümünde öğrenim görmekte olan öğrenciler oluşturmuştur. Sağlık Bilimleri Fakültesi, araştırmanın yapıldığı tarihten 2 yıl önce kurulmuş olup, araştırmanın yapıldığı tarihlerde toplam 2 sınıf mevcuttur. Ebelik 1. Sınıfta 54, Ebelik 2. Sınıfta ise toplam 42 öğrenci öğrenim görmektedir (N=96). Araştırmanın verileri 01 Ekim- 20 Ekim 2021 tarihleri arasında yapılmıştır ve çalışmanın örneklemini toplam 95 Ebelik bölümü öğrencisi oluşturmuştur. Çalışmanın verileri; sosyo-demografik özellikler ve öğrencilerin anne sütü ile ilgili bilgi tutum ve davranışlarını belirlemeye yönelik olarak literatür taramaları sonucu oluşturulmuş, anne sütü ile ilgili bilgi, tutum ve davranışlarıyla ilgili anket formu kullanılarak, Covid-19 pandemi sebebiyle yüz yüze etkileşimi en aza indirmek için web tabanlı anket yöntemi ile toplanmıştır. Araştırma sonucu elde edilen veriler, SPSS-22 programı ile değerlendirilmiş olup, hata kontrolleri, tabloları ve istatistiksel analizleri yapılmıştır.

Bulgular
Çalışmaya 95 kişi katılmıştır (Cevaplılık oranı: %98,9 olmuştur). Öğrencilerimizin tamamı kız öğrencilerden oluşmaktadır. Öğrenciler "Sizin için anne sütü ne ifade eder?" sorusuna %97,9'u "Bebeğin tüm ihtiyacını karşılayan mucizevi besin" olarak cevap vermiştir. "Anne sütü oda ısısında ne kadar süre saklanabilir?" sorusuna, öğrencilerin %57,9'u 2 saat, %28,4'ü ise 3-4 saat yanıtını vermiştir. "Sadece anne sütü ile beslenme sırasında emzirme sıklığı olmalıdır?" sorusuna, katılımcıların %40,0'ı 2 saatte bir, %23,2'si ise, her istediğinde/ ağladıkça cevabını vermiştir.

Sonuç
Araştırmaya katılan öğrencilerin anne sütü ile ilgili bilgi tutum ve davranışları henüz istenilen düzeyde olmadığı saptanmıştır. Emzirmenin başarılı bir şekilde yapılabilmesi için özellikle bu konuda anneleri bilinçlendirecek ve gerekli eğitimi verecek olan ebelik öğrencilerinin bu konuda düzenli eğitilmeleri ve eksikliklerin saptanarak giderilmesi gerekmektedir.
Anahtar Kelimeler: Anne Sütü, Bilgi Düzeyi, Ebelik Öğrencileri

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THE KNOWLEDGE, ATTITUDES AND BEHAVIORS OF MIDWIFERY STUDENTS ABOUT BREAST MILK

ABSTRACT

Purpose

This research was carried out to determine the knowledge, attitudes, and behaviors of midwifery students about breast milk.

Method

The universe of the descriptive study consisted of students studying at the Department of Midwifery at Gaziantep Islam, Science and Technology University. The Faculty of Health Sciences was established 2 years before the date of the research, and there were 2 classes in total at the time of the research. A total of 54 students are studying in the first year of midwifery and 42 students in the second year of midwifery (N=96). The data of the study were carried out between the dates of 1st October, 2021 and 20th October, 2021, and the sample of the study consisted of a total of 95 midwifery students. The data of the study were created as a result of literature reviews to determine the socio-demographic characteristics and the knowledge, attitudes, and behaviors of students about breast milk. The data were collected using a web-based survey method. The data obtained as results of the research were evaluated with the SPSS-22 program, and error controls, tables, and statistical analyzes were also carried out.

Findings

95 people participated in the study (Response rate: 98.9%). All of our students are female students. 97,9% of the students answered the question of "What does breast milk mean to you?" as "Miraculous food that meets all the needs of the baby", and 57,9% of the students answered the question of "How long can breast milk be stored at room temperature?" as 2 hours, and 28.4% of them answered it as 3-4 hours. 40% of the students answered the question of "What should be the frequency of breastfeeding during exclusive breastfeeding?" as every 2 hours, and 23.2% of them answered it as whenever they need/cry.

Conclusion

It has been determined that the knowledge, attitudes, and behaviors of the students participating in the research about breast milk are not yet at the desired level. For breastfeeding to be carried out successfully, midwifery students, who will raise awareness of mothers on this issue and provide the necessary training, should be regularly trained on this issue, and the deficiencies should be determined and eliminated.

Keywords: Breast Milk, Knowledge Level, Midwifery Students

INTRODUCTION

Breast milk is an excellent source of nutrients that babies should receive from birth to one-year-old (1,2). Feeding babies only with breast milk in the first six months of life, continuing to take breast milk with complementary foods after the sixth month, and continuing breastfeeding until the age of two provides many benefits for both the baby and the mother (3).

The World Health Organization (WHO), the American Academy of Pediatrics and the United Nations Children's Fund recommend that breastfeeding should be started within half an hour after birth, and only breast milk should be given for the first six months. These organizations also state that it would be good to continue breastfeeding from the first six months along with complementary foods until the age of two and above (1,4). According to the American Dietetic Society, breastfeeding in the first six months of life is the most appropriate nutrition for newborns and is of great importance in terms of maintaining health. However, breastfeeding is also very important in terms of public health, such as improving and maintaining newborn health, reducing morbidity, mortality, and health care expenditures (5).
This study was conducted to determine the knowledge, attitudes, and behaviors of midwifery students about breast milk.

MATERIAL-METHOD

The universe of the descriptive study consisted of students studying at the Department of Midwifery at Gaziantep Islam, Science and Technology University. The Faculty of Health Sciences was established 2 years before the date of the research, and there were 2 classes in total at the time of the research. A total of 54 students in the first grade and 42 students in the second grade were studying midwifery (N=96).
The data of the study was conducted between the dates of October 1 and October 20, 2021, and the sample of the study consisted of 95 midwifery students in total (Response Rate: 98.9%).
The data of the study was collected by web-based survey method in order to minimize face-to-face interaction due to the Covid-19 pandemic, using the Personal Information Form and the Knowledge, Attitude and Behavior Questionnaire on Breast Milk.
Ethics committee approval and written informed consents were obtained from the participants for the study. The data obtained as results of the research were evaluated with the SPSS-22 program, error controls, tables, and statistical analyzes were made.

FINDINGS

All of the participants of the study are female students. It was determined that 96.8% of the mothers of midwifery students were housewives, and 34.7% of their fathers were self-employed. When the socio-economic status of the participants was questioned, 26.3% of the students stated that their income was less than their expenses, and 71.6% stated that their income was equal to their expenses (Table 1).

Table 1. Descriptive Characteristics of the Participants (N = 95)

Variables	Characteristics	Number	%
Age	under 19 years old	70	73.7
	20 years and older	25	26.3
Grade	Freshman	53	55.8
	Sophomore	42	44.2
Location of Residency	Province	61	64.2
	District	26	27.4
	Town/Village	8	8.4
Socio-economic status	Income is more than expenses	2	2.1
	Income is equal to expenses	68	71.6
	Income is less than expenses	25	26.3
Educational Level of the Mother	Illiterate	17	17.9
	Literate	16	16.8
	Primary-Middle School	50	52.6
	High School	10	10.6
	University	2	2.1
Educational Level of the Father	Illiterate	7	7.4
	Literate	8	8.4
	Primary-secondary School	44	46.3
	High School	25	26.3
	University	11	11.6
Mother's Profession	Housewife	92	96.8
	Government Officer	2	2.1
	Self-employment	1	1.1
Father's Profession	Government Officer	14	14.7
	Self-employment	33	34.8
	Worker	21	22.1
	Unemployed	27	28.4

97.9% of the participants answered the question of “What does breast milk mean to you?” as “Miraculous food that meets all the needs of the baby”. 40.0% of the participants answered the question of “What should be the frequency of breastfeeding during exclusive breastfeeding?” as "every 2 hours", and 23.2% of them answered the same question as "whenever he/she wants/cries". To the question of "How long can breast milk be stored at room temperature?” 57.9% of the participants answered as "2 hours", and 28.4% of them answered the same question as "3-4 hours" (Table 2).

Table 2. The Distribution of Students' Answers to the Questions Asked about Breast Milk (N = 95)

The Questions Asked About Breast Milk	Number	%
What does breast milk mean to you?		
Miraculous food that meets all the baby's needs	93	97.9
Cow/goat milk equivalent	2	2.1
Beverage equivalent to sugared water	0	0.0
When should breastfeeding be started?		
Within the first hour	68	71.6
In the first two hours	22	23.2
After 24 hours	5	5.2
Should never be given	0	0.0
What is the most suitable food for the baby in the first 6 months?		
Breast milk + complementary food	4	4.2
Breast milk + water	22	23.2
Breast milk only	69	72.6
What should be the frequency of breastfeeding during exclusive breastfeeding?		
Whenever he/she wants/cries	22	23.2
By the hour	30	31.6
Every 2 hours	38	40.0
6 times a day	5	5.2
How long should breastfeeding last?		
5-10 minutes	22	23.2
10-15 minutes	29	30.5
15-20 minutes	14	14.7
as long as the baby wants	30	31.6
Should baby girls or baby boys be breastfed longer?		
Baby Girls	1	1.1
Baby Boys	9	9.5
It does not matter	57	60.0
I do not know	28	29.5
What is the color of colostrum (foremilk)?		
White	5	5.2
Blue	1	1.1
Yellowish	75	78.9
I do not know	14	14.7
What is the texture of colostrum (foremilk)?		
Aqueous	16	16.8
Saturated	16	16.8
Semi-saturated	38	40.0
I do not know	25	26.3

How long can breast milk be stored at room temperature?		
2 hours	55	57.9
3-4 hours	27	28.4
5-6 hours	12	12.6
10 hours	1	1.1
How long can breast milk be stored in the refrigerator?		
1-2 day/days	55	57.9
3-4 days	28	29.5
5-6 days	8	8.4
7-8 days	4	4.2
What should be considered when starting complementary feeding for the baby?		
It is appropriate to give complementary food with a feeding bottle.	14	14.7
Complementary food should be given individually and in small quantities.	68	71.6
Complementary food should be given when the child is full.	5	5.3
If the child has not eaten when complementary food is provided, it should not be tried again.	8	8.4

CONCLUSION and RECOMMENDATIONS

It has been determined that the knowledge, attitudes, and behaviors of the students participating in the research about breast milk are not yet at the desired level. In order for breastfeeding to be carried out successfully, midwifery students, who will raise awareness of mothers on this issue and provide the necessary training, should be regularly trained on this issue, and the deficiencies should be determined and eliminated.

REFERENCES

1. World Health Organization Exclusive Breastfeeding. Available at: http://www.who.int/elena/titles/exclusive_breastfeeding/ 2020, Date of Access: 17.08.2021.

2. Furman L, Schanler RJ. Breastfeeding. In: Gleason CA, Juul S, (eds). Avery's diseases of the newborn. 10th edition. Philadelphia: PA, Elsevier; 2018. p.991-1008.

3. Cowgill, B. Back to the Breast: An Historical Overview of the Perceived Connections Between Sudden Infant Death Syndrome and Breastfeeding. Journal of Human Lactation, 2020; 36(2): 310-317.

4. American Academy of Pediatrics Breastfeeding. Available at: https://services. aap.org/en/patient-care/breastfeeding/ 2021. Date of Access: 17.08.2021.

5. American Dietetic Society, Available at: https://www.eatright.org /health/pregnancy/breast-feeding/breastfeeding-basics for healthy-babies. Date of Access: 17.08.2021.

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FIRAT NOMOFOBİ ÖLÇEĞİNİN GELİŞTİRİLMESİ VE PSİKOMETRİK ÖZELLİKLERİNİN İNCELENMESİ

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ÖZET

Nomofobi (No Mobile Phone) çağımızın önemli problemlerinden biri haline gelmiş olup kelime anlamı olarak mobil telefonsuz kalma korkusu olarak tarif edilmektedir.

Bu çalışmada nomofobi kavramı incelenmiş ve 15-65 yaş bireylerde nomofobi düzeyini belirlemek amacıyla "Fırat Nomofobi Ölçeği" geliştirilmesi amaçlanmıştır. Literatür taranarak soru havuzu oluşturulmuş ve uzman görüşüne baş vurulmuştur. Dil ve psikometrik geçerliliği yapılmış olan 13 ifadeli deneme formu; %69'u kadınlardan oluşan ve yaş aralığı 15-65 arasında değişen 678 kişilik bir örnekleme uygulanmıştır. Ölçeğin geçerliliğine yapı geçerliliği ve iç geçerliliği incelenerek karar verilmiştir. Yapı geçerliliğini belirlemek amacıyla açımlayıcı faktör analizi (AFA) ve doğrulayıcı faktör analizi (DFA), iç geçerliliği belirlemek için ise alt- üst grup karşılaştırması yapılmıştır. Ölçeğin güvenilirliğini test etmek amacı ile Cronbach α güvenilirlik katsayısı ve iki yarı test tutarlılığı hesaplanmıştır. Geliştirilmiş olan "Nomofobi Ölçeği" tek boyut ve 8 maddeden oluşmakta olup, Nomofobiye ilişkin varyansın 55.9'unu açıklayabilmektedir. Ölçekten alınabilecek toplam puan 8 ile 40 arasında değişmekte olup, puanın artışı Nomofobi düzeyindeki artışı ifade etmektedir. Ölçeğin Cronbach α güvenilirlik katsayısı .89 olarak hesaplanmış olup, bu değer yüksek güvenilirliği ifade etmektedir. Bulgulara göre geliştirilmiş olan Fırat Nomofobi Ölçeği geçerli ve güvenilir bir şekilde ölçüm yapabilecek özelliklere sahip, varyansı yüksek, madde sayısı az ve ekonomik bir ölçektir.

Araştırmacıların ölçeği başka örneklemlerde de kullanması ölçeğin geçerliliğini arttıracaktır.
Anahtar kelimeler: Nomofobi, geçerlilik, ölçek geliştirme, güvenilirlik

DEVELOPMENT OF FIRAT NOMOPHOBIA SCALE AND INVESTIGATION OF ITS PSYCHOMETRIC PROPERTIES

ABSRTACT
Nomophobia (No Mobile Phone) has become one of the important problems of our age and is defined as the fear of being without a mobile phone. In this study, the concept of nomophobia was examined and it was aimed to develop the "Fırat Nomophobia Scale" in order to determine the level of nomophobia in individuals aged 15-65. 13-statement essay form with linguistic and psychometric validity; A sample of 678 people, 69% of whom were women, and whose age range was between 15 and 65, was applied. The validity of the scale was determined by examining its construct validity and internal validity. Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were used to determine construct validity, and lower-upper group comparison was used to determine internal validity. In order to test the reliability of the scale, the Cronbach α reliability coefficient and two-half test consistency were calculated. The developed "Nomophobia Scale" consists of a single dimension and 8 items and can explain 55.9 of the variance regarding Nomophobia. The total score that can be obtained from the scale varies between 8 and 40, and an increase in the score indicates an increase in the level of Nomophobia. The Cronbach α reliability coefficient of the scale was calculated as .89, which indicates high reliability. The Fırat Nomophobia Scale, which was developed according to the findings, is an economical scale with the features to measure in a valid and reliable way, with high variance, low number of items. The researchers' use of the scale in other samples will increase the validity of the scale.
Keywords: Nomophobia, reliability, scale development, validity

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COVID-19 PANDEMİSİNİN KÜRESEL MÜZİK ENDÜSTRİSİ ÜZERİNDEKİ ETKİSİ[1]

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ÖZET

COVID-19 pandemisi, ortaya çıktığı günden bu yana diğer birçok sektör gibi eğlence sektörünü de önemli ölçüde etkilemiştir. 2020 yılının ilk aylarından, kitlesel aşılanmanın başlatıldığı Aralık 2020'ye dek dünya çapında eğlence sektörü ve bunun en büyük paydaşlarından biri olan müzik sektörü büyük bir durgunluk dönemine girmiştir. Buna bağlı olarak 2020 yılı için küresel müzik endüstrisi gelirlerinde yaklaşık %30'luk bir azalma yaşandığı tahmin edilmektedir. Canlı müzik sektöründeki gelirlerde ise iptallerden ve ertelenmelerden kaynaklı yaklaşık %75 oranında düşüşün kaydedildiği ve gelir kaybının 30 milyar ABD dolarından fazla olduğu belirtilmektedir.

COVID-19 vakalarının görüldüğü ülkelerin çoğunda, uygulanan karantina politikaları sebebiyle eğlence mekânları aylarca kapalı kalmış, konser ve festival gibi etkinlikler ciddi sağlık riski oluşturması sebebiyle iptal edilmiştir. Bu süreçte müzisyenler ise sosyal medya platformları gibi dijital mecralarda evlerinden verdikleri canlı yayın konserleri düzenleyerek dinleyici kitlelerine ulaşmaya devam etmiş; evlerinden çıkamayan dinleyiciler de dijital müzik platformlarına daha çok yönelmiştir. Müzik sektörü çalışanlarının büyük bir kısmı ise pandemi döneminde işsiz kalmıştır.

Bu çalışmada COVID-19 pandemisinin küresel müzik endüstrisi üzerindeki etkisinin kapsamlı bir şekilde ele alınması ve değerlendirilmesi amaçlanmıştır. Bu amaçla, COVID-19'un küresel müzik endüstrisi üzerindeki etkisi çeşitli istatistiklerle ifade edilmiş; virüsün müzik endüstrisinin paydaşları olan dinleyiciler, müzisyenler, çalışanlar ve şirketler üzerindeki etkisi küresel örneklerle açıklanmıştır. Bununla birlikte Universal Music Group gibi uluslararası kayıt şirketlerinin; Spotify gibi dijital müzik akışı hizmeti sunan şirketlerin ve Live Nation gibi canlı yayın şirketlerinin COVID-19 pandemisine dair aldıkları önlemler ve geliştirdikleri politikalar ortaya konmuştur. Son olarak, önümüzdeki yıllara dair istatistiki tahminlerle birlikte küresel müzik sektörünün geleceğine yönelik uzman görüşleri derlenerek COVID-19'un küresel müzik endüstrisi üzerinde devam eden etkisi değerlendirilmiştir.

Anahtar Kelimeler: COVID-19, Koronavirüs, Pandemi, Müzik Sektörü, Eğlence Sektörü

[1] Bu çalışma Marmara Üniversitesi, Sosyal Bilimler Enstitüsü, Pazarlama Doktora Programı'nda Prof. Dr. Mehmet TIĞLI danışmanlığında yürütülen ve Mustafa Serkan SOYAK tarafından yazılan doktora tezinden üretilmiştir.

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THE IMPACT OF THE COVID-19 PANDEMIC ON THE GLOBAL MUSIC INDUSTRY[2]

ABSTRACT

The COVID-19 pandemic has had a significant impact on the entertainment industry, like many other industries. From the first months of 2020 until December 2020, when mass vaccination was launched, the entertainment industry and the music industry, one of its biggest stakeholders, entered a period of serious crisis. Accordingly, it is estimated that there is a 30% decrease in global music industry revenues for 2020. It is stated that revenues in the live music industry, on the other hand, decreased by 75% due to cancellations and postponements, and the revenue loss was more than 30 billion USD.

In most of the countries where COVID-19 cases are seen, entertainment venues have been closed for months due to the quarantine policies implemented, and events such as concerts and festivals have been canceled due to serious health risks. In this process, musicians continued to reach audiences by organizing live broadcast concerts from their homes on digital channels such as social media platforms; listeners who cannot leave their homes have also turned to digital music platforms more. A large part of the music industry employees remained unemployed during the pandemic period.

In this study, it is aimed to comprehensively address and evaluate the impact of the COVID-19 pandemic on the global music industry. For this purpose, the impact of COVID-19 on the global music industry has been expressed with various statistics; the impact of the virus on listeners, musicians, employees, and companies, which are the stakeholders of the music industry, is explained with global examples. In addition, the measures taken and the policies developed by international recording companies such as Universal Music Group, companies providing digital music streaming services such as Spotify, and live broadcasting companies such as Live Nation were presented. Finally, the ongoing impact of COVID-19 on the global music industry has been evaluated by compiling expert opinions on the future of the global music industry along with statistical forecasts for the coming years.

Keywords: COVID-19, Coronavirus, Pandemic, Music Industry, Entertainment Industry

1. GİRİŞ

COVID-19 (Koronavirüs Hastalığı) ilk olarak Aralık 2019 sonlarında Çin'in Vuhan şehrinde ortaya çıkan ve incelemeler sonrasında 13 Ocak 2020 tarihinde tanımlanan bir virüstür. Bu virüse yakalanan insanlardaki en büyük belirtiler ateş ve öksürük olmakla birlikte belirtisiz olgular da var olabilmektedir. COVID-19'lu hastaların öksürüklerinden ortaya çıkan damlacıkların solunması yoluyla hastalığın yayıldığı bilinmektedir. Ayrıca COVID-19 enfeksiyonunun 60 yaş ve üstü kişileri çok daha güçlü etkilediği ve şiddetli hastalıkların ölümle sonuçlanabileceği raporlanmıştır (T.C. Sağlık Bakanlığı, 2020). COVID-19, 11 Mart 2020 tarihi itibariyle Dünya Sağlık Örgütü tarafından pandemi (salgın hastalık) olarak ilan edilmiştir (WHO, 2020).

Bu çalışmanın amacı, COVID-19 pandemisinin küresel müzik endüstrisi üzerindeki etkisini dünya çapından farklı örnekler eşliğinde kapsamlı bir şekilde ele almak ve değerlendirmektir.

[2] This study is derived from the doctoral thesis written by Mustafa Serkan SOYAK, conducted under the supervision of Professor Mehmet TIĞLI at Marmara University, Institute of Social Sciences, Marketing PhD Program.

Çalışmada öncelikle COVID-19 pandemisinin ortaya çıkışı ve güncel istatistikler ifade edilecektir. Sonrasında COVID-19 pandemisinin müzisyenler, dinleyiciler, çalışanlar ve şirketler olmak üzere sektörün paydaşları üzerindeki etkisi ifade edilecek; dünya çapında müzik endüstrisinde uygulanan COVID-19 önlemlerine yer verilecek ve son olarak da COVID-19'un küresel müzik endüstrisi üzerinde devam eden etkisi incelenerek pandemi koşulları altında küresel müzik endüstrisinin geleceği değerlendirilecektir.

2. COVID-19 PANDEMİSİ VE KÜRESEL MÜZİK SEKTÖRÜ ÜZERİNDEKİ ETKİSİ

2.1. COVID-19 Pandemisinde Güncel Durum

14 Kasım 2021 saat 12:00 (GMT+3) itibariyle Our World in Data'nın web sayfasında paylaşılan en güncel veriye göre, dünya çapındaki COVID-19 vaka sayısı 253 milyonu, COVID-19 kaynaklı vefat sayısı da 5 milyonu aşmıştır. Toplam vaka sayısının en yüksek olduğu ülkeler arasında ABD, Birleşik Krallık, Fransa, Brezilya ve Türkiye gibi ülkeler bulunmaktadır. Toplam vefat sayısının en yüksek seyrettiği ilk üç ülke ise sırasıyla ABD, Brezilya ve Hindistan'dır. Öte yandan dünya genelinde uygulanan COVID-19 aşısı 7.45 milyar dozu aşmıştır. Verilere göre dünya nüfusunun %51.6'sı en az bir doz COVID-19 aşısı olmuştur. Dünya nüfusunun %40'ının ise aşılarının tam olarak yapıldığı raporlanmıştır. En çok aşı uygulanan ülkeler arasında Hindistan, ABD, Çin, Brezilya, Türkiye ve Almanya gibi ülkeler bulunmaktadır (Our World in Data, 2021).

2.2. COVID-19 Pandemisinin Küresel Müzik Endüstrisi Paydaşları Üzerindeki Etkisi

Pandeminin küresel canlı müzik endüstrisindeki yıkıcı etkisi başta müzisyenler olmak üzere dinleyiciler, sektör çalışanları ve kayıt veya organizasyon şirketleri gibi müzik sektörünün tüm paydaşları tarafından son derece ağır hissedilmiştir. Goldman Sachs Research tarafından hazırlanıp Mayıs 2020 tarihinde yayımlanan "Music in the Air: The show must go on" başlıklı raporda, COVID-19 pandemisinin küresel müzik endüstrisi üzerindeki etkisinden ötürü, endüstri gelirlerinin 2020 senesinde yaklaşık %30 oranında düşeceği öngörülmüştür. Ayrıca canlı müzik sektöründe de iptallerden ve ertelenmelerden kaynaklı yaklaşık %75'lik bir gelir kaybı tahmin edilmiştir (Goldman Sachs, 2020). Küresel eğlence endüstrisi hakkında yayınlar hazırlayan Pollstar'ın derlediği 2020 yıl sonu raporunda da, canlı etkinlikler sektöründeki toplam gelir kaybının 30 milyar ABD dolarından fazla olduğu belirtilmiştir. Öngörülen bu 30 milyar dolarlık zarar, raporlanmamış etkinlikler, sponsorluklar, biletleme, ticari ürünler, ulaşım, restoranlar, oteller ve canlı etkinliklere bağlı diğer ekonomik faaliyetler de dahil olmak üzere tüm yan gelirleri içermektedir (Pollstar, 2020).

2020 yılında düzenlenmesi planlanan birçok müzik festivali ve konser turu COVID-19 pandemisi sebebiyle gerçekleştirilememiştir. Bu süreçte Download Festivali, Glastonbury Festivali, Montreux Jazz Festivali, ve Primavera Sound gibi büyük festivaller iptal edilmiş veya ertelenmiştir. Bon Jovi, Pearl Jam, Lady Gaga, Rage Against the Machine, The Rolling Stones, Queen and Adam Lambert ve Elton John gibi dünya çapında üne sahip sanatçı ve grupların 2020 yılında gerçekleştirmeyi planladıkları tur ve konserler ise iptal olmuştur (Vulture, 2021). COVID-19 pandemisinin zirve yaptığı 2020 yılında, dünya çapındaki müzisyenler ve sanatçılar, hem seyircilerine ulaşabilmek hem de salgından ötürü durmuş olan canlı müzik sektöründen elde edemedikleri gelirlerin bir kısmını yeniden kazanabilmek için dijital platformlara yönelmiştir. Küçük çaplı sanatçılardan, Chris Martin ve John Legend gibi yıldızlara dek binlerce müzisyen samimi ev konserleri düzenleyerek seyircileriyle buluşmuşlardır.

Bununla birlikte pandemi dönemi boyunca müzik akışı (music streaming) platformlarından elde edilmeye devam edilen gelirler ise sanatçıların ekonomik anlamda kurtarıcısı olmuştur (UNCTAD, 2021).

COVID-19'un etkisi tüm dünyada yaşanmış olmakla birlikte farklı ülkelerdeki müzik endüstrileri farklı boyutlarda hasarlar almıştır. UK Music'in yayınladığı "This is Music 2021" isimli raporda pandemi etkisindeki 2020 yılında, Britanya müzik endüstrisindeki çalışanların yaklaşık üçte birinin işini kaybettiği ve istihdamın 2019 yılına kıyasla %35 düşerek 128,000 çalışana gerilediği belirtilmektedir (BBC, 2021b). Country müziğin bir kültür simgesi haline dönüştüğü ABD'nin Nashville şehrinde ise Nashville Ticaret Odası'nın Aralık 2020 raporuna göre müzik mekanlarının çoğunun %70'den fazla gelir kaybına uğradığı ifade edilmiştir. Bunun da ulusal müzik sektörüne 17 milyon ABD doları bir kayıp yaşattığı tahmin edilmektedir (UNCTAD, 2021). Statista'nın hazırladığı rapora göre İtalya'da 2020'de COVID-19 pandemisi nedeniyle müzik endüstrisindeki tahmini gelir kaybının 1 milyar euro'dan fazla olduğu belirtilmektedir (Statista, 2021d). Fransa'da ise COVID-19 sebebiyle müzik endüstrisi gelirlerinde neredeyse %50'den fazla bir kayıp yaşanmıştır. 2013 senesinde 8.8 milyar euro, koronavirüs öncesi 2020 senesinde de 10.4 milyon euro olan müzik endüstrisi gelirleri aynı sene COVID-19 sonrası 5.9 milyon euro'ya gerilemiştir (Statista, 2021c). PwC tarafından Türkiye pazarına yönelik hazırlanan "PwC Küresel Eğlence ve Medya Sektörüne Bakış: 2020-2024" raporunda, COVID-19'un tüketici davranışlarında dramatik bir değişime yol açtığı ve halihazırda devam eden dijital dönüşümü çok daha hızlandırdığı belirtilmektedir. 2020 senesinde eğlence endüstrisinin çok daha sanal ve çevrimiçi akışa dayalı bir tüketim modeline büründüğü ifade edilmiştir. Raporda, 2019 yılında 184 milyon ABD doları olan Türkiye müzik, radyo ve podcast sektörü toplam gelirlerinin 2020 yılında 141,5 milyon ABD dolarına gerilediği belirtilerek; toplam sektör gelirlerinin beş yıl içinde %27'yi aşan bir büyüme sağlayarak 2024 senesi itibariyle 244,1 milyon ABD dolarına ulaşacağı tahmin edilmektedir (PwC, 2021).

Canlı müzik ve eğlence sektörünün durma noktasına geldiği zamanlarda evlerinden dışarı çıkamayan dinleyiciler ise dijital müzik platformlarını ve özellikle de Spotify, Apple Music ve Youtube Music gibi müzik akışı platformlarını daha fazla kullanmaya başlamıştır. Araştırma şirketi Technavio tarafından hazırlanan "Global Music Streaming Market 2020-2024" başlıklı raporda, COVID-19 pandemisinin küresel müzik akışı sektörü üzerinde nötr bir etkiye sahip olduğu; pandemi yayılmaya devam ederken pazar talebinin sabit bir oranda büyümeye devam ettiği ve karantina uygulamalarının kısa vadede müzik akışı hizmetlerine olan talebi artırdığı belirtilmektedir. Raporda 2024 senesi itibariyle müzik akışı endüstrisi pazar payının 7,47 milyar ABD dolarına ulaşması öngörülmektedir (Business Wire, 2020).

2.3. Dünya Genelinde Müzik Endüstrisinde Uygulanan COVID-19 Önlemleri ve Girişimleri

Uluslararası Fonografi Endüstrisi Federasyonu (IFPI), COVID-19'un etkisiyle mücadele etmek adına dünya genelinde müzik endüstrisi ile ilgili uygulanan önlemler ve girişimler hakkında ayrıntılı bilgi sağlayan bir web sitesi hazırlamıştır. "Musicresponsecovid-19.ifpi.org" adresinden ulaşım sağlanabilen bu web sitesinde, müzik endüstrisi kuruluşları, kayıt şirketleri, hükümetler, canlı müzik sektörü ve dijital hizmet sağlayıcıları gibi küresel müzik sektöründeki aktörlerin ulusal veya küresel düzeyde hangi eylemleri gerçekleştirdiği raporlanmıştır (IFPI, 2021).

Dünya çapında faaliyet gösteren müzik kayıt şirketlerinin COVID-19 pandemisine dair aldıkları önlemler aşağıdaki örneklerle açıklanabilir:

* Sony Corporation, dünya çapında COVID-19'dan etkilenenleri desteklemek için Sony Global Relief Fund for COVID-19 (COVID-19 için Sony Küresel Yardım Fonu) isminde 100 milyon ABD Doları tutarında bir fon oluşturmuştur. Bu fon kapsamında şirket, virüsle mücadele eden sağlık personellerine yardım etmeyi; uzaktan çalışması gereken öğrenci ve eğitimcilere destek sağlamayı ve eğlence sektöründeki yaratıcı topluluk üyelerine destekte bulunmayı hedeflemiştir (IFPI, 2021).
* Universal Music Group ise All Together Now: Stay Connected (Şimdi Hep Birlikte: Bağlı Kalın) ismini verdikleri yardım programı kapsamında, COVID-19 sebebiyle olumsuz etkilenen müzik sektörü çalışanlarına hizmette bulunan organizasyonlara finansal destekte bulunmuş; ABD'de gerçekleştirilen bağış çalışmalarını nitelikli hayır kuruluşlarıyla eşleştirmiş ve müzisyeninden dinleyicisine dünya çapında müzik sektöründeki tüm paydaşları destekleyici faaliyetlerde bulunacak UMG All Together Now Foundation (UMG Hep Birlikte Şimdi Vakfı) isminde bir vakıf kurmuştur. UMG, ayrıca bünyesinde barındırdığı marka yönetimi şirketi Bravado firmasıyla "We've Got You Covered" yazılı yüz maskeleri üreterek satışlardan sağlanan gelirin %100'ünü müzik topluluğu genelinde çeşitli hayır kurumlarına bağışlamıştır (Universal Music Group, 2020).
* Warner Music Group ise COVID-19 Response Fund, Dünya Sağlık Örgütü ve MusicCares gibi küresel fonlara bağışta bulunmuştur. Şirket ayrıca 24-27 Nisan 2020 tarihleri arasında internet üzerinden gerçekleştirilen "PlayON Fest" adında bir sanal müzik festivali organize etmiştir. Bu festival Birleşmiş Milletler tarafından desteklenmiş ve festival kapsamında satışı yapılan ürünlerin tüm gelirleri Dünya Sağlık Örgütü'ne aktarılmıştır (IFPI, 2021).

Müzik endüstrisinin bir diğer parçası olan canlı yayın sektöründe ise dünya genelinde alınan önlemlerden bazıları şunlardır:

* ABD'li canlı yayın organizasyon şirketi Live Nation, Live From Home (Evden Canlı Yayın) ismini verdikleri sanal bir müzik merkezi açarak her gün güncellenecek şekilde canlı yayınlar, özel sanatçı içerikleri, yeni müzikler ve benzeri içerikle canlı müziği çevrimiçi formatta seyircilerle buluşturmuştur (IFPI, 2021).
* İngiltere'de faaliyet yürüten Beatstream şirketi ise seyircilerin çevrimiçi konserleri eşzamanlı şekilde izleyebildiği bir canlı müzik akışı (live music streaming) uygulaması geliştirmiştir. Konser biletleri normal biletleme platformları aracılığıyla satılabilmekte ve sanatçılar etkinliklerinin ücretlerini kendileri belirleyebilmektedirler (IFPI, 2021).

Dijital müzik endüstrisinde de COVID-19 pandemisine yönelik bir takım önlemler alınmış ve girişimler başlatılmıştır. Dünya çapında faaliyet gösteren Spotify, Apple Music ve Amazon Music gibi müzik akışı hizmeti sunan şirketler COVID-19 pandemisinin yıkıcı etkisine çözüm sunabilmek için çeşitli faaliyetlerde bulunmuşlardır. Bunlardan bazıları şunlardır:

* Amazon Music, Pandora, Spotify ve TIDAL gibi müzik akışı hizmeti sunan şirketlerin çoğunun, MusiCares COVID-19 Relief Fund (MusiCares COVID-19 Yardım Fonu) isimli yardım fonuna açıklanmamış miktarlarda bağış yaptıkları bilinmektedir (MusiCares, 2020).
* Spotify, COVID-19 virüsünden derinden etkilenmiş sanatçıları ve yaratıcı topluluğu maddi anlamda destekleyebilmek için Spotify COVID-19 Music Relief (Spotify COVID-19 Müzik Yardımı) isimli bir yardım projesi başlatmıştır. Şirket, bu proje kapsamında PRS Foundation, Support Act, The Arab Fund for Arts and Culture ve MusicHelps gibi dünya çapında 20 farklı organizasyonla işbirliği yürütmüş ve bu şirketlere toplamda 10 milyon ABD doları bağışta bulunmuştur.

Spotify ayrıca, platformda şarkılarını yayınlayan sanatçılar ve gruplar için Artist Fundraising Pick (Sanatçının Bağış Toplama Seçimi) isimli özelliği aktifleştirmiştir. Bu sayede sanatçılar Spotify profillerinde Sanatçının Seçimi şeklinde herhangi bir şarkılarını ön plana çıkarmakla birlikte buna ek olarak herhangi bir bağış toplama seçimini de profillerinde ön plana çıkarabilmişlerdir (Spotify, 2020).

* Sektörün bir başka önemli ismi Apple Music ise, bağımsız plak şirketlerinin ve sanatçılarının koronavirüs pandemisi zarfında çalışmaya ve ödeme almaya devam edebilmelerini sağlamaları adına 50 milyon dolarlık bir avans telif fonunun başlatıldığını Mart 2020'de resmen duyurmuştur (Rolling Stone, 2020).

2.4. Pandemi Koşulları Altında Küresel Müzik Endüstrisinin Geleceği

COVID-19 pandemisinin dünya üzerindeki etkisi hızla değişebilmekte, yeni varyantların ortaya çıkmasına ve kitlesel aşılanmanın etkinliğine bağlı olarak pandeminin küresel etkisi günden güne değişmektedir. COVID-19'un müzik endüstrisi gelirleri üzerindeki etkisi de buna paralel olarak her geçen gün değişkenlik göstermektedir. Statista'nın Temmuz 2021 itibariyle hazırladığı "Dijital Medya Raporu 2021" başlıklı raporunda, dijital müzikten elde edilen küresel gelirin COVID-19 salgını nedeniyle 2021'de %9'luk ek bir artış sağlaması ve 25 milyar ABD dolarına ulaşması öngörülmektedir (Statista, 2021a). Goldman Sachs'ın düzenlediği araştırmaya göre ise, 2021 yılında güçlü bir geri dönüş etkisiyle küresel canlı müzik sektöründe %26'lık bir gelir artışı elde edilmesi ve 2022 senesinde de %18'lik bir artış daha sağlanarak neredeyse COVID-19 öncesi gelir seviyesine geri dönülmesi beklenmektedir. Son olarak 2030 senesinde küresel müzik gelirlerinin 142 milyar ABD dolarına ulaşacağı öngörülmektedir (Goldman Sachs, 2020).

COVID-19 sebebiyle 2020 yılında durma noktasına gelen küresel müzik endüstrisi, kitlesel aşılamaların başlaması ve yaygınlaşması sebebiyle 2021 yılında yeniden hareketlenmeye başlamıştır. Dünya çapında farklı yönetmelikler ve kampanyalar uygulanarak COVID-19'un eğlence sektörü üzerindeki olumsuz etkisi en aza indirgenmeye çalışılmıştır. Örneğin, Avustralya müzik endüstrisinin önde gelen sanatçıları, müzik sektörü çalışanları, tur ve kayıt şirketleri de dahil olmak üzere birçok paydaştan oluşan topluluk "Vax The Nation" (Ulusu Aşıla) ismini verdikleri bir aşılama kampanyası başlatarak ülkelerinde canlı müzik endüstrisinin yeniden hayat bulması adına önemli bir adım atmıştır. Topluluk, 2020'nin sonuna dek Avustralya canlı performans endüstrisinde yaklaşık 80.000 kişinin işsiz kaldığına vurgu yaparak tüm halkı aşı olmaya davet etmiştir (The Guardian, 2021a). 15 Kasım 2021 tarihi itibariyle Galler'de tüm sinema, tiyatro ve konser mekanlarına giriş için COVID-19 pasaportu gösterilmesi zorunlu kılınmıştır. COVID-19 pasaportu, eksiksiz aşısını tamamlayan kişilere tanınmaktadır. Toplu etkinliklere katılım sağlamak isteyen aşı olmayan bireyler içinse son 48 saatte alınan negatif COVID-19 testi zorunluluğu getirilmiştir (BBC, 2021a). Danimarka'da kitlesel aşılamanın %80'lere ulaşması sebebiyle, 1 Eylül 2021 tarihi itibariyle gece kulüpleri yeniden açılmış, toplu buluşmalardaki kısıtlamalar kaldırılarak etkinliklere katılırken aşı kartı gösterme zorunluluğu da sona erdirilmiştir (The Guardian, 2021b). Türkiye'de ise, 6 Eylül 2021 tarihi itibariyle aşı olmayan kişilerin bir takım faaliyetlere katılımını sınırlandıran bir genelge yayınlanmıştır. Buna göre aşı olmayan bireylerin toplu katılım gösterilen konser, tiyatro, sinema gibi etkinliklere girişi yasaklanmış; bu kişilerin etkinliklere katılması için azami 48 saat önceden yapılmış negatif PCR testine sahip olma zorunluluğu getirilmiştir (Euronews, 2021).

Müzik sektörü hakkında uzman görüşlerini yansıtmak ve hem küresel hem de Türkiye müzik endüstrisine dair güncel raporları derlemek adına MÜ-YAP tarafından oluşturulan bir çevrimiçi yayın organı olan Müzik Analiz, Türkiye Canlı Müzik ve Eğlence Sektörü Derneği (TESDER) Başkanı Alp Çağrı Günal ile pandemi sonrası müzik sektörünün değerlendirildiği bir mülakat yapmış ve bunu 27 Temmuz 2021 tarihinde muzikanaliz.com'da yayınlamıştır. Günal bu mülakatta, pandeminin başından bu yana Türkiye'de müzik sektörünün normalleşemediğini, diğer ülkelerde yapılmasına karşın Türkiye'de canlı etkinliklere dair bir deney ve araştırmanın gerçekleştirilmediğini, Park Et Seyret gibi alternatif yöntemlerin uygulansa da çok verimli bir konser modeli olmadığını ve dolayısıyla Türkiye'de müzik endüstrisinin işlerini pandemi döneminde neredeyse hiç yapamadığını belirtmiştir. Ayrıca, COVID-19'un etkisini güçlü hissettirdiği ilk zamanlarda dijital platformlarda düzenlenen konserlere olan ilginin zaman geçtikçe azalarak bittiğini belirten Günal, konser izleyicisinin ciddi bir normale dönüş talebi olduğunu ve buna bağlı olarak canlı müzik sektörünün pandemi öncesi düzeye 2022 yaz aylarında dönebileceğini ifade etmiştir. Günal, etkinliklerde geçerli olmak üzere kapalı mekanlarda maske takma zorunluluğunun devam ettiğini ve seyirciler arasında mesafe kısıtlamalarının uygulandığını belirterek, Türkiye canlı müzik ve eğlence sektörünün bir daha kapanmaması adına konser, düğün, otel etkinlikleri vb. gibi insanların bir araya geldiği tüm etkinlikler için aşı karnesi uygulamasının uygulanması gerektiğini ifade etmiştir (Müzik Analiz, 2021).

3. SONUÇ

2020'nin başlarından beri dünyayı etkisi altına almış COVID-19 pandemisinin küresel müzik endüstrisi üzerindeki etkisi de son derece yıkıcı olmuştur. Durma noktasına gelen sektörde birçok büyük müzik festivali ve konser turu iptal edilmiş; müzisyenler ve sektör çalışanları işsiz kalmış ve işletmeler iflas etmiştir. Statista'nın (Statista, 2021b) raporuna göre 2019-2020 yılları arasında dünya çapında müzik endüstrisinin gelir artışında en iyi senaryoyla %28, en kötü senaryoyla ise %34'lük bir düşüş yaşanmıştır. Ayrıca 2020 senesi için küresel canlı müzik sektöründe %75'lik bir gelir kaybı olduğu tahmin edilmektedir (Goldman Sachs, 2020).

COVID-19 aşısının bulunması ve ülkelerde uygulanmaya başlanmasıyla birlikte özellikle 2021 itibariyle küresel müzik sektörü yeniden hareketlenmeye başlamıştır. Günümüzde ülkelerin büyük bir çoğunluğunda tam aşılı olma veya etkinliklere girişten belirli bir zaman önce yapılmış negatif COVID-19 test sonucuna sahip olunması şartıyla toplu etkinliklere katılabilmek mümkündür. Bazı ülkelerde ise kitlesel aşılanmanın büyük ölçüde tamamlanmış olması sebebiyle tedbirler tamamen kaldırılmıştır.

Dünya çapında 2020 yılında yapılamayan müzik festivalleri ve konser turlarının çoğu 2021 ve 2022 yıllarında gerçekleştirilmek üzere yeniden planlanmıştır. 2021 senesinde özellikle küresel canlı müzik endüstrisinde güçlü bir geri dönüş etkisi beklenmekle birlikte, COVID-19 öncesi küresel müzik endüstrisindeki gelir seviyelerine ancak 2022 senesinde ulaşılması öngörülmektedir.

KAYNAKÇA

BBC. (2021a). Covid passports: How do I get one and when will I need it? https://www.bbc.com/news/explainers-55718553

BBC. (2021b). One in three music industry jobs were lost during pandemic. https://www.bbc.com/news/entertainment-arts-58959179

Business Wire. (2020). Music Streaming Market to Grow by $7.47 Billion amid Recession Includes Impact of COVID-19 and Business Continuity Plan for the New Normal Technavio. https://www.businesswire.com/news/home/20201124005737/en/Music-Streaming-Market-to-Grow-by-7.47-Billion-amid-Recession-Includes-Impact-of-COVID-19-and-Business-Continuity-Plan-for-the-New-Normal-Technavio

Euronews. (2021). Konser, sinema, şehirlerarası seyahatler...PCR testi nerelerde zorunlu? https://tr.euronews.com/2021/09/06/covid-19-as-s-olmayanlara-konser-sinema-ve-sehirleraras-seyahatler-icin-pcr-testi-zorunlu-

Goldman Sachs. (2020). Music in the Air. https://www.goldmansachs.com/insights/pages/infographics/music-streaming/

IFPI. (2021). Global Music Industry COVID-19 response tracker. https://musicresponsecovid-19.ifpi.org/

MusiCares. (2020). Major Streaming Services And Tech Companies Join MusiCares In Support Of COVID-19 Relief Fund. https://www.musicares.org/musicares/news/major-streaming-services-and-tech-companies-join-musicares-support-covid-19-relief

Müzik Analiz. (2021). Türkiye'de Pandemi Sonrası Canlı Müzik Sektörü. https://muzikanaliz.com/turkiyede-pandemi-sonrasi-canli-muzik-sektoru/

Our World in Data. (2021). Coronavirus Pandemic (COVID-19) – the data. https://ourworldindata.org/coronavirus-data

Pollstar. (2020). 2020*—A Year Forever Qualified. https://www.pollstar.com/article/pollstar-2020-year-end-special-146984

PwC. (2021). Küresel Eğlence ve Medya Sektörüne Bakış 2020-2024. https://www.pwc.com.tr/kuresel-eglence-ve-medya-sektorune-bakis-2020-2024#temel-ongoruler

Rolling Stone. (2020). Apple Music Quietly Starts $50 Million COVID-19 Advance Fund for Indie Labels. https://www.rollingstone.com/pro/news/apple-music-quietly-starts-50-million-covid-19-advance-fund-for-indie-labels-979943/

Spotify. (2020). Spotify COVID-19 Music Relief. https://artists.spotify.com/blog/spotify-covid-19-music-relief

Statista. (2021a). Digital Media Report. https://www.statista.com/study/44526/digital-media-report/

Statista. (2021b). Estimated impact of the coronavirus pandemic on music industry revenue growth worldwide between 2019 and 2020. https://www.statista.com/statistics/1172357/coronavirus-music-revenue-growth-worldwide/%0A

Statista. (2021c). Impact of the coronavirus outbreak on the music industry revenue in France from 2013 to 2020. https://www.statista.com/statistics/1135112/impact-coronavirus-music-industry-revenue-france/

Statista. (2021d). Key figures of the estimated loss in the music industry due to the coronavirus (COVID-19) pandemic in 2020, by sector. https://www.statista.com/statistics/1112181/estimated-loss-in-the-music-industry-due-to-the-coronavirus-in-italy-by-sector/ %0A

T.C. Sağlık Bakanlığı. (2020). COVID-19 Bilgilendirme Platformu. https://covid19.saglik.gov.tr/TR-66300/covid-19-nedir-.html

The Guardian. (2021a). Australian music legends join forces in 'vax the nation' campaign. https://www.theguardian.com/music/2021/sep/06/australian-music-legends-join-forces-to-urge-the-nation-to-get-vaccinated

The Guardian. (2021b). Denmark lifts all Covid restrictions as vaccinations top 80%. https://www.theguardian.com/weather/2021/sep/10/denmark-lifts-all-covid-restrictions-as-vaccinations-top-80-per-cent

UNCTAD. (2021). How COVID-19 exposed music industry fault lines and what can be done. https://unctad.org/news/how-covid-19-exposed-music-industry-fault-lines-and-what-can-be-done

Universal Music Group. (2020). UMG's Response to COVID-19. https://www.universalmusic.com/covid-19-response-news/

Vulture. (2021). All the Live Events, Movie Releases, and Productions Affected by the Coronavirus. https://www.vulture.com/2021/01/events-cancelled-coronavirus.html

WHO. (2020). WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020. https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020

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ŞEHR-İ NUH'UN MİNİK MENTÖRLERİ PROJESİ ÜZERİNE BİR DEĞERLENDİRME

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ÖZET
Şehr-i Nuh'un Minik Mentörleri Projesi Anadolu Kültür Çocuk Çalışmaları için Destek Programı tarafından belirlenen başvuru değerlendirme kriterlerini sağlayarak destek almaya hak kazanmış bir sosyal sorumluluk çalışmasıdır. Bu çalışmada, çocukların fiziksel, psiko-sosyal, dil, bilişsel, kişilik ve öz bakım gelişimlerini sağlıklı bir şekilde tamamlayabilmeleri için çocuklara yönelik ''Oyun ve Oyuncak Tasarımı, Tiyatro Gösterimi'' atölyelerinin gerçekleştirilmesi amaçlanmıştır. Çalışmada nitel araştırma yöntemlerinden doküman inceleme yöntemi kullanılmıştır. Dokümanlar niteliğine göre; yazı esaslı, görüntü esaslı, ses esaslı ve görsel-işitsel esaslı olmak üzere dörde ayrılmaktadır. Bu çalışmada görsel ve yazı esaslı dokümanlar kullanılmıştır. Çalışma kapsamında Şehr-i Nuh'un Minik Mentörleri Projesi için hazırlanan çalışma takvimi, proje başvuru rehberi, bütçe planı, proje ara ve dönem raporları, proje toplantı raporları, proje görselleri incelenmiştir. ''Şehr-i Nuh'un Minik Mentörleri'' sloganı ile yaşanan çatışma olaylarından etkilenen 7 – 11 yaş arası 15 çocuk ile ''Oyun ve Oyuncak Tasarımı Atölyesi'', 157 İlkokul öğrencileri ve 143 Ortaokul öğrencilerine ''Tiyatro Gösterimi'' Babındak İlkokulunda gerçekleştirilmiştir. Bu çalışmada yapılan analizler sonucunda Şehr-i Nuh'un Minik Mentörleri Projesi'nin, Proje Yönetim Döngüsü ölçütlerine uygun olduğu ve çocuklara yönelik oyun ve oyuncak tasarımı, tiyatro gösterimi atölyelerinin başarılı bir şekilde gerçekleştirildiği sonucuna varılmıştır.
Anahtar Kelimeler: Çocuk ve Sanat, Oyuncak Tasarımı, Proje

AN EVALUATION OF THE ŞEHR-I NUH'S LITTLE MENTORS PROJECT

ABSTRACT
Şehr-i Nuh's Little Mentors Project is a social responsibility project that has been entitled to receive support by providing the application evaluation criteria determined by the Anadolu Kültür Children's Studies Support Program. In this study, it is aimed to conduct 'Game and Toy Design, Theater Performance' workshops for children so that children can complete their physical, psycho-social, language, cognitive, personality and self-care development in a healthy way. In the study, one of the qualitative research methods, the document review method was used. According to the nature of the documents; They are divided into four as text-based, image-based, audio-visual-based and audio-visual-based. Visual and written documents were used in this study. In the scope of the study, the work schedule prepared for the Şehr-i Nuh's Little Mentors Project, the project application guide, the budget plan, the project interim and dec reports, the project meeting reports, the project visuals were examined. ''Play and Toy Design Workshop'' with 15 children aged 7 to 11 years affected by the conflict dec with the slogan ''Little Mentors of the City of Noah'', ''Theater Performanc'' for 157 Elementary School students and 143 Middle School students was held at Babindak Elementary School.

As a result of the analyses conducted in this study, it was concluded that Şehr-ı Nuh's Little Mentors Project is in accordance with the Project Management Cycle criteria and that the game and toy design and theater performance workshops for children have been successfully carried out.
Keywords: Children and Art, Toy Design, Project

GİRİŞ

Sanat insanlık tarihinin başlangıcından günümüze kadar varlığını sürdüren bir olgudur. Toplumların kendine has bir sanat anlayışı olmakla birlikte insanların yaşamını sürdürdüğü alanlarda maddi kavramlar dışında duygu, düşünce ve bilinçaltının içten gelen bir etkisi olarak yansımıştır (Artut, 2002). Sanat aynı zamanda kişinin kendini olduğu gibi yansıtma yeteneği olarak yorumlanabilir. İnsanın iç dünyasını dışa vurması, duygu ve düşüncelerini yansıtması, insanın deneyimlediklerini, gördüklerini, işittiklerini, hayal ederek tasarladıklarını resim, seramik, müzik, tiyatro, drama vb. sanat dalları ile dış dünyaya yansımış biçimidir.

Sanat kişinin duygu ve düşüncelerini renk, biçim, çizgi, ritim, ses ilkelerinden bir veya birkaçını doğru ve etkili bir biçimde kullanmasıdır. Sanat bir hayal görme şekli değil, yaşantılarını, duygu ve düşüncelerini yansıtma biçimi olarak tanımlanır (Gençaydın, 2002). Sanat çocukların dünyayı anlamasında etkili bir güce sahiptir. Sembollerle duygu, düşünce ve deneyimlerini paylaşabileceklerini görürler (Schirrmacher, 2006). Okul öncesi dönemde somut etkinlikler içeren görsel sanat eğitimi, çocukların çağımızın toplum ve ekonomisine aktif bir şekilde katılımını sağlaması için gerekli bakış açılarını, özellikleri ve yaratıcı düşünce becerilerini geliştirmesine yardımcı olur. Çocukların öz saygı ve öz disiplinini güçlendirir ve yaratıcılığı besler (Isbell ve Raines, 2003). Aynı zamanda sorumluluk duygusunu da geliştirir. Okul öncesi dönemde sanat eğitiminin en önemli özelliklerinden biri çocuklara birçok materyal arasından seçim yapma fırsatı sunarak onlara sağlanan ilk somut ve bağımsız seçim hakkının olmasıdır (Akt. Fox ve Berry, 2008). Çocuklar kendi ürettikleri özgün çalışmaları ortaya koydukça mutluluk ve heyecan duyar, çeşitli uyaranlarla birlikte zaman geçirmeyi, ellerini ve ayaklarını görsel dünyanın keşifleri ile koordine etmeyi öğrenirler. Merakları desteklenir ve zorlukları aşmanın önemini hissederler (Ulutaş ve Demiriz, 2015). Evrensel nitelikte olan sanat, insanlık tarihi boyunca varlığını korumuştur. Sanat tarihine bakıldığında yazıdan önce sanatın var olduğu bilinmektedir. Toplumlar birbirleriyle iletişim kurmak için yazıdan önce duvarlara çizilen resimleri kullanmışlardır.

YÖNTEM

Bu çalışmada nitel araştırma yöntemlerinden doküman inceleme yöntemi kullanılarak sosyal sorumluluk çalışmalarından Şehr-i Nuhun Minik Mentörleri Projesi incelenmiştir. Dokümanlar niteliğine göre; yazı esaslı, görüntü esaslı, ses ve görsel-işitsel esaslı olmak üzere dörde ayrılmaktadır. Bu çalışmada görsel ve yazı esaslı dokümanlar kullanılmıştır. Proje faaliyetlerinin gerçekleştirilmesi ve araştırma verilerinin toplandığı örneklemin seçiminde ise rastgele seçilmiş köy okullarından Silopi İlçe Milli Eğitim Müdürlüğüne bağlı Babındak İlkokulu araştırmaya dahil edilmiştir. Çalışma kapsamında Şehr-i Nuh'un Minik Mentörleri Projesi için hazırlanan çalışma takvimi, proje başvuru rehberi, bütçe planı, proje ara ve dönem raporları, proje toplantı raporları, proje görselleri içerik analizi metodu kullanılarak incelenmiştir.

BULGULAR

Projeniz hakkında kısa bilgi: Bu projede,‘‘Şehr-i Nuh’un Minik Mentörleri’’ sloganı ile yaşanan çatışma olaylarından etkilenen 7 – 11 yaş arası 15 çocuk ile ‘‘Oyun ve Oyuncak Tasarımı Atölyesi’’, Babındak İlkokulunda öğrenim gören 157 İlkokul öğrencileri ve 143 Ortaokul öğrencilerine ‘‘Tiyatro Gösterimi’’ Şırnak Silopi Babındak Köyünde gerçekleştirilmiştir. Çocukların atölye faaliyetleri süresince ortaya çıkardıkları oyun ve oyuncaklar çocuk gelişimi uzmanları ve psikologlar tarafından değerlendirilmiştir. Değerlendirme sonucunda risk altında olduğu tespit edilen çocuklara ve ailelerine psikososyal destek, verilmiştir. Çocukların tasarladığı oyun ve oyuncaklar Babındak Köyü’nde sergilenmiştir.

Projenizde gerçekleştireceğiniz etkinlikler neler? Yapacağınız etkinlikleri sırasıyla yazınız.
- Proje açılış toplantısı gerçekleştirilmiştir.
- Oyun ve oyuncak tasarımı atölye kurulumu yapılmıştır.
- Oyun ve oyuncak tasarımı atölye faaliyetleri gerçekleştirilmiştir.
- Tiyatro oyunu sahnelenmiştir.
- Proje kapanış toplantısı gerçekleştirilerek ürünler raporlanmıştır.

Proje süresi (atölye/etkinlik kaç ay/gün sürecek?)‘‘Şehr-i Nuh’un Minik Mentörleri’’ projesi Eylül 2019 da başlamış Kasım 2019 tarihinde bitmiştir.

Projenin gerçekleştirileceği kent(ler)? ‘‘Şehr-i Nuh’un Minik Mentörleri’’ projesi Şırnak İli Silopi İlçesi Babındak Köyünde gerçekleştirilmiştir.

Projeden faydalanacak çocuklara nasıl ulaşacaksınız? ‘‘Şehr-i Nuh’un Minik Mentörleri’’ projesine katılan çocukları Silopi İlçe Milli Eğitim Müdürlüğü ile yaptığımız görüşmeler sonucunda belirlenmiştir.

Projedeki etkinlik/atölyeyi yapacağınız mekan hakkında kısaca bilgi verir misiniz? ‘‘Oyun ve Oyuncak Tasarımı Atölyesi, Tiyatro Gösterimi’’ Babındak İlkokulunda kurulmuştur. Atölyenin kurulduğu alanın güvenilir, geniş, temiz, ışık alabilen bir ortam olacağına dikkat edilmiştir.

SONUÇ

Bu çalışmada yapılan analizler sonucunda Şehr-i Nuh’un Minik Mentörleri Projesi’nin, Proje Yönetim Döngüsü ölçütlerine ve değerlendirme kriterlerine uygun olduğu, çocuklara yönelik oyun ve oyuncak tasarımı, tiyatro gösterimi atölyelerinin başarılı bir şekilde tamamlandığı sonucuna varılmıştır. Proje kapsamında toplamda 2 öğretmen, 2 uzman, 3 yönetici ve 315 çocuk faydalanmıştır.

ÖNERİLER

- Çocukların gerek okul içi gerek okul dışında eğlenerek öğrenmelerini desteklemek için daha fazla sosyal sorumluluk projeleri uygulanabilir.
- Toplumda sosyal sorumluluk için farkındalık oluşması adına sivil toplum örgütleri ve Milli Eğitim Müdürlükleri arasında protokol yapılabilir.

- Öğretmenlere, sosyal sorumluluk projelerinin yönetimi için eğitimler verilebilir.
- Sosyal sorumluluk projeleri için ilgili kurum ve kuruluşların daha fazla bütçe ayırması önerilebilir.

KAYNAKÇA

Artut, Ö. G. K. (2004). Okul Öncesi Resim Eğitiminde Çocukların Çizgisel Gelişim Düzeylerine İlişkin Bir İnceleme. Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi,13(1). Retrieved from https://dergipark.org.tr/tr/pub/cusosbil/issue/4369/59762

Gençaydın, Zafer. 2002. Eğitimde Zekâ ve Yaratıcılık. H.Ü. Güzel Sanatlar Fakültesi Yayınları 20: 92-VIII.

Gombrich, Ernst Hans. 2007. Sanatın Öyküsü. çev. Erol- Ömer Erduran. İstanbul: Remzi Kitabevi.

Karasar, N. (2009). Bilimsel Araştırma Yöntemi. (19.Baskı). Ankara: Nobel Yayın Dağıtım.

Şimşek, H. ve Yıldırım, A. (2016). Sosyal Bilimlerde Nitel Araştırma Yöntemleri. Ankara, Seçkin.

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BİTİNYA VE PAFLAGONYA'DAKİ BİZANS DÖNEMİ DİNİ YAPILARINDA GÖRÜLEN TRİBELONLAR ÜZERİNE DEĞERLENDİRME

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Özet
Bizans yapılarında iki sütunla ayrılmış, geçit olarak adlandırılan tribelonlar; aydınlatma, sembolik, statik ve estetik amaçlı çeşitli fonksiyonlarla kullanılmıştır. Çalışmanın konusunu, Bizans dini yapılarında çeşitli şekillerde kullanılan tribelonların, Bitinya (Bithynia) ve Paflagonya (Paphlagonia) dini yapılarındaki örnekleri oluşturmaktadır. Tespit edilen tribelonların yapılardaki yeri, yüzyıllara göre kullanım alanları, kullanılan malzeme ve teknik özellikleri dışında süslemelerine değinilmiştir. Fotoğraf ve çizimlerle belgelenen Bitinya ile Paflagonya'daki tribelon örnekleri, dini yapılarda kullanım yerleri ve günümüz durumları açısından ele alınarak sonradan kapatılan ya da işlev değişikliğine uğrayan örnekleri ele alınmıştır. Araştırmalar esnasında Bizans dini yapılarında sıklıkla naos ve narteks duvarları ile apsis cephelerinde uygulandığı tespit edilen tribelonların, Bitinya ve Paflagonya'da günümüze ulaşan altı dini yapıda kullanıldığı belirlenmiştir. Karadeniz Ereğlisi Orhan Gazi Camii'nin (5.-6. yüzyıl) apsisinde, Amasra Fatih Camii'nde (8.-9. yüzyıl), batı cephede ikinci katta, Trilye Hagios Ioannes Theologos Pelekete Manastırı Kilisesi'nde (8. yüzyıl) kuzey ve güneydeki haç kolları, Trilye Fatih Camii'nde (9. yüzyıl sonu) güney ve kuzey haç kolu, Gemlik Kurşunlu Aziz Aberkios Manastırı Kilisesi'nde (9. yüzyıl) apsiste ve Sige Başmelekler Kilisesi'nde (9. yüzyıl) kuzey duvarda, tribelon uygulaması görülmektedir. Çalışmanın sonunda ise tarihi gelişimi açısından incelenen tribelonların sıklıkla görüldüğü Balkanlar, Yunanistan ve Anadolu çevresindeki örnekler de ele alınarak, Bitinya ve Paflagonya'daki dini yapılarda görülen tribelonlar, karşılaştırmalı olarak değerlendirilmiştir.
Anahtar Kelimeler: Bitinya, Bizans, Kilise, Naos, Narteks, Paflagonya, Tribelon

EVALUATION OF TRIBELONS IN BYZANTINE PERIOD RELIGIOUS BUILDINGS IN BITHYNIA AND PAPHLAGONIA

Abstract
Tribelons called gateways, separated by two columns, were used for various purposes (lighting, symbolic, static and aesthetic purposes) in Byzantine buildings. The tribelon examples in Bithynia (Bithynia) and Paphlagonia (Paphlagonia) religious buildings consist of the study subject.

In the study, the location of the tribelons in the buildings, their usage areas according to centuries, the materials used and their technical features as well as their decorations are mentioned. Tribelon examples in Bithynia and Paphlagonia, documented with photographs and drawings, were handled in terms of their current conditions, and examples that were later closed or changed in function were also discussed. During the researches, it was determined that tribelons, which were found to be frequently applied on the naos and narthex walls and apse facades in Byzantine religious buildings, were used in six religious buildings in Bithynia and Paphlagonia. In the apse of Karadeniz Ereğlisi Orhan Gazi Mosque (5th-6th century), in the north and south walls of Trilye Hagios Ioannes Theologos Pelekete Pelekete Monastery Church (8th century), on the second floor on the west side of Amasra Fatih Mosque (8th-9th century), in the south and north wall of Trilye Fatih Mosque (late 9th century), in the north wall of Sige Archangels Church (9th century), and in the apse of Gemlik Kurşunlu St. Aberkios Monastery Church (9th century) tribelon was applied. At the end of the study, the Tribelons were examined in terms of their historical development, and the examples seen in religious buildings in Bithynia and Paphlagonia were evaluated in comparison with the examples in the Balkans, Greece and Anatolia.
Keywords: Bithynia, Byzantine, Church, Naos, Narthex, Paphlagonia, Tribelon

TRİBELONUN TANIMI VE KÖKENİ

Tribelon, kelime kökeni olarak Yunanca "τρίβηλον" teriminin sadeleştirilmiş halidir (Loerke ve Cutler, 1991: 2114). Almancada Tribelo, İngilizcede Tribelon ve Fransızcada Tribelon şekilde telaffuz edilir. Tribelon terminolojik olarak üçlü açıklık anlamına gelir (Grossmann, 1991). Etimolojik olarak Latince tri ve vela/velum kelimelerinin birleşiminden oluşan tribelon (Krautheimer, 1965: 363, Loerke ve Cutler, 1991: 2114), Türkçe bilimsel çalışmalarda çoğunlukla sütun ya da çeşitli yapı elemanları yardımıyla oluşturulmuş üçlü açıklıklara verilen addır. Üçlü açıklık anlamında kullanılan tribelon, iki taşıyıcı duvar ya da sütunlar yardımıyla üçe ayrılmış mimari yapı elemanı olarak tanımlanır. Bu açıklıklardan aynı genişlik ve yüksekliğe sahip olanlarının dışında farklı ölçü ve boyutlara sahip olan örneklerini de uzun yıllar çeşitli medeniyetlerin yapılarında farklı işlevler doğrultusunda uygulandığını belirtmek mümkündür. Çalışma kapsamında incelenen tribelonlar, sütunlarla oluşturulmuştur.

Uygulandıkları yerlerde merkezi açıklık olarak dikkat çeken tribelonların, Roma dönemi kaya mezarları, Mısır'daki mastabalar (Junker, 1953: 95, Abb. 50, Taf. XI), Yunan-Roma tapınakları ile mousoleumlar ve Bizans yapılarında uygulandığı bilinmektedir (Orlandos, 1952: 68-75, 91, Fig. 24, 41,43, 46-47, 51, Grossmann, 1991). Tarihsel süreçte tribelonun ilk defa Yunan ve Roma mimarisinde özgün şekliyle uygulandığı ifade edilmektedir (Feld, 1967: 63). İçsel simetri yapısı göz önünde bulundurularak erken Bizans dönemi ve Ortaçağa tarihlendirilen kiliselerden bazılarında tribelonların uygulandığı görülmüştür (Orlandos, 1952: 104-105, Fig. 59-60, Feld, 1967: 63).

Çalışma kapsamında, Bizans dönemine tarihlendirilen dini yapılardaki tribelonlar incelenmiştir. Mısır'daki erken Hıristiyan kiliselerinde sıkça uygulanan tribelonlar, narteks ile naos arasında sıkça geçiş elemanı olarak uygulanmıştır. Anadolu, Yunanistan ve Balkanlar'daki birçok dini yapının naos-narteks arasındaki geçişlerle yapıların cephelerinde uygulanan tribelonlar buna örnektir (Orlandos, 1952: 105, 149-150, 156, 159, Fig. 60, 115, 118, 121, Hoddinott, 1963: 202, Fig. 127, Krautheimer, 1965: 74, 87).

Dayr Apa Jeremiah Kilisesi, Abu Mina Büyük Bazilika, Selanik Aziz Demetrios Kilisesi ve Vize Ayasofyası'nda (833 sonrası) naos-narteks arasında tribelon yer alır (Grossmann, 1991, Brubaker ve Haldon, 2001: 9, Fig. 2). Tunus Tabarka'da yaklaşık 400'lere tarihlendirilen bazilikanın apsis mozaiğinde tribelon tasvir edilmiştir (Krautheimer, 1986: 190). Ayrıca İtalya Ravenna San Apollinare in Nuovo'nun (6. yüzyıl) mozaikleri arasında yer alan saray kompleksinin girişi de büyük bir tribelon şeklindedir (Orlandos, 1952: 76, Fig. 48, Tafrali, 1913: 46-47, Fig. 3).

Dini mimaride sıkça uygulanan tribelonların Anadolu'da özellikle Bitinya, Isauria, Kilikia, Lidya ve Pontos yapılarında uygulandığı görülür. Kilikya ve Isauria'daki dini yapılarda görülen tribelonlar çoğunlukla 5.-6. yüzyıllara tarihlendirilmektedir (Hellenkember, 1985/1986: 89). Korykus / Kanlıdivane Kilise I'de nartekse girişi sağlayan tribelon bütün anıtsallığıyla ayaktadır (Hill, 1996: Fig. 36). Tribelonlar kiliselerin özellikle doğu apsis cephelerinde, kuzey ve güneydeki bölümlerde ya da cephelerde uygulanmıştır. Zemine kadar uzanan tribelon örneklerinin yanında zeminden belli seviyede yukarıda yer alan, mekanlar arası geçiş sağlayanların yanında sadece yapıların aydınlatılmasını sağlamak için inşa edilmiş örnekleri de görülmektedir.

Narteks ve naos arasındaki üçlü giriş açıklıkları, araştırmacılar tarafından tribelon olarak tanımlanmaktadır (Delvoye, 1976: 151, Loerke ve Cutler, 1991: 2114). Makedonya, Yunanistan'ın anakara yerleşimi, Mora, Girit, Keos, Güney Balkanlar (özellikle Yugoslavya'nın güneyi), İstanbul, Anadolu ve Anadolu'nun kıyı şeritleri ile adalarda, dini yapılarda görülen tribelonlar, naosa açılmaktadır (Krautheimer, 1965: 90-101, Delvoye, 1976: 151, Sodini, 1975: 582-583). Dini yapıların cephelerinde çoğunlukla yarım daire yüzey içinde vurgulanan ya da düz yüzeylerde inşa edilmiş tribelonlar dikkat çeker (Loerke ve Cutler, 1991: 2114). Merkezi planlı kiliseler ve kubbeli bazilikalarda çoğunlukla merkezi alana açılan yan galerilerdeki tribelonların üzeri yarım daire şeklindedir. İtalya Ravenna San Vitale Kilisesi (6. yüzyıl), İstanbul Sergios Bakkhos Kilisesi (6. yüzyıl) (Mathews, 1971: 44, Fig. 25, 30), İstanbul Ayasofya Kilisesi III (6. yüzyıl) (Mathews, 1971: 92), Vize Ayasofyası (833 sonrası) (Brubaker ve Haldon, 2001: 9, Fig. 2) gibi daha birçok yapıda görülen tribelonların, Paflagonya'da Karadeniz Ereğlisi Orhan Gazi Cami (5.-6. yüzyıl) doğu cephede apsiste, Amasra Fatih Cami'nin (8.-9. yüzyıl) batı cephesinde ikinci katta, Sige Başmelekler Kilisesi (9. yüzyıl) kuzey duvarda (Soykan, 2018: Çizim 103-104), Kurşunlu Aziz Aberkios Manastırı Kilisesi (9. yüzyıl) apsiste (Yinsel ve Pekak, 2016: 96, Çizim 3), Trilye Fatih Cami (9. yüzyıl sonu) kuzey ve güney cephelerde ve Trilye Hagios Ioannes Theologos Pelekete Manastırı Kilisesi'nde (8. yüzyıl) kuzey ve güney cephelerde tribelonlar yer almaktadır.

Bizans dönemi yapılarında, kiliselerin cephelerinde sıkça görülen tribelonlar, kiliselerin özellikle batı cephelerinde (çoğunlukla giriş cephelerinde) de uygulanmaktadır (Loerke ve Cutler, 1991: 2114). San Vitale Kilisesi (6. yüzyıl) ve Sergios Bakkhos Kilisesi (6. yüzyıl) gibi merkezi planlı yapılarda, tribelonlar eksedra şeklindeki alanlarda uygulanmıştır (Loerke ve Cutler, 1991: 2114). San Vitale Kilisesi'nde (6. yüzyıl) eksedra şeklindeki alanların dışında apsisin üstünde, ikinci kat ekseninde de bir tribelonun yer alması, dini yapılarda sadece bir alanda uygulanmadığını gösterir. Buradaki tribelonda eksendeki pencere, kuzey ve güneydekine kıyasla daha geniş ve büyüktür (Wright, 2009: 220).

Selanik Aziz Demetrios Kilisesi (5. yüzyıl), birinci ve ikinci katlarda (Texier, 1864: Tab. 184, Tafrali, 1913: 43, Fig. 2), Mersin Mut Alahan Manastırı Kilisesi (6. yüzyıl) batı cephe ikinci katta, Yunanistan Hosios Loukas Manastırı Katholikonu (11. yüzyıl) kuzey ve güney cepheler, birinci ve ikinci katlar (Ousterhout, 1999: Fig. 167), Trabzon Ayasofyası güney, batı ve kuzeydeki kapılarda yarım daire ile son bulan tribelonlar görülmektedir (Loerke ve Cutler, 1991: 2114). Yukarıda yer alan erken Bizans dönemi kiliseleri arasında Selanik Akheiropoitos Bazilikası'nın kuzey, güney ve doğu cephesinde sıkça uygulanan tribelonlar, naostan nartekse geçişi sağlayan bölümlerde iki katlı olarak düzenlenmiştir (Çizim 1).



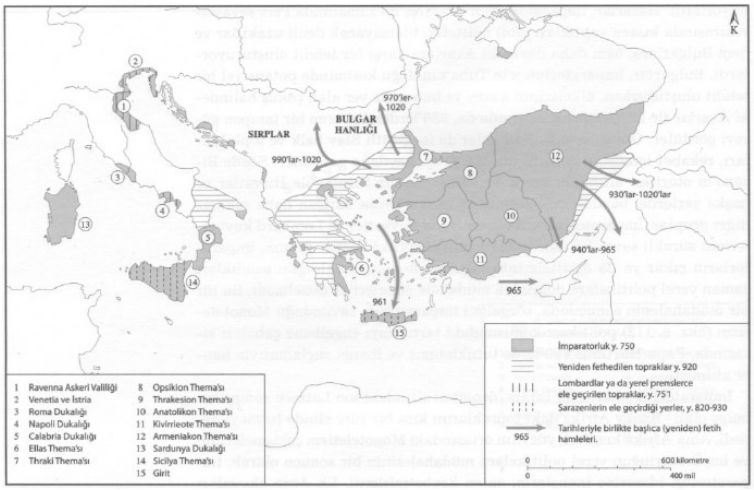
Çizim 1. Yunanistan Selanik Aziz Demetrios Kilisesi, Batı Duvar, Tribelon (Texier, 1864: Tab. 184)

Erken Bizans döneminden itibaren dini yapılarda tek ya da daha fazla katlı tribelon düzenlemeleri görülmektedir. Yunanistan Selanik Akheiropoitos Kilisesi (5. yüzyıl) (Tafrali, 1913: 43, Fig. 2), Yunanistan Hosios Loukas Manastırı Katholikonu (11. yüzyıl) kuzey ve güney cepheler (Loerke ve Cutler, 1991: 2114, Ousterhout, 1999: Fig. 167) ve İstanbul Pammakaristos Kilisesi (Mathews, 1976: 346-347) parakklesionun doğu ve güney cephesinde (14. yüzyıl) iki katlı simetrik tribelon düzenlemesi, tekli uygulamaların dışında dini yapılarda bireysel uygulamaların dışında simetrik iki katlı uygulamalarının da bulunduğunu gösterir. İstanbul'da erken Bizans dönemine tarihlendirilen iki dini yapıdaki tribelon günümüze ulaşmıştır. İstanbul Ayasofya Kilisesi III (6. yüzyıl) ve Sergios Bakkhos Kilisesi'ndeki (6. yüzyıl) tribelonlar, başkent İstanbul'daki erken örneklerdir. Bu iki örnek haricinde İstanbul'da dini yapılarda uygulanan tribelonlar daha çok, orta Bizans (843-1204) ve geç Bizans dönemine (1261-1453) tarihlendirilmektedir. İstanbul Fenari İsa Cami (907) kuzey ve doğu cepheler, İstanbul Eski İmaret Camii (11. yüzyıl) kuzey ve güney cepheler (Ousterhout, 1992: 48, 51-52, Fig. 1, 5-6) ve Kalenderhane Camii (11. yüzyıl) kuzey ve güney cephelerde (Striker ve Kuban, 1967: 268-269, Fig. 1 a-b,) görülen tribelonlar başkentteki orta Bizans dönemine tarihlendirilen örneklerdir. Bunlara ek olarak Kırşehir Üç Ayak Kilisesi'nin (10.-11. yüzyıl) kuzey duvardaki tribelon da örnek olarak gösterilebilir (Eyice, 1968: 125-167). Bizans döneminde dini yapılar başta olmak üzere sivil yapılarda da uygulanan üçlü açıklıklar tribelon olarak tanımlanmakta ve birçok kültürün etkileşimiyle çeşitli yapılarda uygulanmaktadır. Yunan ve Roma tapınaklarında benzeri uygulamaları görülen tribelonların benzeri bir uygulamasını, Bizans dini yapıları dışında, Korint'te 10. yüzyıla tarihlendirilen Bizans dönemi sivil yapıda da uygulandığını belirtmek mümkündür (Bouras, 1983: 6-7, Fig. 1).

Bizans dini mimarisinde sıkça uygulanan tribelonlara benzer uygulamalar, Selçuklu, Anadolu Beylikleri ve Osmanlı dönemi dini yapılarının son cemaat yerlerinde görülen uygulamalarla benzerlik gösterir. Araştırmacılar tarafından Konya Kileci Cami'nin kuzeydeki son cemaat yeri, Bizans yapılarındaki tribelonlara benzetilmektedir (McClary, 2015: 16). Atabey Ertokuş Kümbeti (1224), Atabey Ertokuş Medresesi (1224), Sivas Izz al-Dīn Kümbeti'nde (1220) de tribelon benzeri uygulamaların bulunduğu ifade edilir (McClary, 2015: 19, Fig. 5-6). Buradaki örnekler Bizans yapılarında uygulanan tribelonlardan malzeme ve teknik özelikleri açısından ayrılmaktadır. McClary, her üçlü açıklığın tribelon olarak değerlendirilmesinin doğru olmadığını belirtir (McClary, 2015: 19, Fig. 5-6). Bu gibi uygulamaların dışında özgün bir tribelon kuruluşunu yansıtan Balat İlyas Bey Cami'nin (15. yüzyıl) kuzey cephesi buna örnektir. Tribelonlar sadece somut mimari örneklerde uygulanmamıştır. Birçok duvar resmi, mozaik, el yazmasındaki resimlerde, taş, madeni, ahşap ve kemik eserler, ikonalar ve tablolarda da tribelonların tasvir edildiği belirlenmiştir.

BİTİNYA VE PAFLAGONYA'DAKİ TRİBELONLAR

Kuzeybatı Karadeniz'deki Bizans kentleri, Bitinya ve Paflagonya sınırları içinde yer almaktadır. Bitinya kuzeyde Karadeniz ve İstanbul Boğazı, güneyde Uludağ'ın kuzey yamacı ile Uluabat Gölü, doğuda Sakarya Nehri'nin orta kesimiyle batıda Marmara Denizi ve Karadere Irmağı'nın sınırladığı alanı kapsamaktadır (Pekak, 2009: 11). 380-536 sivil teşkilat listelerinde Karadeniz Ereğlisi, Honorias sınırları içinde gösterilmektedir (Ramsay, 1960: Honor.-Paph.List.). Honorias teması 430-436 tarihleri arasında Karadeniz Ereğlisi (430-431), Zonguldak-Filyos (432), Bursa (433-435), Bolu (436) ve Eskipazar (437) gibi kentlerden oluşmaktadır (Feissel, 2006: 139-142). Bazı araştırmacılar, Honorias'daki şehirleri, Bitinya ve Paflagonya'daki şehirleri birbirine karıştırır. Paflagonya teması 5. yüzyılda, Honorias'ın doğusunda ve Karadeniz kıyısında bulunmaktadır. Beş piskoposluk merkezine sahip Paflagonya'nın metropolit merkezi Gangra (Çankırı) ve buraya bağlı beş piskoposluk merkezi; Sora (Karabük-Zopran ve Akören), Ionopolis (Kastamonu-İnebolu), Pompeiopolis (Kastamonu-Taşköprü), Amasra ve Dadybra (Devrek-?)'dır (Belke, 1996: 186). 640 yılı sonrasındaki Anadolu'da Arap akınları gerçekleşmiştir. Saldırıların ardından, imparatorluğun askeri düzeninde değişime gidilmiştir. 7.-9. yüzyıl arasındaki tema düzenlemeleri, Bitinya, Honorius ve Paflagonya'daki kentlerin askeri nitelik kazanmasını sağlamış yeni temalar ortaya çıkmıştır. Bitinya ve Paflagonya sınırlarındaki kentler, 632-1050 arasında, Opsikion ve Armeniakon temalarına dahil olmuştur (Haldon, 2007: Harita 5.I-II) (Harita 1).



Harita 1. 632-1050 Tarihleri Arasında Tema Düzenlemesi, Paflagonya ve Bitinya'nın Durumu (Haldon, 2007: Harita 5.II)

Bitinya ve Paflagonya'da ise iki dini yapıda tribelon görülmektedir. Paflagonya yapılarından Amasra örneğinde batı cephede ikinci katta, Karadeniz Ereğlisi Orhan Gazi Camii (5.-6. yüzyıl) örneğinde ise doğu cephede tribelon görülürken Bitinya yapılarında özellikle kuzey ve güney cephelerde sıkça uygulanan tribelonlar, üç cepheli apsislerde de karşımıza çıkmaktadır. Çoğunlukla yapıların cephelerinde görülen tribelonlar, onarım çalışmaları sırasında kapatılarak yapılar sağlamlaştırılmaya çalışılmıştır (Resim 1).



Resim 1. Karadeniz Ereğlisi, Orhan Gazi Camii, Doğu Duvar, Apsis, Tribelon (2018)

Trilye Hagios Ioannes Theologos Pelekete Manastırı Kilisesi'nin (8. yüzyıl) kuzey ve güney haç kollarındaki onarımları inceleyen araştırmacıları, burada sonradan kapatılmış tribelonların dışarıya açıldığını ifade tmektedir (Mango ve Ševčenko, 1973: 248). 2009 öncesine ait bazı fotoğraflarda Trilye Hagios Ioannes Theologos Pelekete Manastırı Kilisesi'nin (8. yüzyıl) apsisinde üçlü pencere düzenlemesi görülmektedir. Yuvarlak kemerli bu pencerelerden eksendeki açık, kuzey ve güneydekilerin ise sadece kemerleri görülmektedir. İleriki dönemlerde gerçekleştirilecek restorasyon çalışmaları, kilisenin doğu cephesinde, apsisteki olası tribelon düzenlemesi hakkında daha fazla bilgi sunacağı düşünülmektedir (Pekak, 2009: 180, 182, Resim 72, 75).

Pekak tarafından kapsamlı şekilde incelenen Trilye Fatih Camii'nin (9. yüzyıl sonu) güney ve kuzey cephelerinde de sonradan kapatıldığı tespit edilen tribelonun dışarıya açıldığı ifade edilmektedir (Pekak, 2009: Çizim 16-17, 134, Resim 43-44, 47-48). Yapılardaki tribelonlar bazı araştırmacılar tarafından hatalı yorumlanmış ve tribelonların uygulandığı bu yapılar, kapalı Yunan haçı plan dışında Rusya örneklerinde olduğu gibi beş nefli kiliseler kapsamında değerlendirilmiştir. İstanbul Fenari İsa Cami ve Trilye Hagios Ioannes Theologos Pelekete Manastırı Kilisesi'ni (8. yüzyıl) inceleyen Brunoff'un hatalı tanımlaması buna örnektir (Brunoff, 1927: 49-56, Fig.7). Sige Başmelekler Kilisesi'nin (9. yüzyıl) kuzey duvarında tribelon uygulaması görülmektedir (Soykan, 2018: 37). Trilye Fatih Camii'nde (9. yüzyıl sonu) zemine kadar uzanan tribelonlar, Sige Başmelekler Kilisesi'nde (9. yüzyıl) yerini, kuzey duvarda üst seviyedeki düzenlemelere bırakmıştır (Buchwald, 1969: 42, Fig. 29, 33) (Resim 2 a-b).



Resim 2 a-b. Sige Başmelekler Kilisesi Naos Kuzey Duvar;
C Mekanı (Aziz Haralambos Şapeli) Güney Duvar (2015)

Sige Başmelekler Kilisesi'nin (9. yüzyıl) kuzey duvarında, neden tribelon inşa edildiği tartışma konusudur. Yukarıda yuvarlak kemer ile son bulan tribelon aşağıya kadar uzanmamaktadır (Buchwald, 1969: 42, Soykan, 2018: 2). Hasluck yapının kuzey cephesindeki tribelonun bir benzerinin eksenin güneyinde de bulunduğunu öne sürer ve bunların yapının naosunu aydınlatmak düşüncesiyle dekoratif amaçla inşa edildiğini belirtmektedir (Hasluck, 1906/1907: 297). Hasluck'a ait Trilye Fatih Camii'nin (9. yüzyıl sonu) planlarında da kuzey ve güney cephelerinde tribelonların işlendiği görülmektedir (Hasluck, 1906/1907: 288, Fig. 2). Buchwald ise buradaki tribelonların yan şapellere açılabileceğini öne sürmektedir (Buchwald, 1969: 42). Buchwald'ın bu görüşleri, İstanbul ve Bitinya'daki yapılar üzerinde tartışılan Rus kiliselerinin benzerliği konusundaki tartışmalarını hatırlatmaktadır (Brunoff, 1927: 49-56, Megaw, 1964: 279-298, Mathews ve Hawkins, 1985: 129, Pekak, 2009: 150-151) (Resim 3 a-b).



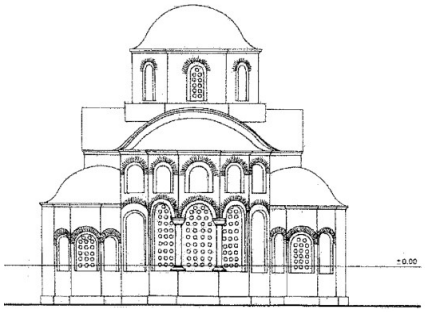
Resim 3 a-b. Trilye Fatih Cami (9. yüzyıl sonu), Güney Haç Kolundaki Tribelon (2015)

Anadolu'da bazı yapıların batı cephelerinde tribelon bulunmaktadır. İstanbul Ayasofya Kilisesi III (6. yüzyıl) (Loerke ve Cutler, 1991: 2114), Korykus / Kanlıdivane Kilise I (6. yüzyıl) (Hill, 1996: Fig. 36), Amasra Fatih Cami'nin (8.-9. yüzyıl) (Gür, 2019) batı cephelerinde tribelon yer almaktadır. Bu yapılardan Korykus / Kanlıdivane Kilise I'de (6. yüzyıl) (Hill, 1996: Fig. 36) tribelon zemine oturur ve giriş açıklığı olarak tasarlanmışken, diğer yapılarda üst seviyelerde sadece estetik ve aydınlatma amacıyla kullanılmıştır. Bitinya'daki dini yapıların batı cephelerinde tribelon uygulanmamıştır. Bölgenin doğusunda, Paflagonya yapıları arasında yer alan Amasra Fatih Camii'nin (8.-9. yüzyıl) batı cephesinde, narteks ikinci katındaki tribelonun, kuzeybatı Karadeniz'de günümüze ulaşan dini yapılar arasında, batıda uygulanan tek tribelon olduğunu göstermektedir (Resim 4).



Resim 4. Amasra Fatih Camii (8.-9. yüzyıl), İkinci Kat, Batı Duvar, Tribelon (2018)

Kiliselerin doğu cephelerinde çoğunlukla üçlü pencere yer almaktadır. Bunlardan bazıları tribelon şeklindedir. Bunlar bazen birbirinden bağımsız bazen de küçük sütunce ve başlıklarla birbirinden ayrılır. Gemlik Kurşunlu Aziz Aberkios Manastırı Kilisesi'nin (9. yüzyıl) apsisinde de (Ousterhout, 1999: 223) tribelon uygulaması görülür (Çizim 2).



Çizim 2. Gemlik Kurşunlu Aziz Aberkios Manastırı Kilisesi (9. yüzyıl), Apsis, Tribelon (Yinsel ve Pekak, 2016: 96, Çizim 3)

Benzeri örneklerini Karadeniz Ereğlisi Orhan Gazi Camii (5.-6. yüzyıl), Gemlik Kurşunlu Aziz Aberkios Manastırı Kilisesi (9. yüzyıl) (Ousterhout, 1999: 223), Kariye Manastırı Kilisesi'nin (12. yüzyıl) merkezi apsisi ile güneydeki parekklesion apsisi (Mango, 2006: 202), orta Bizans dönemi kiliselerinin doğu cephelerindeki tribelonlara örnektir. İncelenen yapılardan Gemlik Kurşunlu Aziz Aberkios Manastırı Kilisesi (9. yüzyıl) ile Karadeniz Ereğlisi, Orhan Gazi Camii'nin apsisinde tribelon (Ousterhout, 1999: 223) yer alması, İstanbul ve Trabzon çevresindeki yapıların apsislerindeki benzeri tribelon uygulamalarının, Kuzeybatı Karadeniz'deki yapılarda da uygulandığını göstermektedir (Resim 5 a-b).



Resim 5 a-b. Gemlik Kurşunlu Aziz Aberkios Manastırı Kilisesi, Doğu Duvar, Apsis, Tribelon, 2000 Öncesi (Sol) (Ousterhout, 1999: 223), Yıkıldıktan Sonra (Sağ) (2015)

Bitinya'daki dini yapıların narteksleri ya da batı cephelerinde tribelon uygulaması görülmemektedir. Bunda inşa edildiği alanlar, form özellikleri ve malzeme-teknik özelliklerinin etkisi bulunur. Ayrıca Bitinya'daki kiliselerin zamanla tahrip olması ya da değişime uğramaları bu uygulamaların özgün durumunun tespit edilmesini zorlaştırmaktadır. Özellikle Yunanistan'daki orta Bizans dönemi (842-1204) kiliselerinin narteksleri nde uygulanan tribelonların, Anadolu'daki yapılarda çok fazla tercih edilmediği görülür. Amasra'daki Fatih Camii'nin (8.-9. yüzyıl) batı cephesindeki tribelon uygulaması, narteks duvarında ikinci katta yer alan tribelonlara bölgedeki tek örnektir[1].

[1] Yunanistan Hosios Loukas Kilisesi (11. yüzyıl) ve Selanik Kutsal Havariler Kilisesi'nin (14. yüzyıl) narteksi buna örnektir (Ousterhout, 1999: Fig. 165).

DEĞERLENDİRME VE SONUÇ

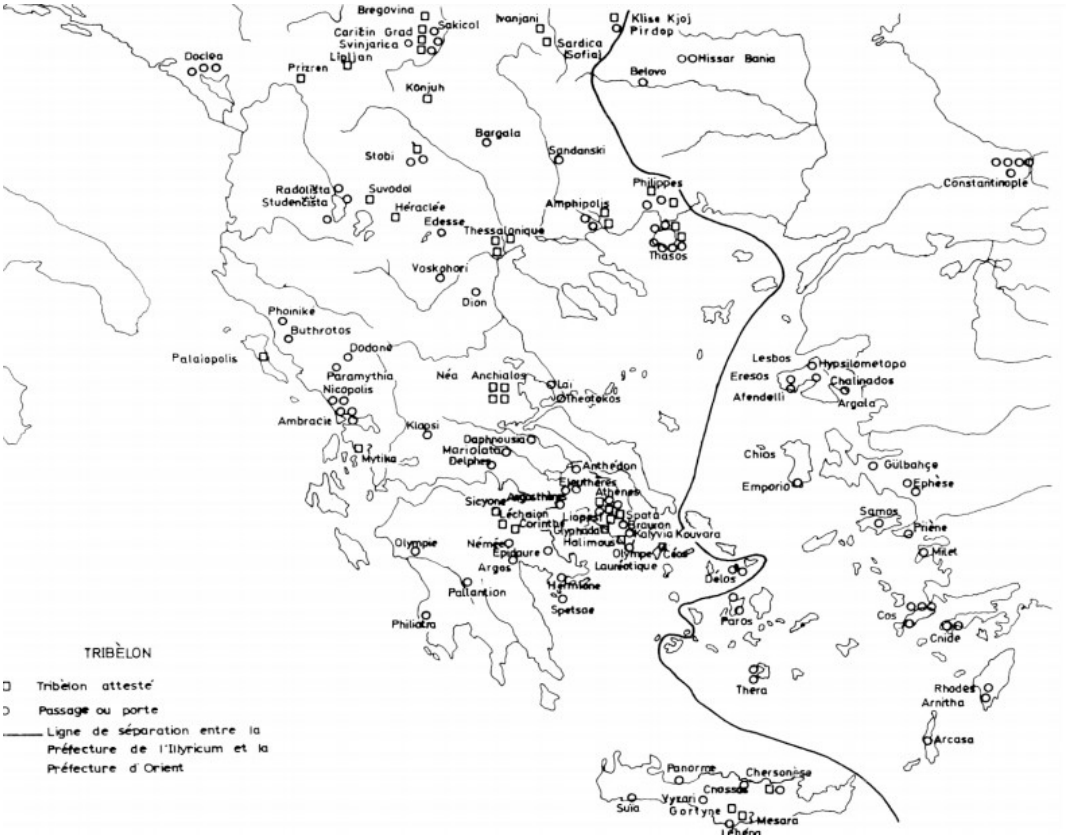
Kuzeybatı Karadeniz'de incelenen altı yapıdan biri üç nefli Hellenistik kilise, üçü kiborion planlı ve ikisi de kapalı Yunan haçı planlı gelişmiş tip kilise planında uygulanmıştır. Altı yapıda uygulanan tribelonlar, kiliselerin çeşitli bölümlerinde karşımıza çıkmaktadır. Yunan ve Roma mimarisinde daha çok tapınakların girişlerinde ikişer sütunlu üçlü açıklıklar, erken Bizans dönemi ile birlikte kiliselerin girişlerinde uygulanmaya başlar. Tek katlı düzenlemelerinin yanında erken Bizans dönemi ile birlikte sembolik, fonksiyonel ve estetik görünümleri nedeniyle birçok yapıda görülmeye başlanan tribelonların Bitinya örnekleri, araştırmacılar tarafından daha önce bu kadar kapsamlı olarak incelenmemiştir.

Erken Bizans dönemine tarihlendirilen yapıların cephelerinde uygulanan tribelonlarda, üç açıklık da çoğunlukla birbirinin aynı boyut ve genişlikte inşa edilmiştir. Ayrıca bu döneme tarihlendirilen örnekler arasında aynı yapıda tek katlı ve iki katlı tribelon uygulamalarını bir arada görmek mümkündür. Selanik Aziz Demetrios Bazilikası'nın cephelerinde görülen tribelonlar tek katlı düzenlemeye örnek iken, naos batı duvardaki tribelon iki katlı düzenlemeye örnektir (Sodini, 1975: 583-584). Bazı yapılarda alt seviyelerde görülen tribelonların bir benzerini İtalya Ravenna San Vitale Kilisesi'nin doğu cephesinde ikinci kat hizasında bulunur. San Vitale Kilisesi doğu cephe dışında naos örnekleriyle de öne çıkmaktadır (Loerke ve Cutler, 1991: 2114, Wright, 2009: 220).

Kiliselerdeki tribelonların yeri ve işlevi uzun yıllar tartışma konusu olmuştur (Sodini, 1975: 582). Geçiş alanı olarak tanımlanan ve sütunların arasında bulunan üçlü açıklık bazen perdelerle kapatılarak bazen de duvarlarla örülerek kapatılmıştır. Ayrıca nefler ile narteks arasında tribelonların kullanıldığı yapılar bulunmaktadır (Sodini, 1975: 581). Örnekler incelendiğinde tribelonların iki alan arasında iletişim sağladığı anlaşılmıştır.

Yunanistan ve özellikle güney balkanlarda bulunan Bizans dönemi kiliselerinde sıkça uygulanan tribelonların Erken Hıristiyan bazilikalarında da tercih edilen bir uygulama olduğu görülmektedir. Selanik Akheiropoitos Kilisesi (5. yüzyıl) ve Aziz Demetrios Bazilikası (5. yüzyıl) başta olmak üzere Attika ve Yugoslavya'daki birçok yapıda tribelon uygulaması görülmektedir. Ayrıca Yunanistan, Makedonya ve Yugoslavya çevresindeki yapıların birbirleriyle etkileşimi söz konusudur ve tribelonların uygulandığı mimari bölümlerin de birbirinden etkilenmiş olabileceği araştırmacılar tarafından öne sürülmektedir (Sodini, 1975: 583-584).

Tribelon Yunanistan'da özellikle Attika ve Atina'da sıkça görülen bir uygulamadır. Aynı zamanda Yunanistan'nın Paiania, Glyfada, Halimous, Olympus Lauréotique, Spata, Peloponnese, Graneion, Léchaion ve Sicyone'deki dini yapılarda tribelon bulunmaktadır. Ayrıca On İki Adalar'daki kiliselerin hiçbirinde tribelon yer almadığı belirtilmektedir (Sodini, 1975: 583). Kuzey Ege adaları ve Keos adası hariç Kiklad adalarında tribelon dağılımının nasıl açıklanması gerektiği tartışılmaktadır. Bu durumdaki etkileşim ifade edildiğinde adalar arasındaki uzaklık ve bölünmenin belirgin olduğu görülür. Güney Balkanlar, Makedonya, anakara Yunanistan, Mora ve Girit'teki tribelonlar buna örnektir (Harita 2).



Harita 2. Balkanlar, Ege ve Yunanistan'da Tribelonların Dağılımı (Sodini, 1975: 582, Fig. 1)

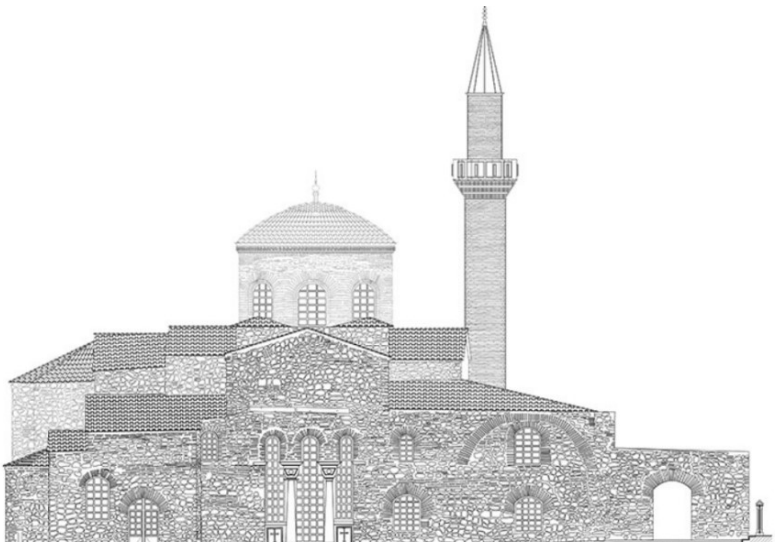
Bu kadar dağınık bir coğrafyada basit bir etkileşimin olmadığı açıktır. Bu kadar geniş coğrafyada uygulanan tribelonların başka mimarilerde de yerini aldığı görülür. Bu kadar geniş bir uygulamayı mimari etkileşimden çok dini yargı yetkisiyle açıklamak daha doğru olacaktır (Sodini, 1975: 584). Illyricum dini açıdan sadece Illyricum piskoposluğuna bağlı değildir, Makedonya ve Tesalya'yı kapsamaktadır. Achaia ve Girit, aynı zamanda her ikisini de içermektedir. Dacia piskoposluğu Dacia, Moesia, Prévalitaine ve Dardanie illerini kapsamaktadır. Dönem kaynakları ve Piskoposların mektuplarında bunlar açıkça görülür (Sodini, 1975: 584). 535 yılında Iustinianus tarafından eyaletlerin yetkileri bölünerek azaltılmıştır. Dacia'nın daha sonradan Justiniana Prima Piskoposluğu'na dahil olduğu düşünülmektedir (Sodini, 1975: 584). Sonraki yüzyılda eyalet Slavlar tarafından işgal edilmiş, Slav istilaları bölgedeki yayılımı çok etkilememiş ve yapıların özelliklerinde çok geç etkili olmuş, bundan dolayı da dini ve siyasi yapılaşma tribelonların şekillenmesinde etkili olmuştur (Sodini, 1975: 584).

Anadolu'da tribelon uygulamaları özellikle erken Bizans dönemi dini yapılarında görülmeye başlamıştır. Kilikya ve Isauria'daki dini yapılarda görülen tribelonlar, Anadolu'da 5.-6. yüzyıllara tarihlendirilen erken örnekleridir (Hellenkember, 1985/1986: 89).

Dağ Pazarı Kilisesi (5. yüzyıl) (Hill, 1996: 151, Fig. 28), Kanlıdivane Kilise I (6. yüzyıl) (Hill, 1996: Fig. 36, Plt. 82), Kanlıdivane Kilise IV (6. yüzyıl) (Hill, 1996: Fig. 39), Tapureli Kilise C (6. yüzyıl) (Hill, 1996: Fig. 53), Yanıkhan Güney Kilise (4.-6. yüzyıl) (Hill, 1996: Fig. 59), İstanbul Ayasofya Kilise III (527-565) (Hill, 1996: Fig. 62), Alahan Doğu Kilise, Batı Cephe (5. yüzyıl) (Hill, 1996: Plt. 8, 9), Alahan Doğu Kilise, Kuzey Cephe (5. yüzyıl) (Hill, 1996: Plt. 6), Manaz Batı Cephe (Hill, 1996: Plt. 97), Mersin Dağpazarı Mikhail Kilisesi (6. yüzyıl) (Hellenkemper, 1985/1986: 86, Abb. 27), Korykus/Kanlıdivane Kilise I'de (6. yüzyıl) nartekse girişi sağlayan tribelon uygulamaları buna örnektir (Hill, 1996: Fig. 36).

Anadolu örneklerini sadece bölgesel etkileşim ile açıklamak çok yanlıştır. Özellikle Başkent ve çevresindeki kentlerde orta Bizans dönemi (843-1204) dini yapılarında, naos, narteks ve cephelerde sıkça tribelon uygulanmıştır. Vize Ayasofyası (833 sonrası), Trilye Fatih Camii (9. yüzyıl sonu), İstanbul Atik Mustafa Paşa Cami (10.-11. yüzyıl), Eski İmaret Cami (11. yüzyıl) ve Kalenderhane Cami (11.-12. yüzyıl) orta Bizans dönemi tribelonlarına örnektir (Mathews ve Hawkins, 1985: Fig. 8-11, Brubaker ve Haldon, 2001: 9, Fig. 2, 4, 6-7, Pekak, 2009: 151-152, 159, Çizim 25-26). Çalışmanın konusunu oluşturan Bitinya'daki dini yapıların çoğunda da özellikle kuzey ve güney cephelerde tribelonlar bulunaktadır.

Bir örneğini de Trilye Fatih Camii'de (9. yüzyıl sonu) naosun kuzey ve güney haç kollarında gördüğümüz, iki sütunla oluşturulmuş üç kemerli tribelonların dışa açılması sorunu araştırmacılar tarafından farklı şekilde yorumlanmıştır. Bizans mimarisinde kuzey ve güney haç kollarındaki ikili sütunlarla desteklenen tribelonlar, bazı araştırmacılar tarafından bu alanlarda ek yapı birimlerinin bulunduğu şeklinde yorumlanmıştır. Bu hataya düşen Brunoff incelediği kapalı Yunan haçı planlı kiliselerinden kuzey ve güneydeki tribelonların, bu alanlardaki yan neflere açılan Rus kiliseleri ile benzer plan şemasına sahip olduğu öne sürülmüştür (Brunoff, 1927: 49-56). Trilye Fatih Camii'nde (9. yüzyıl sonu) gördüğümüz tribelonların bir benzeri İstanbul Fenari İsa Camii'nin (907) kuzey cephesinde karşımıza çıkar (Pekak, 2009: 150). Brunoff tarafından öne sürülen beş nefli kapalı Yunan haçı uygulamasının (Brunoff, 1927: 49, Fig. 7), Pekak, Mathews ve Megaw tarafından doğru olmadığı öne sürülmüş ve kuzeydoğu ile güneydoğusundaki apsislerin yan neflerle herhangi bir bağlantısının bulunmadığı, burada sadece şapellerin yer aldığı ifade edilmiştir (Megaw, 1964: 279-298, Mathews ve Hawkins, 1985: 129, Pekak, 2009: 150-151). Kapalı Yunan haçı planlı kiliselerde bazen kuzey ve güney ya da tek yönden dışa açılan yapı örnekleri bulunmaktadır. Bu alanlarda da tribelonların görüldüğü başkent yapıları bilinmektedir. İstanbul Atik Mustafa Paşa Cami (10.-11. yüzyıl), Vefa Kilise (10.-11. yüzyıl), Eski İmaret Cami (11. yüzyıl), Kalenderhane Cami (11.-12. yüzyıl) bu uygulamaya örnektir (Mathews ve Hawkins, 1985: 129, Pekak, 2009: 151-152) (Çizim 3).



Çizim 3. Trilye Fatih Cami (9. yüzyıl sonu), Kuzey Cephe Tribelon (D2 Desing Architecture)

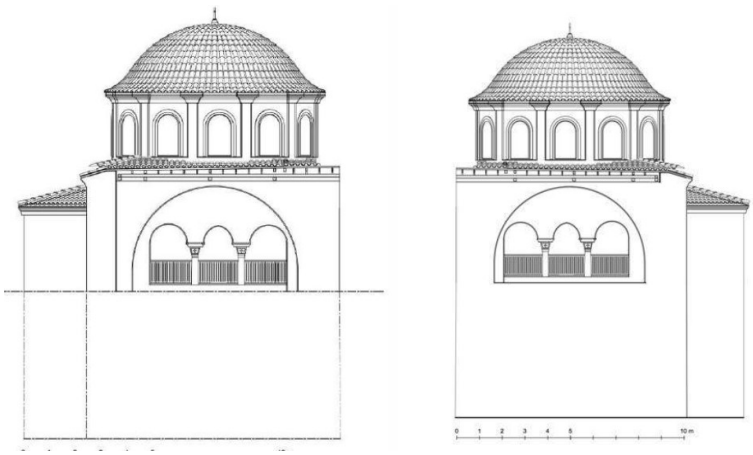
Orta Bizans dönemine tarihlendirilen yapıların kuzey ve güney cephelerindeki tribelon uygulamalarının yuvarlak kemer ile taçlandırıldığı görülmektedir. İstanbul Konstantin Lips Manastırı Kilisesi (Fenari İsa Cami) (907), Trilye Fatih Cami (9. yüzyıl sonu), İstanbul Atik Mustafa Paşa Cami (10.-11. yüzyıl), Eski İmaret Cami (11. yüzyıl) ve Kalenderhane Cami (11.-12. yüzyıl) ve daha birçok yapı bu uygulamaya örnektir (Megaw, 1964: 279-298, Mathews ve Hawkins, 1985: Fig. 8-11, Pekak, 2009: 151-152, 159, Çizim 25-26). Bitinya'daki bu tribelon örneklerini, İstanbul'daki benzer örneklerle karşılaştırmak, iki bölge arasında yoğun bir etkileşimin olduğunu belirtmek mümkündür. Ayrıca bu iki bölgenin birbirine yakın olduğu kadar siyasi, ekonomik ve dini koşulların da büyük etkisinin olduğu unutulmamalıdır. Burada Sodini'nin Yunanistan başta olmak üzere Güney Balkanlar'daki tribelon etkileşimlerinin sadece coğrafya ile açıklamaması, dini etkileşimlere bakılması gerektiği görüşü doğmuştur. Özelikle 9.-12. yüzyıl arasına tarihlendirilen yapılar arasında sıkça uygulanan tribelonlar, bu tarihler arasında İstanbul yapılarındaki tribelonlarla benzerlik gösterir. Kiliselerin çoğunlukla kapalı Yunan haçı plan tipine sahip olmaları ve tribelonların çoğunlukla kuzey ve güney cephelerde inşa edilmeleri de diğer önemli benzerlikler arasındadır.

Bölgelerdeki siyasi ve kilise yapılanmaları, dini yapıların şekillenmesinde, özellikle tribelon kuruluşlarında büyük etkiye sahiptir. M.S. 400'lerde Kladiopolis Metropolitliği'ne bağlı olan bölge (Haldon, 2007: 38), 565 yılında Bitinya olarak adlandırılmaktadır (Haldon, 2007: 66). 650-717 tarihleri arasında Opsikion teması sınırlarında kalan bölge (Haldon, 2007: 100), uzun yıllar bu konumunu korumuştur. Bu dönemde temanın kuzeybatısında İstanbul yer almaktadır (Ostrogorsky, 1981: 123-125). Bitinya 900'lerde dört küçük bölgeye ayrılmış, zamanla Bitinya küçülerek Opsikion teması adıyla eski sınırlarına yakın bir konuma sahip olmuştur (Haldon, 2007: 102-103, 122, Pekak, 2009: 12). Bu durum bölgenin kendi içinde tutarlı bir yönetim-etkileşimi gösterdiği gibi Karadeniz ticareti başta olmak üzere doğudaki Bukellarion teması ve batıda başkent İstanbul sınırlarıyla yakın ilişkiler içinde bulunduğunu gösterir. Ayrıca bölge 10. yüzyılda huzurlu bir dönem yaşamış olsa da 11. yüzyılda Selçukluların hakimiyetiyle büyük zarar görmüştür (Pekak, 2009: 12). 700-1000 arasında bölgenin merkezi Kladiopolis'tir (Bolu) (Haldon, 2007: 132, 151).

Buradaki siyasi yapılanma kadar dini etkileşim de kiliselerdeki tribelonların şekillenmesinde büyük etkiye sahiptir. 726-842/843 öncesinde 650'lere tarihlendirilen Piskoposluk kent listelerinde Gemlik ve Mudanya'nın doğrudan İstanbul Patrikhanesi'ne bağlı olduğu görülmektedir. Bu durum dini etkileşimin ne kadar güçlü olduğunu yansıtmaktadır (Janin, 1921: 180). Bitinya, Bizans döneminde büyük manastır komplekslerinin yer aldığı merkezler arasında gösterilmektedir (Beck, 1959: 209). Çok geniş bir coğrafyada yer alan kiliseler ve manastır kuruluşları bunun göstergesidir (Janin, 1975: 3-192).

Bitinya kiliselerindeki tribelonların 8.-9. yüzyıl arasında sıkça uygulandığı tespit edilmiştir. İkonoklasmus'un (726-842/843) kilise inşasıyla tribelonların uygulamalarını etkilediği düşünülmektedir. Çünkü Bitinya, 842/843 sonrasında manastır yaşamının merkezlerinden biri olarak gösterilmektedir (Pekak, 2009: 13). Çoğunlukla 8.-9. yüzyıllarda inşa edilmiş olan manastırların Bursa çevresinde yoğunlaştığı görülür (Beck, 1959: 209-210). Bu dönemdeki dini yapılaşma sırasında başkentteki tribelon etkileşiminin Bitinya yapılarında sıkça uygulandığını düşündürmektedir. Bölgedeki depremlerin diğer kent yapılarında olduğu gibi dini yapılarda da büyük hasara sebep olduğu bilinmektedir. 1063-1065 arasında iki yılda sıkça görülen depremlerin bölgedeki yapılarda hasarlara sebep olduğu düşünülmektedir (Pekak, 2009: 14-15).

Trilye Hagios Ioannes Theologos Pelekete Manastırı Kilisesi (8. yüzyıl) (Mango ve Ševčenko, 1973: 248), Trilye Fatih Camii (9. yüzyıl sonu) (Pekak, 2009: Çizim 16-19) ve Sige Başmelekler Kilisesi'nin (9. yüzyıl) kuzeyinde kısmen kapatılan tribelon, bölgedeki depremler sonrasında yapılan restorasyonları hatırlatmaktadır (Çizim 4 a-b, Resim 6).



Çizim 4 a-b. Bursa Sige Başmelekler Kilisesi (9. yüzyıl), Kuzey ve Güneydeki Tribelonlar, Restitüsyon (Soykan, 2018: Çizim 103-104)



Resim 6. Trilye Fatih Cami (9. yüzyıl sonu), Kapatılan Tribelon, 2000'ler
(Brubaker ve Haldon, 2001: Fig. 7)

Tribelonarın neden özellikle dini yapılarda, kiliselerin kuzey ve güney cephelerinde uygulandığı çalışma kapsamında cevap aranan sorulardır. Ayrıca tribelonların kiliselerde narteksle rde uygulanma durumları ve özellikle narteksten naosa geçişi sağlayan birinci ve ikinci katlarda inşa edilmesi, yanıt aranan diğer bir önemli sorudur.
Kiliselerde aydınlanma sorununun çözülmesinde pencerelerin büyük rolü bulunur. Erken Bizans dönemi dini yapılarında bu sorun aşılması zaman almış sorunların başında gelmektedir. Konya Karaman çevresindeki dini yapılar buna örnektir.
Amasra'daki tribelonda sütun başlıklarında Latin haçı tasvir edilmiştir. Karadeniz Ereğlisi Orhan Gazi Camii (5.-6. yüzyıl) apsisteki tribelonda, sütun başlıklarından kuzeydekinde, madalyon içinde Latin haçı yer almaktadır. Haç kollarının, caminin işlev değişikliğine uğramasıyla kazındığı görülür. Sige Başmelekler Kilisesi'nde (9. yüzyıl) kuzeydeki tribelonda, sütun başlıklarında monogramlar yer almaktadır. Batıdaki monogramda "Bessou ya da Eusebiou", doğudakinde ise "Georgiou Theophanous" yazar (Soykan, 2018: 55, Resim 6, 35-36, Çizim 6-7) (Resim 7 a-b, Resim 8 a-b).



Resim 7 a-b. Karadeniz Ereğlisi, Orhan Gazi Camii (5.-6. Yüzyıl), Doğu Duvar, Apsis, Tribelon, Sütun Başlıkları (Hoepfner, 1966: 95, Gür, 2018)



Resim 8 a-b. Sige Başmelekler Kilisesi (9. yüzyıl), Kuzeydeki Tribelon, Sütun Başlıklarındaki Monogramlar (Soykan, 2015)

Dini yapılarda uygulanan tribelonların zamanla tahrip olduğu belirlenmiştir. Karadeniz Ereğlisi, Orhan Gazi Camii (5.-6. yüzyıl), tribelonun güneyine inşa edilen mihrap, tribelonun güneyinde bir bölümün kapatılmasına neden olmuştur. Trilye Hagios Ioannes Theologos Pelekete Manastırı Kilisesi'nin (8. yüzyıl), kuzey ve güney haç kollarındaki tribelonlar, Amasra Fatih Camii (8.-9. yüzyıl), batıdaki tribelon (1990-2000 arasında yeniden açılmış), Trilye Fatih Camii (9. yüzyıl sonu), güneydeki ve kuzeydeki tribelon (2000 öncesinde) ve Sige Başmelekler Kilisesi'nin (9. yüzyıl) güneyindeki tribelon işlev değişikliği nedeniyle kapatılmıştır. Bunlardan sadece Amasra Fatih Camii'nde (8.-9. yüzyıl), batıdaki tribelon 2000'li yıllardan önce, restorasyon çalışmaları sırasında açılmıştır.

İşlev değişikliği ile birlikte kapatılan ya da sonradan restorasyon işlemleri ile birlikte açılan tribelonların dışında bazı tribelonların tahrip olduğu ya da yıkıldığı belirlenmiştir. Gemlik Kurşunlu Aziz Aberkios Manastırı Kilisesi (9. yüzyıl), uzun yıllar asıl işlevinin dışında kullanıldığı ve terk edildiği için tahrip olmuştur. Kilisenin doğusunda, apsiste 2000'li yıllara kadar varlığı bilinen ve çekilen fotoğraflarla belgelenen tribelonların, zamanla yıkıldığı, günümüze ulaşmadığı tespit edilmiştir. Karadeniz Ereğlisi, Orhan Gazi Camii (5.-6. yüzyıl) ve Gemlik Kurşunlu Aziz Aberkios Manastırı Kilisesi'nde (9. yüzyıl), doğudaki apsiste tribelonlar yer alırken, Amasra Fatih Camii'nde (8.-9. yüzyıl), batı cephede, nartekste ikinci katta tribelon yer almaktadır. Trilye Hagios Ioannes Theologos Pelekete Manastırı Kilisesi'nde (8. yüzyıl) kuzey ve güneydeki haç kollarında tribelon olduğu ifade edilmiştir (Mango ve Ševčenko, 1973: 248). Yapı hakkında çalışma yapan araştırmacılar da bu görüşü desteler nitelikte tribelon önerileri sunmuştur. Günümüzde kuzey ve güney haç kollarındaki tribelonlar işlev değişikliği nedeniyle kapatıldığı için görülememektedir. Sige Başmelekler Kilisesi'nde (9. yüzyıl) kuzeydeki tribelon günümüzde ayaktadır. Güneydeki tribelon ise kapalıdır. Bu alanda gerçekleştirilen çalışmalarda, naos güney duvarda da kuzeydeki ile simetrik bir tribelonun bulunduğu düşünülür.

İncelenen tribelonlar, üç farklı plan tipine sahip yapılarda uygulanmıştır. Karadeniz Ereğlisi, Orhan Gazi Camii (5.-6. yüzyıl) (üç nefli Hellenistik bazilika), Trilye Hagios Ioannes Theologos Pelekete Manastırı Kilisesi (8. yüzyıl) (kapalı Yunan haçı, gelişmiş tip) ve Trilye Fatih Camii (9. yüzyıl sonu) (kapalı Yunan haçı, gelişmiş tip), Amasra Fatih Camii (8.-9. yüzyıl) (kiborion), Gemlik Kurşunlu Aziz Aberkios Manastırı Kilisesi (9. yüzyıl) (kiborion) ve Sige Başmelekler Kilisesi (9. yüzyıl) (kiborion), tribelonların plan özelliklerine göre yapılarda uygulandığını göstermektedir. İncelenen yapılardan biri üç nefli Hellenistik bazilika, ikisi kapalı Yunan haçı planı gelişmiş tip, üçü ise kiborion planlı kilisedir.

Kısaca özetlemek gerekirse, İstanbul ve Pontos yapılarında sıkça benzeri uygulamaları görülen tribelonların, bölgedeki en erken örneği 5.-6. yüzyıl, en geç örneği ise 9. yüzyıla tarihlendirilmektedir. Bitinya ve Paflagonya'daki dini yapılarda özellikle 8.-9. yüzyıl arasında tribelonların sıkça uygulandığı görülmektedir.

KAYNAKLAR

Beck, Hans Georg. (1959). Kirche und Theologische Literatur im Byzantinischen Reich. München: CHB.

Belke, Klaus (1996). Paphlagonien und Honorias. Tabula Imperii Byzantini Band 9. Vienna: Verlag der Österreichischen Akademie der Wissenschaften.

Bouras, Charalambos. (1983). "Houses in Byzantium", Δελτίον, XAE 11 (1982-1983). 1-26. Αθηνα.

Brubaker, Leslie ve Haldon, John. (2001). Byzantium in the Iconoclast Era (ca 680-850): The Sources. An Annotated Survey. Ashgate.

Bryer, Anthony ve Winfield, David. (1985). The Byzantine Monuments and Topography of the Pontos (Dumbarton Oaks Studies 20). Washington D C.: Dumbarton Oaks Papers.

Brunoff, Nicolas. (1927). "Une Église Aux Environs de Chalcédonne", Echos d'Orient, Vol.: 26. 33-56.

Buchwald, Hans. (1969). The Church of the Archangels in Sige near Mudania. Böhlau in Wien.

Delvoye, Charles. (1976). "Sur Quelques Aspects Des Relations Entre L'Architecture Paléobyzantine De L'Anatolie De Constantinople Et De La Grèce", Revue Archéologique, Nouvelle Série, Fasc. 1, Études sur les relations entre Grèce et Anatolie offertes à Pierre Demargne, 1 (1976), pp. 143-152

Eyice, Semavi. (1968). "Kırşehir'de Üç-Ayak Adındaki Yapı Kalıntısında Araştırmalar", 125-167.

Feissel, Denis. (2006). "Chroniques d'Épigraphie Byzantine 1987-2004", Collège De France-Cnrs Centre de Recherche d'Histoire et Civilisation de Byzance Monographies, 20. Fransa-Paris.

Feld, Otto. (1967). "Noch Einmal Alexios Apokaukos und Die Byzantinische Kirche Von Selymbria (Silivri)", Byzantion, Vol. 37. 57-65.

Grossmann, Peter. (1991). "Tribelon", The Coptic Encyclopedia, Volume 1. Claremont Graduate University. School of Religion.

Gür, Durmuş. (2019). Kuzeybatı Karadeniz'de Bizans Dönemi Dini Eserler, Hacettepe Üniversitesi Sosyal Bilimler Enstitüsü (Yayınlanmamış Doktora Tezi). Ankara.

Haldon, John. (2007). Bizans Tarih Atlası (Çev. Ali Özdamar). İstanbul: Kitap Yayınevi.

Hasluck, F. W. (1906/1907). "Bithynica", The Annual of the British School at Athens, Vol. 13. British School at Athens. 285-308.

Hellenkemper, Hansgerd. (1985/1986). "Die Kirchenstiftung Des Kaisers Zenon im Wallfahrtsheiligtum Der Heiligen Thekla Bei Seleukeia" Wallraf-Richartz-Jahrbuch, Vol. 46/47. 63-90.

Hill, Stephen. (1996). The Early Byzantine Churches of Cilicia and Isauria. Birmingham Byzantine and Ottoman Monographs, Vol.1. Alders.

Hoddinott, Ralph. F. (1963). Early Byzantine Churches in Macedonia and Southern Serbia A Study of the Origins and the Initial Development of East Christian Art. London: Palgrave Macmillan.

Hoepfner, Wolfram. (1966). "Herakleia Pontike - Ereğli Eine Baugeschichtliche Untersuchung", Forschungen an der Nordküste Kleinasiens Ergänzungsbände zu den Tituli Asiae Minoris, Band II, Teil I. Wien: Graz. Hermann Böhlaus Nachf.

Janin, Raymond. (1921). "La Bithynie Sous L'Empire Byzantin", Échos d'Orient, Vol.: 20. 168-182, 301-319.

Janin, Raymond. (1975). Les églises et les monastères des grands centres byzantins: (Bithynie, Hellespont, Latros, Galèsios, Trébizonde, Athènes, Thessalonique). Paris: Institut Français D'Études Byzantines

Junker, Hermann. (1953). Giza, Der Friedhof südlich der Cheopspyramide Ostteil, Vol. 11, Wien: Rudolf M. Rohrer.

Krautheimer, Richard. (1965). Early Christian and Byzantine Architecture. Harmondsworth and Baltimore, Penguin Books.

Krautheimer, Richard. (1986). Early Christian and Byzantine Architecture. New Haven and London: Yale University Press.

Lemerle, Paul (1945). Philippos et la Macédoine orientale à l'époque chrétienne et byzantine. Paris: E. de Boccard.

Loerke, Willian ve Cutler, Anthony. (1991). "Tribelon", Oxford Dictionary of Byzantium, Vol. III. 2114.

Mango, Cyril ve Ševčenko, İhor. (1973). "Some churches and monasteries on the southern shore of the Sea of Marmara" Dumbarton Oaks Papers, Vol.: 27. 235-277.

Mango, Cyril. (2006). Bizans Mimarisi. İstanbul: Yapı Kredi Yayınları.

Mathews, Thomas F. (1971). Early Churches of Constantinople. London: The Pennysylvania State University Press.

Mathews, Thomas F. (1976). The Byzantine Churches of Istanbul, A Photographic Survey. London: The Pennysylvania State University Press.

Mathews, Thomas F. ve Hawkins, Ernest J. W. (1985). "Notes on the Atik Mustafa Paşa Camii in Istanbul and Its Frescoes", Dumbarton Oaks Papers, Vol.: 39. 125-134.

McClary, Richard Piran. (2015). "The Re-use of Byzantine Spolia in Rūm Saljūq Architecture", bfo-Journal, Vol.: 1. 14-22.

Megaw, Arthur H.S. (1964). "The Original Form of the Theotokos Church of Constantine Lips", Dumbarton Oaks Papers, Vol.: 18. 279-298.

Orlandos, A. K. (1952). βασιλική. Athens.

Ostrogorsky, Georg. (1981). Bizans Devleti Tarihi. Türk Tarih Kurumu Yayınları.

Ousterhout, Robert. (1992). "Some Notes on the Construction of Christos Ho Pantepoptes (Eski Imaret Camii) in Istanbul", Δελτίον ΧΑΕ 16 (1991-1992), Περίοδος Δ'. Στη μνήμη του André Grabar (1896-1990). 47-56.

Ousterhout, Robert. (1999). Master Builders of Byzantium. New Jersey: Princeton University Press.

Pekak, M. Sacit. (2009). Trilye (Zeytinbağı) Fatih Camisi. İstanbul: Arkeoloji ve Sanat Yayınları.

Ramsay, William M. ve Bell, Gertrude (1909). The Thousand and One Churches. London: Hodder and Stoughton.

Ramsay, William. M. (1960). Anadolu'nun Tarihi Coğrafyası (Çeviren: Mihri Pektaş). İstanbul: Milli Eğitim Basımevi.

Sodini, Jean-Pierre. (1975). "Note Sur Deux Variantes Régionales Dans Les Basiliques de Grèce et des Balkans: Le Tribèlon et L'emplacement de L'ambon", Bulletin de Correspondance Hellénique, 99/1.581-588.

Soykan, A. Nazlı. (2018). Bursa Kumyaka (Sige) Başmelekler (Archangeloi) Kilisesi, Hacettepe Üniversitesi Sosyal Bilimler Enstitüsü (Yayınlanmamış Doktora Tezi). Ankara.

Striker, Cecil L. ve Kuban, Y. Doğan. (1967). "Work at Kalenderhane Camii in Istanbul: First Preliminary Report", Dumbarton Oaks Papers, Vol. 21. 267-271.

Tafrali, Oresta. (1913). Mélanges d'Archéologie et d'Epigraphie Byzantines. Paris, P. Geuthner.

Texier, Charles. (1864). Byzantine Architecture. London: Day and Son.

Wright, J. Robert. (2009). "Iconography and Eucharistie Ecclesiology in the Apse Mosaics of San Vitale, Ravenna, and their Distant Liturgical Echo in the First Anglican Canon of 1549", Anglican and Episcopal History, Vol. 78, No. 2 (June). 219-226.

Yinsel, Serap ve Pekak, Sacit M.. (2016). Kurşunlu'da (Elegmi) Aziz Aberkios Manastırı Kilisesi, Arkeoloji ve Sanat Dergisi, Sayı: 151. İstanbul. 85-104.

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MISIRLI ŞAİR İSMAİL SABRİ PAŞA (ŞEYHU'Ş-ŞU'ARÂ') VE ONUN NEO-KLASİK ŞAİRLİĞİ

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Özet
İsmail Sabri Paşa (1854-1923), Mısırlı bir neo-klasik şair ve devlet adamıdır. On dokuzuncu yüzyılın sonlarında, Mısır'da ulusal bir bilincin doğmasına katkı sağlamıştır. Ne var ki Sabri'nin neo-klasik şairler arasındaki önemi, ilk başlarda genellikle göz ardı edilmiştir. Mamafih ilerleyen süreçte hak ettiği ilgiyi yeniden görmeye başlamıştır. İsmail Sabri, çağdaşları tarafından Şeyhu'ş-Şu'arâ' yani Şairlerin Üstadı unvanıyla taltif edilmiştir. Karakteri, fıtratı ve şiirleri dikkate alındığında, onun özü itibariyle gerçek bir vatan şairi olduğu anlaşılmaktadır. Ülkesindeki işgal günlerine tanık olmuş ve bu deneyimi onun şairlik güdüsünü alevlendirmiştir. Mamafih Sabri, diğer birçok neo-klasik şairin aksine, siyasî düşüncelerini ifade etme hususunda yeterince açık sözlü olmayı başaramamıştır. Muhtemelen bu durum, kamu hizmetindeki yüksek pozisyonunun getirdiği sınırlamalardan kaynaklanmaktadır. İsmail Sabri'nin ılımlı bir milliyetçi olduğunu öne sürmek daha doğru olacaktır. Yahut başka bir deyişle, İsmail Sabri, Mısır'da gerçekleşecek olan Panislamizm'den Mısır milliyetçiliğine geçişte karşımıza çıkan tipik figürlerden birisidir. Sabri, modern Arap edebiyatının gerçek anlamda kültür sahibi olan ilk şairleri arasındadır. Ayrıca onun Mahmut Sami el-Bârûdî'den sonra siyasî şiirle ilgilenen ikinci kişi olduğu söylenmektedir. Keza o, Arap şiirine metafizik bir nitelik kazandıran ilk modern şairdir. Sabri'nin dikkate değer bireysel şiirleri, modern lirizmin başlangıcını temsil etmektedir. Fransız edebiyatıyla tanışmasının ardından, şiirin şairin hayatını ve fikirlerini yansıtması gerektiğini düşünmeye başlamıştır. Sabri, şairin birkaç beyitle yetinerek, anlatmak istediğini ifade edebilmesi gerektiğini savunmaktadır. Onun bu anlayışı, bir yenilik olarak değerlendirilebilir. İsmail Sabri, bu nedenle genellikle şiirlerini kısa tutmuştur. Sabri'nin şairliği, itiraf etmek gerekirse, oldukça uzun bir süre boyunca Ahmet Şevki'nin popülaritesinin gölgesinde kalmıştır. Öte yandan Sabri, Şevki kadar dikkat çekmeyi başaramasa da şairlik hususunda ona ilham vermeye muvaffak olmuştur. İsmail Sabri, Arap neo-klasik şiirinde çok önemli bir isimdir. Bu çalışmada, İsmail Sabri'nin hayatına uzunca değinmekten ziyade, onun neo-klasik şairliğinin tetkik edilmesi hedeflenmektedir.
Anahtar Kelimeler: Arap Dili ve Edebiyatı, Modern Arap Edebiyatı, Modern Arap Şiiri, İsmail Sabri

EGYPTIAN POET ISMĀ'ĪL SABRĪ PASHA (SHAYKH AL-SHU'ARĀ') AND HIS NEO-CLASSIC POETRY

Abstract
Ismā'īl Sabrī Pasha (1854-1923) was an Egyptian neo-classical poet and statesman. In the late nineteenth century, he contributed to the emergence of a national consciousness in Egypt. However, Sabrī's importance among neo-classical poets was often overlooked at first.

Nevertheless, he has started to receive the attention he deserves in the following period. Ismā‘īl Sabrī was honored by his contemporaries with the epithet of Shaykh al-Shu‘arā’, which means the Master of Poets. Considering his character, and poetry, it is understood that he was a real patriotic poet. He witnessed the days of occupation in his country and this experience motivated him to compose poetry. However, unlike many other neo-classical poets, Sabrī failed to be frank enough in expressing his political views. Presumably this was due to the limitations imposed by his high position in the public service. It would be more accurate to suggest that Ismā‘īl Sabrī was a moderate nationalist. Or in other words, Ismā‘īl Sabrī was one of the typical figures that we encounter in the transition process of Egypt from Pan-Islamism to Egyptian nationalism. Sabrī was among the first truly cultured poets of modern Arabic literature. It is also said that he was the second person interested in political poetry after Mahmūd Sāmī al-Bārūdī. He was also the first modern poet to give a metaphysical character to Arabic poetry. And we must say that, Sabrī’s remarkable individual poems represent the beginning of modern lyricism. After becoming acquainted with French literature, he began to think that poetry should reflect the poet’s life and ideas. He argued that the poet should be able to express what he wants to tell by being content with a few couplets. His aforementioned thought can be considered as an innovation. For this reason, Ismā‘īl Sabrī generally kept his poems short. Sabrī’s poetry was overshadowed by the popularity of Ahmad Shawqī for quite some time. On the other hand, although Sabrī did not manage to attract as much attention as Shawqī, he succeeded in inspiring him with his poetry. Ismā‘īl Sabrī was a very important figure in the neo-classical Arabic poetry. Therefore this study aimed to examine Ismā‘īl Sabrī’s neo-classical poetry rather than to dwell on his biography.
Keywords: Arabic Language and Literature, Modern Arabic Literature, Modern Arabic Poetry, Ismā‘īl Sabrī

Giriş

İsmail Sabri Paşa (1854-1923), Mısırlı bir neo-klasik şair ve devlet adamıdır. On dokuzuncu yüzyılın sonlarında, Mısır’daki ulusal bilincin doğmasına katkı sağlayan şairlerden birisi de odur. Keza modern Arap edebiyatının gelişimine sağladığı katkılar açısından da son derece mühim bir isimdir. Ne var ki Sabri’nin neo-klasik şairler arasındaki önemi, ilk başlarda genellikle göz ardı edilmiş, hatta kısa bir süre sonra unutulmuştur. Mamafih ilerleyen süreçte onun hak ettiği ilgiyi yeniden görmeye başladığı anlaşılmaktadır. İsmail Sabri, aynı zamanda çağdaşları tarafından Şeyḫu’ş-Şu‘arâ’ yani Şairlerin Üstadı namıyla da taltif edilmiştir. Şahsiyeti, fıtratı ve edebî ürünleri dikkate alındığında, onun özü itibariyle gerçek bir vatan şairi olduğunu söylemek mümkündür. Ülkesindeki işgal günlerine tanıklık etmiş ve bu deneyimi onun şairlik güdüsünü alevlendirmiştir. Vatanperverliği yüceltmeyi ve sömürgeciliğe karşı mücadele vermeyi arzuladığı kesindir. Mamafih Sabri, diğer birçok neo-klasikçinin aksine, bu hususta yeterince açık sözlü olmayı başaramamıştır. Belki de bu durumu, kamu hizmetindeki yüksek pozisyonunun getirdiği hassasiyete yormak en doğrusudur. Nitekim Mısır’da İngiliz vesayetine karşı şiddetli tepkilerin meydana gelmesine yol açan Denişvay olayı gerçekleştiğinde, sessiz kalmayı tercih etmiş; ama emekli olduğunda fikirlerini daha özgürce ifade etme hususunda cesaret gösterebilmiştir. Yine de onun ılımlı bir milliyetçi olduğunu öne sürmek daha isabetli olacaktır.

Yahut başka bir deyişle, İsmail Sabri'nin Mısır'da gerçekleşecek olan Panislamizm'den Mısır milliyetçiliğine geçişte karşımıza çıkan tipik figürlerden birisi olduğunu söylemek mümkündür[1].

Bu çalışmada, İsmail Sabri'nin hayatına uzunca değinmekten ziyade, onun neo-klasik şairliğinin tetkik edilmesi hedeflenmektedir. Arap dünyasında dahi hak ettiği ilgiyi görememiş olan Sabri, batılı akademisyenlerin de dikkatini yeterince çekememişe benzemektedir. Keza İsmail Sabri hakkında herhangi bir müstakil Türkçe çalışmaya da ne yazık ki tesadüf edilmemektedir. Bu noktada, Rahmi Er'in İslam Ansiklopedisinde kaleme aldığı İsmâil Sabri Paşa adlı madde, büyük bir eksikliği gidermektedir[2]. Ayrıca Ahmet Kâzım Ürün'ün çağdaş Arap edebiyatının öne çıkan şahsiyetleri hakkında münferit başlıklar halinde bilgiler aktardığı Modern Arap Edebiyatı adlı kıymetli çalışmasında, İsmail Sabri'nin ele alındığı iki sayfalık bir bölüm bulunmaktadır[3]. Keza Ahmet Savran'ın 19. YY. Osmanlı Döneminde Yeni Arap Edebiyatı adlı kitabında, İsmail Sabri'ye tahsis edilmiş başlık altında, takriben iki sayfalık malumat bulunmaktadır[4]. Öte yandan istikbalde Sabri'nin divanı tercüme edilirse yahut onun edebiyatçılığını her yönüyle ele alan doktora tezi seviyesinde kapsamlı bir çalışma yapılırsa, modern Mısır şiirinin gelişiminin de daha iyi anlaşılması mümkün hale gelebilecektir.

İsmail Sabri Paşa'nın Hayatı

İsmail Sabri, 16 Şubat 1854'te Kahire'de dünyaya gelmiştir. Temel eğitimini doğduğu kentte alan Sabri'nin gençlik günlerinde, onun ilham kaynağı olan Mahmut Sami el-Bârûdî (ö. 1904) vatanseverlik bayrağını taşımayı üstlenmiş kişi olarak temayüz etmektedir. Delikanlılık yılları Hidiv İsmail Paşa (ö. 1879) dönemine denk gelen Sabri, çocukluk günlerinde evinde şiir söyleme hususunda rehberlik görebileceği bir ortam bulduğu için, kendisine esin kaynağı olarak seçtiği el-Bârûdî'den aslında daha şanslıdır[5]. Şairin yaşamındaki en önemli kırılma anı ise, adına methiyeler nazmettiği Hidiv İsmail Paşa'nın himayesiyle, Fransa'ya gönderilen öğrenci heyetine iştirak etmesinin ardından vuku bulmuştur. Netice itibarıyla 1874 senesinde, Fransa'ya Aix-en-Provence Üniversitesinde hukuk eğitimi almak üzere gönderilmiştir. Söz konusu fırsat, şaire kendisini gerçekleştirmesi hususunda son derece büyük bir imkân sağlamıştır. İsmail Sabri, bu süreçte Fransız kültürünü yakından tanıma olanağı bulmuş, Fransız edebiyatının zenginliğinden istifade etmiş ve 20 Mayıs 1878 tarihinde hukuk diplomasını alarak Mısır'a geri dönmüştür. Ülkesine dönüş yaptığı yıl itibariyle, bilfiil mahkemelerde görev almaya başlamış ve birkaç kez görev yeri değiştirmiştir. 1896 senesinin başında 1899'a kadar görevde kalacağı İskenderiye valiliğine atanmıştır. Bu vazifesinin ardından, Adalet Bakanlığı'nda vekil kadrosu almayı başarmıştır. 1907 senesinde ise emekliliğe ayrılmış ve sanatını daha özgür şekilde icra etme fırsatı bulmuştur.

[1] Abdurrahman er-Râfi'î, Şu'arâ'u'l-vaṭaniyye, (Mısır: Hindâvî, 2020), 39-50.; J. Brugman, An Introduction to the History of Modern Arabic Literature in Egypt (Leiden: E. J. Brill, 1984), 33-35.

[2] Rahmi Er, "İsmâil Sabri Paşa", Türkiye Diyanet Vakfı İslâm Ansiklopedisi (İstanbul: TDV Yayınları, 2001), 23/120-121.

[3] Ahmet Kâzım Ürün, Modern Arap Edebiyatı (Konya: Çizgi Kitabevi Yayınları, 2015), 28-29.

[4] Ahmet Savran, 19. YY. Osmanlı Döneminde Yeni Arap Edebiyatı (Erzurum: Atatürk Üniversitesi Fen-Edebiyat Fakültesi Yayını, 1991), 99-101.

[5] Muhammed Sabri, İsmâ'îl Ṣabrî: Ḥayâtuhu ve şi'ruhu, (b.y.: Maṭba'atu'ş-Şebâb [Muhammed Abdülaziz eş-Ṣadr], 1341/1923), 9.

Birinci Dünya Savaşı patlak verdiğinde, İsmail Sabri suskunlaşmış ve bu sessizliği ölünceye kadar devam etmiştir. Şair, 16 Mart 1923 tarihinde, henüz altmış dokuz yaşındayken Kahire'de hayata veda etmiştir[6].

İsmail Sabri Paşa'nın Neo-Klasik Şairliği

İsmail Sabri'nin şiirsel yeteneği, o henüz daha on altı yaşında bir öğrenciyken kendini göstermiştir. Sabri, Arap dilini canlandırmayı ve Arapça şiirlere revaç kazandırmayı hedefleyen ve eṭ-Ṭahṭâvî (ö. 1873) tarafından Hidiv İsmail Paşa'nın izniyle kurulmuş olan Ravḍatu'l-Medâris adlı dergide, 1871 yılında, şiirlerini yayınlamaya başlamıştır. Genç şaire tecrübe kazandırması ve tanınırlığına katkı sağlaması açısından, bu şiirlerin önemi büyüktür. Onun mezkûr eserlerinde, Abbâsî dönemi şairlerine duyduğu hayranlığın izlerini okumak mümkündür. Bu ürünlerinde tevriye ve te'rîḥ gibi alışıldık belagat unsurlarından istifade ettiği gözlemlenmektedir. Onun mevzu bahis temayülü olgunluk döneminde de devam edecektir. Belirli münasebetlerle nazmettiği tehniye, mersiye yahut siyasî hadiselere ilişkin şiirleri, şairin divanının büyük bir kısmını teşkil etmektedir. Öte yandan döneminde gelişim gösteren çağdaş Fransız şiiriyle temas kurması, şairin düşünce dünyasının şekillenmesine olumlu katkı sağlamışa benzemektedir. Bu durum, bilhassa ülkesinin içtimaî ve siyasî meselelerine yönelik algılarını kuvvetlendirmiş ve insanlığın kaderi hakkındaki düşüncelerini zenginleştirmiştir. Ayrıca Sabri'nin Fransız romantik şiirinden de etkilendiği düşünülmektedir. Nitekim Sabri, teknik açıdan geleneksel gibi görünmelerine rağmen oldukça kişisel olan bazı şiirler kaleme almıştır. Onun bu ürünlerinin, yirminci yüzyılın başlarındaki neo-romantik şairlerin şiirleri için bir ön hazırlık mesabesinde görülmesi mümkündür. Örneğin; bu bağlamda Sabri'nin Maḳarru'l-ġazâl namıyla tanınan şiiri zikredilebilir. Mamafih hem Fransa'da bulunmasına hem de uzunca bir müddet Avrupai bir şehir olan İskenderiye'de Avrupalılarla temaslar kurmasına karşın, Sabri'nin şiirlerinde yoğun bir Avrupa edebiyatı etkisi olduğu söylenemez. Son tahlilde, bazı istisnalar göz ardı edildiğinde, İsmail Sabri'nin klasik şairlerin şiirlerine özenen gerçek bir neo-klasikçi olduğunu söylemek doğru olacaktır[7].

İsmail Sabri, zamanının munâsebât şiirlerine düşkün şairlerinden bir yönüyle ayrılmaktadır. Nitekim o, Mısır siyasetine yön veren dönemin iki gücünün, yani Osmanlı ve İngiltere'nin etkisine taviz göstermek istemeyen bir ulusalcıdır. Sabri'nin şiirleri arasında, Sultan II. Abdülhamid (ö. 1918)'e yahut onun hizmetindeki devlet ricaline adanmış herhangi bir kasideye rastlanmamaktadır. Öte yandan Sabri'nin şiirde kullandığı temalar arasında, aşk, ölüm ve vatan unsurlarını saymak mümkündür. Daha incelikli bir tanımlamayla, yaratıcıya duyduğu gizemli iman, kadınlara beslediği şefkatli duygular ve gerçek bir vatanseverlik, onun şiirlerinin alametifarikasıdır. Halk dilinde birçok şiir nazmeden İsmail Sabri, ileride şöhrete kavuşarak kendisinden daha popüler hale gelecek olan Ahmet Şevki (ö. 1932) ve Hafız İbrahim (ö. 1932) gibi pek çok şaire de ilham kaynağı olmuştur. İsmail Sabri'nin şairliğinin üstün yönü, tabii bir imgelem çerçevesinde ve güzel bir üslupla ifade edilen derinlikli düşünceleridir. Çağdaşlarının üretimiyle mukayese edildiğinde, Sabri'nin şiir mirasının fazla hacimli olmadığı görülmektedir.

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[6] Muhammed Mendûr, Muḥâḍarât 'an İsmâ'îl Ṣabrî (Windsor: Hindâvî, 2019), 11.; Hayreddîn ez-Ziriklî, el-A'lâm (Beyrut: Dâru'l-'İlm li'l-Melâyîn, 2002), 1/315.; Ahmet Savran, 19. YY. Osmanlı Döneminde Yeni Arap Edebiyatı, 99-101.

[7] U. Rizzitano, "Ismâ'il Ṣabrî Pasha", The Encyclopaedia of Islam (Leiden: E. J. Brill, 1997), 4/194-195.; Ahmet Kâzım Ürün, Modern Arap Edebiyatı, 28-29.; J. Brugman, An Introduction to the History of Modern Arabic Literature in Egypt, 34.; Rahmi Er, Modern Mısır Romanı-I (Ankara: Hece Yayınları, 2015), 26.

Muhtemelen bu durumun ardında, Sabri'nin yalnızca kendisini memnun etmek maksadıyla şiir söylemiş olması ve kendisine bildirilen talepleri görmezden gelmesi yatmaktadır. Edebiyat münekkitleri, onun şiirlerini, duygusal ve ruhsal açıdan kapsayıcı, düşünceleri hassas ve betimlemeleri hoş şeklinde değerlendirmektedir[8]. İsmail Sabri'nin en güzel manzumelerinin, gazel, nesîb, tasvir ve hikmet temalarında olduğu düşünülmektedir. Sağlam üslubu, kolay dili ve girizgâhlarına önem vermesi bakımından, Abbâsî dönemi şairi el-Buḥturî (ö. 284/897)'den büyük ölçüde etkilenmiş olduğu ortadadır. Nitekim ona Mısır'ın Buḥturî'si lakabının verilmesi de buradan mülhemdir[9].

İsmail Sabri, yurtdışında aldığı eğitimi hasebiyle, modern Arap edebiyatının gerçek anlamda kültür sahibi olan ilk şairleri arasında addedilmektedir. Ayrıca onun Mahmut Sami el-Bârûdî'den sonra siyasî şiirle ilgilenen ikinci kişi olduğu söylenmektedir. Keza bu bağlamda Sabri'nin, kadim Mısır kültürünün yüceltilmesi hususunda öncülüğü üstlenen el-Bârûdî'nin izinden gittiğinin hatırlatılmasında da fayda vardır. Ayrıca onun Arap şiirine metafizik bir nitelik kazandıran ilk modern şair olduğunu söylemek mümkündür. Keza Sabri'nin dikkate değer kişisel şiirleri, modern lirizmin başlangıcını temsil etmektedir. Fransız edebiyatıyla tanışmasının ardından, nazmın şairin yaşamını ve fikirlerini yansıtması gerektiğini düşünmeye başlaması ve şairin birkaç beyitle iktifa ederek muradını takrire muktedir olması gerektiğini savunması, bir yenilik telakki edilebilir. Bu nedenle genellikle şiirlerini kısa tuttuğu gözlemlenmektedir. Şairin Ahmed ez-Zeyn tarafından Dîvânu İsmâ'îl Ṣabrî (1357/1938) adı altında tedvin edilen en mühim şiirleri yirminci yüzyılda nazmedilmiştir. İsmail Sabri'nin şairliği, itiraf etmek gerekirse, oldukça uzun bir süre boyunca Ahmet Şevki'nin popülaritesinin gölgesinde kalmıştır. Öte yandan Sabri, Şevki kadar dikkat çekmeyi başaramasa da şairlik hususunda ona ilham vermeye muvaffak olmuştur. Fasih Arapçayla kaleme aldığı manzumelerinin yanı sıra, yerel konuşma dilinde de bazı şiirler nazmetmiştir. Bu kısa şiirlerinden bazıları daha sonra bestelenmiş ve 'Abduh el-Ḥamûlî (ö. 1901) tarafından okunmuştur. Ayrıca İsmail Sabri'nin Alfred de Musset (ö. 1857), Alphonse de Lamartine (ö. 1869) ve Paul Verlaine (ö. 1896)'in şiirlerini tercüme ettiği bilinmektedir[10].

Sonuç

Arap neo-klasik şiirinin gelişimi açısından son derece önemli bir isim olan İsmail Sabri Paşa'nın Mısır'da ulusal bir bilincin doğmasına sağladığı katkı yadsınamaz boyuttadır. Ne var ki onun Arap şiirinin gelişimindeki misyonu uzunca bir müddet yeterince takdir görmemiş ve şairin potansiyeli Ahmet Şevki'nin yüksek popülaritesinin gölgesinde kalmıştır. İsmail Sabri, Mısır bürokrasisinde ulaştığı yüksek mevkiin sınırlamaları nedeniyle, düşünce ve hissiyat noktasında gerçek bir vatanperver olmasına karşın, siyasî fikirlerini açıkça ifade etme hususunda yeterince serbest bir hareket imkânı bulamamıştır. Öyle ki bu durum, emekliliğinin ardından düşüncelerini daha özgürce ifade etme olanağı bulmasına kadar geçerliliğini korumuştur.

[8] U. Rizzitano, "Ismâ'il Ṣabrî Pasha", 4/194-195.; Ahmet Kâzım Ürün, Modern Arap Edebiyatı, 28-29.
[9] Ahmet Savran, 19. YY. Osmanlı Döneminde Yeni Arap Edebiyatı, 99-101.
[10] Necîb Tevfik, İsmâ'îl Ṣabrî Bâşâ, Şeyḫu'ş-Şu'arâ': Ḥayâtuhu ve eşeruhu fî'l-edeb ve fî 'aṣrihi, 1854-1923, (Kahire: el-Hey'etu'l-Mışriyyetu'l-'Âmme li'l-Kitâb, 1985), 60.; P. C. Sadgrove, "Ṣabrī Pasha, Ismāil (1854-1923)", Encyclopedia of Arabic Literature, ed. J. S. Meisami - Paul Starkey (Londra-New York: Routledge, 1998), 2/673.; Rahmi Er, "İsmâil Sabri Paşa", 23/120-121.; Bk. İsmâ'îl Ṣabrî, Dîvânu İsmâ'îl Ṣabrî Bâşâ, haz. Ahmed ez-Zeyd - Ṣâḥibu'l-'İzze Hasan Rıfat Bek (Kahire: Maṭba'atu Leceneti't-Te'lîf ve't-Terceme ve'n-Neşr, 1357/1938).; Şükran Fazlıoğlu, Arap Romanında Türkler (İstanbul: Küre Yayınları, 2015), 112.

Netice itibarıyla ılımlı bir milliyetçi olarak değerlendirebileceğimiz İsmail Sabri'nin, Mısır'ın Panislamizm'den Mısır milliyetçiliğine geçişi sürecinde karşımıza çıkan tipik figürlerden birisi olduğunu söylemek mümkündür.

Ardında bıraktığı şiirsel mirası incelendiğinde, Abbâsî dönemi şairlerinden, bilhassa da el-Buḥturî'den etkilendiği anlaşılan Sabri, nazmettiği ilk şiirlerinde dahi alışıldık belagat unsurlarından yararlanmış ve bu eğilimini olgunluk döneminde de devam ettirmiştir. İsmail Sabri'nin şiirlerinde Avrupa edebiyatlarının muazzam bir etkiye sahip olduğunu söylemek esasen çok doğru olmayacaktır. Yine de onun Fransa'da gördüğü eğitim, şairin düşünce dünyasını zenginleştirmiş ve şairliğini belirli açılardan etkilemiştir. Zira onun geleneksel gibi görünen bazı şiirlerinin, aslında dikkat çekecek derecede bireysel ürünler olduğu ortadadır. Binaenaleyh onun bu minvaldeki ürünlerini, yirminci yüzyılın başlarındaki neo-romantik şiirlerin hazırlayıcısı olarak değerlendirmek mümkündür. İsmail Sabri, şiirlerinde genellikle aşk, ölüm ve vatan temalarına yer vermektedir. Doğal bir imgelem çerçevesinde, güzel bir üslupla düşüncelerini ifade etmeye kadir olması, onun şairliğinin üstün yönüdür. Çağdaşlarına nazaran Sabri'nin şiirsel mirası çok hacimli değildir. Mamafih edebiyat eleştirmenleri tarafından genellikle iyi şekilde değerlendirilmiştir. O, modern Arap edebiyatının gerçek manada kültürlü olan ilk şairlerindendir. Keza kadim Mısır kültürünün yüceltilmesindeki öncülerden birisi de odur. Arap şiirine metafizik bir incelik kazandıran ilk modern şair olmasının yanı sıra, kişisel nitelikteki şiirleri Arap edebiyatında modern lirizmin başlangıcının mümessili olarak nitelendirilmektedir.

Kaynakça

Brugman, J.. An Introduction to the History of Modern Arabic Literature in Egypt. Leiden: E. J. Brill, 1984.

Er, Rahmi. "İsmâil Sabri Paşa". Türkiye Diyanet Vakfı İslâm Ansiklopedisi. 23/120-121. İstanbul: TDV Yayınları, 2001.

Er, Rahmi. Modern Mısır Romanı-I. Ankara: Hece Yayınları, 2015.

Fazlıoğlu, Şükran. Arap Romanında Türkler. İstanbul: Küre Yayınları, 2. Basım, 2015.

Mendûr, Muhammed. Muḥâḍarât 'an İsmâ'îl Ṣabrî. Windsor: Hindâvî, 2019.

er-Râfi'î, Abdurrahman. Şu'arâ'u'l-vaṭaniyye. Mısır: Hindâvî, 2020.

Rizzitano, U.. "Ismâ'il Ṣabrî Pasha". The Encyclopaedia of Islam. 4/194-195. Leiden: E. J. Brill, 1997.

Ṣabrî, İsmâ'îl. Dîvânu İsmâ'îl Ṣabrî Bâşâ. haz. Ahmed ez-Zeyd - Ṣâḥibu'l-'İzze Hasan Rıfat Bek. Kahire: Maṭba'atu Leceneti't-Te'lîf ve't-Terceme ve'n-Neşr, 1357/1938.

Sabri, Muhammed. İsmâ'îl Ṣabrî: Ḥayâtuhu ve şi'ruhu. b.y.: Maṭba'atu'ş-Şebâb [Muhammed Abdülaziz eş-Ṣadr], 1341/1923.

Sadgrove, P. C.. "Ṣabrī Pasha, Ismāil (1854-1923)". Encyclopedia of Arabic Literature. ed. ed. Julie Scott Meisami - Paul Starkey. 2/673. Londra-New York: Routledge, 1998.

Savran, Ahmet. 19. YY. Osmanlı Döneminde Yeni Arap Edebiyatı. Erzurum: Atatürk Üniversitesi Fen-Edebiyat Fakültesi Yayını, 1991.

Tevfik, Necîb. İsmâ'îl Ṣabrî Bâşâ, Şeyḫu'ş-Şu'arâ': Ḥayâtuhu ve eseruhu fî'l-edeb ve fî 'aṣrihi, 1854-1923. Kahire: el-Hey'etu'l-Mışriyyetu'l-'Âmme li'l-Kitâb, 1985.

Ürün, Ahmet Kâzım. Modern Arap Edebiyatı. Konya: Çizgi Kitabevi Yayınları, 2015.

ez-Ziriklî, Hayreddîn. el-A'lâm. 8 Cilt. Beyrut: Dâru'l-'İlm li'l-Melâyîn, 2002.

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HERAT SARAYININ ÖNEMLİ HATTATI: MEVLÂNÂ MÂ'RÛF BAĞDÂDÎ

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ÖZET
XV. yüzyıl Herat nakkaşhanesinin gelişmesinde, zengin sanatçı kitlesi ve özgün eserlerin hazırlanmasında Celâyirî sarayında yetişmiş sanatçıların büyük katkısı vardır. Ca'fer Tebrizî'nin (öl.1455) Arz'ında hattat Mevlâna Ma'rûf Bağdâdî (öl.1427-1428) ile ilgili rastladığımız ilk bilgi şudur: Celâyirî hükümdarı Sultan Ahmed'in (öl.1410) hizmetinde Bağdat'ta çalışmış, sarayın bilinen yetenekli hattatlarından Mevlâna Sa'duddin Iraqi'nin öğrencisi olmuştur. Bağdâdî mahlası bize onun bu bölgede doğduğunu işaret eder. Daha sonra Ma'rûf, Ahmed Celâyirî hizmetinden çıkarak, hükümdarın kızıyla evlenen İskender Sultan'ın (öl.1415) yanına İsfahan sarayına gelir. Ma'rûf sadece hattat değil, farklı ilim alanlarından haberdar, yetenekli bir kişi olarak tanınır. Vefat edene kadar İsfahan'da bulunsada, İskender Sultan'ın 1412 yılına kadar himayesindeki sanatçıların çoğunu Şiraz'da bıraktığı bilinir. Sultan Şahruh (öl.1447) Şiraz'ı alınca sarayda bulunan sanatçılar Herat Sarayı'na getirilmiştir. Saraya getirilen sanatçılar arasında Mevlânâ Mâ'rûf da vardır. 1427 yılında Hurufîlerin Sultan Şâhruh'u öldürmeye teşebbüsü sonrasında hattatın bu suikasta dahil olduğu gerekçesiyle Herat kalesinin bir kuyusunda boğularak öldürüldüğü söylenir. Hattatın vefatına kadar Herat'ta yaşadığı, Sultan Şâhruh ve Baysungur Mirza (öl.1433) için çeşitli eserleri istinsah ettiği bilinir. Hattatın Sultan Şâhruh için istinsah ettiği ilk eseri 1417-1418 yılına ait Hâfız-i Ebrû'nun (öl.1430) Külliyat-ı Tarih'idir. 1421 tarihli ikinci eser Nizami Gencevi'nin (öl.1209) Hamse Mesnevisi'dir. Her iki eserde de kendinden bahsederken Ma'rûf Bağdâdî mahlasını kullanmıştır. Yukarıda bahsi geçen eserler haricinde Bağdat, Şiraz ve Herat'ta hattatın diğer hamileri için hazırladığı eserler hakkında fazla bilgiye rastlamayız.
Anahtar Kelimeler: Sultan Ahmed Celâyir, İskender Sultan, Sultan Şâhruh, Herat, Mevlânâ Mâ'rûf

MAWLANA MA'RUF BAGHDADI, THE CRUCIAL CALLIGRAPHIST OF HERAT PALACE

ABSTRACT
The artists educated in Jalayiri Palace have great contribution to the development of 15th century Herat Kitabhana (Muralist/ Painter House) and composing fertile artists and original works of art. In the Arzadasht of Ja'fer Tebrizi (d.1455), the first info we meet as to Mawlana Ma'rûf Baghdadi (d.1427-1428) is as follows: He worked under the auspices of Sultan Ahmed (d.1410), the Jalayiri ruler and was the disciple of Mawlana Sa'duddin Iraqi, one of the famous, talented calligraphists in the palace. His pseudonym "Baghdadi" indicates us he was born in this region. Later on Ma'ruf left the service under Ahmed Jalayiri and moved to the palace of Iskandar Sultan (d.1415) who had married the ruler's daughter. Ma'ruf is known not only as a calligraphist but also a talented person who is informed about various fields of science. Despite the fact that Iskandar Sultan lived in Isfahan till death, he left most of the artists under his auspices in Shiraz.

When Sultan Shahrukh (d.1447) captured Shiraz, the artists present in the palace were transferred to Herat Palace. Among the artists employed in the palace Mawlana Ma'ruf existed too. It is told that in 1427, after the Hurufis' attempt to murder Sultan Shahrukh, the calligraphist was choked in a borehole of Herat Palace on the grounds that he had been involved in the attempt. It is known the calligraphist had copied various pieces of art for Sultan Shahrukh and Mirza Baysunghur (d.1433) lived in Herat until he passed away. The first work of art he copied for Sultan Shahrukh is Hafiz-ı Abru's (d.1430) Kulliyat-ı Tarikhi pertaining to the years 1417-1418. The second work of art, dated 1421, is Khamsa by Nizami Ganjavi (d.1209). In both works of art he employed the pseudonym "Ma'ruf Baghdadi". Except the above mentioned pieces of art, we are unable to find much info about the other works of art the calligraphist produced in Baghdat, Shiraz and Herat for other tutelars.
Keywords: Sultan Ahmed Jalayir, Iskandar Sultan, Sultan Shahrukh, Herat, Mawlana Ma'ruf

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MEVLÂNÂ ÖRNEĞİNDE VARLIK BİRLİĞİ ANLAYIŞININ KUANTUM AÇILIMI

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Özet
Varlık birliği (vahdet-i vücut) yaratılan ve onu idare edenin birliğini, Hak'tan başka varlığın olmadığını savunan bir görüştür. Her şey O'nda ve O'ndandır. Tek bir gerçeklik vardır o da Hak'tır. Görünen her şey O değil, O'nun tecellisidir. O isim ve sıfatlarıyla eserlerine nüfuz etmekte ve O'ndan başka her şey zatları itibariyle mutlak yokluktadır. Nitekim âlem ezelî ve ebedî yokluğu ifade etmektedir. Tek olan varlık niteliği bakımından tecelli ettiğinde çok olmamakta, çünkü Hak tek bir gerçekliktir ve âlemin özünü oluşturmaktadır. Varlık birliği anlayışında Hak da halk da epistemolojk olarak aynıdır. Vahdet açısından bakıldığında O Hak'tır, isim ve sıfatlarıyla âleme yansıması açısından halktır.
Mevlânâ'da varlık birliği görüşü onun bakış açısı ve birikimiyle şekillenmiştir. O karmaşık ve sistemli bir şekilde bu anlayışı anlatmak yerine şiir, hikâye ve alegorik bir anlatımı kullanarak sade bir şekilde ortaya koymuştur. Mevlânâ'nın varlık birliği anlayışında varlık gerçekte yoktur, âlem Hakk'ın tecellisidir. Onun eserlerinde Hak'ta yok olmak, yokluğa ulaşmak kavramları öne çıkmaktadır. Fizikteki bazı kavramlar ile Mevlânâ'nın eserlerindeki varlık birliği terimlerinin (fena, yokluk, isim ve sıfatlar, aşk, vaktin oğlu, hakikat-i Muhammediye) benzer olduğunu fark ettik. Bu çalışmada Mevlana'daki varlık birliği görüşünün kuantum mekaniği ile örtüşen taraflarını ortaya koymaya çalıştık. Çalışmada felsefe, edebiyat, kuantum fizik ile karşılaştırmalı bir sentez oluşturmaya gayrettik. Kesinlik ilkesinin ve determinizmin olmadığı, belirsizlik ilkesiyle hareket eden kuantum mekaniği ile varlık birliği görüşü arasındaki paralellikleri açıklamaya çalışacağız.
Anahtar Kelimeler: Tasavvuf, Varlık birliği, Mevlana, Kuantum fizik

THE QUANTUM EXPANSION OF THE APPROACH OF THE UNITY OF BEING IN THE EXAMPLE OF MAWLANA

Abstract
The unity of existence (unity of body) is an opinion that argues that the one who is created and manages it that there is no existence other than Allah. Everything is in him and from him. There is only one reality and that is God. Everything that appears is not him, but his manifestation. He permeates his Works with his names and attributes and everything other than him is in absolute non-existence. As a matter of fact the world expresses eternal and eternal non-existence. When the single being is manifested in terms of its quality, it is not many. Because the truth is a single reality and constitutes the essence of the universe. Opinion of unity of existence both the right and the people are the same. From the point of view of unity he is the reality and in terms his reflection to the world with his names and attributes it is the people.
Mawlana's view of unity of existence has been shaped by his perspective and experience. Instead of expressing this vie in a complex and systematic way, he told it simply with poetry, stories and an allegorical expression. In Mawlana's understanding of unity of existence, existence doesn't actually exist, according to him, the universe is the manifestation of God.

In his works the concepts of disappearing in the reality and reaching non-existence are frequently used in examples. It has been seen that some concepts in physics and the terms of unity of existence in Mawlana's works (absence, names and attributes, love, son of time, hakikat-i Mohammadiyye) are similar. In this study e tried to put the aspects of Mawlana's view of unity of being that overlap with quantum mechanics. We tried to create a comparative synthesis with philosophy literature and quantum physics. We will try to explain the parallels between quantum mechanics which acts with the uncertainty principle here there is no certainty and determinism and the unity of existence view.
Keywords: Mysticism, Unity of existence, Mawlana, Quantum physic

Giriş

Varlık birliği doktrini Hakk'ı zat yönüyle aşkın, esma ve sıfatlar yönünden içkin kabul eden, hakikatte tek bir varlığın olduğunu savunan bir görüştür. Bu görüşte tek varlık Hak'tır, varlık ise O'nun isim ve sıfatlarının tecellisidir.

Varlık birliğine göre var olan tek şey "Vücud-ı Mutlak" tır. Hiçbir şey ezelî ve ebedî varlık olan Tanrı'dan bağımsız değildir. Vahdet-i vücut kuramcıları her şeyde Tanrı'nın varlığını görme eğilimindedirler ve onlara göre âlem sürekli değişim içindedir. Allah kâinatta farklı şekillerde yansıyan yegâne cevherdir (Kırkkılıç, 1996: 174-177). Muhyiddin Arabî'nin vahdet-i vücut görüşü "*Varlık birdir, o da Hakk'ın varlığıdır*." (Demirli, 2012: 432) fikrine dayanır. Arabî'ye göre Hakk'ın dışındaki hiçbir varlığın gerçekliği yoktur. Âlem onun vücududur; ama O değildir. Hallac'ın varlık birliği anlayışında her şeyin O'nda olduğu ve O'dan başkasının bulunmadığı düşüncesi vardır. Hallac'a göre halk ile Hak arasında bir ayrılık yoktur. Vahdaniyet bütün varlığı kuşatmıştır. İnsan dış dünya ile bağlarını koparabildiğinde gerçek varlığa ulaşabilir. Böyle bir makamda senlik-benlik yok olmakta ve tek hakikat kalmaktadır. Âlemdeki tek gerçek olarak Hakk'ı kabul eden Gazali'nin varlık birliği anlayışında O'nun varlığı dışında her şey yokluktur. Ecsamın yok olması bir zaman dâhilinde değildir, ezelî ve ebedî yokluktur. Hakk'ın dışında bir şeyin varlığını kabul etmeyen Gazali'de varlık birliği anlayışı sistemli değildir (Erdem 1990: 34-37). Gazali'ye göre Hak kendini isim ve sıfatlarla izhar etmektedir.

Pir Sultan Abdal'ın şiirlerinde varlık birliği görüşü varlıktan arınıp Hakk'a ulaşmak ve onu müşahede etmek biçiminde işlenmektedir. Pir Sultan Abdal tüm varlığını Hak yolunda yok edip kendini Allah'a teslim etmektedir.

Pir Sultan'ım Hakk'a niyaz ederim
Erenler rahına doğru giderim
Külli varım Hakk'a teslim ederim
Hakk'ın cemalini gördüm bu gece

(Öztelli, 2019: 241)

Kaygusuz Abdal'ın şiirlerinde varlık birliğini yansıtan ifadelere rastlanmaktadır. O terci-i bendinde görünen görünmeyen her şeyin Hak olduğunu belirtmekle birlikte âlemin hayal olduğunu söylemektedir. Kaygusuz Abdal da Arabî gibi tek gerçeği Hak kabul etmekte âlemi gölge/hayal olarak düşünmektedir.

Zâhir ü bâtın deki Hak'dır
Terk et hayali olma merdud

(Divân-ı Kaygusuz Abdal, s. 64)

Yunus Emre'nin şiirlerinde varlık birliği görüşünü yansıtan ifadeler bulunmaktadır. Hallac'ın "Ene'l-Hak" ifadesi bu söylemlerden biridir. Nitekim Yunus Hak'tan başka bir vücut kabul etmemekte ve hakikati bir olarak görmektedir. Şiirde Yunus'a kadeh sunan kişi vahdet makamında olan insan-ı kâmildir. Yunus ikinci dizede kendisinin vecd halinde birlik makamında olduğunu bildirmektedir.

Yunus'a kadeh sunan, Ene'l-Hak demin uran
Bir cura sundu bana, içtim ben ayılamam

(Gölpınarlı, 1975: 57)

Mevlânâ'nın tasavvuf görüşünün temelinde vahdet-i vücut telakkisi vardır (Ocak, 1996: 94). İbn Arabî tarafından sistemleştirilen bu doktrinden Mevlânâ etkilenmiştir (Tunçbilek, 2007: 56). Mevlânâ bu sistemin ahlakçı karakterinin üzerine kendi estetikçi mührünü vurmuş, insanı öne çıkartarak tasavvuf tarihinin farklı bir sentezini meydana getirmiştir (Ocak, 1996: 132). Mevlânâ'nın vahdet-i vücut anlayışı onun ahlak görüşüyle yoğrulan, insanı ve aşkı merkeze alan bir yapıya sahiptir.
Mevlânâ'ya göre âlemde tek bir hakikat vardır, o da Tanrı'dır. Kâinattaki her şey Tanrı'nın tecellisi olup birliği ancak aşkın bir bilinç ile ulaşılmaktadır. Mevlânâ'nın vahdet telakkisinde Yaratan ve yaratılan ayrılığı söz konusudur. O, bilinç ve benlik ile birliği dile getirmektedir (Yıldırım, 2008: 231). Her şey nihai "Bir"le başlar. Bir, ancak kendini gösterdiği kadarıyla bilinebilmektedir. İlahî isimlerin tecellileri, âlemin meydana gelişini ve ilişkilerini bildirmektedir (Chittick, 2008: 56-59). İlahî isim ve sıfatlarla varlığı açıklayan vahdet-i vücut teorisi, Tanrı-âlem ilişkisini "Bir" ile izah eden bir inanç sistemidir. Çalışmada bu teorinin çatısı altında olan terimlerin, hâllerin kuantum mekaniğiyle olan benzerliklerini Mevlânâ'nın eserlerinden hareketle açıklamaya çalışılacağız.

1. İnsanın Enerji Kozası

Tasavvufta salik, kendini gerçekleştirmek için pek çok psikolojik merhaleden geçmekte ve mürşit denetiminde nefsini terbiye etmektedir. Bu yücelme sırasında mana âlemine doğru çıkarken bütün suretler "Bir" etrafında toplanarak yok olmaktadır. Berkmen'e göre insan bu boyutta tüm benliğini yok etmekte ve Allah'ın isteklerine aracı olarak hayatını idame ettirmektedir. Bu istekler, canlı ve cansız bütün mevcudatın hayrını içine alan tümel isteklerdir. Bu boyuttaki kâmilin söz ve davranışları bütüncüldür. Bilinç arttıkça geri çekilen benlik öznel ruhumuzun önünü açmaktadır. Bu ruhun tek isteği tümel ruhla birleşmektir. Yok olmak yerine "*aynı frekansta titreşmek rezonansa girmek ve uyum içinde bulunmak"* bu durumu daha iyi ifade etmektedir. "*Eğer tümel ruh ile rezonansa girer, onun sesini dinlersek hakiki kimliğimiz olan çoşku ve mutluluğu deneyimleyebiliriz."* (Berkmen, 2015). İnsan rıza makamında, iç sesiyle hareket etmekte ve evrenin akışına uygun olarak bütüncül düşünüp davranmaktadır. Mevlânâ, bu mertebeye erişmiş kulun, genişlik ve refah için olduğunu bildirmektedir.

"Bütün doğal olayların güzelliğinin kendisi aracılığıyla taştığı, doğanın iradesine dair sevgi dolu bir rızanın da kendisi aracılığıyla ifade edildiği iyimser beyanların anlamı budur. Ruhun kendisi aracılığıyla ayrım gözetmediği bu içsel tavır şeyler karşısında eşit kalır, ruhun yüceliğine tekabül eder. (Hadot, 2012: 138). Rıza makamındaki kişinin doğayla arasındaki ayrımın kalkması ile her şeyden razı olan kulun kuantum açısından en yüce enerjiyle aynı frekansta titreşmesi arasında benzerlik olduğu söylenebilir.

"*Merhaba ey seçilmiş, ey Tanrı'dan razı olmuş, O'nun razılığını kazanmış er; sen yittin mi kaza gelir çatar, genişlik, daralır gider."* (Mesnevî C.1, Beyit 99).

Parça-buçuktan çıkıp tümel ruhla birleşen kişide benlik bulunmaz, her şey yok olur. Evvel ve ahir hepsi sonsuzluğun içinde vahdette birleşir. Birlik makamı ile bütüncül enerji alanı arasında ortak düşünceler bulunmaktadır. Evren bir enerji alanı olup tüm varlık bu enerji alanının yoğunluklarından oluşmaktadır ve her birey bu sonsuz ve bütüncül enerji sahasının bir uzantısıdır (Berkmen, 2015: 113). Vahdet (birlik) makamı, Hakk'ın isimler ve sıfatlar mertebesidir (Arabî, 2013: 180). İsim ve sıfatların bir olduğu vahdet makamı ile bütüncül enerji sahası arasında paralellikler görülmektedir. İkisinden çıkan enerjiyle gölge âlem, varlık oluşmaktadır.

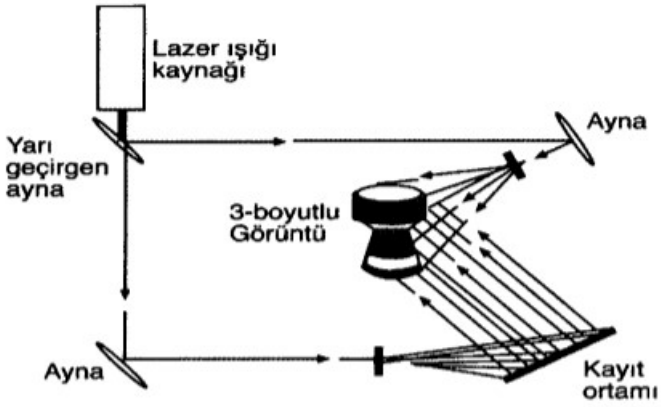
"*Evveline evvel olmayan bir makamdan bir şimşektir çaktı, bütün âlemi yakıp kül etti. Birlik nuru bayrak açınca nice bizlik, benlik yıkıldı gitti*" (Dîvân-ı Kebîr C.1, 653. Beyit)

"*Birlikte mekânsız bir hale gel, yokluğun ta kendisinde yer edin, ikilik fikrini taşıyan her başı kes, as puta tapanın boynuna."* (Dîvân-ı Kebîr C.2, 1247. Beyit)

Varlığın özü enerjidir, kütle ise enerjinin yoğunlaştırılmış halidir. Enerji durmaksızın titreşerek salınım oluşturmaktadır. İnsanın en yüksek titreşimi rıza makamında gerçekleşmektedir. Sonsuz enerji alanına Mevlânâ'nın düşüncesindeki gibi koşulsuz sevgi ve şükür ile ulaşılmaktadır.

2. Hologram

Varlığından arınmış kul, ilahi isim ve sıfatların tecelli noktasında an be an oluşlara şahit olmaktadır. Kuantum mekaniğine göre tüm mahlûkat bütünsel ve sonsuz enerji alanından (Hak'tan), yoğunlaşmış enerji yumakları biçiminde ayrılmıştır. Bu noksanlığı tamamlamak ve birliğe ulaşmak onlarda gizli bir arzu olarak vardır. Bilim ve irfanın kökeninde teklik ve çokluğun parçalanamaz bir bütün oluşturması bulunmaktadır. Hem kuantum kuramında gözlenilen ve gözleyen ile bir bütün oluşturdukları hem de holografik örnekte her parça-buçukta bütünün bilgisinin saklı olduğu, bu bilginin tüme göre daha bâtın ve kısmi olarak tanımlanacağı görüşü hâkimdir (Berkmen, 2015: 142-152). Birliğe ulaşmış olan insan-ı kâmil, bütün bilgisine vakıf kişidir. Mutlak şahit ve meşhut birliği ile nitelendirilen insan-ı kâmilin toplayıcı ayn'ında, ayn'ların hepsi vücuttur. Hakk'ın ilmi, insan-ı kâmilin ilmidir (Arabî, 2013: 663). Vahdet-i vücut anlayışının vahdet makamında ilim, âlim ve malum birdir görüşüyle kuantum kuramındaki gözleyen ile gözlenilen aynıdır düşüncesinin benzer olduğu düşünülmektedir.



Şekil 14. Hologram (Berkmen, 2015: 119)

Bir kaynaktan fışkıran ve en baştan beri ilişki içinde olan iki ışık dalgası, yeniden karşılaştıklarında dalga özelliklerini muhafaza ederlerse girişim görüntüsünde dalgasal görüntüsünü korumaktadır. Sonra dalga çökmeyerek ışık kaynağı, nesne ve ortam ile bütünleşmektedir. Yani kuantum kuramının iddia ettiği gibi "gözleyen ve gözlenen" bir bütün oluşturmaktadır (Berkmen, 2013: 119). Âlem Hakk'ın ilahi isim ve sıfatları olduğu gibi aynı zaman da Hakk'ın vücududur. Hak hem gözleyen hem de gözlenilendir
Pozitif bilimlerde de yukarıda izah edildiği üzere malum da birdir âlim de birdir. Varlığından arınıp vahdaniyet mertebesine ulaşmış kişi, bütünsel enerji alanıyla birleşmiş, gözleyen de gözlenen de O olmuştur. Allah aşk-ı zati sebebiyle âlemi yaratmıştır. Bilen de bilinmek isteyen de O'dur.

"*Tüme âşık, zaten de kendisi tüm. Kendine âşık, kendi sevgisini arıyor o*." (Mesnevî C.1 Beyit1583)

Hak, aşk-ı zati sebebiyle âlemi yaratmıştır, âlem O'nun tecellisi olduğu için tüm olan/bir olan O'dur. Âlem ise gözlenilen yerdir.

"*Doğruyu buyurmak da odur, doğru da o, sırları açan da o dur, açılmış sır da o."* (Mesnevî C.6, Beyit 2098)

Tasavvufta Hak kendini insan-ı kâmil aracılığıyla bildirmektedir, yani âlim, ilim ve malum bir olmaktadır. Mevlânâ bu görüşünü "doğru da O, sırrı açan da O, açılmış sır da O" ifadesiyle bildirmektedir. Çünkü Hak kendisini kendisine kendiyle bildirmektedir.

3. Ether

Klasik bilim bütün bir sistemi sadece parçalar arasındaki ilişkilerin sonucu olarak görmektedir, fakat kuantum potansiyeli bu görüşü tersine çevirmekte ve parçaların davranışlarının bir bütün tarafından organize edildiğine işaret etmektedir. Ünlü fizikçi Bohr'un, atom altı parçacıklarının ilişkisiz "şeyler" olmayıp ayrılmaz bir sistemin parçaları olduğu düşüncesini ileriye götürmesi, en mühim gerçekliğin bütünsellik olduğunu vurgulamaktadır (Talbot, 2004: 72-73). Tanrı, kuantum seviyesinde evrende pasif güç olarak var olan olasılıkları seçmekte, değişmez yasalarıyla onu etkinleştirmektedir. İşte insan-ı kâmil, bu değişmez birliğe ulaşan öz ya da esîr ile ifade edilmektedir.

Esîr satanda haset dili olursa
Yusuf'u bir arşın beze alabilirsin" (Gölpınarlı, 2003: 651).

Beyitlerde geçen "esîr" maddesi insan-ı kâmili işaret etmektedir. Esîr maddesi "eter" maddesi olarak düşünülmektedir. Tesla, Dinamik Graviti teorisi üzerine aydınlık eterin uzaydaki tüm boş alanı doldurduğunu iddia etmektedir. "*Eter, yaşamı veren yaratıcı güç tarafından etkiliyor ve ışığın hızına yakın bir hareket sergiliyor, sonsuz küçük kıvrımlarla düşünebiliyor ve madde hâline geliyor. Kuvvet kaybolduğunda ve hareket kesildiğinde madde tekrar etere dönüyor"* (*https://www.gzt.com/).* Kuantum mekaniğine göre vakum (atom ve molekülün olmadığı boşluk) boş olmadığı gibi enerjisi de yok değildir, sanal (virtüel) parçacıklarla doludur. Bu parçacıklar (virtüel) âlem-i gayb içinde olan, enerjisi ve kütlesi ölçülemeyen parçacıklardır. Bu sanal parçacıkların varlık âleminde zuhur etmesi yani ölçülebilir olması için ($E= M.C^2$ formülüne göre) her bir parçacığın kütlesiyle orantılı olarak enerjiye sürekli sahip olmasını gerektirmektedir. Şu anın elektronları ve protonları, anti- parçacığı ile birlikte bir zamanlar vakum içinde gaybi (virtuel) parçacık olarak var oluş ve yok oluşunu devam ettirirken zamanın belli bir anında *büyük ihtimalle heyulanın, yani kâinatın ilk maddesinin yaratılması hengâmında veya daha önce varlık (âlem-i şehadet) âlemine çıkarılmış varlığı hâlâ devam eden parçacıklardır.*" Bir vakum içerisindeki virtüel parçacıkların ortamı esîr ise kâinat içerisindeki her şeyin esîrden oluşmuş olması akli olarak mümkündür (Eker, 2018: 204-210). Mesnevî'de geçen esîr maddesiyle insan-ı kâmil ve vahdeti temsil eden Hz. Yusuf kast edilmektedir. Vahdet makamı olan hakikat-i Muhammediye esîre karşılık gelmektedir. Esîr ve eter varlığın özü olarak düşünülebilir. Kuantum mekaniğine göre kuvvet ve hareket kesildiğinde ortaya çıkan "eter" ile birlik makamı ve öz olarak nitelendirilen esîr arasında benzerliğin olduğu söylenebilir.

4. Süper Sicim Teorisi

Varlığın içindeki özü açıklayan bir fizik kuramı da süper sicimdir. Fizik âlem, arızi olup bir vücudu yoktur. Nitekim modern fizikte gerçekliğin insan zihninden bağımsız olarak mevcut olamayacağını "sicim teorisinde" göstermiştir.

"Her solukta dünya da yenilenir; fakat biz onu, duruyor görürüz de bu yenilenmeden haberimiz bile olmaz" (Mesnevî C.1, Beyit 1149)

Âlem denilen şey arazlarını bütünlüğüdür ve an be an değişmektedir. Hiçbir varlık kendi nefsiyle kaim bir cevher değildir. Kendi zatıyla bulunun Hakk'ın mutlak vücududur (Arabî, 2013: 612). Nitekim evrendeki her varlıkta Tanrısal öz bulunur. Bu öz an be an titreşip evreni vücuda getiren sicim olarak düşünülebilir. Vahdet-i vücut anlayışına göre âlemin hayal olması, an zamanda yeniden yaratılması ile maddelerin içinde bulunan sicimlerin titreşmesi ve âlemi vücuda getirmesi görüşüyle paralellik bulunmaktadır.

Yapılan işin izleri görünmeyen dünyada doğar; o doğan izler de halkın buyruğunda değildir" (Mesnevî C.1, Beyit 1670)

İlahi isimler de Hakk'ın gölgesidir. Bütün varlığın vücudu gölgeden başka bir şey değildir. Vücut, ancak gölge sâhibi olan Hakk'ındır. (Arabî, 2013: 463). Mevlânâ "görünmeyen dünya" ile hakikati, birlik âlemini, insan-ı kâmilin makamını bildirmektedir. Tüm mevcudat bu âlemden doğmaktadır.

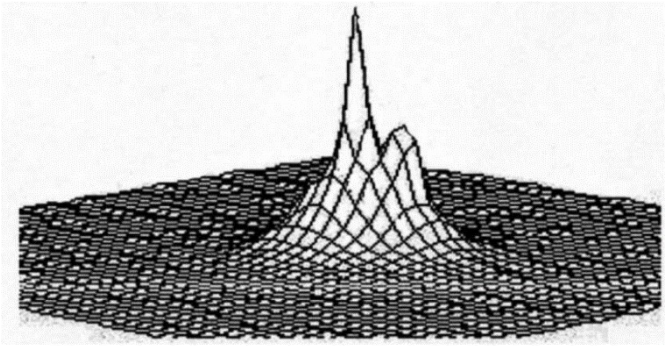
"*Canlara can katan aşkına her an bedenimizdeki canı feda ediyorduk."* (Dîvân-ı Kebîr C.4, 2263. Beyit)

Beyitte vurgulanan insanı kâmilin "can feda etmesi" yeni oluşumları ifade etmektedir. Her yeni oluşum ondan varlığa bürünmektedir. Çünkü insan-ı kâmilin makamı, vahdet ya da öz olarak nitelendirilen mertebedir. Bu mertebede yaratılmış, yaratılan, yaratılacak her şey birliktedir. Her varlığın içinde olan öz, sicim ile benzerlik taşımaktadır. Çünkü sicimin farklı titreşimleri farklı maddeleri oluşturarak âlemi meydana getirmektedir.
Temel parçacıkları sicimler olarak tanıtan bu kuram "süper sicim kuramı" olarak ileri sürülmüş, sonraları "11 boyutlu süper yüzey" (mambran) modeline dönüşmüştür (Berkmen, 2015: 1634). Süper sicim kuramına göre temel parçacıklar, titreşen bir sicim üzerindeki notalar olarak düşünülebileceği fikri üzerine kuruludur. Herhangi bir elektronun içi gözlenebilecek olsa titreşen sicimler görülür. *Süper sicim farklı bir konumda veya notada titreştiği zaman, bir foton* (elektromanyetik alanın kuantumu/hareket eden parçacık/ışığın temel birimi) *veya nötrino* (yaklaşık olarak ışık hızına sahip, elektriksel olarak sıfır yüklü temel parçacık) *gibi farklı bir atom altı parçacığa dönüşür.* Doğada görünen atom altı parçacıklar süper sicimin en düşük seviyedeki oktavıdır. Yani *on yıllar boyunca sağanak olarak* ortaya çıkartılan atom altı parçacıklar sadece süper sicimin notalardır. Tesadüfi ve karmaşık görünen kimya kanunları, süper cisimlerimizle icra edilen melodilerdir. Evren de bir sicimler senfonisidir (Kaku, 2012:185-186). Sicimlerin temel parça özelliğini göstermesi için 10 boyutlu uzayın içinde bulunmaları gerekmektedir. *Bir boyut daha eklenince 11 boyutlu* süper yüzey (mambran), *uzayda sabit çözümlerin bulunduğu ve bu boyutlardan 4-boyutlu uzay-zaman yapısına karşılık* gelmektedir. 7 boyutunun ise görünmez biçime dönüştüğü matematiksel olarak bilinmektedir. Fakat bu ifade fiziksel âlemde 11 boyutun bulunduğunu kanıtlamamaktadır. Yalnızca bilim dünyasında "gerçek" kavramının insan zihninden bağımsız olamayacağını göstermektedir (Berkmen, 134-135)
Her maddenin ya da boşluğun içinde yer alan sicim, geçmiş ve geleceğin oluşumlarını içinde taşıyan öz ile benzerlik göstermektedir. Var olan her şeyde bu öz olduğu düşünülürse her olan ve olacak olan hadise bir rezonans yaratmakta ve bâtını zahir etmektedir. Duyular ile algıladığımız evrenin an be an titreşen sicimlerden oluşan bir gölge olduğu söylenebilir.

5.Örgü Alan Kuramı

Zatının aynı olan Hakk'ın iradesi ve Hakk'ın açığa çıkmaya olan meyli ile Hakk'ın kendisinde potansiyel olarak bulunan işler ilahi ilimde belirerek ilmî taayyün elbisesi giyerler. İlahi ilimde ne şekilde taayyün etmişlerse o suretle Hakk'ın bilineni olurlar. Bütün taayyünlerin evvelini, bütün varlığın sâbit ayn'larını ve hakikatini kapsayan mertebe hakikati-i Muhammediyedir (Arabî, 2013: 939). Bu mertebenin her varlığın oluşumu ve potansiyel olarak açığa çıkma alanı olarak tanımlanan "Örgü Alan"ın özellikleriyle benzer nitelikler taşıdığı söylenebilir.

Kuantum kuramında her cisim, sonsuz ve bütünsel bir enerji alanında devinen (hareket eden) bir enerji yumağıdır. Alan ile söylenmek istenen düzgün aralıklardan oluşmuş 4 boyutlu uzam-zamandır. Bu alana "Örgü Alan" denmektedir ve tüm var olanları oluşturmaktadır ve varlığa indirgenemez. Bu alanda tıpkı bir örgüdeki gibi düğüm noktaları ve bunları birbirine iliştiren bağlar bulunmaktadır. Nitekim noktalar arasında boşluklar ve bu boşluklarda enerji vardır, bu enerjiden dolayı örgü alan sürekli titreşmekte ve yeni yapılar ortaya çıkarmaktadır. Örgü alanın varlığını devam ettirebilmesi için gerekli olan düzensiz, kuralsız ve kaotik görünümlü bu yapılara, "Kuantum Flüktüasyonları" adı verilmektedir. Nedensellik ilkesine indirgenemeyen bu yapılar olasılık kuramıyla açıklanmaya çalışılmaktadır. Örgü alan içerisindeki düz bölümde her düğüm komşu düğümlerle eşit ve düğümler arası uzaklıkta oldukça küçüktür (Berkmen, 2015: 45-47).



Şekil 16. Örgü Alan (Berkmen, 2015: 46)

Şekil incelendiğinde tepe noktasına yaklaştıkça düğüm noktaları arasındaki uzaklık (aralık) artar. Düğümler yerlerine dönmek istedikçe de çekim kuvveti artar. Temel parçacıkların içinde bulunan kuarklar (temel parçacıklarda hadronların içinde) "Asemtotik Özgürlük" denen hareket sergiler. İki kuark arasındaki uzaklık düştükçe serbestlik dereceleri artar. Örgü aralıkları düştükçe kuark özgür bir parçacık gibi davranır. Temel parçacıkların dağılmadan dalga paketi olarak var oluşlarını sürdürmeleri ve nesnelerin dağılmadan varlığını devam ettirmelerini bu kavramla açıklamak mümkündür. "Asemtotik Özgürlük" olgusundan çıkan sonuçlardan biri de her mahlûk, erişmek istediği doğal durumun düz olan bölgesidir. Her varlık düzgün örgü alanına mutlaka dönecektir. Sonsuz ve bütünsel bir enerji alanı olan örgü alanı, cisimlerin oluşumuna olanak sağlayan zemin olarak düşünüldüğünde burası canlı veya cansız bütün var olanların ana kaynağıdır (Berkmen, 2015: 48-49). Varlıktan soyutlanarak aslına dönen ruh özgür iradesine kavuşur, örgü alan adı verilen hem sürekli hem de süreksiz alana intikal eder. Tıpkı kuarkların (temel parçacıklar) örgü aralıkları kısaldıkça özgürleşmesi gibi insanda sebepler ve bağıntılardan arınıp Hakk'ın nurlarını kendinde bulduğu zaman örgü alanının arka zeminine düşer, özgürleşip cevherin kendisi olur. "*Sebepler kendi nefsinde hüviyet hususunun ayrıntılanmışıdır. Yani mutlak hüviyetin vechi olan "Allah" ismi bütün vecihlerin, yani bütün isimlerin ayn'ıdır ve bu özel vechin bütün vecihlerde ayrıntılanışı yani "Allah" isminin bütün isimler ile ayrıntılanışı, kendi nefsinde ayrıntılanmasıdır."* (Arabî, 2013: 870). Sebeplerden arınan kul başlangıç noktası örgü alana yani hakikat-i Muhammediye'ye ulaşarak oluş-bozuluş âleminden çıkmaktadır. Mevlânâ'da "ölümsüzlük yurdu" ile varlığın kaynağı olan örgü alan arasında paralellikler vardır.

Hakk'ın ilahi isim ve sıfatlarının mevcut olduğu hakikat-i Muhammediye ölümsüzlük yurdudur, çünkü burası bütün ayn'ların kaynağıdır, ayn'ın şey olduğu yerdir. Örgü alan da varlığı mevcut eden enerji yumağıdır.

"*Soluklarımız, temizlik yüzünden çıkar, yücelir de bizden armağan olarak* ***ölümsüzlük*** *yurduna varır*." (Mesnevî C.1, Beyit 888)

İnsan parça-buçuklardan çıkıp birliğe ulaştığında hem sürekli hem de süreksiz alana geçmekte ve sürekli yaratılan evreni müşahede etmektedir. Bu alan yokluk adı verilen hakikat-i Muhamediye'dir. İsimler ve sıfatlar mertebesi olan hakikat-i Muhammediye, potansiyel olarak mevcut; fakat fiilen olmayan eşyanın izafi yokluğunu ifade eder. Bu yüzden yokluk ile örgü alanın benzer olduğunu söylemek yanlış olmasa gerek.

"*Ey yokluk aynası, yokluksun sen hatta daha da öte şey. Ey gönülde olan, gönülde ne varsa osun, daha da başka bir şeysin sen*." (Dîvân-ı Kebîr C.1, 2569. Beyit)

"*Benliklerinden varlıklarından geçmişler, sevgiliyle var olmuşlardır*
Şaşılacak şey şu ki: Onlar hem yoktur hem var,
Birlik ehli olan kişiler bunlardır işte." (Mevlânâ, 2010: 76-77).

Mevlânâ yokluk, varlığından geçip yok olma, birlik kavramlarıyla vahdet makamı olan hakikat-i Muhammediye vurgusu yapmaktadır. Eşyaya bürünmüş, yok olmuş, özüne dönmüş her varlık birlik mertebesindedir. Nitekim varlığın kaynağı hakikati Muhammediye ile cisimlerini oluşumuna olanak sağlayan örgü alan arasında paralellikler bulunmuştur.

6. Karmaşa Kuramı

Hakikatine ulaşmayan insan, parça-buçuklarda kalmaktadır. Kul nefsin isteklerine itaat ettikçe daha da karmaşık bir girdabın içine düşmektedir.

Matematik fraktallarını inceleyen ve karmaşa kuramının temellerini atan fizikçi Mitchell Feingenbaum, kaotik yapının belli bir noktadan çatallaşma ile yeni dallara ve farklı taraflara bölünerek gelişimini devam ettirdiğini söylemektedir. Bölünme ve farklılaşma ilkin yavaş sonra gittikçe hızlanmakta ve temel yapı her zaman kendine benzeterek çeşitlilik oluşturmaktadır. Karmaşadan çıkmanın çaresi düşüncemizi iyileştirmektir. Karşıt olarak görünen ikilemli kavramlara vahdet çatısından bakmakla bu iyileşme gerçekleşmektedir. Vahdet düşüncesinin bizi tümel ruh olan Allah'a götürmesi kaçınılmazdır (Berkmen, 2015: 87-177). Mevlânâ'ya göre gaflette olan kişi parça buçuklarda kalmıştır ve tüme ulaşmayı arzulamaktır. İnsanın nefsini terbiye etmesiyle birliğe ulaşacağı düşünülmektedir. Birliğe ulaşan kişiler ise gerçeğe erenler olarak bildirilmektedir.

"*O bölük ateşten doğmuştu ya parça buçukların yolu, tümedir*." (Mesnevî C.1, Beyit 880)

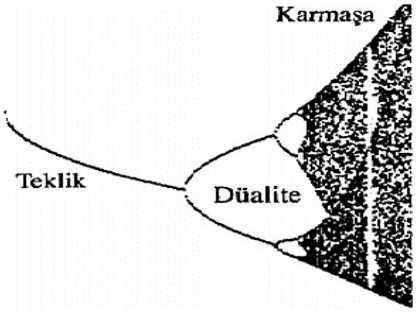
"*Gerçeğe erenler, yolu izi görenler*
Senin hallerini bir bir görürler, bilirler" (Mevlânâ, 2010: 69).

İkilikte kalıp nefsinin esiri olan, parça-buçuklarda kaybolan kişi de bu karmaşada ziyan olmaktadır. Nefsin arzuları çoğaldıkça insandaki bölünmeler, istekler de artmaktadır. Tamamlanmak isteyen ruh ise özüne kavuşmayı arzulamaktadır. Ancak zıtlıktaki birliği yani Hakk'ın cemal ve celal sıfatlarının tecellisini kendinde bulup özüne, hakikatine kavuşan insan- ı kâmil, vahdetin güzelliğine hem meşhud hem de müşahid olmaktadır. O, parçalanmanın ve bölünmenin olmadığı, cefadan, kederden uzak, geçmiş ve geleceğin birlikte olduğu vahdet makamında yer almaktadır.

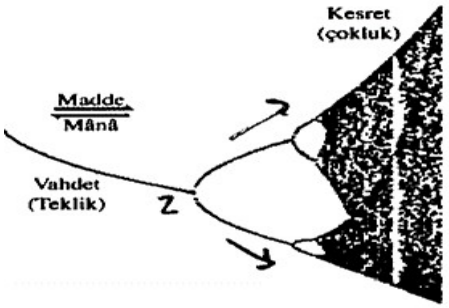
"Ay ışıklarının doğusu olan o gönül, arif için 'Kapıları açılmış cennetlerdir." (Mesnevî C.2, Beyit 166)

"Senin, aynada apaçık gördüğünü pir, senden önce kerpiçte görür." (Mesnevî C.2, Beyit 168)

"*Âşıklık nedir? Kendi varlığından, benliğinden söz etmemek." (*Mevlânâ, 2010: 68). Benliğinden kurtulan kul, birlik makamındadır. Bu kişiler arif, pir, âşık ya da insan-ı kâmil olarak adlandırılır. "*Tanrı'nın has kulları ve arifler ne ahiri ne de ahırı görürler. Onların nazarları evvele düşmüştür, her işin evvelini bilirler*." (Mevlânâ, 2017: 62). Onlar, ikilikten kurtulmuş, Hakk'ı müşahede eden, her şeyin öncesini ve sonrasını bilen kimselerdir.



Şekil 17. Karmaşa Kuramı (Berkmen, 2015: 87)



Şekil 18. Vahdet-Kesret (Berkmen, 2015: 176)

Birliğe ulaşmaya can atan ruh, her ayrışmada düzensizliğe yol almakta, her nefsi hareket başka bir ayrışmaya neden olmaktadır. Bu düzensizlik, insanı karmaşaya sürüklemekte ve mutsuzlaştırmaktadır. Yaratılmış her varlığı seven ve kendisiyle bir bilen ise sonsuz mutluluğa erişmektedir. Karmaşa kuramına bölünme, ayrışma ilkin yavaş daha sonra hızlı olarak gelişmektedir. İnsan nefsi bölündükçe daha hızlı bir şekilde birlikten uzaklaşmaktadır.

Mevlânâ'ya göre asıl mutluluk tüme ulaşmakla yani karmaşa kuramın ifade ettiği gibi ayrışmalardan geçmekle mümkün olabilir.

7. Dalga ve Parça

Tasavvufta Allah kendini aşk ile izhar etmektedir. Bu yüzden evrende her şey aşktır ve aşk ile özüne dönmektedir. Mevlânâ'ya göre kul âlemde olan her şeyi Hakk'ın tecellisi olarak görüp bu suretlere katlanarak aşk mertebesine ulaşabilir.

"*Aşkın yüzlerce nazı var, yüzlerce ululuğu. Aşk, yüzlerce naza katlanmakla, yüzlerce niyaz etmekle elde edilebilir."* (Mesnevî C.5, Beyit 1164)

İlk Gölge, ilk berzah, ilk mertebe, hakîkatlerin hakikati en büyük aşk olarak anılır. Aşk bağında baki olan bir ahadiyyet, dal ve ağaç, gül yaprağı ve diken olarak ortaya çıkar. İlâhî kelâm kendince harf ve ses kisvesine bürünerek taayyün âlemine gelir. *Bu nefsi yani kendince olan kelâm çıkınca o şey, bir anlık bakışta, ilahî ilimde peyda olur*. Hakk'ın mutlak vücudu, O'nun "Zahir" isminden dolayı *var edilmiş suretlerden bir suretle taayyün edici olup da bu suretten "ol" sözü çıksa hakikatte bu sözün söyleyicisi Hak olur* (Arabî, 2013: 27-717). Mevlânâ da Arabî gibi sureti hem aşkın yansıması hem de sureti oluşturan olarak görmektedir.

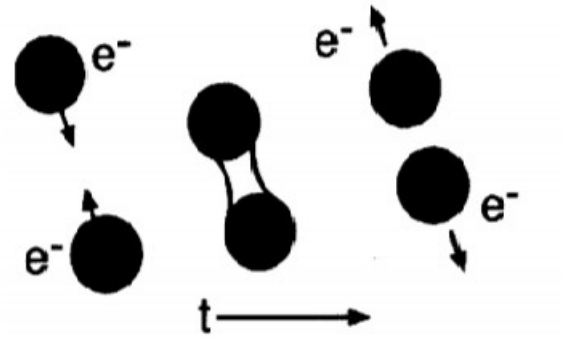
"*Suret aşkın feridir. Çünkü aşk olmadan onun değeri yoktur. Aşk sureti meydana getirir ve ondan yüz binlerce suret hâsıl olur. Bunlar aynı zamanda gerçekleşmiş, şekil almış suretlerdir. Ressam olmadan resim olmadığı gibi resimsiz de ressam olmaz." (*Mevlânâ, 2017: 163)

Varlık Hakk'ın suretidir. Hakk'ın sureti olarak nitelendirilen mevcudatın en küçük parçası atomdur. Rutherford'a göre atomlar, ufacık parçacıkların hareket ettiği büyük boşluklardan oluşmaktadır. Bu parçacıklar, yani maddenin atom altı ögeleri ikili niteliğe sahip soyut varlıklar gibi hem parçacık hem de dalga özelliği göstermektedir. (Capra, 1991: 100-101).



Şekil 19. Madde (dalga/parçacık) (Capra, 1991: 101)

Atom altı parçacıklarda bulunan bu boşluk aşk olarak düşünülebilir. Çünkü zuhur edip görünen her şey ya parça ya da dalgadır. Hem parça hem dalga ancak bütün âlemin özü olan vahdetin hakikat-i Muhammediye'de baki olduğu söylenebilir. Bu mertebeye ulaşan insan-ı kâmil, aşk makamında olduğu için bütün mahlûkatı kendinde bulmaktadır.

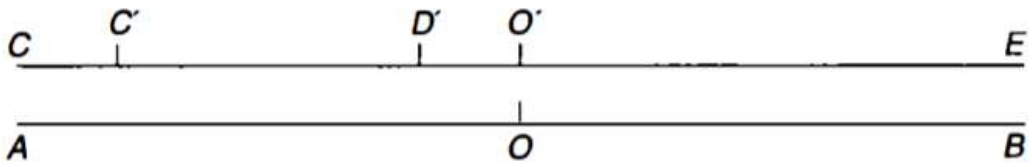


Şekil 20. Elektronların çarpışması (Berkmen, 2015: 20)

Atom altı parçacıklar birbirleri ile bilardo topları gibi çarpışmazlar. Onların çarpışması daima bir ara parçacık veya eşdeğer olarak bir ara dalga değiş tokuşuyla gerçekleşir. Şekil incelendiğinde iki elektron (belirli bir yakınlıkta) birbirine yaklaştığında aralarında enerjetik bağlar oluşur. Bu bağlar elektromanyetik kuvveti ileten fotonlardır (ışık dalgalarıdır) (Berkmen, 2015: 19-20). Bu enerjetik bağ arasındaki boşluğun da aşk olduğu söylenebilir. Çünkü Mevlânâ'ya göre kâinattaki her bir zerre bu aşk ile vücut bulmakta ve mahlûkat bu aşk ile varlığını sürdürmektedir.

8. Görelilik Kuramı

Sufiler, çeşitli varlıkların nitelik ve zihinsel olarak bir göreceliğe sahip olduğunu savunurlar. Sufi, dünyevî kimliğinden arındığında benliğinde zamansal olarak ezeliyeti hissedebilir (Küçük, 2002: 237). Sufilerin, zamanın izafi oluşuyla ilgili bu görüşleri kuantum kuramındaki izafiyet teorisiyle benzerlik göstermektedir



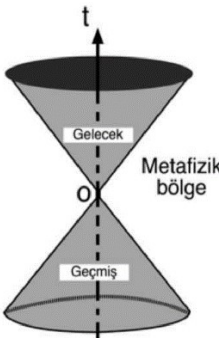
Şekil 21. İzafiyet Teorisi (Bohm, 2013: 59)

Einstein'ın zamanın izafi olmasına ilişin görüşlerini yukarıdaki şekilden yola çıkarak izah etmeye çalışalım. Şekilde A-B arasında v hızıyla hareket eden bir tren tasavvur edelim. Trenin ortasına düşen O noktasında sabit (durağan) bir gözlemci bulunsun. O'nun A-B'deki meslektaşlarının ışık çakışı yolladığını ve bunların O'ya aynı anda ulaştığını varsayalım. Bu çakışların birlikte görünmeleri, bu çakışların aynı anda doğdukları sonucuna bizi ulaştırmaz. Lakin ışık hızı ve uzaklık her iki yönde de aynı olduğundan ötürü O çakışların aynı zaman diliminde yer aldığı sonucuna varılır. İkinci olarak hareketli bir tren içinde bulunan O' gözlemcisini ele alalım. O, A-B'den iki çakış alırken O gözlemcisinin karşısında O' gözlemcisi yer alsın. O gözlemcisi iki çakışı anda görür. Çakış ilk kez gönderildiğinde O'nun karşısında O'' de değil D' noktasına ulaşmış olur. Yani ışık A'dan O'ya giderken D' O' uzaklığı geçilecektir. Gözlemci O'' ye ulaştığı ve çakışı gördüğünde C noktası set gözlemcisine göre C' noktasını geçmiş olacaktır. Trendeki gözlemci kendisini dinginlikte görmesinden dolayı ışık çakışının kökeni ve kendisi arasındaki uzaklığı dikkate almaz.

Lakin uzaklık C'O' olarak belirler, C'O' set gözlemcisi tarafından belirlenen AO uzaklığından küçüktür. (Bohm, 2013: 59-60). Einstein'ın görelilik teorisinin temelini oluşturan bu görüşe göre hızı sabit bir tren vagonu içinde duran bir kişinin elindeki bir nesneden çıkan ışık demetinin hızı hiçbir zaman değişmeyecektir. Trenin içindeki kişi dışarıdaki gözlemciye göre ışık demetini önce görür. Çünkü ışık daha az mesafe kat eder. Dışarıdaki gözlemci ise daha sonra görür. Çünkü hız sabit olup yol uzuyorsa Yol = v.t 'ye göre zaman değişmiş demektir. Kütle zamanla etkileşime girdiğinde enerjiye dönüşür. İzafiyet teorisine göre varlığın fizik olayları görelidir. İyilik ve kötülüğün izafi olduğunu söyleyen Mevlânâ sureti yok eden an zamana ulaşan kişiyi vaktin oğlu olarak nitelendirir.

"Ey arkadaş, sufi vaktin oğludur; yarın demek yol şartından değildir." (Mesnevî C.1, Beyit 133)

"*Kendine gel, sufi içinde bulunduğu vaktin oğludur, geçen yıldan, gelecek yıldan geç, sıçra*." (Dîvân-ı Kebîr C.6, 2919. Beyit)



Şekil 22. An Zaman (Berkmen, 2015: 25).

Alttaki koni geçmişi üstteki koni ise geleceği göstermektedir. O noktası ise "an, burası" olup her kişi tarafından farklı olarak algılanmaktadır. Her mahlûkun töz ile ilişkisi "anda" olmaktadır. Sıfır noktası hem dış hem içe aynı ölçüde yakın ve eşdeğerdir yani hem fizik hem de fizikötesi âlemlere bu noktadan ulaşılabilmektedir (Berkmen, 2015: 25- 27). Bu bağlamda vecd hâlinde hâlden hâle giren sufinin "an zamanda" geçmiş ve gelecek bilgisine vakıf olabileceği söylenebilir.

Sonuç

Kuantum mekaniğine göre atomun %99'u boşluktur. Atom altı parçacıklar hem parçacık hem de dalga etkisine sahip büyük boşluklardan oluşmaktadır. Mevlânâ'nın eserlerinde kâinatın yaratılış sebebi olarak kabul edilen aşk, varlığın içine nüfuz etmiş ve varlığı ayakta tutan güç olarak anlatılmaktadır. Çünkü Hak aşk-ı zati sebebiyle âleme isim ve sıfatları ile tecelli etmiştir. Bu bağlamda boşluklarda bulunan enerji ile Hakk'ın âleme tecelli ettiği isim ve sıfatları arasında paralellik bulunmuştur.

Hakikat-i Muhammediye ya da insan-ı kâmilin makamı olan aşk, boşluklarda yer alan sonsuz enerji alanı olarak düşünmek mümkündür. Varlığın surete bürünmeden önceki ve sonraki halinin bulunduğu mertebe olan hakikat-i Muhammediye ve tümel enerji alanını gösteren örgü alan arasında benzerlikler olduğu görülmüştür.

Fizik evrenin arizi olduğunu sicim teorisi bildirmektedir. Var olan her şeyin içinde yer alan süper sicimler ve varlığın içindeki öz arasında ortak noktalar saptanmıştır. Öz ve sicimin bütünün bilgisini sahip olması ikisinin benzer yönünü ortaya koymuştur.
Karmaşa kuramı kaotik yapının belli bir noktadan sonra farklı dallara ayrıldığını belirtmektedir. Mevlânâ'ya göre nefsinin isteklerine yerine uyan kul bölündükçe parçalanmaktadır. Bu yüzden bu kişiler parça-buçuk olarak nitelendirilmiştir. Buna bağlı olarak karmaşa kuramı ile nefis arasında benzerliğin olduğu görülmüştür.
Vahdete ulaşmış sufi geçmiş-gelecekten geçip an zamanda yaşadığı için Mevlânâ tarafından vaktin oğlu olarak adlandırılmıştır. Varlıktan arınan sufinin mekân, zaman ve hareketin bil-kuvve olarak yer aldığı sıfır noktasında (vahdet âleminde) olması ile bir cismin ışık hızına ulaşıp zamanın durduğu sıfır noktasında olması arasında paralellikler bulunmuştur. Mevlânâ'nın varlık birliği görüşü ile kuantum mekaniğinin bazı kuramları ve terimleri arasında benzer görüşlerin olabileceği ortaya konmuştur.

Kaynakça

Afifî, E.A. (2015). Tasavvuf İslam'da Manevî Hayat. İstanbul: İz Yayıncılık.

Arabî, M. (2013). Füsûsu'l Hikem (Terc. ve şerh Ahmed Avni Konuk). e-kitap

Arberry, A. J. (2008). Tasavvuf /Müslüman Mistiklere Toplu Bakış. İstanbul: Ağaç Kitabevi Yayınları.

Avşar, Z. (2007). Mevlânâ'nın Rubailerinde Müteal Aşk. Marife, Y.7, S.3, 91-103.

Berkmen, H. (2015). Kuantum Bilgeliği ve Tasavvuf. İstanbul: Agora Kitaplığı.

Bohm, D. (2013). Özel Görelilik Kuramı (Çev. Aziz Yardımlı). İstanbul: İdea Yayınevi.

Capra, F. (1991). Fiziğin Tao'su. İstanbul: Arıtan Yayınevi.

Chittick, W. (2008). Var Olmanın Boyutları. İstanbul: İnsan Yayınları.

Demirli, E. (2012). "Vahdet-i Vücud" maddesi. C.42, İstanbul: TDV İslam Ansiklopedisi.

Eker, Z. (2018). Modern Bilim ve Risale-i Nur Penceresinden Heyula Esir ve Yedi Kat Sema, Katre, Y. 2018, S. 6, 193-216.

Erdem, H. (1990). Panteizm ve Vahdet-i Vücûd Mukayesesi. Ankara: Kültür ve Turizm Bakanlığı Yayınları.

Gölpınarlı, A. (1975). Yunus Emre Hayatı Sanatı Şiirleri. İstanbul: Varlık Yayınevi.

Gölpınarlı, A. (1983). Mesnevî Tercemesi ve Şerhi III-IV. İstanbul: İnkılap Kitabevi.

Gölpınarlı, A. (2003). Mesnevî Tercemesi ve Şerhi V-VI. İstanbul: İnkılap Kitabevi.

Gölpınarlı, A. (2012). Tasavvuf. İstanbul: Milenyum Yayınları.

Gölpınarlı, A. (2017). Mesnevî Tercemesi ve Şerhi I-II. İstanbul: İnkılap Kitabevi.

Hadot, P. (2012). Ruhani Alıştırmalar ve Antik Felsefe. İstanbul: Pinhan Yayıncılık.

Kaku, M. (2012). Einstein'ın Evreni. (Çev. Engin Tarhan). Ankara: ODTÜ Geliştirme Vakfı Yayıncılık.

Kırkkılıç, Ahmet (1996). Başlangıçtan Günümüze Tasavvuf. İstanbul: Timaş Yayınları.

Küçük, O. N. (2002). Zaman Düşüncesinin Tasavvufî Açılımı. Tasavvuf İlmi ve Akademik Araştırma Dergisi, Y. 3, S. 9, 221-238.

Mevlânâ (2010). Mecâlis-i Seba. (Çev. Abdülbâki Gölpınarlı). İnkılap Kitabevi: İstanbul.

Mevlânâ (2017). Fîhi Mâ Fîh. (Çev. Meliha Ülker Anbarcıoğlu). İstanbul: Ataç Yayınları.

Mevlânâ (2020). Dîvân-ı Kebîr. (Çev. Abdülbâki Gölpınarlı). Türkiye İş Bankası Kültür Yayınları, İstanbul.

Nicholson A.R. (1978). İslam Sûfîleri (Çev. Mehmet Dağ vd.). Ankara: Kültür Bakanlığı Yayınları.

Ocak, A.Y. (1996). Türk Sufiliğine Bakışlar. İletişim Yayınları: İstanbul.

Öztelli, C. (2019). Pir Sultan Abdal Bütün Şiirleri. İstanbul: Özgür Yayınları.

Sever, M. (2016). Dîvân-ı Kaygusuz Abdâl. Ankara: Helke Yayıncılık.

Talbot, M. (2004). Holografik Evren. İstanbul: Ruh ve Madde Yayıncılık.

Tunçbilek, H. (2007). Mevlânâ'da Vahdet-i Vücûd Telâkkisi, Harran Üniversitesi İlahiyat Fakültesi Dergisi, S. 18, Temmuz-Aralık, 55-60.

Yıldırım, A. (2008). Mevlânâ'nın Vahdet Anlayışı ve Paradoksal Söylem, Erdem, S.50, 223-232.

Yılmaz, K. (2000). Tasavvuf ve Tarikatlar. İstanbul: Ensar Neşriyat.

https://www.gzt.com/jurnalist/nikola-teslanin-kayip-notlari-ortaya-cikti-bilinen-tum-fizik-kurallari-safsatadan-ibaret-2653098. 09/09/2021

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DIŞ MEKAN FUTBOL SAHALARINA YÖNELİK AYDINLATMA ARMATÜRÜ TASARIMI

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ÖZET

Spor karşılaşmalarının çoğunun akşam saatlerinde yapılmasından dolayı aydınlatmanın spor uygulamalarındaki önemi büyüktür. Aydınlatmanın önemini; enerji verimliliği, bakım maliyetlerin azaltılması, uluslararası standartlara uygunluk ve aydınlatma konforu (aydınlık seviyesi, homojenliği ve kamaşma) açılarından değerlendirebiliriz. Aydınlatma birçok spor dalında önemli olmakla birlikte, futbol statları büyüklükleri açısından aydınlatmanın en zorlu ve önemli olduğu uygulamaların başında gelmektedir.

Kapsamı futbol statları olan çalışmamızda verimli, bakım maliyetlerini azaltan ve doğru aydınlatma değerlerini sağlayan LED'li aydınlatma armatürlerinin tasarım özelliklerini, doğru uygulama gerekliliklerini ve uygulama sonrası hedeflenen aydınlatma değerleri ile gerçek değerlerin karşılaştırmasının nasıl yapılması gerektiğini ele almaktayız.

Canlı yayın yapılmayan statlarda UEFA standardı 350 lüks ve üzeridir. Minimum lüks seviyesinin ortalama lüks seviyesine bölünmesi ile elde edilen ortalama düzgünlük seviyesi ise 0,7 değerinin üzerinde olmalıdır. Işık rengi genellikle 5000K, CRI olarak da belirtilen renk geri verim indisi 70 ve üzerinde olmalıdır.

Stat aydınlatmalarında kullanılan 1000 W geleneksel armatürler sistem kayıpları ile birlikte 1100 W elektrik tüketimine sahiptir. Günümüzün teknolojisi doğru kullanıldığında, bu armatürler 500 W sistem tüketimine sahip verimli LED armatürler ile değiştirilebilmektedir.

Uzun ürün ömür için LED teknolojisinin avantajları tek başına yeterli değildir. Armatürün endüstriyel ve mekanik tasarımı EN 60598-1 standardına göre uygunluğunun yanı sıra etkili termal tasarım ve soğutma, yüksek IP seviyesi ve esnek yönlendirilebilme ve montaj seçenekleri için oldukça önemlidir.

Optik tasarım; kamaşmanın kontrol edilmesi, homojen ve yeterli bir ışık dağılımı sağlaması açısından önemlidir. Bu aşamada lens ya da reflektör tasarımı, ışık dağılımının simetrik ya da asimetrik öngörülmesi tasarımı etkileyen parametreler arasındadır. Malzeme seçimi de ışığın geçirgenliği ve optik bileşenin uzun yıllar dayanımı açısından önemlidir.

Işık kaynağı tasarımı da optik bileşen ile uyumluluğu, armatürün verimliliği ve uzun ömür açısından önemlidir. Çalışmamızda farklı aydınlatma kaynağı alternatiflerinin karşılaştırması da anlatılmaktadır.

Güç elektroniği de armatürün ömrü, zorlu hava şartlarında arızalanmadan çalışması ve enerji verimliliği açısından önemlidir. Doğru güç elektroniği parametrelerine de çalışmamızda değinilmektedir.

Aydınlatma armatürlerinin montajı, Dialux çalışmaları sonucunda oluşturulmuş olan montaj detaylarına göre yapıldıktan sonra, aydınlatma ölçümleri yetkili kişiler tarafından yapılıp uygunluk verilmektedir. Bu ölçüm aşağıdaki metot ile yapılmalıdır:

1. Kalibrasyonu geçerli olan bir lüks metre kullanılmalıdır.
2. 68 m x 105 m olan futbol sahası kısa kenarda 8, uzun kenarda 12 oranlarında toplam 96 bölüme bölünmelidir.
3. Ölçüm sırasında lüksmetre her bir karenin orta noktasında pozisyonlanıp, sensörü yukarı bakacak şekilde 1 m yükseklikte tutulmalıdır. Her ölçüm kayıt altına alınmalıdır.
4. Ölçümler tamamlandıktan sonra veriler Excel tarzı bir programa girilip; minimum değer, maksimum değer ve ortalama değer bulunmalıdır.

Anahtar Kelimeler: Armatür Tasarımı, Dialux, Aydınlatma Testleri

LIGHTING FIXTURE DESIGN FOR OUTDOOR FOOTBALL FIELD

ABSTRACT

Since most of the sports events are held in the evening, lighting has great importance in sports applications. We can evaluate the importance of lighting in terms of energy efficiency, reducing maintenance costs, compliance with international standards and lighting comfort (brightness level, uniformity and glare). Although lighting is important in many sports branches, football stadiums are one of the most challenging and important applications in terms of their size.

In our study, the scope of which is football stadiums, we discuss the design features of LED lighting fixtures that are efficient, reduce maintenance costs and provide correct lighting values correct We indicate the requirements for the correct application. And we discuss the actual values with the values targeted comparison of how we are addressing should be done. We discuss how to compare the targeted lighting values with the actual values after the application.

The UEFA standard is 350 lux and above in the stadiums where there is no live broadcast. The average level of smoothness obtained by dividing the minimum lux level by the average lux level and it should be above 0,7. Generally, the light color should be 5000 K, and the color rendering index, also called CRI, should be 70 and above.

1000 W conventional fixtures used in stadium lighting have 1100 W electricity consumption together with system losses. When today's technology is used correctly, these fixtures can be replaced with efficient LED fixtures with 500 W system consumption.

The advantages of LED technology are not enough for long product life alone. The industrial and mechanical design of the fixture is very important for its compliance with the EN 60598-1 standard, as well as effective thermal design and cooling, high IP level and flexible routing and mounting options.

Optical design is important for controlling glare, ensuring a uniform and sufficient distribution of light. At this stage, lens or reflector design and symmetrical or asymmetrical prediction of light distribution are among the parameters that affect the design. Also, the choice of material is important for the transmittance of light and the long-term durability of the optical component.

The design of the light source is also important for its compatibility with the optical component, the efficiency of the luminaire and the long-life. In our study, the comparison of different lighting source alternatives is also explained.

Power electronics are important in terms of the life of the fixture, its failure-free operation in harsh weather conditions and energy efficiency. Correct power electronics parameters are also mentioned in our study.

After the installation of the lighting fixtures is done according to the installation details created as a result of Dialux studies, the lighting measurements are made by authorized persons and compliance is provided. This measurement should be made by the following method:

1. A luxmeter whose calibration is valid should be used.
2. 68 m x 105 m size football field should be divided into 96 sections, 8 on the short side and 12 on the long side.
3. During the measurement, the luxmeter should be positioned at the midpoint of each square and kept at a height of 1 m with the sensor facing upward. Every measurement must be recorded.
4. After the measurements are completed, the data should be entered into an Excel-style program. And the minimum value, maximum value and average value should be calculated in this program.

Keywords: Fixture Design, Dialux, Lighting Tests

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BİTKİSEL YAĞ SANAYİİNDE ENERJİ VERİMLİLİĞİ UYGULAMASI

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ÖZET
Dünyada ve ülkemizde artan enerji ihtiyacı, tükenmekte olan fosil yakıtlar, iklim değişikliği ve diğer çevre sorunları nedeniyle enerjinin verimli kullanılması tüm enerji tüketim aşamalarında önem kazanmaktadır. Bu bağlamda enerji tüketiminde büyük paya sahip olan sanayi sektöründe enerjinin verimli kullanılması ve enerji tasarrufu öncelikli uygulama alanlar arasında yer almaktadır. Bu çalışmada Trakya Bölgesi'nde bitkisel yağ endüstrisinde faaliyet gösteren bir fabrikada eşanjör kullanılarak enerji tasarrufu uygulaması incelenmiştir. Fabrikada en fazla elektrik ve buhar tüketimi olan rafineri departmanında prosese eşanjör konularak bir senelik elektrik ve buhar tüketimi takip edilmiştir. Deodorizasyon prosesinden çıkan 220°C-240°C sıcaklıktaki yağ ile 30°C-50°C derecedeki ham yağ eşanjörden geçirilerek ham yağ sıcaklığı 95°C'ye çıkarılıp vinterize prosesine hazır hale getirilirken deodorizasyondan çıkan yağ ise yaklaşık 125°C'ye dereceye düşürülüp dolum hattına aktarılmaktadır. Eşanjör konulması ile elektrik tüketimindeki azalma ile 7855 USD/ay kazanç sağlanmıştır. Eşanjörün geri ödeme süresi yaklaşık olarak 1,5 ay olarak hesaplanmıştır. Geri ödeme süresinin çok kısa olması ve enerji kaynaklarının daha az kullanılması gibi faydaları dikkate alındığında benzer uygulamaların diğer bitkisel yağ üreten rafineri tesislerinde uygulanması ile ülkemizde sanayi sektöründe enerjinin verimli kullanılması ve enerji tasarrufu alanında yol gösterici olacağı düşünülmektedir.
Anahtar Kelimeler: enerji verimliliği, bitkisel yağ endüstrisi, atık ısı geri kazanımı

ENERGY EFFICIENCY APPLICATION IN VEGETABLE OIL INDUSTRY

ABSTRACT
Efficient use of energy gains importance in all energy consumption stages due to the increasing energy demand in the world and our country, depleting fossil fuels, climate change and other environmental problems. In this context, efficient use of energy and energy saving are among the priority application areas in the industrial sector, which has a large share in energy consumption. In this study, energy saving application was investigated by using a heat exchanger in a factory that is operating in the vegetable oil industry in Thrace Region. In the refinery department, which has the highest electricity and steam consumption in the factory, a heat exchanger was placed in the process and electricity and steam consumption was monitored for one year.

The oil from the deodorization process at 220°C-240°C and the crude oil at 30°C-50°C are passed through the heat exchanger and the crude oil temperature is increased to 95°C and ready for the winterizing process, while the oil that comes out of the deodorization is reduced to approximately 125°C and transferred to the filling line. With the installation of the heat exchanger, 7855 USD/month gain was achieved with the decrease in electricity consumption. The payback period of the heat exchanger has been calculated as approximately 1.5 months. Considering the benefits such as very short payback period and less use of energy resources, it is thought that the implementation of similar applications in other refinery facilities producing vegetable oil, it will be a guide in the field of efficient use of energy and energy saving in the industrial sector in our country.
Keywords: energy efficiency, vegetable oil industry, waste heat recovery

GİRİŞ

Enerji, ekonomik ve sosyal kalkınmanın temel faktörlerinden üretimin vazgeçilmez girdisidir. Nüfus gelişimi, gelişen teknoloji ve yaşam kalitelerinin yükselmesine yönelik eğilimler gibi faktörler nedeniyle enerji talebi artmaya devam etmektedir. Gelecekte dünyanın enerji talebindeki artışın devam edeceğinin öngörülmesi; enerji arzının ağırlıklı olarak fosil yakıtlara bağlı olması, bunların tükenme riskleri, iklim değişikliği ve enerji maliyetlerinin artması; enerjinin verimli kullanılmasını ve tasarruf edilmesini zorunlu kılmaktadır. Artan enerji maliyetleri ve buna bağlı olarak küresel rekabet koşullarının zorlaşması nedeniyle enerji verimliliği dünya ticaretinde önemli hale gelmiştir. Enerji kaynaklarına erişimin giderek zorlaşmasının yanı sıra çevresel maliyetler de enerji verimliliğinin itici güçleri arasında yer almaktadır (Özer ve Güven, 2021).

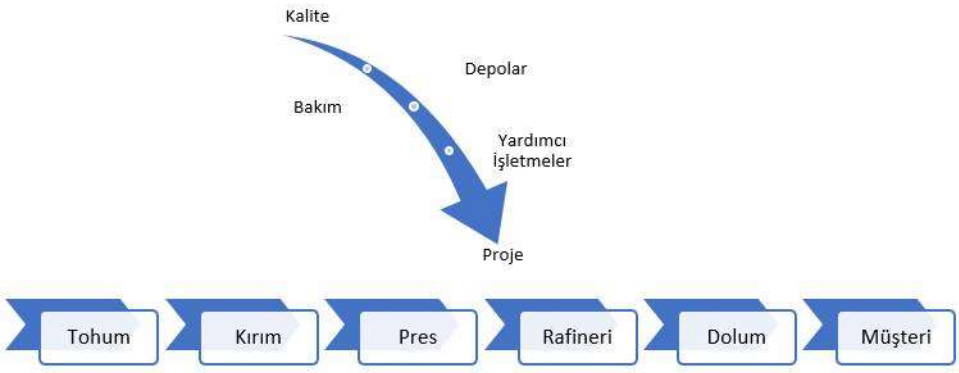
Enerji verimliliği, ekonomik kalkınmayı ve sosyal refahı engellemeden, üretim miktarını ve kalitesini düşürmeden ürün başına enerji tüketiminin azaltılması olarak ifade edilebilir (Url-1). Enerji verimliliği, hammadde ve enerji temini ile başlayarak tüketim ve atık aşamalarına kadar tüm faaliyetleri kapsamaktadır. Günümüzde gelişen teknoloji ile daha az yakıt kullanarak enerji temin etmek mümkündür. Artan enerji talebi ve azalan kaynaklardan dolayı enerjinin verimli kullanılması Dünya'da önem kazanmaya başlamıştır. Hem enerji yatırımları için mevcut kaynakların sınırlı olması hem de enerji talebinin hızla büyümesi, gelişmekte olan ülkelerde enerji verimliliği stratejilerinin önemini daha da artırmaktadır. Özellikle sanayi sektöründe enerji verimliliği, gelişmiş ülkelerin de temel stratejilerinden biridir, artan verimlilik sayesinde hem maliyeti hem de kaynakların kullanımını azaltmak asıl hedef haline gelmiştir. Diğer yandan sürdürülebilir kalkınma, sürekli ve kaliteli bir enerji arzı ile mümkün olabilir. Bu noktadan hareketle enerji verimliliği, sürdürülebilir kalkınma için de önemli bir konu olarak görülmektedir.

Enerji verimliliği çalışmaları, özellikle endüstrilerde, fosil yakıt tüketiminin ve buna karşılık gelen CO_2 emisyonlarının azaltılmasına katkıda bulunmaktadır. Ana CO_2 emisyon kaynağı olan enerji sektörü, Türkiye'deki toplam CO_2 emisyonunun yaklaşık %87'sini oluşturmaktadır (TÜİK, 2019). Enerji, gıda endüstrisindeki temel maliyet bileşenlerinden biridir ve toplam maliyetteki payı ülkeden ülkeye değişiklik göstermektedir. İklim Değişikliği ile mücadele alanında Birleşmiş Milletler İklim Değişikliği Çerçeve Sözleşmesi kapsamında, iklim değişikliğinin azaltılması, adaptasyonu ve finansmanı hakkında 2015 yılında imzalanan Paris Anlaşması, 2016 yılında yürürlüğe girmiştir. Türkiye Ekim 2021'de anlaşmaya taraf olmuştur.

Anlaşmanın uzun dönemli hedefi, küresel ortalama sıcaklık artışının sanayileşme öncesi döneme göre 2°C altında tutulması; ilave olarak ise bu artışın 1,5°C'nin altında tutulmasına yönelik küresel çabaların sürdürülmesi olarak ifade edilmektedir. Düşük sera gazı emisyonlu kalkınmanın temin edilmesi temel hedefler arasında yer almaktadır (Url-2).
Bu çalışmada ülkemizde gıda endüstrisinde faaliyet gösteren yağ fabrikasında eşanjör kullanımı ile verimliliğin arttırılması araştırılmıştır. Çalışma kapsamında prosesler arasına eşanjör ilave edilerek, buhar ve elektrik tüketimindeki azalma hesaplanmıştır.

GELİŞME

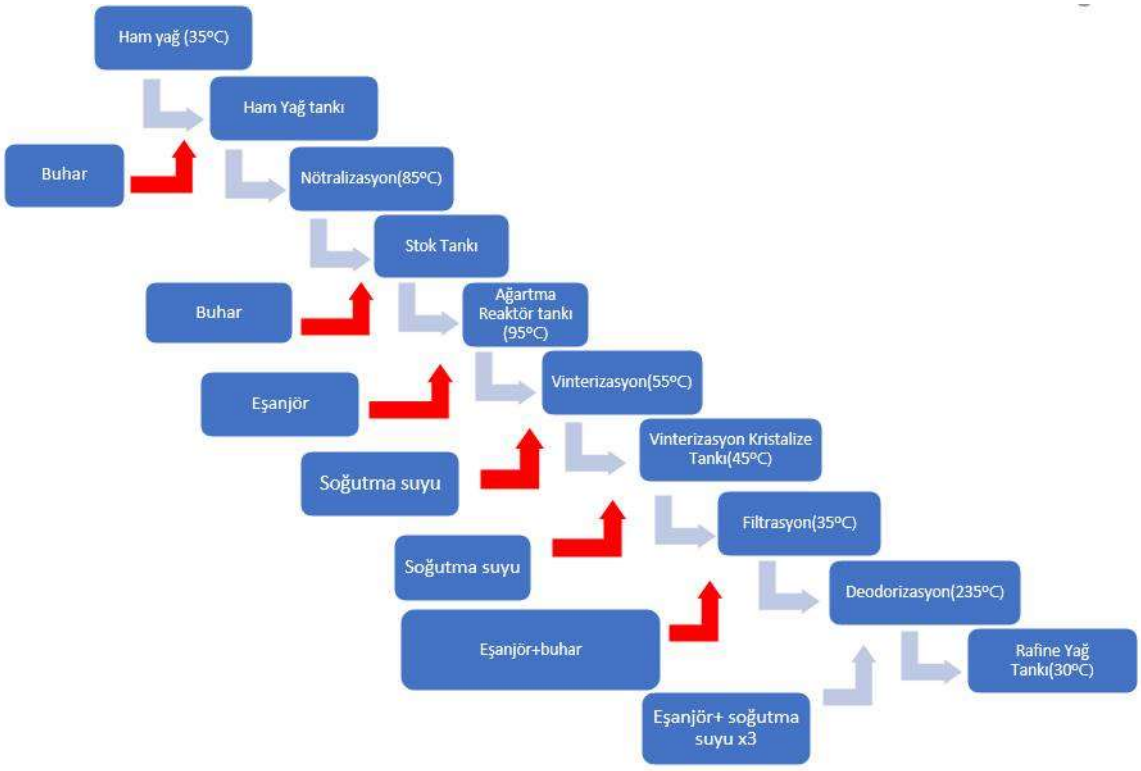
Türkiye'de bitkisel yağ sektörü, gıda sanayi içinde önemli bir yere sahiptir ve ülkemiz bitkisel yağ sektöründe, dünyanın yönetici ülkeleri arasında yer almaktadır. Türkiye'nin bitkisel yağ üretimi giderek artmaktadır. Bitkisel yağ sanayinin üretiminde en büyük pay yaklaşık %29 ile sıvı rafine yağlardır (Onurlubaş ve Kızılaslan, 2017).
Bu çalışmada incelenen fabrika Türkiye'de 2000 yılından bu yana faaliyet göstermektedir ve Trakya Bölgesi'nde 123.000 m^2 kurulu alana sahiptir. İşletmenin yıllık 153.000 ton dolum kapasitesi, 127.000 ton rafinerasyon kapasitesi bulunmaktadır. Yıllık enerji tüketimi ise yaklaşık 7415 TEP'tir. Hem iç piyasadan hem de ithal olarak tedarik ettiği ayçiçeği, mısır ve kanola tohumlarını sektörün ihtiyacına uygun olarak işlemekte ve dağıtımını sağlamaktadır. Yağlı tohumlar başta Trakya olmak üzere, Güney Marmara, Ege ve Akdeniz bölgelerinde bulunan firmaya ait tesislerde işlenmektedir. Tohumların işlenmesinden elde edilen ham yağ, önce rafinerasyona tabi tutulmakta son aşamalarda ise saf veya rafine bitkisel yağ olarak yurtiçi ve yurtdışı pazarlarında satılmaktadır. Şekil 1'de gösterildiği gibi üretimde kırım, pres, rafineri ve dolum prosesleri ile birlikte kalite, bakım, yardımcı işletmeler, depolar ve proje departmanları bulunmaktadır. Üretimde yağın ısıtılması ve soğutulması için eşanjörler kullanılmaktadır.



Şekil 1: Fabrika üretim akış şeması

Eşanjörler, sıcaklığı daha yüksek olan sıvının sahip olduğu ısıyı öncelikle ısı transfer yüzeyinde (plaka veya boru) toplayarak, bu ısıyı aynı plaka veya borunun diğer yüzeyi ile temas etmekte olan düşük sıcaklıktaki diğer sıvıya aktarma prensibine göre çalışırlar. Böylelikle sıvılardan biri ısı kazanıp sıcaklığı artarken, diğeri ısı kaybına uğradığı için sıcaklığı düşmektedir. Bu çalışmada fabrikanın rafineri bölümü ham yağ girişine eşanjör ilave edilerek elde edilen enerji tasarrufu araştırılmıştır.

Şekil 2'de görüldüğü gibi rafineri işlemi başlangıcında 35ºC olan ham yağ, rafineri içi tankına alınır. Burada pompa vasıtası ile buhar yağ eşanjöründen geçirilerek 85ºC ısıtılıp nötralizasyon işlemine tabi tutulur. Daha sonra ağartma reaktör tankına alınan nötr yağ, 85ºC den 95ºC' ye kadar reaktör içerisinde buhar serpantinleri ile tekrar ısıtılarak nötr yağ ağartma yağı haline getirilir. Ağartma yağı ise 16 ºC'deki vinterize yağ ile eşanjörden geçirilerek 55ºC'ye kadar soğutularak vinterizasyon işlemi tamamlanır. Vinterize yağ daha sonra bir soğutma suyu eşanjöründe 45ºC kadar soğutularak vinterize kristalize tanklarına alınır. Burada kademeli olarak tanklar içerisinde chiller soğutma suyu ile 10ºC kadar soğutulduktan sonra filtrasyona tabi tutulur. Filtre edilmiş vinterize yağ, birinci plakalı eşanjörden geçirilerek ağartma yağı ile çarpıştırılıp 70ºC'ye, ikinci bir eşanjörden geçirilerek rafine yağ çıkışı ile çarpıştılarak 80ºC'ye getirilir. Daha sonra sepantinlerde 235ºC olan deodorize yağ ile çarpıştırılarak sıcaklığı 190ºC yükseltilir. Deodorizasyon işleminde yüksek basınç buhar serpantinleri ile yağ sıcaklığı 235ºC'ye kadar yükseltildikten sonra tekrar sepantinlerden geçirilip önce 125ºC'ye, sonra da kademeli olarak (85ºC-70 ºC-68ºC) 68ºC kadar soğutularak rafine yağ elde edilir. Dolum standartları gereği yağ sıcaklığı 17º -24 ºC olmalıdır. Dolum işlemi için yağ kademeli olarak eşanjörlerden geçirilmeye devam edilerek (55ºC-30ºC-18ºC) 18ºC'ye kadar soğutulur.



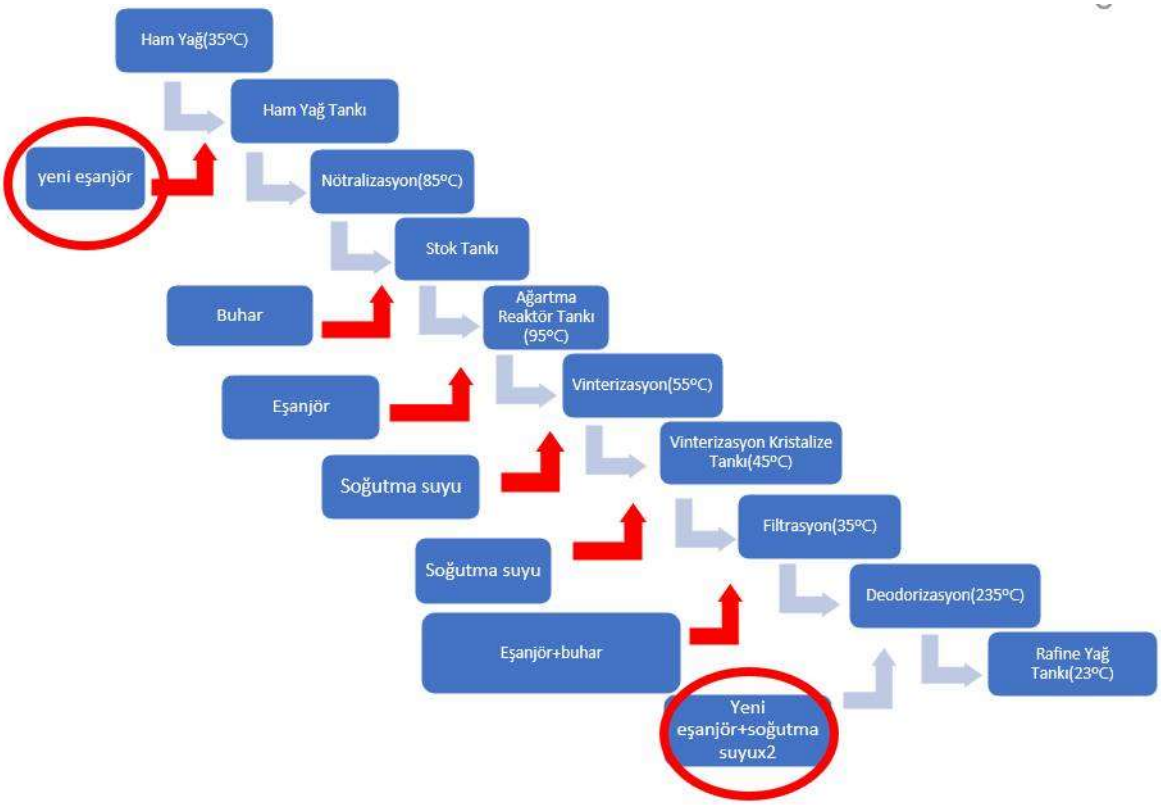
Şekil 2: Revizyon öncesi rafineri üretim akış şeması

Bu çalışmada verimliliği artırmak için Şekil 3'deki gibi ham yağ prosesinden sonra ilave edilen eşanjör ile enerji tüketimindeki azalma hesaplanmıştır. Eşanjör ilave edilmeden önce 3 kademede soğutularak 18ºC'ye düşürülen 125ºC'deki deodorizasyon yağı, eşanjör ilave edildikten sonra 2 kademede soğutma sonrası 23ºC'de doluma hazır hale getirilmektedir. Böylece dolum bölümü girişindeki mevcut eşanjör devre dışı bırakılmıştır.

SONUÇ

Eşanjör ilave edilmesi ile birlikte buharda 29,8 TEP ile %7,5, elektrikte ise 7,91TEP ile %4,6 oranında enerji tasarrufu buna bağlı olarak da 7855 USD/ay kazanç sağlanmıştır. Eşanjörün geri ödeme süresi yaklaşık olarak 1,5 ay olarak hesaplanmıştır. Bu uygulama ile ayrıca su tüketimi ise 0,06 m^3/ton değerinden 0,05 m^3/ton değerine düşürülmüştür. Bu çalışmada elde edilen sonuçlar, özellikle Türk gıda sektöründe, endüstriyel enerji yönetimi, enerji verimliliği ve enerji tasarrufu alanlarındaki uygulamalara örmek olacaktır. Üretimin yoğun olduğu bir sektördeki enerji tasarrufu potansiyelinin hem gıda sektöründeki diğer fabrikalara hem de Türkiye'deki diğer imalat şirketlerine yol açabilecek sonuçlarının sunulması açısından önemlidir.

Geri ödeme süresinin çok kısa olması ve enerji kaynaklarının daha az kullanılması gibi faydaları dikkate alındığında benzer uygulamaların diğer bitkisel yağ rafineri tesislerinde uygulanması ile ülkemizde sanayi sektöründe enerjinin verimli kullanılması ve enerji tasarrufu alanında yol gösterici olacağı düşünülmektedir.



Şekil 3: Revizyon sonrası rafineri üretim akış şeması

KAYNAKÇA

Onurlubaş, E., Kızılaslan, H., 2017. Türkiye'de Bitkisel Yağ Sanayindeki Gelişmeler ve Geleceğe Yönelik Beklentiler, YAYIN NO: 157 ISBN 978–975–407–228–0.

Özer B., Güven B., 2021. Energy efficiency analyses in a Turkish fabric dyeing factory, Energy Sources, Part A: Recovery, Utilization, and Environmental Effects, 43:7, 852-874, DOI: 10.1080/15567036.2020.1755392.

TÜİK, 2019. Sera Gazı Emisyon İstatistikleri, 1990-2019

Url-1: https://enerji.gov.tr/enerji-verimliligi, erişim tarihi: 16.11.2021

Url-2 https://iklim.csb.gov.tr/paris-anlasmasi-i-98587, erişim tarihi: 20.11.2021

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PROBING THE PHYSICS OF GAS, DUST AND STELLAR POPULATIONS ACROSS THE DISC OF THE NEARBY SPIRAL GALAXY NGC 3938

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ABSTRACT
Molecular gas and dust are the key ingredients for star formation in galaxies. Since spiral galaxies are rich in molecular gas and dust, they are ideal targets to better understand the star formation processes compared to the elliptical and lenticular galaxies poor in gas and dust. Using the literature data of multiple CO lines (along with far-infrared (FIR) and far-ultraviolet (FUV) data) we study the physical properties of the interstellar medium (ISM) across the entire gaseous and dusty disc of the spiral galaxy NGC 3938. We obtained the data from multiple sky surveys including the CO Multi-line Imaging of Nearby Galaxies (COMING) survey (for ^{12}CO (1-0) and ^{13}CO (1-0) data), the HERA CO-Line Extragalactic Survey (HERACLES) [for ^{12}CO (2-1) data], James Clerk Maxwell Telescope Nearby Galaxy Survey [JCMT NGS; for ^{12}CO (3-2) data], SPITZER infrared survey (for the FIR data at 24 µm, 70 µm and 160 µm), and finally The Galaxy Evolution Explorer (GALEX) survey (for FUV data). We defined seven positions along the major axis of the galaxy, allowing us to study the physics of the ISM without selection bias. We also targeted 13 positions bright in 24µm emission over the spiral arms. We obtained multiple CO line ratios [i.e. ^{12}CO (1-0)/^{13}CO(1-0), ^{12}CO(2-1)/^{12}CO(1-0) and ^{12}CO(3-2)/^{12}CO(1-0)], molecular gas mass, FUV and FIR emission, and the extinction (i.e. FUV/24µm ratio) at each position studied. Our preliminary results indicate that almost all physics properties show a good negative correlation with the galactocentric distance. Any correlations between the pair of parameters will further be studied, and the physical properties in the disc of the galaxy will be compared with that in other galaxies from different Hubble types.
Keywords: Spiral Galaxies, Molecular Gas, Interstellar Dust, Far-ultraviolet Radiation, Far-infrared Radiation

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THE EFFECT OF FIN ANGLE ON INCREASING THE HEAT TRANSFER FROM ELECTRONIC COMPONENTS BY APPLYING AN IMPINGING JET-CROSS FLOW

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Abstract
With the advancement of technology, circuit elements in developing electronic devices heat up and their temperatures rise depending on the working load. Cross flow, which is one of the methods used to increase heat transfer from electronic circuits, may be insufficient for cooling circuit elements that have reached very high temperatures. The temperature is kept within safe limits by providing an efficient heat transfer from the circuit elements with the impinging jet-cross flow application. In this study, heat transfer from rectangular shaped surfaces with copper plate with constant heat flux of 1000 W/m^2 in the channel was investigated numerically by using a combination of impinging jet and cross flow. Numerical research was carried out by solving the energy and Navier-Stokes equations as three dimensional and steady, using the Ansys-Fluent computer program with k-ε turbulence model. In order to direct the flow in the channel to the heated surfaces, the fins with 30º, 45º and 60º angles and the length of the D jet inlet diameter were placed in the channel horizontally with the impinging jet surface. The jet fluid used in the channel is water, and the upper and lower surfaces of the channel and the fin are adiabatic. The distance between the jet and the plate is 45 mm ($3D_h$), and the jet Reynolds number range is 5000-9000. The results of the study were compared with the experimental results of the study in the literature and they were found to be consistent with each other. The results were presented as the mean Nu number and surface temperature variation for each rectangular patterned surface. Besides, the velocity-streamline and temperature contour distributions of the impinging jet-cross flow along the channel for channels were evaluated comparatively. For Re = 9000, it was determined that the average Nu number value in the channel with 60º fin angle was 20.02% higher than the channel without fin.
Keywords: Impinging Jet-Cross Flow, Fin angle, Electronic component, Numerical heat transfer

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ELEKTRONİK BİLEŞENLERDEN OLAN ISI TRANSFERİNİN ÇARPAN JET-ÇAPRAZ AKIŞ UYGULANARAK ARTIRILMASINDA KANATÇIK AÇISININ ETKİSİ

Özet

Teknolojinin ilerlemesiyle gelişmekte olan elektronik cihazlardaki devre elemanları çalışma yüküne bağlı olarak ısınmakta ve sıcaklıkları yükselmektedir. Elektronik devrelerden ısı transferini artırmak için kullanılan yöntemlerden biri olan çapraz akış, çok yüksek sıcaklıklara ulaşmış devre elemanlarının soğutulmasında yetersiz kalabilmektedir. Çarpan jet-çapraz akış uygulamasıyla devre elemanlarından verimli bir ısı transferi sağlanarak, sıcaklık güvenli sınırlar içinde tutulmaktadır. Bu çalışmada, kanalda bulunan sabit ısı akısına sahip bakır plakalı dikdörtgen şekilli yüzeylerden olan ısı transferi çarpan jet-çapraz akış kombinasyonu kullanılarak sayısal olarak incelenmiştir. Sayısal inceleme, zamandan bağımsız, üç boyutlu enerji ve Navier-Stokes denklemlerinin k-ε türbülans modeli ile Ansys-Fluent bilgisayar programının kullanılarak çözülmesiyle gerçekleştirilmiştir. Kanaldaki akışı ısınmış yüzeylere yönlendirmek amacıyla 30^o, 45^o ve 60^o açılı ve D jet giriş çapı uzunluğunda kanatçık, çarpan jet yüzeyiyle yatay olarak kanala yerleştirilmiştir. Kanalda kullanılan jet akışkanı su olup, kanalın alt ve üst yüzeyleri ve kanatçık adyabatiktir. Dikdörtgen şekilli yüzeyler, 1000 W/m^2' lik sabit ısı akısına sahiptir. Jet-plaka arası uzaklık 45 mm ($3D_h$) olup, jet Reynolds sayısı aralığı 5000-9000' dir. Çalışmanın sonuçları, literatürdeki çalışmanın deneysel sonuçlarıyla karşılaştırılmış ve birbirleriyle tutarlı oldukları görülmüştür. Sonuçlar, her bir dikdörtgen desenli yüzey için ortalama Nu sayısı ve yüzey sıcaklık değişimi olarak sunulmuştur. Re = 7000' de 30^o, 45^o ve 60^o kanatçık açılı ve kanatçıksız (0^o) kanallar için kanal boyunca çarpan jet-çapraz akışın hız-akım çizgisi ve sıcaklık konturu dağılımları karşılaştırmalı olarak değerlendirilmiştir. Re = 9000 için 60^o açılı kanatçıklı kanalda ortalama Nu sayısı değerinin kanatçıksız kanala göre %20.02 daha fazla olduğu belirlenmiştir.

Anahtar Kelimeler: Çarpan jet-çapraz akış, Kanatçık açısı, Elektronik bileşen, Sayısal ısı transferi

1. GİRİŞ

Bilim ve teknolojinin ilerleme sürecinde olduğu günümüzde elektronik cihazlar da sürekli gelişim aşamasındadır. Genel itibariyle tbütün elektronik cihazlar, elektronik devrelerden oluşmaktadır. Kullanılan elektronik cihazlarda elektronik devreler ısınarak, sıcaklıkları artmaktadır. Isınan elektronik devre elemanları soğutularak, çalışma sıcaklıkları güvenli sınır aralığına çekilemezse, cihazın bozulma problemiyle karşılaşılabilir. Bu elemanların soğutulabilmeleri için çeşitli soğutma teknikleri uygulanabilmektedir. Bu tekniklerden en bilineni çapraz akış ile soğutma yöntemidir. Bu teknik, soğuk akışkanın fan ile bütün elektronik devre üzerine yollanması ve böylece devre elemanlarının tümünün soğutulması prensibine dayanır. Fakat bu teknik, tüm devre elemanlarının soğutulmasını temel aldığından çok yüksek sıcaklıklara ulaşmış elemanların soğutulmasını sağlayamayabilir. Bir diğer soğutma tekniği ise, çarpan jet ile soğutma tekniğidir. Bu teknikte, soğuk akışkan lüle ile yüksek sıcaklıktaki bir yüzeye noktasal olarak püskürtülür. Çarpan jetler, çok yüksek sıcaklığa ulaşmış bir elektronik devre elemanın soğutulmasını sağlayabilirken, devrenin tümünün soğutulmasında başarısız olabilmektedir.

Bir elektronik devre sıcaklık değerleri birbirinden oldukça farklı olan birçok eleman bulundurabilmektedir. Bu nedenle, tek tip bir soğutma tekniği ile tüm devreyi güvenli çalışma sıcaklıkları içinde tutabilecek duruma ulaşılamayabilinir. Bundan dolayıdır ki; çarpan jet ve çapraz soğutma tekniğinin birlikte kullanılması soğutma verimi yüksek bir faydalı durum sağlayabilir. Çapraz akış ile devre elemanlarının tümü belirli bir dereceye kadar soğutulurken, devrede yalnızca çok yüksek sıcaklıklara ulaşmış olan elemanlar ise çarpan jet akışı ile yersel olarak soğutulabilmektedir. Böylece, ana kartı meydana getiren bütün elektronik devre elemanlarının sıcaklıkları güvenli bir sınırda tutulabilmektedir [1-2].

Literatür araştırıldığında sadece çapraz akış veya sadece jet akışın kullanıldığı birçok çalışma mevcuttur. Bu çalışmada da araştırılan geometri daha çok jet akışa benzerlik gösterdiğinden, literatür incelemesinde jet akış üzerinde durulmuştur. Ayrıca, literatürde çarpan jetler üzerine çok sayıda deneysel ve sayısal inceleme bulunmaktadır. Bu çalışmalarda ise esas itibariyle çarpan jetler için akışkan seçimi, akış alanın geometrisi, kullanılan türbülans modeli, Re sayısı, jet ile çarpma yüzeyi arasındaki mesafe ve elektronik elemana uygulanan ısı akısı gibi değişkenlerin ısı transferine olan etkilerine odaklanılmıştır. Bununla birlikte, çapraz akış ve çarpan jet akışının kombine olarak kullanıldığı elektronik devre soğutma teknikleri ile ilgili gerçekleştirilen çalışma sayısı oldukça az olup, akışın kanal içerisinde yüzeyler üzerine yönlendirilmesine yönelik herhangi bir çalışmaya ulaşılan literatürde rastlanmamıştır.

Kılıç [1], yüksek ısı akılı elektronik devre elemanlarının dört farklı nanoakışkan ve çarpan jet tekniği uygulanarak soğutulmasını ve akış özelliklerini sayısal olarak araştırmıştır. Farklı hacimsel oranlardaki nanoakışkanların (%2, %4, %6 ve %8) ısı transferine olan etkilerini de incelemiştir. En yüksek ısı transferi miktarına %8 hacimsel oran için ulaşmış olup, hacimsel oranının %2' den %8' e artışıyla ortalama Nu sayısında %15,2 artış sağlamıştır. Hadipour vd. [3], sabit ısı akılı iç bükey bir yüzey üzerine gönderilen çarpan dairesel bir jet akışının akış ve ısı transferi karakteristiklerini, farklı jet-plaka oranları için deneysel ve sayısal olarak araştırmışlardır. H/D (kanal yükseklik/jet giriş çapı) oranı 0.1-4, Reynolds sayısı aralığı 10000-35000 ve jet çapları 18-30 mm değerlerini için inceleme yapmışlardır. Aynı Re sayısında jet çapı artışının, ısı transferini arttırdığını saptamışlardır. Küçük H/D oranlarında daha iyi bir soğutma etkisi elde etmişlerdir. Re sayısının 10000 ve H/D oranının 0.1 olduğu durumda, sırasıyla H/D oranı 0.4, 1 ve 4 olduğu durumla kıyaslandığında ortalama Nu sayısında %44,5, %55,3 ve %922 lik artışlar elde etmişlerdir. Baydar [4], alt yüzeye konumlandırılmış tek ve çift çarpan jetlerin, üst yüzeye doğru dik bir şekilde püskürtülmesiyle meydana gelen akış alanının
deneysel araştırmasını gerçekleştirmişlerdir. Re sayısı 500-10000 ve H/D 0.5-4 oranı için değerlendirmeler yapmışlardır. $Re>2700$ ve $H/D<2$ için tek ve çift jet uygulamalarıyla çarpma yüzeyinde atmosfer basıncından düşük bölgelerin meydana geldiğini saptamışlardır. Köseoğlu [5], jet ve çarpma yüzeyi arasındaki sıcaklık farkının ısı transferine olan etkisini deneysel ve sayısal olarak araştırmışlardır. Re sayısı aralığı 250-10000, H/D aralığı 2-12 ve 10-3000 ısı akısı değerlerinde çalışmışlardır. Düşük Reynolds sayılı jet akışlarda ısı transferinde %35 civarında artış saptamışlardır. Jet kesit alanının artışıyla ısı transferinde kayda değer değişiklik gözlemlemişlerdir. Choo vd. [6] deneysel olarak eğimli bir çarpan jetin, küçük jet-plaka mesafelerinde ısı transferine olan etkisini araştırmışlardır. Bu amaçla, $0°\leqslant\theta\leqslant40°$ eğim açısı, $H/D\leqslant1$ jet plaka mesafesi ve 5000-15000 Re sayısında çalışmışlardır. Bölek [7], sayısal olarak çarpan jetlerin farklı düzlemlere çarpıtılmasıyla oluşan akış ve ısı transferini farklı Re sayılarında ve H/D oranlarında etkisini araştırmıştır. En yüksek ısı transferi miktarını Re sayısı 20000 Re sayısı değerinde ve 6 H/D mesafesi için elde etmiştir.

Larraona vd. [8], sayısal olarak sabit ısı akılı elektronik bir devre elemanının çarpan jet ve çapraz akış ile soğutulmasını araştırmışlardır. Ortalama Nu sayısının elektronik elemanın yüksekliği ile ters, kanal Re sayısı ve hız oranlarıyla doğru orantılı olarak arttığını belirlemişlerdir. Jet çapı artışıyla ortalama Nu sayısında küçük bir artış sağladığını gözlemlemişlerdir. Çarpan jet-çapraz akışın, yalnızca kanal akışı kullanılmasına göre daha yüksek soğutma verimliliği sağladığını saptamışlardır. Demircan [9], sayısal olarak bir elektronik devre elemanının, çapraz akış ve çarpan jet uygulamasıyla soğutulmasını araştırmıştır. Re sayısı aralığı 30000–90000, jet ve kanal hız oranının farklı değerleri için incelemeler gerçekleştirmiştir. Re sayısının ve hız oranlarının artışıyla ısı transferinin önemli oranda arttığını belirlemiştir. Mergen [10], sayısal olarak sabit ısı akılı (3500 W/m^2) bir elektronik elemanın çarpan jet ve çapraz akışla soğultulmasını araştırmıştır. Çalışmasının sonucunda jet Re sayısının kanal Re sayısına oranı azaldıkça ısı transferinin azaldığını belirlemiştir. Maghrabie vd. [11], sayısal olarak bir kanal boyunca sıralanmış yedi adet elektronik elemandan oluşan bir sistemin çarpan jet-çapraz akış ile soğutulmasını araştırmışlardır. Jet konumu değişikliğinin ısı transferini etkilediğini saptamışlardır.

Bu çalışmada, kanalda bulunan sabit ısı akısına sahip bakır plakalı dikdörtgen şekilli yüzeylerden olan ısı transferi çarpan jet-çapraz akış kombinasyonu kullanılarak sayısal olarak incelenmiştir. Sayısal araştırma, zamandan bağımsız, üç boyutlu olarak enerji ve Navier-Stokes denklemlerinin k-ε türbülans modelli Ansys-Fluent bilgisayar programının kullanılarak çözülmesiyle gerçekleştirilmiştir. Kanaldaki akışı ısınmış yüzeylere yönlendirmek amacıyla 30^o, 45^o ve 60^o açılı ve D jet giriş çapı uzunluğunda kanatçık, çarpan jet yüzeyiyle yatay olarak kanala yerleştirilmiştir. Kanalda kullanılan jet akışkanı 303 K sıcaklığındaki su olup, kanalın alt ve üst yüzeyleri ve kanatçık adyabatiktir. Dikdörtgen şekilli yüzeyler, 1000 W/m^2' lik sabit ısı akısına sahiptir. Kanalda referans çalışmalar dikkate alınarak üç adet dikdörtgen şekilli yüzey kullanılmıştır. Jet-plaka arası uzaklık 45 mm ($3D_h$) olup, jet Reynolds sayısı aralığı 5000-9000' dir. Çalışmanın sonuçları, literatürdeki çalışmanın deneysel sonuçlarıyla karşılaştırılmış ve birbirleriyle tutarlı oldukları görülmüştür. Sonuçlar, her bir dikdörtgen desenli yüzey için ortalama Nu sayısı ve yüzey sıcaklık değişimi olarak sunulmuştur. Re = 7000' de 30^o, 45^o ve 60^o kanatçık açılı ve kanatçıksız (0^o) kanallar için kanal boyunca çarpan jet-çapraz akışın hız ve sıcaklık konturu dağılımları karşılaştırmalı olarak değerlendirilmiştir.

2. SAYISAL İNCELEME

Çalışmada, üç boyutlu ve zamandan bağımsız olarak dikdörtgen şekle sahip desenli yüzeyler üzerindeki çarpan jet-çapraz akışın zorlanmış taşınım ısı transferinin sayısal olarak hesaplamalı çözümünde Ansys-Fluent programından yararlanılmıştır.

Çalışmada, jet akışı uygulanması sonucu kanal içerisinde düzensiz akış dalgalanmaları oluşacağından çalışma türbülanslı olarak modellenecektir. Bu nedenle, çalışmada türbülans modeli olarak k-ε türbülans modeli kullanılacaktır. Kanaldaki akış ve ısı transferinin çözümüne aşağıda açıklandığı üzere gövde kuvvetinin bulunmadığı kararlı durumdaki türbülanslı akış için zaman ortalamalı kütle, momentum ve enerjinin korunumu denklemlerinden türetilen kısmi türevli diferansiyel denklemlerin çözümü ile ulaşılmıştır [12]. Süreklilik ve momentum denklemleri için yakınsama ölçeği 10^{-6} olup, enerji denklemi için bu değer 10^{-7}'dir. Simülasyonlarda kullanılan ağ yapısı şekli dörtyüzlüdür (tetrahedral).

Süreklilik denklemi

$$\frac{\partial \overline{u}_i}{\partial x_j} = 0 \tag{1}$$

Momentum denklemi

$$\rho \frac{\partial}{\partial x_j}\left(\overline{u}_i \overline{u}_j\right) = \frac{\partial \overline{P}}{\partial x_i} + \frac{\partial}{\partial x_j}\left[\mu\left(\frac{\partial \overline{u}_i}{\partial x_j} + \frac{\partial \overline{u}_i}{\partial x_j}\right) - \rho\overline{u_i' u_j'}\right] \tag{2}$$

Enerji denklemi

$$\rho c_p \frac{\partial}{\partial x_i}\left(\overline{u}_i \overline{T}\right) = \frac{\partial}{\partial x_i}\left[k\frac{\partial \overline{T}}{\partial x_i} - \rho c_p \overline{T' u_i'}\right] \tag{3}$$

Türbülans kinetik enerji denklemi

$$\frac{\partial}{\partial x_i}\left(\rho k u_i\right) + \frac{\partial}{\partial y}\left(\rho k\right) = \frac{\partial}{\partial x_j}\left[\mu + \frac{\mu_t}{\sigma_k}\frac{\partial k}{\partial x_j}\right] + G_k - \rho\varepsilon \tag{4}$$

Türbülans kinetik enerji yutulma terimi

$$\frac{\partial}{\partial x_i}\left(\rho \varepsilon u_i\right) + \frac{\partial}{\partial y}\left(\rho \varepsilon\right) = \frac{\partial}{\partial x_j}\left[\left(\mu + \frac{\mu_t}{\sigma_\varepsilon}\right)\frac{\partial \varepsilon}{\partial x_j}\right] + C_{1\varepsilon}\frac{\varepsilon}{k}G_k - C_{2\varepsilon}\rho\frac{\varepsilon^2}{k} \tag{5}$$

Bu denklemlerde ρ akışkanın yoğunluğunu, k türbülanslı akışın kinetik enerjisini, u_i, x, y ve z eksenleri doğrultusundaki hız bileşenlerini, μ akışkanın viskozitesini, σ_k türbülanslı kinetik enerji Prandtl sayısını ($\sigma_k = 1$) göstermektedir. Türbülanslı kinetik enerji üretimi (G_k) ve türbülanslı akışın viskozitesini (μ_t) veren eşitlikler aşağıda verilmiştir [12]

$$G_k = -\rho\overline{u_i' u_j'}\frac{\partial u_j}{\partial x_i} \tag{6}$$

$$\mu_t = C_\mu \rho \frac{k^2}{\varepsilon} \tag{7}$$

$C_{1\varepsilon}$, $C_{2\varepsilon}$ ve C_μ katsayıları, σ_ε ise türbülans yutulma Prandtl sayısını temsil etmektedir ve sırasıyla $C_{1\varepsilon} = 1.44$, $C_{2\varepsilon} = 1.92$, $C_\mu = 0.09$ ve $\sigma_\varepsilon = 1.3$ olarak alınmıştır [13].
Elektronik elemanların yüzeylerindeki ortalama taşınım ısı transferi katsayısı Eş. 8, Nusselt sayısı (Nu) ise Eş. 9 vasıtasıyla hesaplanacaktır [14].

$$h = \frac{q''}{T_y - T_a} \tag{8}$$

Nu sayısı, taşınımla ısı geçişinin iletimle ısı geçişine oranı olarak değerlendirilir.

$$-k_a\left(\frac{\partial T}{\partial n}\right)_y = h\left(T_a - T_y\right) \quad \text{ve} \quad Nu = \frac{h(3.m)}{k_a} \tag{9}$$

Burada, T_a ve T_y sırasıyla su akışkanının ve elektronik eleman ortalama yüzey sıcaklıkları (K), k_a akışkanın ısı iletim katsayısı (W/m.K), 3.m elektronik elemanın akışkanla temasta olan toplam yüzey uzunluğu (m), h ve h_m sırasıyla yüzey üzerindeki yerel ve ortalama ısı taşınım katsayısı ($W/m^2.K$), n yüzeye dik yön olup ortalama Nu sayısı (Nu_m) aşağıdaki gibi hesaplanmaktadır

Ortalama ısı taşınım katsayısı

$$h_m = \frac{1}{3.m}\int_0^{3m} h dx \tag{10}$$

Ortalama Nu sayısı

$$Nu_m = \frac{h_m(3.m)}{k_a} \tag{11}$$

Kanal hidrolik çapı

$$D_{kh} = \frac{4A_k}{P_k} = \frac{4(HW)}{2(H+W)} \tag{12}$$

Bu denklemde A_k kanalın kesit alanı, P_k kanalın ıslak çevresi, H ve W ise sırasıyla kanalın yükseklik ve genişliğidir. Jetin hidrolik çapı ise jet girişi daire olduğundan D jet girişinin çapına eşittir ($D_{hjet} = D$).
Kanal ve Jet Reynolds sayıları ise sırasıyla Eş. (13) ve Eş. (14) yardımıyla belirlenmektedir.

$$Re_k = \frac{\rho_a V_k D_{hk}}{\mu_a} \tag{13}$$

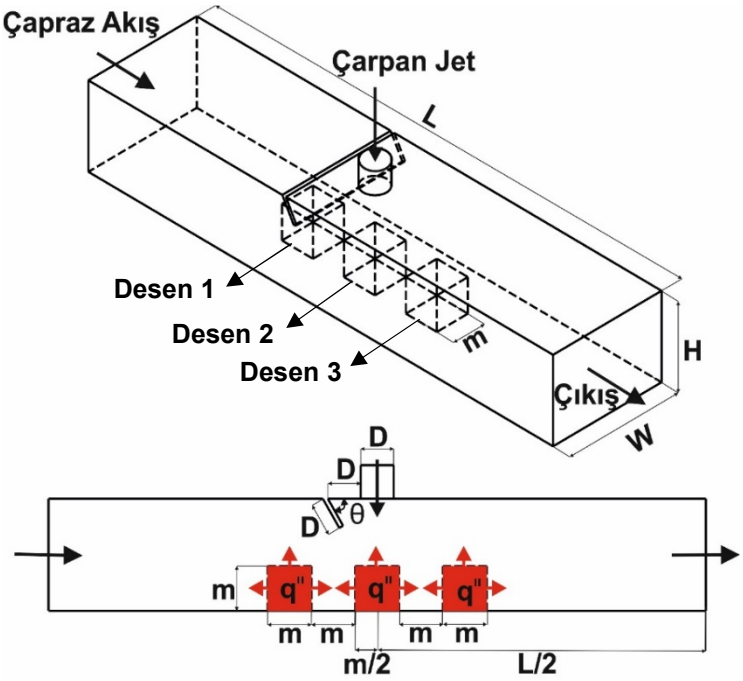
$$Re_j = \frac{\rho_a V_j D}{\mu_a} \tag{14}$$

Bu eşitliklerde, ρ_a ve μ_a sırasıyla suyun yoğunluğu (kg/m^3) ve viskozitesi (kg/s.m), V_k ve V_j ise sırasıyla suyun kanal ve jet akış hızlarıdır (m/s).

3. GEOMETRİK MODEL TASARIMI

Çalışmada kullanılan çarpan jet-çapraz akış tasarımlı kanal ve kanaldaki dikdörtgen desenli elektronik elemanlara ait ölçü ifadeleri ve sınır şartları Şekil 1' de gösterilirken, modelin geometrik boyutlandırılmasına ait ölçüler ise Tablo 1' de belirtilmiştir. Bu çalışmada yapılan kabuller şunlardır:

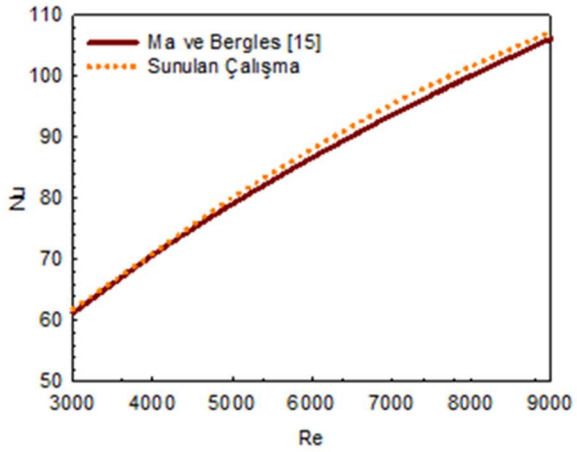
a) Akış hacmi zamandan bağımsız, üç boyutlu ve türbülanslıdır.
b) Hem jet akışkanı hem de kanal girişindeki çapraz akış için kullanılan akışkan sıkıştırılamaz sudur.
c) Dikdörtgen desenli elektronik eleman yüzeylerine sabit ısı akısı uygulanmıştır.
d) Akışkanın ısıl özellikleri sabit olup, dinamik viskozitesi μ = 0.00080340 N.s/m^2, ısıl iletkenliği k = 0.6172 W/m.K, yoğunluğu ρ = 995.80 kg/m^3, özgül ısısı c = 4178.40 J/kg.K olarak alınmıştır.
e) Kanal ve açılı kanatçık yüzeyleri adyabatiktir
f) Akışkan ve desenli yüzeyler için ısı üretimi yoktur.



Şekil 1. Sınır şartları ve boyutları olan hesaplama hacminin perspektif görünüşü

4. SONUÇLARIN DEĞERLENDİRİLMESİ

Sunulan çalışmada yalnızca jet akışın olduğu durumda farklı Re sayılarında incelemeler yapılarak ulaşılan sonuçlar ile Ma ve Bergles [15] tarafından yapılan deneysel araştırmalar sonucu elde edilen bağıntı kullanılarak ($\overline{Nu} = 1.29\,\mathrm{Re}^{0.5}\,\mathrm{Pr}^{0.4}$) ulaşılan sonuçlar birbirleriyle karşılaştırılmıştır (Şekil 2). Şekil 2' den görülebildiği gibi, Ma ve Bergles [15]' in deneysel sonuçlarıyla, bu çalışmanın sayısal sonuçlarının birbirleriyle oldukça uyumlu ve tutarlı oldukları saptanmıştır.



Şekil 2. Sunulan çalışma ve Ma ve Bergles [15]' in deneysel sonucunun karşılaştırılması

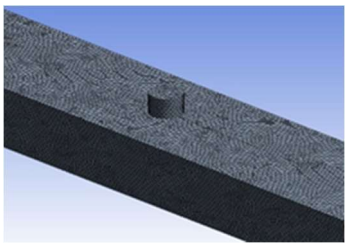
Tablo 1. Modelin geometrik boyutlandırma ölçüleri

Modelin Geometrik Boyutlandırması	
D	15 mm
L	66D
W	4D
H	3D
m	20 mm
$q^{"}$	1000 W/m^2
θ	30º, 45º, 60º

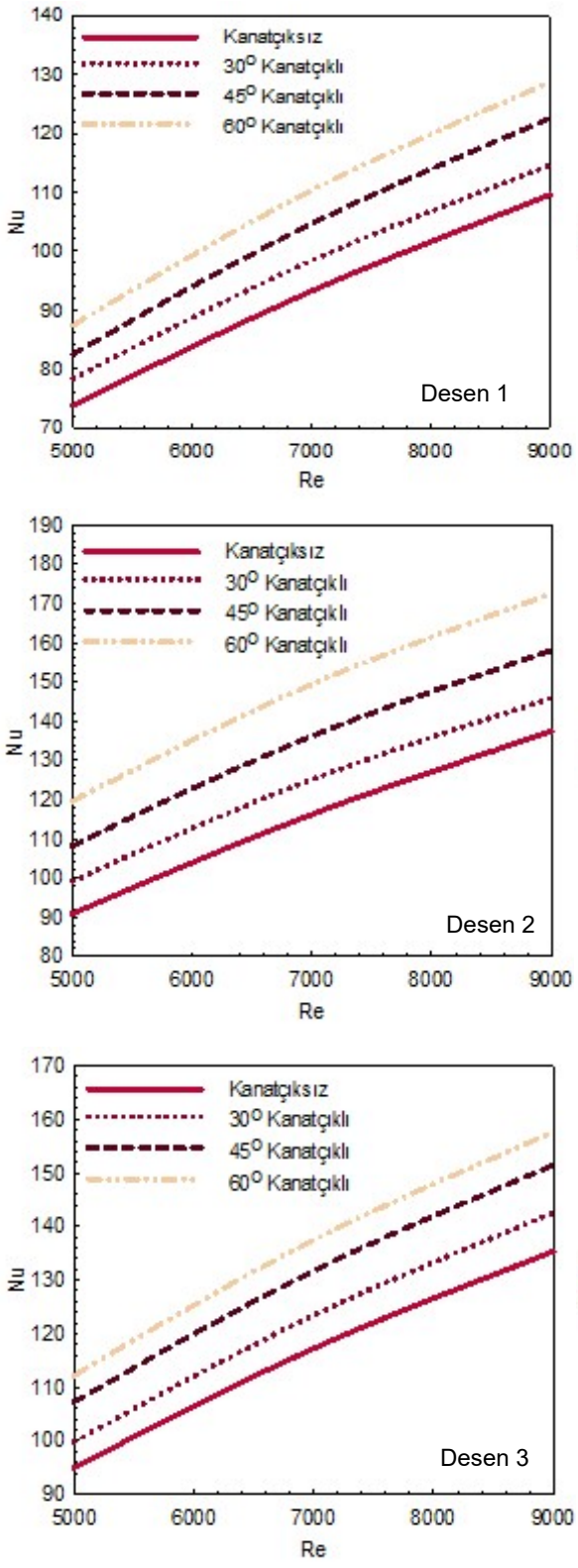
Tablo 2' de ağ sayısının Nu sayısı üzerindeki etkisini belirleyerek kanal için en uygun sayıda ağ elemanı kullanabilmek amacıyla kanatçıksız çarpan jet-çapraz akışlı kanalda ağ sayısının ortalama Nu sayısı üzerindeki etkisi farklı Re sayılarında verilmiştir. Elde edilen sonuçlara göre kanatçıksız kanalda 2022840 adet ağ elemanının yeterli olduğu belirlenmiştir. Bunun yanı sıra, simülasyonlarda kullanılan ağ yapısı şekli dörtyüzlü (tetrahedral) olup Şekil 3' de daha iyi görebilmek amacıyla yakınlaştırılarak gösterilmiştir.

Tablo 2. Ağ elemanı sayısına göre Nu_m sayısının Re sayısı ile değişimi

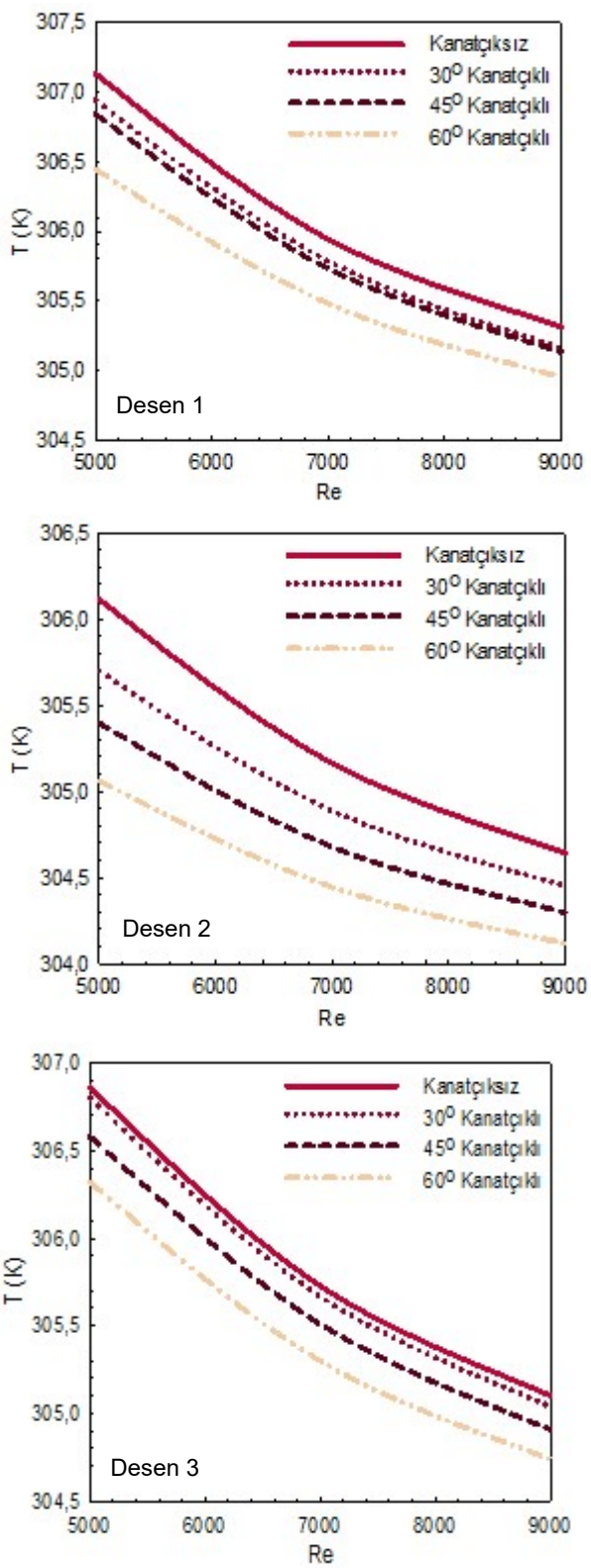
Ağ elemanı sayısı	Re=5000-Nu	Re=7000-Nu	Re=9000-Nu
1758412	86.48	108.84	127.40
2022840	86.52	108.88	127.43
2245786	86.52	108.87	127.42



Şekil 3. Hesaplamada kullanılan desenli yüzeylere ait ağ yapısı



Şekil 4. Desenli yüzeyler için ortalama Nu sayısının Re ile değişimi



Şekil 5. Desenli yüzeyler için ortalama yüzey sıcaklığının Re ile değişimi

Şekil 4' de çarpan jet-çapraz akışlı kanala yerleştirilmiş olan desenli yüzeylerin her birine ait ortalama Nu sayısının Re sayısı ile değişimleri desenli yüzeylerin her biri için gösterilmektedir. Kanalda üç adet sabit ısı akılı desenli yüzey bulunmaktadır. Her üç desenli yüzey için Re sayısının artışıyla ısı transferinin artmasına bağlı olarak Nu sayısı artmaktadır. Bununla birlikte, kanatçığın olmadığı kanala göre her üç kanatçık açısı ve desenli yüzeyde Nu sayısında daha fazla artış elde edilmektedir. Kanatçık kullanımıyla birlikte çapraz akıştan yani kanaldan gelen akış desenli yüzeyler üzerine daha fazla yönlendirebildiği gibi desenler üzerinde ikincil bir jet akış etkisi oluşturularak ısı transferi miktarını artırma etkisi elde edilebilmektedir. Birinci sıradaki yani çapraz akış tarafındaki ilk desen için Nu sayısını incelediğimizde kanatçık açısının artışıyla Nu sayısı artmakla birlikte Re = 9000 için 60^o açılı kanatçıkta Nu sayısında %17.44' lük bir artış elde edilmektedir. Aynı Re sayısında bu artış miktarı diğer açılı kanatçıklı kanallar için daha düşüktür. İkinci sıradaki desen için (Desen 2) çapraz akışın kanatçık sayesinde desenli yüzey üzerine yönlendirilebilmesinin yanında jet akış etkisinin bu desen üzerinde daha fazla olması nedeniyle Nu sayısı değerleri bu yüzey için daha yüksek değerlere ulaşmaktadır. Re = 5000 için 30^o açılı kanalda birinci sıradaki desene göre %30,18 oranında daha fazla artış elde edilmektedir. Desen 3' de ise çarpan jet-çapraz akışın desenli yüzeyin özellikle sağ tarafına etki etmemesi sonucu kanatçıksız kanal durumunda ve Desen 1' e göre Nu sayısı değerlerinde daha fazla artış elde edilse de tüm Re sayıları için Desen 2' ye göre Nu sayısı değerleri daha düşük kalmaktadır. Re = 7000' de 60^o açılı kanalda Desen 2' ye göre Desen 3' de Nu sayısı yaklaşık %9 daha azdır. Bununla birlikte aynı Re sayısı ve kanatçık açı değeri için sırasıyla Desen 1 ve kanatçıksız kanala göre Desen 3' de Nu sayısında %24,66 ve %17.27' lik artışlar olduğu saptanmıştır.

Şekil 5' de Re sayısına göre çarpan jet-çapraz akışlı bir kanaldaki desenli elemanların (elektronik bileşenler) ortalama yüzey sıcaklığı değişimleri kanatçıksız ve 30^o, 45^o ve 60^o açılı kanatçıklı kanallarda ve kanal girişinden başlayarak desen sırasına (Desen 1, Desen 2 ve Desen 3) göre verilmektedir. Tüm Re sayıları ve desen sıraları için kanatçıksız kanalda desen yüzeylerinden olan ısı transferinin kanatçıklı kanallara göre daha az olması nedeniyle ortalama yüzey sıcaklığı değerleri daha fazladır. Bununla birlikte, kanala eklenen açılı kanatçıklar sayesinde kanaldan gelen çapraz akış ve çarpan jet desen yüzeylerine yönlendirilebildiğinden ısı transferi artarak yüzey sıcaklık değerlerinde düşüşler elde edilmektedir. Sıcaklık değerinde en fazla düşüş, kanal girişine göre ikinci sıradaki Desen 2' de elde edilmektedir. Bunun yanında, Desen 3' de desen kenarlarında azalan akış etkisi nedeniyle Desen 2' ye göre ortalama sıcaklık değerlerinde artış görülse de kanatçıksız duruma göre sıcaklık değerleri daha düşüktür. Desen 1 ise kanal girişinde olduğundan dolayı daha çok çapraz akış etkisinde olduğundan sıcaklık değerleri Desen 2 ve 3' göre daha yüksektir.

Tablo 3' de her üç desenli yüzey için ortalama Nu sayısı (Nu_m) ve yüzey sıcaklığının (T_m) kanatçıksız ve farklı açılı kanatçıklı çarpan jet-çapraz akış kanallarında Re sayısı ile değişimleri gösterilmektedir. Re = 9000 için 60^o açılı kanatçıklı kanalda ortalama Nu sayısı değerinin kanatçıksız kanala göre %20,02 daha fazla olduğu belirlenmiştir. Bu duruma paralel olarak kanatçıksız kanala göre ısı transferinin artışına bağlı olarak en düşük ortalama yüzey sıcaklığı değerlerine 60^o açılı kanatçıklı çarpan jet-çapraz akışlı kanalda ulaşılmaktadır. Kanatçıklar sayesinde Nu sayısının artması yüzeyden akışkana olan ısı transferini artırarak yüzey sıcaklığının azalmasını sağlamaktadır. Böylece, ısınmış olan elektronik devre elemanları daha iyi soğutularak sıcaklıklarının güvenli sınırlar içinde kalması mümkün olabilmektedir.

Tablo 3. Desenli yüzeylere ait Nu_m ve yüzey sıcaklığı T_m' nin Re sayısı ile değişimi

	Kanatçıksız Nu_{ort}	**30° Kanatçıklı Nu_{ort}**	**45° Kanatçıklı Nu_{ort}**	**60° Kanatçıklı Nu_{ort}**
Re = 5000	86.52	92.42	99.31	106.39
Re = 7000	108.88	115.65	124.22	132.42
Re = 9000	127.43	134.37	144.02	152.96
	Kanatçıksız T_{ort} (K)	**30° Kanatçıklı T_{ort} (K)**	**45° Kanatçıklı T_{ort} (K)**	**60° Kanatçıklı T_{ort} (K)**
Re = 5000	306.63	306.59	306.49	305.94
Re = 7000	305.54	305.44	305.31	305.07
Re = 9000	304.95	304.88	304.77	304.60

Şekil 6' da kanatçıksız, 30°, 45° ve 60° kanatçık açısına sahip çarpan jet-çapraz akışlı kanallarda kanal boyunca akışkanın hız-akım çizgisi ve sıcaklık konturu dağılımları Re = 7000 için sunulmaktadır. Kanatçıksız durumda kanal girişinden gelen akış, ikinci desenin üstündeki jet akışla karşılaşana kadar kanal içerisindeki hareketine devam etmekle birlikte ikinci desenin üstünde yüzeyin sonuna doğru akışta jet akış etkisi oluşarak hızlanma meydana gelmektedir. Bu duruma, jet akışın sağ tarafında oluşan yeniden dolaşım bölgesi de akışı desen üzerine yönlendirerek sebep olmaktadır. Sıcaklık dağılımında oyuk bölgelerinde oluşan yeniden dolaşım bölgeleri akışın kendi içinde sirkülasyon oluşturarak akış ısınmasının meydana geldiği bölgelerdir. Bu kısımlarda akışta tam bir sirkülasyon oluşmadığından yüzeylerden olan ısı transferi miktarı azalmaktadır. Kanala kanatçık eklediğinde (30°, 45° ve 60°) çapraz akış olarak kanal girişinden gelen akış desenli yüzeyler üzerine doğru yönlendirilebilmektedir. Böylece, sıcaklık dağılımlarından da görülebildiği gibi ısınmış akış bölgeleri azaltılabilmektedir. Bununla birlikte, üçüncü desenin sağ yan alt tarafındaki ısınmış akış bölgesi azaltılabilse de tüm kanatçık açı değerlerinde bulunmaktadır. Ayrıca, kanatçık açı değeri 30°' den 60°' ye çıkarıldığında kontur dağılımlarından da saptanabildiği gibi çapraz akış akışkanı özellikle ikinci desen üzerine daha çok yönlendirilebildiğinden bu desen üzerinde jet etkisi artarak desenin soğuma etkisi yani diğer bir deyişle ısı transferi etkisi artmaktadır. Bu nedenle en iyi soğutma etkisi ikinci desen için elde edilmektedir.

5. GENEL SONUÇLAR

Bu çalışmada, kanalda bulunan sabit ısı akısına sahip bakır plakalı dikdörtgen şekilli yüzeylerden olan ısı transferi çarpan jet-çapraz akış kombinasyonu kullanılarak sayısal olarak incelenmiştir. Sayısal inceleme, zamandan bağımsız, üç boyutlu olarak enerji ve Navier-Stokes denklemlerinin k-ε türbülans modeli ile Ansys-Fluent bilgisayar programının kullanılarak çözülmesiyle yapılmıştır. Kanaldaki akışı ısınmış yüzeylere yönlendirmek amacıyla 30°, 45° ve 60° açılı ve D jet giriş çapı uzunluğunda kanatçık, çarpan jet yüzeyiyle yatay olarak kanala yerleştirilmiştir. Kanalda kullanılan jet akışkanı 303 K sıcaklığındaki su olup, kanalın alt ve üst yüzeyleri ve kanatçık adyabatiktir.

Dikdörtgen şekilli yüzeyler, 1000 W/m^2' lik sabit ısı akısına sahiptir. Kanalda referans çalışmalar dikkate alınarak üç adet dörtgen şekilli yüzey kullanılmıştır. Jet-plaka arası uzaklık 45 mm ($3D_h$) olup, jet Reynolds sayısı aralığı 5000-9000' dir. Çalışmanın sonuçları, literatürdeki çalışmanın deneysel sonuçlarıyla kıyaslanmış ve birbirleriyle tutarlı oldukları saptanmıştır. Sonuçlar, her bir desenli yüzey için ortalama Nu sayısı ve yüzey sıcaklık değişimi olarak sunulmuştur. Re = 7000' de 30^o, 45^o ve 60^o kanatçık açılı ve kanatçıksız (0^o) kanallar için kanal boyunca çarpan jet-çapraz akışın hız ve sıcaklık konturu dağılımları karşılaştırmalı olarak değerlendirilmiştir. Bu çalışmadan ulaşılan sonuçlar aşağıdaki gibi özetlenebilir:

-Kanatçık kullanımıyla birlikte çapraz akıştan yani kanaldan gelen akış desenli yüzeyler üzerine daha fazla yönlendirebildiği gibi desenler üzerinde ikincil bir jet akış etkisi oluşturularak ısı transferi miktarını artırma etkisi elde edilebilmektedir.

- Desen 1 için Nu sayısını incelediğimizde kanatçık açısının artışıyla Nu sayısı artmakla birlikte Re = 9000 için 60^o açılı kanatçıkta Nu sayısında %17.44' lük bir artış elde edilmektedir. Aynı Re sayısında bu artış miktarı diğer açılı kanatçıklı kanallar için daha düşüktür.

- Desen 2' de çapraz akışın kanatçık sayesinde desenli yüzey üzerine yönlendirilebilmesinin yanında jet akış etkisinin bu desen üzerinde daha fazla olması nedeniyle Nu sayısı değerleri bu yüzey için daha yüksek değerlere ulaşmaktadır. Re = 5000 için 30^o açılı kanalda birinci sıradaki desene (Desen 1) göre %30,18 oranında daha fazla artış elde edilmektedir.

- Desen 3' de ise çarpan jet-çapraz akışın desenli yüzeyin özellikle sağ tarafına etki etmemesi sonucu kanatçıksız kanal durumunda ve Desen 1' e göre Nu sayısı değerlerinde daha fazla artış elde edilse de tüm Re sayıları için Desen 2' ye göre Nu sayısı değerleri daha düşük kalmaktadır. Re = 7000' de 60^o açılı kanalda Desen 2' ye göre Desen 3' de Nu sayısı yaklaşık %9 daha azdır.

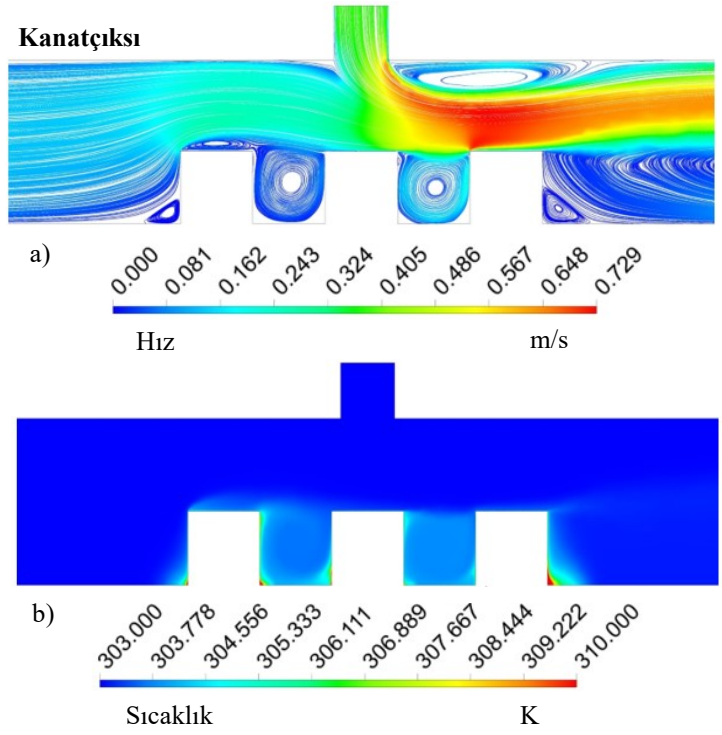
- Re = 7000' de 60^o açılı kanalda sırasıyla Desen 1 ve kanatçıksız kanala göre Desen 3' de Nu sayısında %24,66 ve %17.27' lik artışlar olduğu saptanmıştır.

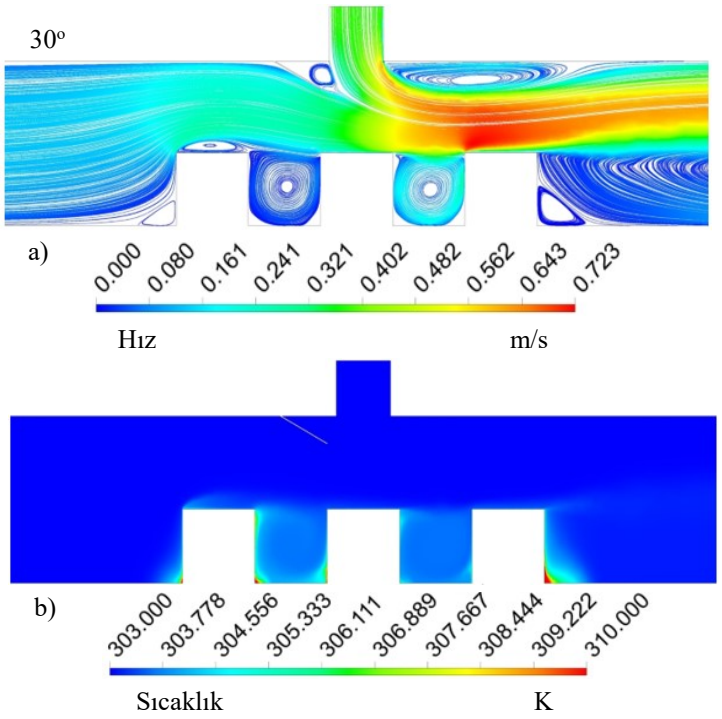
- Tüm Re sayıları ve desen sıraları için kanatçıksız kanalda desen yüzeylerinden olan ısı transferinin kanatçıklı kanallara göre daha az olması nedeniyle ortalama yüzey sıcaklığı değerleri daha fazladır. Bununla birlikte, kanala eklenen açılı kanatçıklar sayesinde kanaldan gelen çapraz akış ve çarpan jet desen yüzeylerine yönlendirilebildiğinden ısı transferi artarak yüzey sıcaklık değerlerinde düşüşler elde edilmektedir.

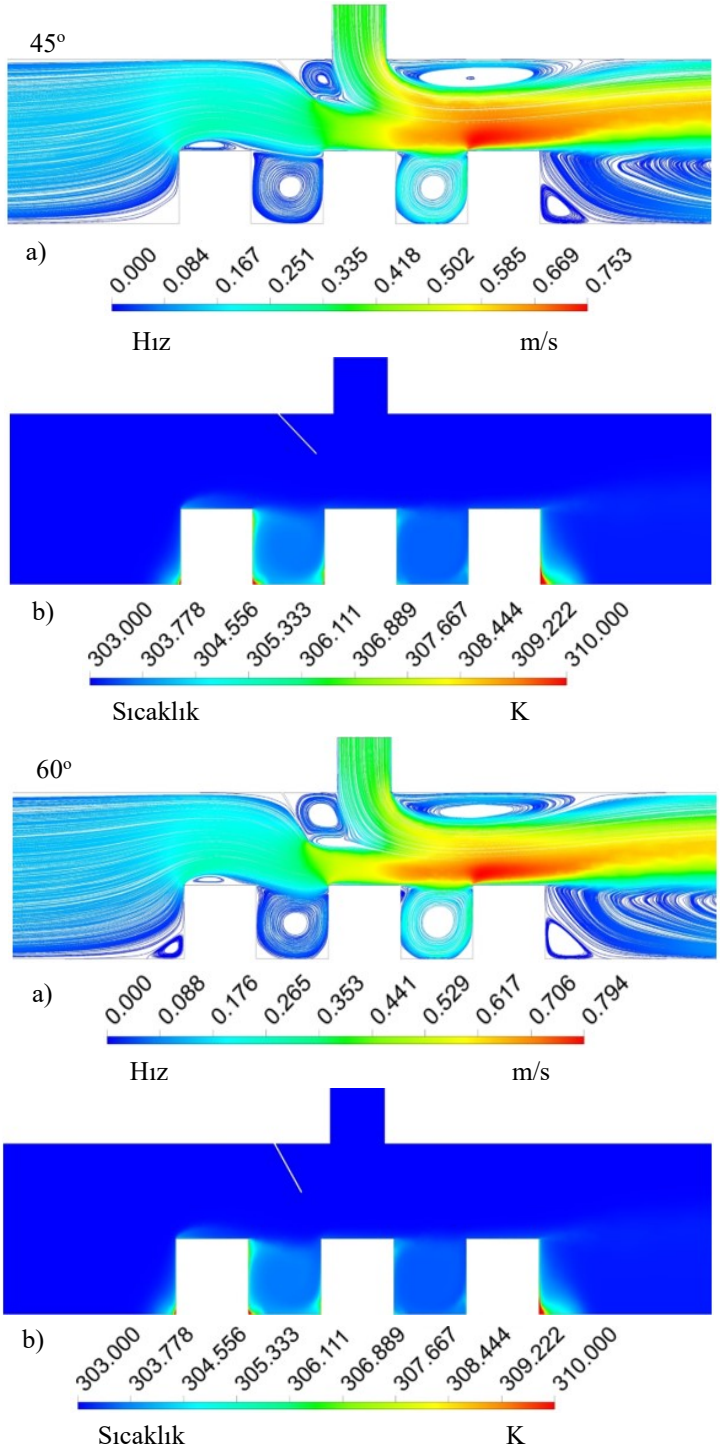
-Sıcaklık değerinde en fazla düşüş, kanal girişine göre ikinci sıradaki Desen 2' de elde edilmektedir. Bunun yanında, Desen 3' de desen kenarlarında azalan akış etkisi nedeniyle Desen 2' ye göre ortalama sıcaklık değerlerinde artış görülse de kanatçıksız duruma göre sıcaklık değerleri daha düşüktür.

- Re = 9000 için 60^o açılı kanatçıklı kanalda tüm desenler dikkate alındığında ortalama Nu sayısı değerinin kanatçıksız kanala göre %20,02 daha fazla olduğu belirlenmiştir. Bu duruma paralel olarak kanatçıksız kanala göre ısı transferinin artışına bağlı olarak en düşük ortalama yüzey sıcaklığı değerlerine 60^o açılı kanatçıklı çarpan jet-çapraz akışlı kanalda ulaşılmaktadır.

Sonuç olarak, çarpan jet-çapraz akışlı bir kanala kanatçıkların eklenmesi kanaldan gelen çapraz akışı ısınmış desenli yüzeyler üzerine daha fazla yönlendirerek yüzeyler üzerinden olan ısı transferini artırmaktadır. Bununla birlikte, desenli yüzeyler arasında ve üzerlerinde oluşabilecek yeniden dolaşım bölgelerini azaltılması akışkan hareketini artırarak soğutma etkisini iyileştireceğinden desenli yüzey ve kanal tasarımlarında bu etki dikkate alınmalıdır.


Kanatçıksı
a)
0.000 0.081 0.162 0.243 0.324 0.405 0.486 0.567 0.648 0.729
Hız
m/s
b)
303.000 303.778 304.556 305.333 306.111 306.889 307.667 308.444 309.222 310.000
Sıcaklık
K


30°
a)
0.000 0.080 0.161 0.241 0.321 0.402 0.482 0.562 0.643 0.723
Hız
m/s
b)
303.000 303.778 304.556 305.333 306.111 306.889 307.667 308.444 309.222 310.000
Sıcaklık
K



Şekil 6. Kanatçıksız, 30º, 45º ve 60º açılı çarpan jet-çapraz akışlı kanallar için a) hız-akım çizgisi b) sıcaklık dağılımı konturları (Re = 7000)

TEŞEKKÜR
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KAYNAKÇA

[1] Kılıç, M. Elektronik Sistemlerin Soğutulmasında Nanoakışkanlar ve Çarpan Jetlerin Müşterek Etkisinin İncelenmesi, Çukurova Üniversitesi Mühendislik Mimarlık Fakültesi Dergisi, 33 (3), 121-132, (2018).

[2] Teamah, M.A., Dawood, M.M., Shehata, A. Numerical and Experimental Investigation of Flow Structure and Behavior of Nanofluids Flow Impingement on Horizontal Flat Plate, Experimental Thermal and Fluid Science, 74, 235-246, (2015).

[3] Hadipour, A., Zargarabadi, M.R. Heat Transfer and Flow Characteristics of Impinging Jet on a Concave Surface at Small Nozzle to Surface Distances, Applied Thermal Engineering 138, 534-541, (2018).

[4] Baydar, E. Confined Impinging Air Jet at Low Reynolds Numbers, Experimental Thermal and Fluid Science 19, 27-33, (1999).

[5] Köseoğlu, M.F. Çarpan Akışkan Jetleri Kullanılarak Elektronik Elemanların Soğutulmasının Deneysel ve Sayısal Olarak İncelenmesi, Doktora Tezi, Gazi Üniversitesi, Fen Bilimleri Enstitüsü, Ankara, 2007.

[6] Choo, K., Kang, T.Y., Kim, S.J. The Effect of Inclination on Impinging Jets at Small Nozzle-to-Plate Spacing, International Journal of Heat and Mass Transfer 55, 3327-3334, (2012).

[7] Bölek, A. Farklı Düzlemler Üzerine Çarpan Jetlerin Akış ve Isı Transfer Analizleri, Yüksek Lisans Tezi, Yıldız Teknik Üniversitesi, Fen Bilimleri Enstitüsü, İstanbul, (2007).

[8] Larraona, G.S., Rivas, A., Antón, R., Ramos, J.C., Pastor, I., Moshfegh, B. Computational Parametric Study of an Impinging Jet in a Cross-Flow Configuration for Electronics Cooling Applications, Applied Thermal Engineering, 52, 428-438, (2013).

[9] Demircan, T. Numerical Analysis of Cooling an Electronic Circuit Component with Cross Flow and Jet Combination, Journal of Mechanics, 35 (3), 395-404, (2019).

[10] Mergen, S. Kanal İçi Akış ve Çarpan Jet İle Birlikte Elektronik Eleman Soğutulmasının Sayısal Olarak İncelenmesi, Yüksek Lisans Tezi, Gazi Üniversitesi, Fen Bilimleri Enstitüsü, Ankara, (2014).

[11] Maghrabie, H.M., Attalla, M., Fawaz, H.E., Khalil, M. Numerical Investigation of Heat Transfer and Pressure Drop of In-Line Array of Heated Obstacles Cooled by Jet Impingement in Cross-Flow, Alexandria Engineering Journal, 56, 285-296, (2017).

[12] Wang S.J., Mujumdar A.S. A Comparative Study of Five Low Reynolds Number k-ε Models for Impingement Heat Transfer, Applied Thermal Engineering, 25, 31-44, (2005).

[13] Saleha, N., Fadela, N., Abbes, A. Improving Cooling Effectiveness By Use Chamfers on the Top of Electronic Components, Microelectronics Reliability 55, 1067-1076, (2015).

[14] Incropera, F.P., Dewit, D.P., Bergman, T.L., Lavine, A.S., Fundamentals of Heat and Mass Transfer (Sixth Edition), John Wiley&Sons, Indiana, 447-487, (2007).

[15] Ma, C.F., Bergles, A.E., Boiling Jet Impingement Cooling of Simulated Microelectronic Chips, Heat Transfer in Electronic Equipment HTD 28, 5-12, 1983.

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A NOVEL SECOND-ORDER CONE PROGRAMMING APPROACH TO SOLVE CAPACITATED RECHARGING STATION LOCATION PROBLEM WITH STOCHASTIC DEMAND

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ABSTRACT

With the rising concerns about the use of fossil fuels in transportation and the recent advances in battery technologies, the interest in electric vehicles (EVs) is rising. EVs are expected to play a critical role in reducing transportation-related greenhouse gas emissions and air pollution. However, the lack of reliable infrastructure to satisfy the recharging needs of EVs for their long-distance travels and associated range anxiety of the potential EV drivers constitute a significant barrier for the widespread adoption of EVs. Fast-charging technologies emerge as a promising solution to effectively address this problem and satisfy the recharging needs of the EVs in long-range trips. This study focuses on the optimal deployment and sizing of fast-charging stations to satisfy the recharging needs of EVs in long-range trips. We propose a novel modeling approach for the recharging station location problem with stochastic demand and capacitated recharging stations (RSLPSC). We first formulate RSLPSC as a mixed-integer non-linear stochastic program with chance constraints that bound the probability of capacity shortages to satisfy the EVs recharging needs. Taking advantage of the central limit theorem results to approximate the capacity shortage probability for a given network design, we reformulate our model as a second-order cone program that can be efficiently solved by commercial solvers for large realistic problem instances. We conduct extensive numerical experiments with two widely used problem instances from the literature: California and Arizona problem instances. Our results attest to the efficacy of the suggested modeling approach and provide critical managerial insights into the recharging infrastructure design.

Keywords: Electric vehicles, fast-charging, location analysis, stochastic programming, integer programming

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Özet
Yapılarda, üretim ve uygulama süreçlerinde yapılan yanlışlıklar ve yapı malzemelerinin seçiminde yapılan hatalar ciddi problemlere sebep olmaktadır. Bu hatalar ve/veya eksiklikler, yapıların farklı etkilere maruz kaldığında, zaman içinde önemli ölçüde hasar görmesine ve hatta yapıların yıkılabilmesine neden olabilmektedir. Yapı üretim sürecinde uygun nitelikte bir malzeme kullanılması kadar; zaman içinde malzemenin bozularak performansını kaybetmemesinin sağlanması da önemlidir. Yapının zaman içinde hasara uğramasına neden olan temel etkenlerin yapı fiziği etkenleri olan nem (su, rutubet), ısı, ses, güneş etkisi, yangın ve korozyon olduğu söylenebilir. Hasara sebep olan bu temel etkilerin ülkemizde ki eğitim binalarına olan etkilerinin incelenmesi önemli bir durum tespitinin yapılmasını sağlayacaktır. Eğitim yapıları, kamu bina stokunu incelendiğinde önemli bir bölümünü oluşturduğu görülmektedir. İnsanlarımız zamanlarının ve yaşamlarının azımsanmayacak derecede büyük bir kısmını eğitim yapılarında geçirmektedir. Eğitim yapılarının uzun yıllar kaliteli eğitim verilebilmesi için yapının işlevselliğinin yanısıra hizmete uygun şartlarda niteliğinin de önemli olduğu unutulmamalıdır. Öğrencilerin içinde bulundukları mekânı etkili bir öğrenme alanına çevirebilmek ve bu alanın uzun yıllar devamlılığını sağlayabilmek için yapı içinde veya dışında çeşitli önlemler almak gerekir. Bu çalışma; Düzce ilinde seçilen eğitim binasının çiçeklenme ve yosunlaşma, metallerde yüzeysel korozyonlar, yüzeysel bozulmalar ve insan kaynaklı hasarlar olmak üzere dört başlık altında incelenmiştir. Ayrıca, incelenen hasarların tespiti gelecekte yaşanabilecek benzer durumlara örnek olabilmesi ve gerekli müdahalelerin yapılmasında yararlı bir çalışma olması amaçlanmıştır. Çalışmanın sonucunda; en çok metallerde yüzeysel korozyonların oluştuğu tespit edilmiştir.
Anahtar Kelimeler: Eğitim Yapısı, Düzce, Yapı Fiziği Problemleri

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BUILDING PHYSICS PROBLEMS IN EDUCATIONAL BUILDINGS: THE EXAMPLE OF DUZCE

Abstract
Inaccuracies in construction, production and application processes and mistakes made in the selection of building materials cause serious problems. These errors and/or deficiencies can cause the structures to be significantly damaged over time and even to collapse when exposed to different effects. As much as using a suitable material in the building production process; It is also important to ensure that the material does not deteriorate over time and lose its performance. It can be said that the main factors that cause the building to be damaged over time are moisture (water, humidity), heat, sound, sun effect, fire and corrosion, which are the factors of building physics. Examining the effects of these main effects that cause damage on educational buildings in our country will provide an important situation determination. Educational buildings constitute an important part of the public building stock. Our people spend a considerable part of their time and lives in educational buildings. It should not be forgotten that in order to provide quality education in educational buildings for many years, the quality of the structure is important as well as the functionality of the structure. It is necessary to take various measures inside or outside the building in order to turn the space where the students are in an effective learning area and to ensure the continuity of this area for many years. This work; The education building selected in Düzce has been examined under four headings: flowering and moss, surface corrosion on metals, surface deterioration and human-induced damage. In addition, it is aimed to determine the examined damages, to set an example for similar situations that may occur in the future and to be a useful study in making the necessary interventions. As a result of the study; It has been determined that surface corrosion mostly occurs in metals.
Keywords: Educational Structure, Düzce, Building Physics Problems

GİRİŞ

Ülkelerin kalkınmasında eğitim-öğretim çok önemli bir role sahiptir. Ülkenin tüm alanlarında ilerleme kaydedilmesi için öncelikle eğitimin kalitesinin artırılması gerekir. Eğitim kalitesinin artırılmasında eğitim yapısının fiziksel çevresi de önemlidir. Eğitim yapısının fiziksel koşulları ve tasarımı öğrenme performansını artırır ve doğrudan eğitimin kalitesini de artırır [1].

Son zamanlarda eğitim yapılarının fiziksel çevresi ve özelliklerinin öğrenmeye katkısı arasındaki ilişkili çok sayıda çalışma yapılmıştır. Bu çalışmalarda fiziksel koşulları kötü olan eğitim ortamının öğrencileri öğrenme performansını olumsuz yönde etkilemektedir. Kişilerin algısı, tutum ve davranışı üzerinde fiziksel çevrenin büyük etkisi vardır. Eğitim öğretim alanında yenilik yapılmasının yanında fiziksel çevrenin şartlarının da iyileştirilmesi gerekmektedir. Eğitim mekanı iyileştirildikçe öğrencilerin öğrenme performansı da artacaktır [1].

Eğitim binaları, konut dışı kamu bina stokunun önemli bir bölümünü oluşturmaktadır. İnsanlarımız yaşamlarının azımsanmayacak derecede büyük bir kısmını eğitim yapılarında geçirmektedir. Öğrencilerin içinde bulundukları mekanı etkili bir öğrenme alanına çevirebilmek ve bu alanın uzun yıllar devamlılığını sağlayabilmek için yapı içinde veya dışında çeşitli önlemler almak gerekir.

Yapı inşa edildikten sonra çevresi ile etkileşime girer. Dış cepheler, fiziksel, iklimsel ve mekanik etkilere en çok maruz kalan yapı elemanlarıdır. Bu durum yapı hasarlarını kaçınılmaz kılmaktadır [2]. Yapıların, bulundukları ortam koşullarında veya inşaları esnasında yapılan bazı tasarım ya da uygulama hataları meydana gelmektedir. Bu hataların sonucu karşılaştığı çeşitli problemler 'yapı fiziği problemleri' olarak adlandırılmaktadır. Oluşan problemler zamanla yapıda veya yapı bileşenlerinde çeşitli deformasyonlara yol açarak hem konforsuz hem de güvensiz yaşam alanlarının oluşmasına neden olmaktadır.
Binalarda yapı fiziği problemleri yapının niteliğini, uzun ömürlü olmasını doğrudan etkileyen temel etkenlerdendir. Problemlerin önüne geçilebilmesi amacıyla, gereken önlemlerin alınması gerekir. Bu doğrultuda yapı fiziği kurallarına uyularak ortaya çıkabilecek sonuçların büyük tahribatından da kaçınılabilir. Bu çalışmanın amacı; seçilen eğitim yapısında karşılaşılan mevcut yapı fiziği problemlerin tespit edilmesidir. Böylece bu tespitlerin gelecekte yaşanabilecek benzer olumsuzluklara ışık tutabilmesi ve gereken önlemlerin alınması amaçlanmaktadır.
Bu çalışma; Düzce ilinde seçilen eğitim binasının çiçeklenme ve yosunlaşma, metallerde yüzeysel korozyonlar, yüzeysel bozulmalar ve insan kaynaklı hasarlar olmak üzere dört başlık altında incelenmiştir. Bu bağlamda, ele alınan eğitim yapısındaki yapı fiziği problemleri ve tahribatları fotoğraflandırılmıştır. Ayrıca, incelenen hasarların tespiti gelecekte yaşanabilecek benzer durumlara örnek olabilmesi ve gerekli müdahalelerin yapılmasında yararlı bir çalışma olması amaçlanmıştır. Çalışmanın sonucunda; en çok metallerde yüzeysel korozyonların oluştuğu tespit edilmiştir.

2. EĞİTİM YAPISINDA İNCELENEN HASARLAR

2.1.Çiçeklenme ve Yosunlaşma

Çiçeklenme betonun içindeki kalsiyum hidroksitin ve diğer tuzların çözünerek kapiler boşluklar ile beton yüzeyine çıkması sonucu beyaz tabaka oluşturmasına denir. Havadaki karbondioksit ile birleşen kalsiyum hidroksit $CaCO_3$ (kalsiyum karbonat) haline dönüşmektedir [3]. $CaCO_3$ ağırlıklı birikmelerde beyaz leke oluşumu gözlemlenmektedir. Sülfat ve nitrat tuzlarında ise leke gri tonlarında ve bulunduğu zemine göre daha koyu olabilmektedir. Bu lekelenmelerin kalınlığı genelde 3-4 mm'dir [4]. Oluşumunda $CaCO_3$'ün yanı sıra, bir miktar sodyum sülfat, sodyum karbonat ve magnezyum sülfat gibi bileşenler de bulunur ve renkleri açık gri olur. Oluşan renkler çoğunlukla sıva ve beton içerisindeki minerallerin renklerini yansıtmaktadır.
Nem kaynaklı diğer bir bozulma ise yosunlaşmadır. Yosunlaşma biyolojik bir bozulmadır ve yapı malzemesinin nefes almasını engeller. Algler, gölgeli yürüyüş yolları ve ev temelleri gibi nemli ve serin alanlarda büyür. Beton ve diğer gözenekli yapı malzemeleri alg gelişimine meyillidir çünkü nemi tutarlar ve büyümeleri için ideal bir ortam sağlarlar. Yosun sadece çirkin ve kolonize ettiği betona zarar vermekle kalmaz, kaygan dokusu nedeniyle de önemli bir güvenlik tehlikesi oluşturur [5].
Yapıdaki suyun tahliyesini sağlayan elemanlarda, zemin ve dış duvar birleşimlerindeyse bu elemanların bulunduğu yerlerde yoğunlukla gözlemlenmektedir.

2.2. Metallerde Yüzeysel Korozyonlar

Korozyon, metallerin veya metal alaşımlarının oksitlenerek veya diğer kimyasal etkilerle aşınmasıdır [6]. Korozyon taşıyıcı sistemi ve yapının estetiğini olumsuz yönde etkiler [2]. Nem oranının %30'un altında ve hava sıcaklığının normal ve normalin altında olduğu nispeten daha soğuk olan ortamlarda korozyon önemsenmeyecek kadar azdır [7].
Bu sebeple rutubet giderilerek korozyonun önüne geçilebilir [2]. Yüzey kaplama işlemleri de malzemeyi korozyonda korumada kullanılan en önemli yöntemdir [6].

2.3.Yüzeysel Bozulmalar

Yapı yüzeyinde meydana gelen kirlenme, eskimiş görüntü gibi tabakalı deformasyonlardır. Çevresel etkenlerle ortamda bulunan toz, kirin bina yüzeyinde birikmesi sonucu dış cephede estetik olmayan görüntülere sebep olmaktadır. Söz konusu bahsedilen basit kirlenmeler değildir. Daha kalın tabakalı ve koyu renkli kirlenmelerdir.

2.4. İnsan Kaynaklı Hasarlar

İnsan kaynaklı hasarları; tasarım kaynaklı, uygulama kaynaklı ve kullanım süreçlerindeki yanlışlardan kaynaklanan hasarlar olarak açıklayabiliriz.
Dış etkilere karşı alınması gereken önlemlerin tasarım aşamasında alınması gerekmektedir. Uygulama aşamasında tasarımda alınan kararların uygun ve eksiksiz bir şekilde uygulanması gerekmektedir. Tasarım ve uygulama aşamaları uygulandıktan sonra kullanım sürecinde yapı bakımının yapılması, doğru onarım çalışmaları yapılması önemlidir.
Tüm bu süreçler doğru ve eksiksiz uygulanmadığında yapıda insan kaynaklı hasarların görülmesi kaçınılmaz olmaktadır.

3.ALAN ÇALIŞMASI VE BULGULAR

Düzce ili ılıman bir iklime sahip olup yoğun yağış alan, sıcaklığı ortalama 17,9 °C olan bir batı Karadeniz şehridir [8]. Kuzey rüzgarları etkilidir.
Seçilen eğitim yapısı Düzce Üniversitesi Kampüsü'nde yer almaktadır. İlgili eğitim yapısı 1992 yılında Abant İzzet Baysal Üniversitesi'ne bağlı olarak Düzce'de kurulmuştur. Daha sonra 2006 yılında kurulan Düzce Üniversitesi bünyesine dahil olmuştur.

3.1. Çiçeklenme ve Yosunlaşma

Yapının zemininden ve yağmur iniş borularından bünyesine aldığı sudan kaynaklı özellikle duvar zemin birleşimlerinde çiçeklenme ve yosunlaşma birlikte gözlemlenmiştir (Şekil 1-8).



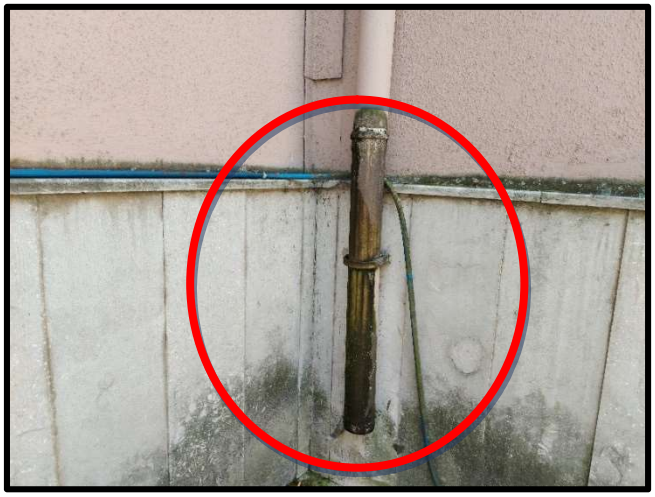
Şekil 1. Duvarda ve zeminde çiçeklenme ve yosunlaşma



Şekil 2. Duvarda çiçeklenme ve yosunlaşma



Şekil 3. Duvar-zemin birleşiminde yosunlaşma



Şekil 4. Yağmur iniş borusunda yosunlaşma



Şekil 5. Perde duvarlarda çiçeklenme ve yosunlaşma



Şekil 6. Duvarda yosunlaşma



Şekil 7. Duvarda çiçeklenme



Şekil 8. Duvarda çiçeklenme ve yosunlaşma

3.2.Metallerde Yüzeysel Korozyonlar

Yapının küpeşlerinde, kuranglezlerinde ve çelik betonarme birleşim detaylarında yoğun korozyon tespit edilmiştir (Şekil 9-16).



Şekil 9. Küpeştede korozyon



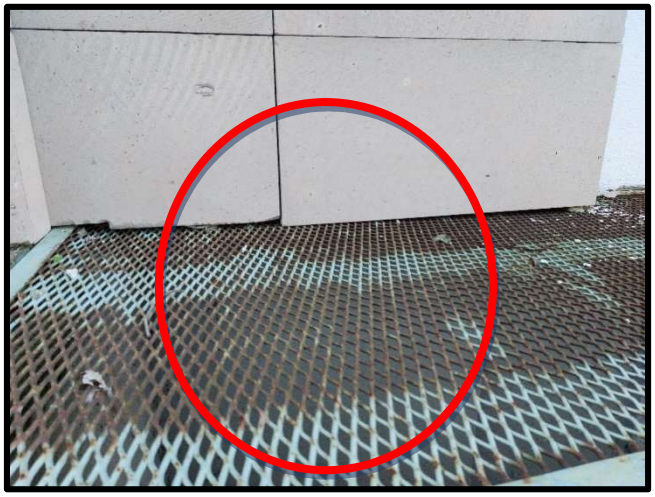
Şekil 10. Betonarme-çelik birleşim detayı korozyonu



Şekil 11. Kuranglezlerdeki korozyonlar



Şekil 12.Küpeştelerdeki korozyon



Şekil 13. Kuranglezlerdeki korozyon



Şekil 14. Korkuluklardaki korozyonlar



Şekil 15. Küpeştelerdeki korozyonlar



Şekil 16. Engelli rampası korkuluklarındaki korozyonlar

3.3. Yüzeysel Bozulmalar

İklimsel ve atmosferik etkiler neticesinde yapı cephelerinde kirlenmeler ve dökülmeler görülmüştür (Şekil 17-21).



Şekil 17. Cephedeki dökülmeler ve kirlenmeler



Şekil 18. Uygulamadaki hatalar



Şekil 19. Kolondaki kirlenmeler



Şekil 20. Cephedeki kirlenmeler ve bozulmalar



Şekil 21. Cephedeki kirlenmeler

3.4. İnsan Kaynaklı Hasarlar

Yapıdaki insan kaynaklı hasarlar daha çok merdivenler ve engelli rampasında görülmüştür (Şekil 22-23).



Şekil 22. Engelli rampası korkuluklarının durumu



Şekil 23. Merdiven hasarları

SONUÇ VE ÖNERİLER

Bu çalışma sonucunda Düzce'de bir eğitim yapısının 4 başlık altında yapı fiziği hasarları incelenmiştir. Yapının cephelerinde fotoğraf çekimi yapılmıştır. Bu inceleme sonucunda nemin bozulmaların başlıca iklimsel faktör olduğu gözlemlenmiştir. Yapının tasarım aşamasında, uygulama ve kullanım aşamalarında eksiklikler olduğu gözlemlenmiştir.

Yağmur iniş borularının ve zemindeki suyun yosunlaşmanın ve çiçeklenmenin asıl sebebi olduğu görülmüştür. Aynı zamanda tasarımdaki hareketlerin binada küçük ve ışık alamayan cepheler oluşturmuştur. Bu cepheler güneş alamadığından yosunlaşma yoğun olarak söz konusu bölümlerde görülmektedir.

Bina sirkülasyonunu sağlayan merdiven korkuluklarındaki korozyonların yoğunluğu dikkat çekmektedir. Aynı zamanda çelik merdivenin betonarme bağlantı detayındaki korozyon, çeliğin direncini kıracağı için yapıda tehlikelere yol açabileceği göz önünde bulundurulmalıdır. Yapıdaki kuranglezlerde de korozyon yoğun şekilde görülmektedir.

Yapının cephelerinde çevresel şartlardan kaynaklı kirlenmeler ve dökülmeler görülmektedir.

Yapının merdivenlerindeki hasarlar, giriş bölümündeki engelli rampasının korkuluk hasarları yapıda insan kaynaklı hasarlara örnektir.

Yapılan tüm bu incelemelerde eğitim yapısındaki yapı fiziği hasarlarından en çok metallerde yüzeysel korozyonun olduğu görülmüştür.
Yapıdaki korozyonu önlemek için uygun kaplama yapılmalı ve estetik olmayan görünümün önüne geçilmelidir. Söz konusu eğitim yapısı yoğun yağış alan bir bölgede bulunduğu için, yapıdaki suyun uygun drenajlarla tahliye edilmesi, olabildiğinde zeminde biriktirilmemesi, yağmur iniş borularının temizlenmesi ve aynı zamanda yeniden düzenlenmesi gerekmektedir. Yapı cephesindeki yüzeysel hasarlar ve insan kaynaklı hasarlar ise düzenli bakım çalışmaları yapılarak daha iyi bir eğitim alanına dönüştürülebilir.

KAYNAKÇA

[1] http://www.mimarlikdergisi.com/index.cfm?sayfa=mimarlik&DergiSayi=419 & RecID= 4621, E.02.11.2021, Mimarlık Dergisi

[2] Işık, F. N., Bideci, A.,Sever, Ü.,Bideci, Ö.S.(2020), Düzce'de 1999 Depremleri Sonrası Yapılan Toplu Konutlarda Cephe Hasarları, Düzce

[3] Yıldırım, K. (2018, May). Yapı Fiziği Açısından Yapı Elemanlarında Dayanıma Etki Eden Çiçeklenme Olayı Ve Korunma Yöntemleri. In 2nd International Symposium on Natural Hazards and Disaster Management, Sakarya University Culture and Congress Center, Sakarya-Turkey 04-06 May 2018.

[4] Döndüren, S. (2017), '' Tarihi Yapılarda Görülen Hasar Türleri'', Selçuk Üniversitesi Sosyal ve Teknik Araştırmalar Dergisi Sayı:13, ss. 45-58

[5] https://tr.thewelcomeplace.net/34866-how-to-remove-algae-from-concrete.html, E.02.11.2021

[6] BÖKE, B. Yalıtım Altında Korozyon, TMOBB Makine Mühendisleri Odası MMO Yayını, 13. Ulusal Tesisat Mühendisliği Kongresi, İzmir,2017

[7] Çetinel, E. (2012), ''Tarihsel Süreç İçinde Dış Cephe Kaplama Malzemelerinin Isı Yalıtımı Açısından İrdelenmesi'', Yüksek Lisans Tezi, Dokuz Eylül Üniversitesi, Fen Bilimleri Enstitüsü, İzmir.

[8] https://tr.climate-data.org/asya/tuerkiye/duezce/duezce-187/, E.04.11.2021, Climate

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KAMU YAPISINDA CEPHE HASARLARI: DÜZCE ÖRNEĞİ

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Özet
Dünyada yapılarda yapı fiziği üzerine yapılmış ve yapılmakta olan çok sayıda ulusal ve uluslararası çalışmalar yapılmıştır ve yapılmaya da devam edilmektedir. Ülkemizde yapılan çalışmalar incelendiğinde özellikle yapıların cephelerin de meydana gelen hasar ve bozulmalar üzerine yapılan çalışmaların da arttığı görülmektedir. Yapılarda yapı fiziği açısından tasarım, uygulama veya kullanımdan kaynaklı hasarlar meydana gelebilmektedir. Bu hasarların olmaması veya en düşük seviyede tutulabilmesi için yapı genel anlamda yapı fiziği açısından üç aşamada ele alınabilir. Bunlar tasarım, uygulama ve kullanım olarak belirlenebilir. Yapının, tasarım aşamasında tüm plan ve detayların tasarlanması, uygulama aşamasında bunların eksiksiz şekilde yapılması ve uygulanması, yapının kullanımı aşamasında da yapı fiziği açısından da dikkat edilerek kullanılması gerekmektedir. Yapılarda cephe hasarları ise en sık rastlanan problemlerden biridir. Cephe hasarları ve bozulmaları yapıların çeşitli faktörlerden etkilenmesinden dolayı meydana gelmektedir. Bu faktörlerden bazıları ise fiziksel, mekanik, iklimsel ve biyolojik etkenli olabilmektedir. Bu sorunlar kullanıcıyı ve çevreyi olumsuz etkilemektedir. Kullanıcı için yapı iç ortamı kadar dış cephesi de konfor için önemlidir. Bozulma ve hasarların olmaması için yapı cephelerini çevre etkilerden koruyarak, hem estetik görünüm sağlayabilir hem de kullanıcılar için sağlıklı koşullar yaratabiliriz. Bu çalışmada Düzce ilinde seçilen kamu binalarında meydana gelen cephe hasarlarının tespiti analiz edilmiştir ve çalışılan alanlarda ki bozulmalar fotoğraflandırılarak çözüm önerileri sunulmuştur. Çalışmanın amacı ise, karşılaşılan hasarların ilerde görülebilecek benzer sorunlara örnek olabilmesi ve bu bozulmalarla karşılaşıldığında neler yapılması gerektiği konusunda yararlı bir kaynak olması amaçlanmıştır.
Anahtar Kelimeler: Cephe Hasarı, Bozulmalar, Düzce, Yapı Fiziği

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FACADE DAMAGES IN PUBLIC STRUCTURE: A CASE OF DUZCE

Abstract
Numerous national and international studies on building physics in buildings have been made and are still being made in the world. When the studies carried out in our country are examined, it is seen that the studies on the damage and deterioration of the facades of the buildings have increased. In terms of building physics, damage may occur in buildings due to design, application or use. In order to avoid these damages or to keep them at the lowest level, the building can be handled in three stages in terms of building physics in general. These can be determined as design, implementation and use. It is necessary to design all plans and details during the design phase of the building, to make and implement them completely during the application phase, and to be used carefully in terms of building physics during the use phase of the building. Facade damage in buildings is one of the most common problems. Facade damage and deterioration occur due to the effects of various factors on the structures. Some of these factors can be physical, mechanical, climatic and biological factors. These problems negatively affect the user and the environment. For the user, the exterior of the building is as important for comfort as the interior environment. By protecting the building facades from environmental influences in order to prevent deterioration and damage, we can both provide an aesthetic appearance and create healthy conditions for the users. In this study, the detection of facade damage in selected public buildings in Düzce was analyzed and solutions were presented by photographing the deteriorations in the studied areas. The aim of the study is to be an example of similar problems that may be seen in the future and to be a useful resource on what to do when these deteriorations are encountered.
Keywords: Facade Damage, Deterioration, Düzce, Building Physics

1. GİRİŞ

İnsanların barınmak ve korunmak için inşa ettiği yapılarda sağlıklı, konforlu ve güvenli bir şekilde yaşamlarını sürdürmeleri gerekmektedir fakat yapılar çeşitli etkenlere maruz kalmaktadırlar. Etkenler genel olarak iklimsel, fiziksel-kimyasal, mekanik ve biyolojik kökenli olmaktadırlar ve bu olumsuzluklar yapılara zarar vermektedirler. Yapılarımızın dış cepheleri ise bu etkenlerle en çok karşı karşıya gelmektedirler. Yapılara zarar veren etmenler düşünülmeden tasarlanmış ise yapı dış cephelerinde çiçeklenme-yosunlaşmalar, korozyon, yüzey kirlilikleri, renk değişimleri, çatlama-aşınmalar, kabarma ve dökülmeler gibi onarımı zor sorunların oluşmasına ve yapı-insan sağlığının bozulmasına neden olmaktadır. Bu yüzden yapı dış yüzeylerinin korunma gereksinimi artmaktadır [1].

Yapılarda yapı fiziği açısından tasarım, uygulama veya kullanımdan kaynaklı hasarlar olarak üç aşamada ele alınabilir. Yapının, tasarım aşamasında tüm plan ve detayların tasarlanması, uygulama aşamasında bunların eksiksiz bir şekilde yapılması ve uygulanması, yapının kullanımı aşamasında da yapı fiziği açısından da dikkat edilerek kullanılması gerekmektedir.

Sonuç olarak, bu etkenlerinin sorun oluşturmaması ya da oluşan sorunların çözümlenebilmesi için yapı tasarımcı, uygulayıcı ve kullanıcılarının çeşitli sorumlulukları bulunmaktadır. Sorumlulukların yerine getirilebilmesi için herkesin gerekli bilince kavuşturulması sağlanmalıdır [2].

Bu çalışmanın amacı, yapılarda zaman içinde ortaya çıkabilecek cephe hasarlarının tespit edilmesi ve tasarım, uygulama ve kullanımın amacına uygun olmamasından dolayı yapılarda oluşabilecek tahribatın göz önüne serilmesidir.

Bu amaçla, Düzce ilinde bir kamu kurumu belirlenerek ve belirlenen kamu binasına ait dış yüzeyde oluşan cephe hasarları analiz edilmeye çalışılmıştır. Karşılaştığımız hasarlar fotoğraflandırılarak, yapılarda ne tür bozulmalarla karşılaşıldığı gösterilmek istenmiştir.

2. GENEL OLARAK BİNALARDA KARŞILAŞILAN HASARLAR

2.1. Çiçeklenme- Yosunlaşma

Dış hava şartlarına maruz yapılarda, malzemelerde hasarlar kolaylıkla izlenebilmektedir. Çiçeklenme ise, suyun çeşitli sebeplerden yapı malzemesinin içine girerek betonu oluşturan çimento harcındaki kalsiyum hidroksiti veya beton içinde bulunan tuzların çözünerek beton yüzeyinden dışarı sızmasına ve yüzeyde biriktirerek (sülfat, klorür vb. tuzlar) beyaz lekeler oluşmasına neden olmaktadır. Betonun içerisinde bulunan suyun, kapiler boşluklar arasından ilerleyerek beton yüzeyine ulaşması ve yüzeyde buharlaşarak içindeki tuzları yüzeye taşır [3]. Bu nedenle malzemelerinin mineralojisi, boşluklu yapısı bizim için önemlidir.

Çiçeklenme-yosunlanma sonucunda beton ve sıva içinde bulunan maddelerin kimyasal açıdan etkilenerek bozulmaya neden olmaktadır. Bina yüzeylerinde beyaz lekelenme, yosunlaşma ve renk değişikliği gözlenmektedir [4]. Yosunlaşma biyolojik etkenli bir bozulma olduğundan yapı malzemelerin üzerini kaplamasından dolayı malzemelerde dökülmelere, hasarlara sebep olmaktadır.

Genellikle çiçeklenme-yosunlaşma dış cephelerde zeminle birleşen duvar kısımlarında görülmektedir. Bu bölgelerin dış hava koşullarından yağışlardan etkilenerek ve zeminden gelen suyun kılcallık yoluyla bünyeye almasından dolayı görülmektedir.

2.2. Yüzey Kirlikleri

Teknolojinin gelişmesi ile birlikte fabrikaların artması, motorlu araçların çoğalması ve ısınma için çeşitli yakıtların kullanılmasından dolayı atmosfere karbondioksit, azot, kükürt gibi kirletici etkilere sahip gazlar karışmaktadır. Bu havaya karışan kirli gazlar yağışların etkisiyle yapıların yüzeyine yapışarak o bölgelerde kirlilik, siyah tabakalaşmalar meydana getirmektedir. Hem estetik açıdan kötü bir görünüm hem de malzemelerin yıpranmasına neden olabilecek bir etkendir.

2.3. Korozyon

Korozyon, metal veya metal alaşımların bulunduğu ortamda, kimyasal-elektrokimyasal reaksiyonlara girerek bozulması şeklinde veya genel olarak herkes tarafından bilinen adı paslanma olarak tanımlanmaktadır. Genellikle metalik malzemelerin korozyona uğraması ile kimyasal, fiziksel veya elektriksel özelliklerinin çeşitli değişikliklere uğraması yapılar için önemli bozulmalara yol açar [5].

Korozyon meydana gelebilmesi için su-nem ve oksijenin malzeme içine nüfus etmesiyle gerçekleşebilmektedir. Su, dünya üzerinde her ortamda bulunan katı, sıvı, gaz halde olabilen bir birleşiktir. Bu nedenle yapıların su ile teması kaçınılmaz bir hal almaktadır ve suyun yapıda oluşturduğu kimyasal etkilerden biri de korozyondur [6].

Korozyona uğrayan yapı malzemelerinin hacmi artarak içsel gerilmeler meydana gelir ve bu gerilmeler nedeniyle malzemelerde parçalanmalar ve ufalanmalar görülür böylelikle yapı dayanıklılığını ve mukavemetini kaybeder. Bu nedenle korozyon yapı elemanlarımız için çok önemlidir. Yağışların, zemin sularının ve deniz kenarının olduğu yerlerde korozyona dayanıklı elemanlar üretmeliyiz. Dış hava koşullarıyla karşı karşıya kalan yapılarımızın bünyesine su ve nemin girmesini engellemeliyiz.

2.4. Kabarma ve Dökülmeler

Su-nem ve sıcaklık gibi, dış etkenlerden dolayı meydana gelebileceği gibi, yapı içerisinde su kullanılan sıhhi tesisatın bulunduğu bölümlerde de kabarmalar, dökülmeler oluşabilmektedir. Sıcak ve nemli hava yapı içerisinde malzemenin boşluklu yapısından veya yüzeyde çeşitli kuvvetler sonucu oluşmuş olan çatlaklardan içeri girerek malzeme bünyesinde birikir ve su alarak şişen yapı ürünlerinin, ısı etkisiyle kuruyup büzüldüklerinde tam anlamıyla eski haline dönemedikleri ve hacimce daha çok küçüldükleri için bozulmaya sebep olmaktadır [7]. Bu nedenle yüzeyde boya kabarması, sıva dökülmesi, küflenme gibi problemlere sebep olmaktadır.

Binalarda, kabarma, dökülme ve çürüme gibi bozulmalara, küf gibi bakteri içeren sağlık açısından olumsuz ortam oluşturmasına neden olmaktadır. Dış etkenler sonucu oluşan özellikle su ve nem varlığında oluşan bu bozulmalar, yapının dayanımını ve sağlamlığını zamanla azaltacağından hem taşıyıcılık hem yapı sağlığı açsından sorunlar yaratmaktadır [8].

2.5. Çatlak ve Aşınmalar

Yapılarda oluşan mekanik bozulmalar; yapıyı etkileyen kuvvetler sonucunda oluşan gerilmelerden dolayı bozulmalar oluşmaktadır. Binalarda oluşan bazı mekanik deformasyonlar; Basınç ve Çekme, Eğilme, Burkulma, Burulma, Yorulma, Aşınma ve Kayma'dır [8].

Yapı kendi yükünden, kullanım yükünden ve deprem, rüzgar gibi yatay yüklerin etkisi altında kaldığından yapılarda çatlama, kırılma, çökme, aşınma gibi çeşitli boyutlarda hasarlar meydana gelmektedir. Dış cephe malzemesinde hava koşullarından, birbiri ile uygun olmayan malzeme seçiminden ve kullanımdan dolayı sıva çatlakları, aşınmadan dolayı malzeme kopmaları, tahribatlar meydana gelmektedir.

2.6. İnsan Kaynaklı Bozulmalar

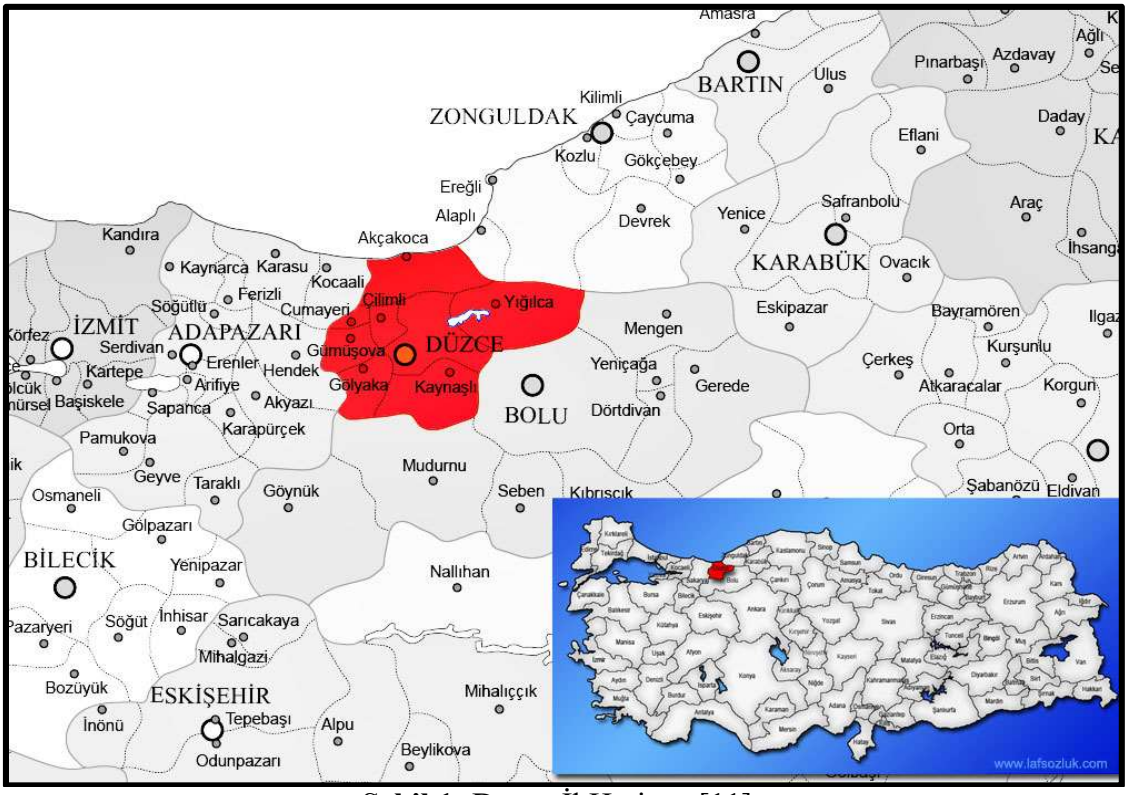
İnsan kaynaklı hasarların oluşum nedenlerini 3 başlık olarak ele alabiliriz. Tasarım kaynaklı, uygulama kaynaklı ve kullanım kaynaklıdır.

Tasarım aşamasındayken; plan ve taşıyıcı sistemi uygun düzenleme ve boyutlandırmaların yapılası, tüm detayların düşünülmesi ve uygun malzeme seçimini yapılması gerekmektedir. Uygulama aşamasındayken; ortam koşullarına, hava sıcaklıklarına dikkat edilmeli, uygun gereçlerin-malzemelerin temini, depolanması, standarda uygun ölçülerde yapılması, kalifiyeli işçilik önemlidir. Kullanım aşamasındayken; yapının işlevi, tasarım aşamasında alınan kararlara uygun bir şekilde kullanılmalıdır. Kullanım aşamasında değiştirilen işlevler, çeşitli eklentiler, bakım ve onarımlarda yanlış müdahaleler gibi etkilerden dolayı yapıda insan kaynaklı bozulmalar meydana gelmektedir.

3. SEÇİLEN KAMU KURUMUNA AİT BİNADA ALAN ÇALIŞMASI VE BULGULAR

Düzce, Karadeniz Bölgesinin batı kısmında yer alan yüzölçümü 2.593 km² olan Karadeniz Bölgesinin ikinci küçük illerden biridir, batıda Sakarya, doğu ve güneyde Bolu ve kuzeyde Zonguldak illeriyle komşudur. Akçakoca ilçesi ile Karadeniz'e açılan Düzce İli, 30 km. uzunlukta bir kıyıya sahiptir [9].

Düzce ilinde ılıman bir iklim görülmekte olup yılın genelinde yağışlar hakimdir ve yıllık ortalama sıcaklığı ise 11,7 °C' dir. Karadeniz Bölgesinde olan Düzce ilinde Kuzeyden esen rüzgarlar hakimdir [10].



Şekil 1: Düzce İl Haritası [11].

Çalışma kapsamında alan çalışması için seçilen yer; Düzce ili Merkez ilçesinde bulunan bir kamu kurumudur. Deprem sonrası 2006 yılında inşasına başlanan bina 2009 yılında tamamlanmıştır. 24.357 m² inşaat alanına sahiptir. Betonarme yapım sistemi ile yapılan binada radye temel, düz çatı, plak kiriş döşeme, malzeme olarak tuğla ve ısıtma sistemi olarak bina içi kalorifer kullanılmaktadır. Bina iç bahçeli ayrı girişleri olan farklı birimlerden oluşan bir plana sahiptir. Bina yıllar içerisinde çeşitli tahribatlarla karşılaşmıştır ve bunun sonucunda farklı zamanlarda gerekli yerlerde bakım ve onarım çalışmaları yapılmıştır. Şu anda bile binanın bir kısmında dış cephe tadilatları yapılmaktadır. Çalışma kapsamında seçilen kamu yapısında karşılaşılan cephe hasarları tespit edilmeye çalışılmıştır.

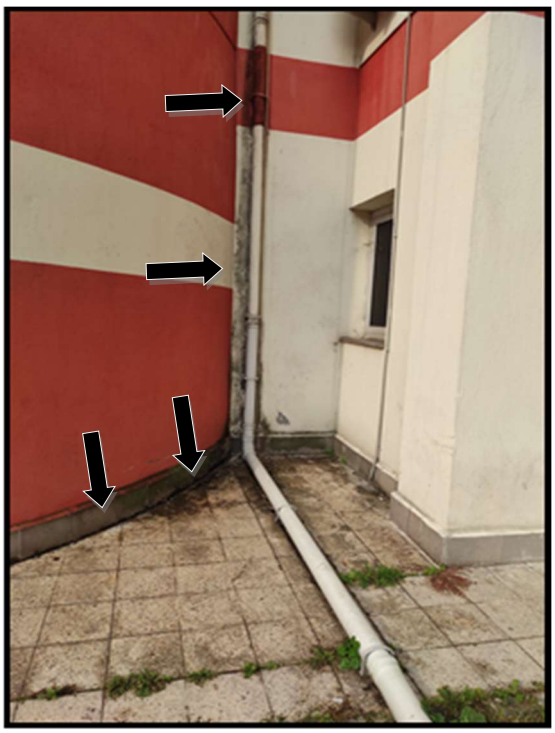
4. ÇALIŞMA ALANINDA KARŞILASILAN SORUNLAR

4.1. Çiçeklenme-Yosunlaşma

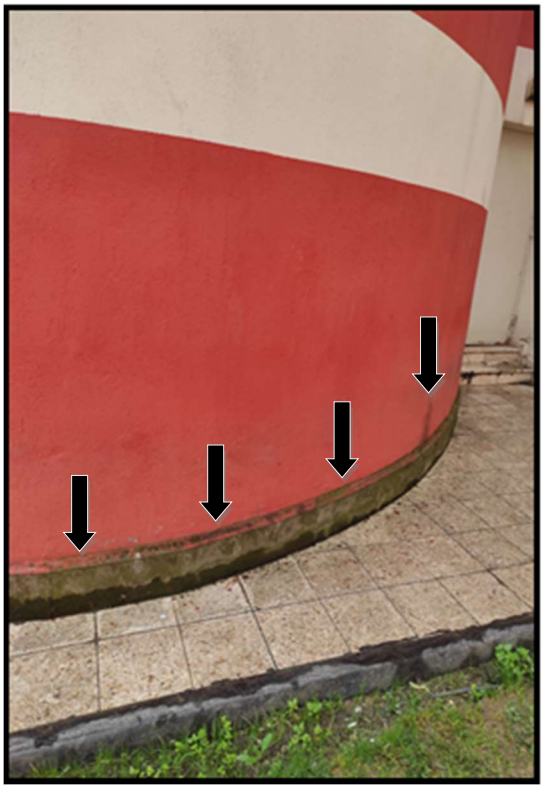
Yapının zemin kat duvar ve zemin birleşim yerlerinde kapilarite etkisi (kılcal su yükselmesi) ve dış etmenlerden dolayı sürekli yıkanma etkisiyle karşılaşan cephelerde görsel kirlilik, çiçeklenme ve yosunlaşma gözlemlenmiştir.



Şekil 2. Duvarda çiçeklenme



Şekil 3. Zemin ve duvar birleşiminde Yosunlaşma



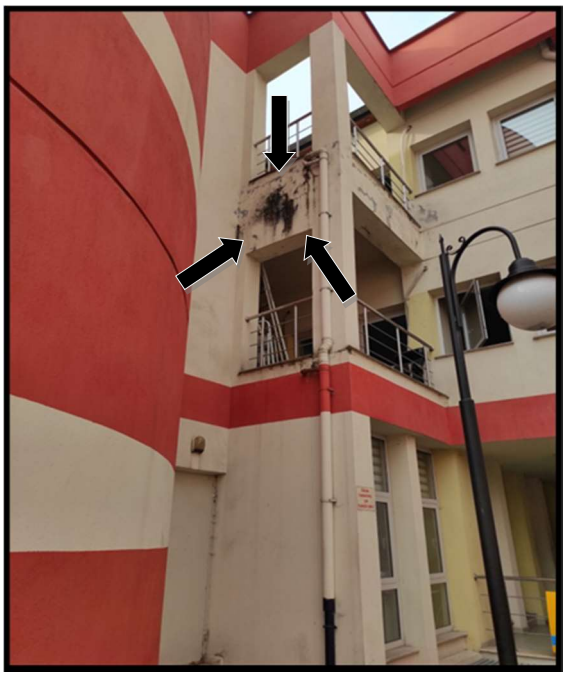
Şekil 4. Dış cephe ve tretuvar birleşiminde yosunlaşma



Şekil 5. Duvarda çiçeklenme, zeminde yosunlaşma

4.2. Yüzey Kirlilikleri

Girinti çıkıntıların olduğu söveler ve damlalık detaylarının doğru çözümlenmediği yerlerde ve doğrudan yıkanmanın olmadığı bölümler de hava kirliliği sonucu meydana gelir. Bu kirlilikler cephe yüzeyine yapışıp birikirler. Genellikle koyu gri, siyah renkli kabuk halinde görülür.



Şekil 6. Denizlik altında oluşan siyah tabaka



Şekil 7. Söve bölgesinde oluşan kirlilik



Şekil 8. Denizlik altında oluşan siyah tabaka



Şekil 9. Duvar yüzeyinde oluşan yüzey kirliliği

4.3. Korozyon

Yapı dış cephesinde su-nem kaynaklı su iniş borularının alt kısımlarının malzemelerinin metal olmasından dolayı korozyona uğramaları sık karşılaşılan durumdur. Malzemelerin korozyona uğramasından dolayı paslanmalar meydana gelmektedir.



Şekil 10. Su iniş borusunda oluşan korozyon



Şekil 11. Su iniş borusunda oluşan korozyon



Şekil 12. Metal malzemeli dış kapı altlarında oluşan korozyon

4.4. Yüzeyde Kabarma ve Dökülmeler

Yapı dış cephesinde su-nem kaynaklı boya ve sıvalarda kabarma, dökülme ve kopma şeklinde cephe hasarları yaygın olarak gözlemlenmiştir. Balkon damlalık detaylarının uygunsuz çözümü sonucunda parapet bölgelerinde, balkon altlarında ve cephe yüzeylerinde boya kabarmaları ve dökülmeler meydana gelmiştir.



Şekil 13. Parapet gölgesinde oluşan boya kabarması



Şekil 14. Parapet gölgesinde oluşan boya dökülmesi



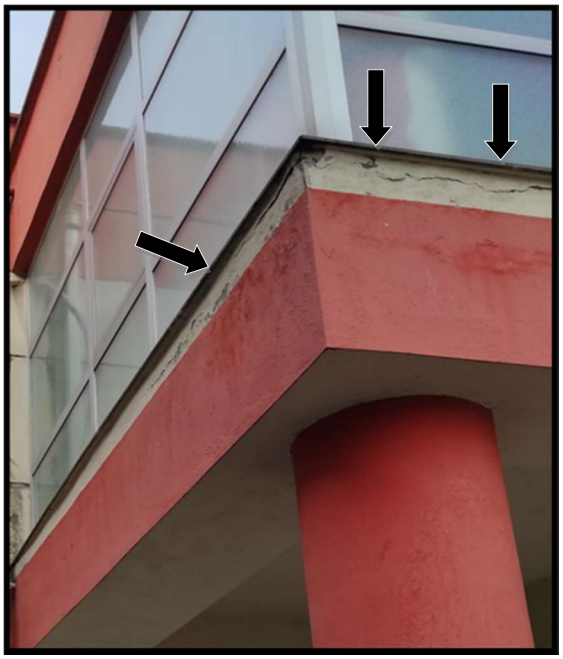
Şekil 15. Duvarda boya dökülmesi



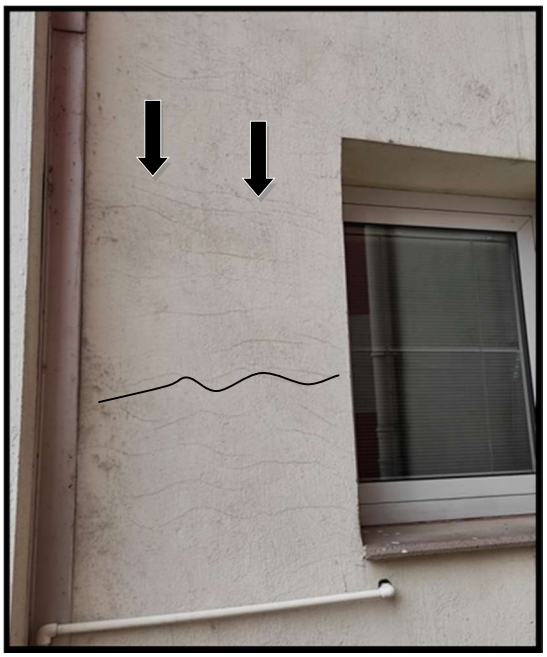
Şekil 16. Balkon altında oluşan boya dökülmesi

4.5. Çatlak ve Aşınmalar

Dış cephe malzemesinde iklimsel etkilerden, su-nem etkisinden ve kullanımdan dolayı sıva çatlakları, aşınma ve malzeme kopmaları meydana gelmektedir. En çok karşılaşılan sorunlar şunlardır; 1) Yapı su basman seviyesinde ve giriş kısımlarında aşınmalar. 2) Denizlik altlarında kuvvet etkisinden ve yanlış uygulamalardan dolayı sıva çatlakları ve boya dökülmeleri. 3) Duvar birleşim yerleri ve pencere kenarlarında gerilmelerden dolayı enerji boşalımının olduğu yerlerde sıva çatlakları meydana gelmiştir.



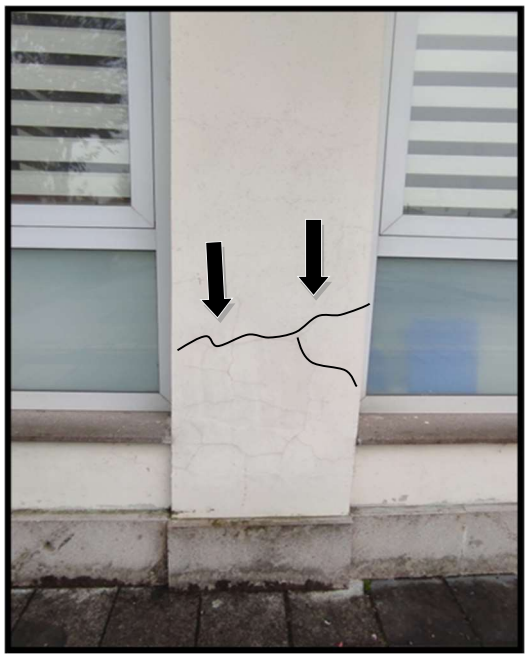
Şekil 17. Denizlik altı sıva çatlağı



Şekil 18. Pencere etrafında sıva çatlağı



Şekil 19. Çarpma etkisinde malzeme kopması



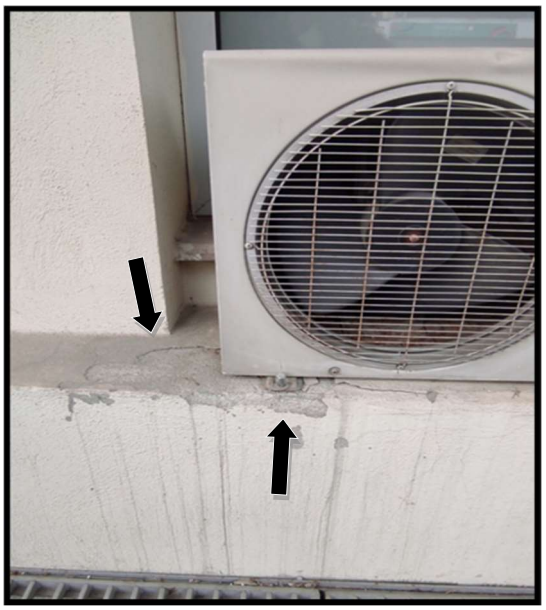
Şekil 20. Pencere etrafında sıva çatlağı

4.6. İnsan Kaynaklı Bozulmalar

Tasarım aşamasında düşünülmeyen havalandırma, ısıtma, soğutma, sıhhi tesisattaki eksikliklerden dolayı kullanım aşamasında ihtiyaç doğması sebebi ile yapılan uygulamalar hem estetik hem de yapı fiziği açısından sorunlar meydana çıkmıştır. Klima borularının çıkış yerleri, klima motorunun takılacağı bölüm, su giderlerinin unutulması gibi eksikliklerden dolayı monte işleminden kaynaklı duvar çatlakları, kopmalar, estetik açıdan cephede kötü görünüme sebep olan kablolar, borular gözükmektedir.



Şekil 21. Tesisatın çözüm hasarı



Şekil 22. Montaj sırasında oluşan deformasyonlar



Şekil 23. Duvarda parça kaybı



Şekil 24. Estetik açıdan sorun yaratan kablolar

5. SONUÇLAR VE ÖNERİLER

Cephe hasarları üzerine yapılan bu çalışmada elde edilen analizler ve sonuçlar doğrultusunda, Düzce ilinde seçilen bir kamu yapısında karşılaşılan problemler ele alınmaktadır. Seçilen kamu yapısında görülen cephe hasarları, yalnızca bu yapıda değil, tüm yapı çeşitlerinde görülebilecek ortak hasarlardadır. Bu çalışmanın amacı ise benzer durumlara örnek olabilmesi için uygun tasarım, doğru uygulama ve tasarıma uygun kullanım ile birlikte gerekli müdahalelerin yapılması konusuna açıklık getirmeye çalışarak, yararlı bir kaynak olması amaçlanmıştır.

Çalışmanın sonucunda ise cephe hasarları incelendiğinde karşılaşılan sorunların başlıca nedenlerinin iklimsel dış faktörler olduğunun, su-nem varlığında iyi yalıtılmamış yapıların tahribata uğradığını, en önemli etkenlerden birinin aslında tasarım aşamasında düşünülmeyen (tesisat, damlalık detaylandırmaları, yanlış malzeme seçimi vb.) detaylar ve diğer bir etken ise kullanımdan kaynaklı hasarların meydana geldiği görülmektedir. En çok cephede hasarlar zemin duvar birleşim yerlerinde, su basman seviyesinde, pencere üzeri sövelerinde, balkon parapetlerinde ve balkon döşeme altlarında olmakla birlikte cephelerde kabarmalar, dökülmeler, çatlamalar, kirlilikler olarak karşımıza çıkmaktadır. Yağmur oluklarının zemine yakın kısımlarında sağlamlık açısından kullanılan metal malzemelerde korozyon problemleri meydana gelmiştir. İnsan kaynaklı hasarlarda binaya sonradan eklemelerde monte etme, binaya sabitleme, duvarda delik açma gibi işlemlerinden dolayı malzemeler (dökülme, çatlama, kırılma, ufalanma gibi) tahribata uğramıştır. Bunların genel sonucunda hem yapı fiziği açısından olumsuzluklar görülmekle beraber estetik açıdan da binada kötü bir görünüme neden olmaktadır.

Bu karşılaştığımız sorunlar için çözüm önerileri şunlar verilebilir;

Yapılarımızı en çok etkileyen faktörlerden birisi suyun varlığıdır bu yüzden yapılarımızı sudan uzaklaştırmalıyız ve bu sorunun çözümü için kesinlikle su yalıtımını uygun yerlere gerektirdiği standartlarda uygulamalıyız. Sudan korunmak için sadece yalıtım değil çatı çözümlerinin uygun ve eksiksiz olması, balkonlarda ve denizliklerde damlalık detaylandırmaları, cephe malzemesi seçiminde su etkisiyle bozulacak, lekelenecek, paslanacak ürünlere yer verilmemelidir.

Yapıların dış cephelerinde korozyona uğrayabilme ihtimali olan metal, kurşun ve demirden yapılmış olan malzemeleri seçmemeliyiz ya da bu malzemeleri korozyona uğramasın diye malzemelerin metal yüzeylerini koruyucu kaplamalar ile kaplayabilir veya yüzeylerine boyama işlemi yapabiliriz.

Cephe yüzeylerinde oluşan çiçeklenme-yosunlanmalar için dış cephelerde uygun malzeme seçimi çok önemlidir, harçların içine çeşitli katkılar katılabilir ve geçirimlilik azaltılabilir. Eğer çiçeklenmeler oluştuysa ise su ile fırçalayarak bu sorun giderilebilir fakat çiçeklenme şiddeti daha fazla ise HCl asidi ile yıkayarak, cephede paslanma oluştuysa ise $CaCl_2$ kimyasal bileşeni ile yıkanarak da sorun giderilebilir.

Karşılaştığımız cephe sorunlarına bazı çözüm önerileri getirilmiştir ve yapılarımızı yaparken tasarım aşamasında, uygulama aşamasında ve kullanım aşamasında yapının işlevinin göz önünde bulundurarak her detayının düşünülüp, hesaplanıp, uygun malzeme özelliklerine göre seçilip, nitelikli işçilik ve düzenli bakımlarla destekleyerek yapılarımızı koruyup, kullanım sürecinde ki tahribatlarını azaltabiliriz ve böylelikle kullanıcılar için daha konforlu, sağlıklı ve sağlam yapılar oluşturabiliriz.

6. KAYNAKÇA

[1]. Tuna, G., 1998, Yapı Dış Yüzey Sıvalarında Oluşan Sorunların Belirlenmesi Ve Çözüm Önerileri, Mimar Gökçe Tuna, Yüksek Lisans Tezi, YTÜ Fen Bilimleri Enstitüsü, İstanbul.

[2]. Güzelçoban, S., 2007, Yapılarda Su Ve Isı Etkenleri, Oluşturduğu Sorunlar, Nedenleri Ve Çözüm Önerileri, Yüksek Lisans Tezi,YTÜ Fen Bilimleri Enstitüsü, İstanbul.

[3]. Akan, A. Örmecioğlu, H., Brüt Beton Yapıların Kullanım Ömrü ve Onarım Teknikleri, Mimarlık Dergisi, Temmuz-Agustos, 2012.

[4]. Yıldırım, K., 2018, Yapı Fiziği Açısından Yapı Elemanlarında Dayanıma Etki Eden Çiçeklenme Olayı ve Korunma Yöntemleri, ISHAD2018-page: 417-424.

[5]. Yüzer, N., 2003, Betonarme Yapılarda Korozyon Ölçüm Yöntemleri ve Hasar Tespiti, THM Türkiye Mühendislik Haberleri, Sayı 426-2003/4.

[6]. Dal, M., Yılmaz, D., 2015, Su-Nemin Yapı Elemanlarına ve Yapı Konforuna Olumsuz Etkileri, Int. J. Pure Appl. Sci. 1: 89-99.

[7]. Toydemir, N., Gürdal E., Tanaçan, L., 2000, Yapı Elemanı Tasarımında Malzeme, Literatür Yayıncılık, İstanbul.

[8]. Güler, H., Şenkal Sezer, F., Ülkü, S., 2010, Binalarda Yapı Fiziği Problemleri: Bursa'da Bir Kamu Kurumu Örneği, Uludağ Üniversitesi Mühendislik-Mimarlık Fakültesi Dergisi, Cilt 15, Sayı 2.

[9]. Erşahin, G., Akkahve, D., Sabuncu, A., 2001, Düzce İli Raporu, Yayın No. DPT: 2578.

[10]. https://tr.climate-data.org/asya/tuerkiye/duezce/duezce-187/.

[11]. https://www.lafsozluk.com/2009/02/duzce-ilinin-ilceleri-ve-nufus-sayilari.html.

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ORANGE G'NİN FOTOKALİTİK BOZUNMASI

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ÖZET
Bu çalışmada tekstil atık sularında yer alan azo boyar maddelerden Orange G molekülünün ftalosiyanin gibi bir fotokatalizör yardımıyla kimyasal olarak zararsız ya da daha az zararlı formlarına parçalanması incelenmiştir. Fotokatalizör olarak kullanılan ftalosiyanin türevi merkezinde kobalt metali bulunan, tetra nanperiferal karboksilik asit gurupları taşıyan metalli bir ftalosiyanindir (TCCoPc). Yapıda bulunan karboksilik asit grupları molekülün (TCCoPc) suda çözünür olmasını, dolayısıyla fotokatalitik reaksiyonda katalizörün homojen olarak ortamda bulunmasını sağlamaktadır. Merkez metal atomu ise ışık varlığında ftalosiyanin tarafından üretilen ve organik kirleticinin parçalanması için gerekli olan singlet oksijen üretim miktarını artırmak amacıyla seçilmiştir. Model organik kirletici olarak 5 x 10^{-4} M derişimde Orange G çözeltisi ve foto katalizör olarak da 1 x 10^{-5} M TCCoPc çözeltisi kullanılmıştır. Orange G ve TCCoPc çözeltileri 2:1 oranında 100 mL'lik bir kapta karıştırılmış ve optik bir düzenek yardımıyla 5'er dakikalık periyotlarda ışığa maruz bırakılmıştır. Işığın etkisiyle TCCoPc tarafında üretilen singlet oksijen ile kimyasal olarak parçalanan Orange G molekülünün absorbansındaki değişim UV-vis. spektrofotometresi ile izlenmiştir. Elde edilen sonuçlara göre çalışmada kullanılan TCCoPc'nin tekstil atık sularından organik kirleticilerin giderilmesinde fotokatalizör olarak kullanılabilir potansiyelde olduğu tespit edilmiştir.
Anahtar Kelimeler: Ftalosiyanin, Fotokatalizör, Organik Kirletici, Atıksu

PHOTOCATALYTIC DEGRADATION OF ORANGE G

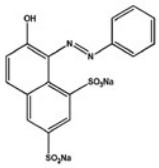
ABSTRACT
In this study, chemical degradation of Orange G molecule, which is one of the azo dyestuffs in textile wastewater, into harmless or less harmful forms with the help of a photocatalyst such as phthalocyanine was investigated. The phthalocyanine derivative used as a photocatalyst is a metallo phthalocyanine (TCCoPc) with a cobalt metal in its center and carrying tetra-peripheral carboxylic acid groups. The carboxylic acid groups in the structure ensure that the molecule (TCCoPc) is soluble in water, so that the catalyst is homogeneously present in the photocatalytic reaction medium. The central metal atom was chosen to increase the amount of singlet oxygen produced by phthalocyanine in the presence of light and required for the degradation of organic pollutants. Orange G solution at 5 x 10^{-4} M concentration was used as model organic pollutant and 1 x 10^{-5} M TCCoPc solution was used as photocatalyst. Orange G and TCCoPc solutions were mixed at a ratio of 2:1 in a 100 mL container and exposed to light for 5 minute periods with the help of an optical setup. The change in absorbance of the Orange G molecule, which was chemically decomposed by the singlet oxygen produced by TCCoPc under the influence of light, was monitored by UV-vis spectrophotometer. According to the results obtained, it was determined that the TCCoPc used in the study has the potential to be used as a photocatalyst in the removal of organic pollutants from textile wastewater.
Keywords: Phthalocyanine, Photocatalyst, Organic Pollutant, Wastewater

1. GİRİŞ

Ftalosiyaninler (Pcs) 1900'lü yılların başında keşfedilen ve 1930'lu yıllarda kimyasal yapısı aydınlatılan porfirin türevli bileşiklerdir. Kimyasal yapısının stabil olması, görünür bölge ve yakın infrared bölgede absorpsiyon yapmasından dolayı bilim adamlarının ilgisini çekmiştir. Yapılan araştırmalar sonucunda, bu moleküllerin pigment, senssör, yarı iletken, fotodinamik terapide (PDT) foto algılayıcı ve atık sulardaki organik kirliliklerin giderilmesinde fotokatalizör olarak kullanılabilir oldukları keşfedilmiştir.

Fotokataliz, katalizör olarak ışık ve ftalosiyaninler gibi fotoaktif malzemelerin bir kombinasyonunu kullanan moleküllerin bozunma veya transformasyon reaksiyonlarını içermektedir. Fotokatalizörler olarak ftalosiyaninler, nispeten yüksek kimyasal kararlılık, uygun redoks ve koordinasyon özellikleri ve görünür ila yakın kızılötesi (NIR) bölgede yoğun absorpsiyon bantları gibi birçok üstün özellik sergilemekte ve bu da Pc'yi diğer fotokatalizörlerden (TiO_2 gibi) daha avantajlı kılmaktadır. Görünür bölge ışığı varlığında singlet oksijen üretme yeteneklerinin de olması araştırmacılar tarafından yoğun ilgi görmektedir. Pc'nin singlet oksijen oluşturma özelliği, organik kirleticilerin fotooksidasyonunda önemli bir rol oynamaktadır [1]. Bu nedenle, organik kirleticilerin fotokatalitik bozunması sırasında foto-indüklenen bozunmaya daha az eğilimli olan yüksek verimli singlet oksijen üretme yeteneklerine ve büyük molar absorpsiyon katsayılarına sahip ışığa duyarlılaştırıcılar geliştirmek çok önemlidir [2].

Su kirliliğinin doğal ekosistemler ve günlük yaşam üzerinde olumsuz etkileri vardır, bu nedenle acil bir küresel ekolojik sorundur. Artan insan nüfusu ile sanayinin büyümesi su kaynaklarına olan talebin yüksek olmasına neden olurken, bu kaynakların kalitesini tehdit eden büyük miktarlarda çeşitli atık sular üretilmektedir. Endüstriyel atık su, insan sağlığı ve çevre üzerindeki etkilerini en aza indirmek için bertaraf edilmeden önce uygun şekilde arıtılmalıdır [3]. Tüm kirleticilerin %80-90'ı biyolojik işlemler gibi geleneksel yöntemlerle arıtılsa da [4], tehlikeli organik kirleticilerin bu işlemlerle atık sulardan tamamen giderilemeyeceği belirlenmiştir [5, 6]. Tekstil endüstrisi, boyama işleminde kullanılan boyaların yüksek konsantrasyonları ve bu boyaların çevresel bir risk faktörü oluşturan toksik doğası nedeniyle suyu yoğun bir şekilde kirletmektedir [7]. Boya molekülleri çoğunlukla toksik, kanserojen, mutajeniktir veya alerjen görevi görür [8, 9].



Şekil 1. OG'nin molekül yapısı

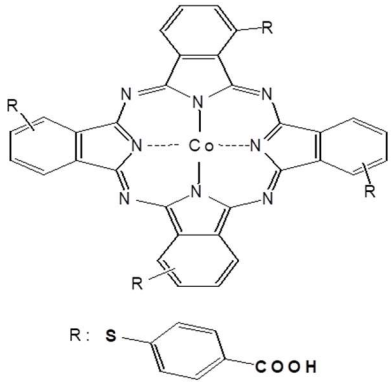
Özellikle azo boyalar, mevcut tekstil boyaları pazarının %60-70'ini oluşturmaktadır [10]. Tekstil endüstrisi, yıllık olarak üretilen azo boyaların %70'inden fazlasını tüketiyor ve bu miktar yaklaşık $7{,}0 \times 10^5$ ton. Tahmini olarak $2{,}8 \times 10^5$ ton tekstil atık suları yoluyla çevreye deşarj edilmektedir [11]. Orange G (OG), tekstillerde, gıda maddelerinde [12] ve tabakhane endüstrisinde yaygın olarak kullanılan bir azo boyadır (Şekil 1). OG'nin kromozomal hasara neden olduğu ve özel toksik etkiler olarak klastojenik aktivite sergilediği bildirilmiştir [13].

Bu çalışmada, ftalosiyanin türevinin (TCCoPc) fotokatalitik performansı sulu çözelti içinde incelenmiştir.

Sülfür atomları ile ilişkili ağır atom etkisinden yararlanmak ve suda çözünürlüğü arttırmak için karboksilik asit ile işlevselleştirilmiş tiyafenil grupları tanıtıldı. Model organik kirletici olarak OG gibi azo boyar madde kullanılmıştır. Fotokatalitik bozunmaları, sulu çözelti içinde TCCoPc varlığında izlenmiştir.

2. MATERYAL VE METOD

Bu çalışmada kullanılan tüm kimyasallar analitik saflıkta olup ticari kaynaklardan temin edilmiştir. Fotokatalitik işlemlerin takibinde PG Instruments T60 UV-vis spekrofotometre kullanılmıştır. Bu çalışmada fotokatalizör olarak kullanılan TCCoPc, literatüre [14] göre sentezlenmiştir (Şekil 2).



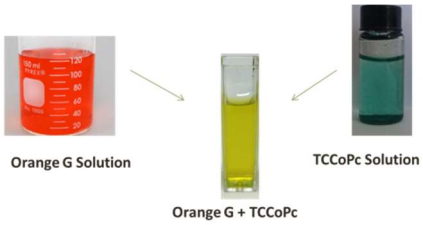
Şekil 2. TCCoPc'nin molekül yapısı [14]

2.1. Suda çözünür TCCoPc kullanılarak fotokatalitik reaksiyonlar

Fotokatalitik reaksiyonlar, cam şişelerde manyetik olarak karıştırılan bir kesikli reaktörde gerçekleştirildi. Işınlama deneyleri, bir fotoliz düzeneği kullanılarak gerçekleştirilmiştir. Reaksiyon kabına ulaşan ışığın yoğunluğu bir güç ölçer (Power Max 5100, Molelectron Detector Inc.) ile ölçüldü. Fotokatalist (TCCoPc) ve OG organik kirleticinin çözeltileri suda ayrı ayrı hazırlandı ve 1:2 oranında karıştırıldı. Tekrarlanan 5 dakikalık ışınlama aralıklarında ışığa maruz bırakıldı. OG için bozunma verimlilikleri, 478 nm'de bant maksimum absorbans değerleri ölçülerek UV-görünür absorpsiyon spektral ölçümleri ile değerlendirildi.

3. SONUÇLAR VE TARTIŞMA

Tetrakarboksikobalt ftalosiyanin (TCCoPc) türevinin, nanperiferal pozisyonlarında taşıdığı karboksilik asit gruplarının etkisi ile suda çok iyi çözündüğü tespit edilmiş olup homojen bir fotokatalizör çözeltisi (1×10^{-5} M) hazırlanmıştır. Diğer taraftan model organik kirletici olarak bir azo boyar madde türevi olan ve tekstil atık sularında oldukça fazla bulunan Orange G bileşiğinin sulu çözeltisi (5×10^{-4} M) hazırlanmıştır. Model organik kirleticinin konsantrasyonu fotokatalizörün konsantrasyonundan 10 kat fazla olacak şekilde ayarlanarak bu iki sulu çözelti (TCCoPc ve OG) 1:2 oranında bir kapta karıştırılmıştır (Şekil 3).



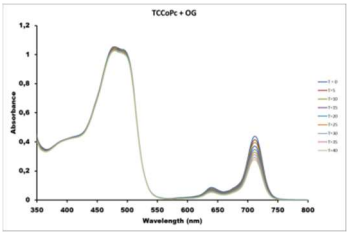
Şekil 3. TCCoPc ve OG çözeltileri

Fotokatalizör (TCCoPc) ve organik kirletici (OG) çözeltilerini içeren bu karışım bir ultrasonik banyo yardımıyla tamamen homojen hale getirilmiştir. Daha sonra aşağıdaki optik düzenek yardımıyla görünür bölge dalga boyundaki ışığa maruz bırakılmıştır (Şekil 4).



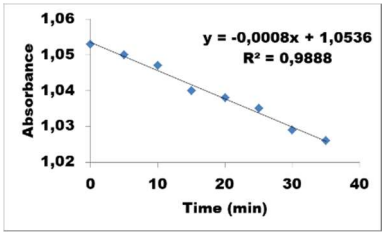
Şekil 4. Çalışmada kullanılan altyapı

Hazırlanan karışım yukarıdaki optik düzenek yardımıyla 5'er dakikalık aralıklarla ışığa maruz bırakılarak her bir aralıkta UV spektrofotometresi ile spektrumları ölçülmüştür. Reaksiyon karışımının UV spektrumu incelendiğinde TCCoPc'ye ait pik maksimumunun görünür bölgede (700 nm civarında) OG'ye ait pik maksimumunun ise 480 nm civarında olduğu tespit edilmiştir. 5'er dakikalık ışığa maruz bırakma sonucunda hem TCCoPc'ye ait pikin hem de OG'ye ait pikin maksimumlarının azaldığı görülmüştür (Şekil 5). Bu durum ışık varlığında TCCoPc tarafından singlet oksijen üretildiği ve üretilen singlet oksijen ile organik kirletici olan OG'nin fotokatalitik olarak bozunduğunu göstermektedir.



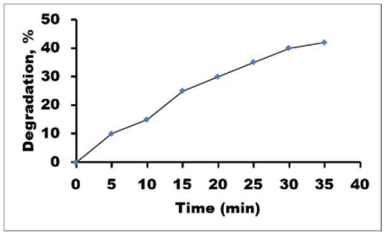
Şekil 5. OG'nin fotokatalitik bozunması

Fotokatalitik reaksiyon 5'er dk aralıklarla toplamda 35 dk devam ettirilmiştir. Geçen bu süre sonunda OG'nin absorbansındaki değişim zamana karşı grafiğe geçirilmiştir (Şekil 6). Grafiğin korelasyon katsayısına bakıldığında absorbanstaki azalmanın oldukça stabil ve tekrarlanabilir olduğu görülmüştür.



Şekil 6. OG'nin zamana karşı absorbansındaki değişim

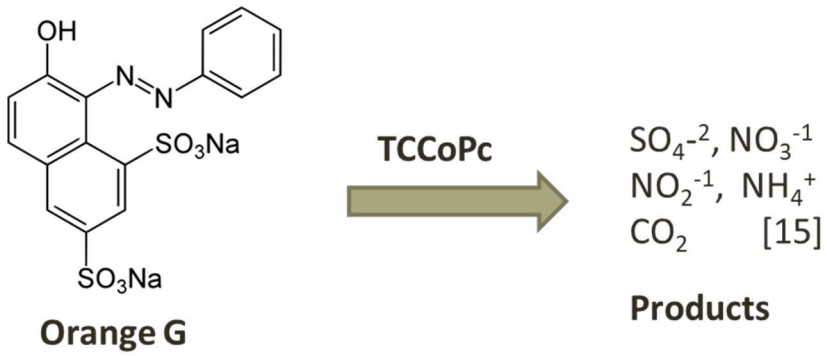
Beer–Lambert (A = □ x l x C) eşitliği yardımıyla fotokatalitik olarak bozunan OG'nin konsantrasyonundaki değişim miktarı hesaplanmış ve ortamdaki OG'nin yaklaşık %45'in bozunduğu tespit edilmiştir (Şekil 7).



Şekil 7. OG'nin TCCoPc varlığında %'de bozunma grafiği

4. SONUÇ

Tekstil atık sularında bulunan, organik kirleticilerin başında gelen ve bir azo boyar madde türevi olan OG'nin organik yapılı bir fotokatalizör yardımıyla fotobozunması incelenmiştir. Hem fotokatalizör hem de organik kirletici suda çözündüğünden homojen bir kataliz reaksiyonu gerçekleşmiştir. Reaksiyon sonunda elde edilen veriler ışığında bu fotokatalizörün atık sulardaki organik kirleticilerin fotobozunmasında kullanılabilir potansiyelde olduğu tespit edilmiştir.



Şekil 8. OG'nin fotokatalitik bozunma ürünleri

KAYNAKÇA

[1] P. Kluson, M. Drobek, A. Zsigmond, J. Baranyi, P. Bata, S. Zarubova, A. Kalaji, Appl. Catal. B: Environ. 2009, 91, 605–609.

[2] S. Tombe, E. Antunes, T. Nyokong, J. Mol. Catal. A: Chem. 2013, 371, 125-134.

[3] A. Babuponnusami, K. Muthukumar, J Environ Chem Eng 2014, 2, 557–72.

[4] N. Jallouli, L.M. Pastrana-Martı´nez, A.R. Ribeiro, N.F.F. Moreira, J.L. Faria, O. Hentati, et al., Chem Eng J. 2018, 334, 976–84.

[5] L. Hui, W. Yan, W. Juan, L. Zhongming, Recent Innov Chem Eng. 2014 7, 17–24.

[6] S.G. Poulopoulos, A. Yerkinova, G. Ulykbanova, V.J. Inglezakis, PLoS ONE 2019, 14(5), e0216745.

[7] E. Brillas, C.A. Martinez-Huitle, Appl Catal B: Environ 2015, 166, 603–643.

[8] K. Turhan, D. Ilknur, S.A. Ozturkcan, Z. Turgut, Dyes Pigments 2012, 92, 897–901.

[9] P.K. Chukowry, A. Mudhoo, S.J. Santchurn, Environ Chem Lett 2017, 15, 531–536.

[10] A. Alinsafi, F. Evenou, E.M. Abdulkarim, M.N. Pons, O. Zahraa, A. Benhammou, A. Yaacoubi, A. Nejmeddine, Dyes Pigments 2007, 74, 439–445.

[11] Z. Eren, J Environ Manag 2012, 104, 127–141.

[12] N. Divya, A. Bansal, A.K. Jana, Int J Biol Chem Sci 2009, 3, 54–62.

[13] P. Verma, S.K. Samanta, Environ Chem Lett 2018, 16, 969–1007.

[14] Y. Yılmaz, A. Youssef, M. Sönmez. AKU J. Sci. Eng. 2017, 17, 469-478.

[15] Kyriakopoulos, J.; Kordouli, E.; Bourikas, K.; Kordulis, C.; Lycourghiotis. Appl. Sci. 2019, 9, 1958. https://doi.org/10.3390/app9091958.

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MAKRO SENTETİK LİF KATKILI BETONUN MEKANİK ÖZELLİKLERİNİN ARAŞTIRILMASI

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ÖZET
Yeni nesil kompozit malzemeler, diğer sektörlerde kullanıldığı gibi inşaat sektöründe de kullanması günden güne artmaktadır. Kompozit malzemeler, yüksek mukavemet/ağırlık oranı, aşındırıcı olmayan yapısı, hafifliği, düzgün yüzeyli yapısı vb gibi etkin özelliklere sahiptir. Beton çeşitli avantajları sahip olduğundan inşaatlarda en çok kullanılan yapı malzemelerden biridir. Geleneksel beton güçlü basınç dayanımına sahip olmasına karşın zayıf çekme dayanıma sahiptir. Çekme dayanımındaki bu zayıflığı ortadan kaldırmak ve bunun yanı sıra betonun sünekliğini iyileştirmek için geleneksel betonda makro sentetik fiber kullanılmıştır. Makro sentetik donatılı fiberler betonda birincil ve ikincil donatı olarak kullanılabilen fiber, beton içerisinde 3 boyutlu homojen dağılan özel tasarıma sahip olduğundan plastik rötre ve yük altında oluşabilecek yapısal çatlakların oluşmaması için betonun her noktasında etkin çatlak kontrolü sağlar. Bu çalışmanın amacı, makro sentetik fiberlerin kullanılması ile betonun zeyıf mekanik özelliklerinin iyileştirilmesidir. Lifli betonu üretmek için agrega, su ve çimento sabit tutularak karışımın hacimce %0,4 ve %0,8'i kadar makro sentetik lif eklenmiştir. Sade betondan ve makro sentetik fiber donatılı betondan üretilen numuneler deneye tabi tututulmuştur. Çalışma kapsamında slump testi, basınç testi, yarma testi, eğilme testi, küp ultrasonic beton testi ve Schmidt çekiç testi yapılmıştır. Bu çalışmada yapılan deneyler için 150x150x150 mm boyutlarında küp numuneler hazırlanmıştır. Eğilme deneyi için 100x100x500mm boyutlarında küçük kirişler hazırlanmıştır. Makro sentetik donatılı fiber ilavesiyle betonun mekanik özelliklerinde sade betona göre değiştiğini görülmüştür.
Anahtar Kelimeler: Kompozit malzemeler, Makro sentetik fiber, Beton, Fiber hacim oranı değişimi

INVESTIGATION OF MECHANICAL PROPERTIES OF CONCRETE WITH MACRO SYNTHETIC FIBER

ABSTRACT
The use of new generation composite materials in the construction industry is increasing day by day as they are used in other sectors. Composite materials have effective properties such as high strength/weight ratio, non-abrasive structure, lightness, smooth surface structure, etc. Concrete is one of the most widely used building materials in construction because it has various advantages. Conventional concrete has strong compressive strength but weak tensile strength.

Macro synthetic fiber has been used in conventional concrete to eliminate this weakness in tensile strength as well as improve the ductility of concrete. Macro synthetic reinforced fibers, which can be used as primary and secondary reinforcement in concrete, provide effective crack control at every point of the concrete to prevent plastic shrinkage and structural cracks that may occur under load, since it has a special design that disperses 3 dimensional homogeneously in the concrete. The aim of this study is to improve the weak mechanical properties of concrete by using macro synthetic fibers. To produce fibrous concrete, aggregate, water, and cement were kept constant and macro synthetic fiber was added at 0.4% and 0.8% by volume of the mixture. Samples produced from plain concrete and macro-synthetic fiber reinforced concrete were tested. Within the scope of the study, slump test, pressure test, split test, bending test, cube ultrasound test and hammer test were performed. For the experiments carried out in this study, 150x150x150mm3 cube samples were prepared. For the bending test, 100x100x500mm3 small beams were prepared. It has been observed that the mechanical properties of concrete with the addition of macro synthetic reinforced fiber change compared to plain concrete.
Keywords: Composite materials, Macro synthetic fiber, Concrete, Fiber volume ratio change, Mechanical behavior of concrete

1. Giriş

Beton çeşitli avantajlara sahip olduğundan inşaatlarda en çok kullanılan yapı malzemelerden biridir. Üretiminin kolay olası, istenilen özelliklerde ve istenilen şekilde üretilebilmesi ve basınca karşı yüksek dayanım sağlayabilmesi betonu kullanışlı bir yapı malzemesi yapmaktadır. Beton kompozit bir malzeme olduğu için içinde birden fazla karışım bileşenleri vardır, betonun bileşenleri ise agrega, çimento, su, hava, gerek duyulduğunda akışkanlaştırıcı ve çeşitli kimyasal malzemelerdir. Betonda agreganın kullanımı önemlidir. Ekonomik ve kolay bulunabilmesi, çimentoyla bağlanması, betonun içindeki boşlukları azaltabilmesi, çeşitli granülometri oranlarında kullanılabilmesi, betona dayanım kazandırması gibi özelliklere sahiptir. Geleneksel beton bilindiği gibi basınca karşı dayanıklılığını gösterirken çekmeye karşı çok düşüktür. Betonun çekme özelliğinin arttırılması için çeşitli makro sentetik yeni nesil malzemeler kullanılmaktadır. Makro-sentetik lifler içeren betonlar üzerine çeşitli çalışmalar yapılmıştır. Çalışmalarda, etriyeli-etriyesiz donatılı betonarme kirişler kullanılmış ve buna ek olarak çelik/CFRP etkileşiminin deneysel araştırması yapılmıştır. Yapılan çalışmada, kirişin durumu hasarlı-hasarsız olarak ele alınmıştır. Çalışmada makro-sentetik elyaf dozajı %0,5, %0,75 ve %1 olarak düşünülmüştür. Test sonuçları, hasarlı betonarme kirişlerin EB-FRP kullanılarak yeniden donatılandırılmasının, kirişlerin orijinal kesme kapasitesini önemli ölçüde arttırdığını ve dayanım kazanımlarının makro sentetik liflerin miktarına bağlı olarak %50 ile %111 arasında değiştiğini göstermiştir [1]. Makro sentetik liflerle takviye edilmiş betonun mekanik davranışını belirlemek için yapılan diğer bir deneysel çalışmada dört çeşit numune hazırlanmıştır. Biri lifsiz ve geri kalan üçü hacimce sırasıyla %0.33, %0.42 ve %0.51'lik oranlarda lifli olarak üretilmiştir. Basınç, çekme, kesme mukavemeti ve gerilme-şekil değiştirme ilişkileri gibi mekanik davranışları belirlemek için küp, prizma ve kiriş beton numuneler dökülmüştür. Test sonuçları, makro sentetik elyafın basınç dayanımını önemsiz derecede arttırdığını göstermiştir. Bununla birlikte, %0.33, %0.42 ve %0.51 hacim oranlarındaki makro sentetik lifler, kontrol numunesine kıyasla çekme mukavemetini sırasıyla en az %10, 15 ve %14 oranında iyileştirmiştir [2]. Sentetik liflerle güçlendirilmiş beton kirişlerdeki çatlaklar deneysel olarak araştırılmıştır.

Hem tekli hem de çoklu çatlama senaryolarını değerlendirmek için boyuna donatılı ve donatısız beton kirişler incelenmiştir. Numuneleri hazırlamak için %0,5 ve %1'lik hacim oranlarında sentetik elyaf kullanılmış ve sonuçlar sentetik elyaf içermeyen beton kirişlerin sonuçlarıyla karşılaştırılmıştır. Sonuçlar, %1 sentetik elyaf kullanımının betonarme kirişlerin hasar yükünü arttırdığını, çatlak sayısını ve çatlak genişliğini azalttığını göstermiştir. Çatlaklar önemli ölçüde açıldığında, %1 fiber dozajlı kirişler, çatlak yerlerinde köprüleme etkisi oluşturmakta ve böylece beton kiriş daha yüksek yükleri taşıyabilmektedir [3]. Diğer bir çalışmada, etriye olmadan makro-sentetik elyaf takviyeli beton kirişlerin kesme davranışı araştırılmıştır. Çalışmada, makro sentetik lifler, hacimce %0,50, 0,75 ve 1,0 oranlarında karışıma eklenmiştir. Makro sentetik liflerin eklenmesinin, kirişlerinin kesme mukavemetini ve sünekliğini önemli ölçüde iyileştirdiği, çatlama ve kırılma davranışını değiştirdiği gösterilmiştir [4]. Çelik (yüksek sertlik) ve makro-sentetik (düşük sertlik) liflerin betonun taze özellikleri üzerine etkisi, işlenebilirlik ve hava içeriği ile ortaya çıkan mekanik performans dikkate alınarak bir araştırma çalışması yapılmıştır. Farklı su-çimento oranlarına (0.45 ve 0.50) sahip iki çeşit betonda, iki hacim oranında (%0,5 ve %1,0) dört lif tipi üzerinde çökme testi, DIN akış tablosu testi ve hava muhtevası ölçer kullanılarak incelenmiştir [5]. Diğer bir çalışmada, makro sentetik elyaf takviyeli geri dönüştürülmüş agrega betonun eksenel gerilme-şekil değiştirme davranışı araştırılmıştır [6]. Polimer liflerin türü ve içeriğinin lif takviyeli betonun eğilme dayanımı, basınç dayanımı, dolaylı çekme dayanımı ve elastisite modülü gibi mekanik özellikleri üzerindeki etkilerini araştırmak için deneysel bir çalışma yapılmıştır. Bu araştırmada, beton numuneleri sırasıyla 0,2, 0,4 ve 0,6 hacim oranlarında bükümlü, çubuklu ve lifli olmak üzere üç farklı polimer lif türü kullanılmıştır. Lif eklenmesiyle betonun eğilme ve çekme mukavemetinin arttığını; ayrıca betona lif ilavesinin basınç dayanımını ve elastisite modülünü azalttığı tespit edilmiştir [7].
Bu çalışmada makro sentetik donatlı liflerin betonun mekanik davranışı üzerine etkisi araştırılmıştır. Çalışmada, üç farklı beton karışımı hazırlanmıştır. Birinci tip beton, lif içermeyen geleneksel sade beton olarak üretilmiştir. İkinci ve üçüncü tip betonun karışımında sırasıyla %0,4 ve %0,8 makro sentetik lif kullanılmıştır.

2. MATERYAL VE YÖNTEM

2.1 MALZEME

Bu çalışmada kullanılan malzemelerin fiziksel özellikleri ve kimyasal bileşimi ile 1 m^3 beton üretimi için aşağıda verilmiştir.

2.1.1 Çimento

Bağlayıcı malzeme olarak TS EN 197-1 (2012) "Genel çimentolar-bileşim, özellikler ve uygunluk kriterleri standardına uygun CEM I 42,5 R tipi Portland çimentosu kullanılmıştır. Çimentonun bazı özellikleri Tablo 1 ve 2'de verilmiştir.

Tablo 1. Çimentonun kimyasal özellikleri

Oksit	Çimento
Sio_2	18.86
Al_2O_3	5.71
Fe_2O	3.09
CaO	62.7
MgO	1.16
So_3	2.39
Na_2O+0.658 K_2O	0.92
Cl^-	0.01
Çözünmeyen Kalıntı	0.32
Kızdırma Kaybı	3.2
Serbest CaO	1.26

Tablo 2. Çimentonun mekanik özellikleri

Fiziksel Özellikleri	
Özgül Ağırlık	3.15
Özgül Yüzey (Blaine, Cm^2 /g)	3530
0.045 mm Elekte Kalıntı (%)	7.6

2.1.2 Agrega

Bu çalışma kapsamında %60 iri agrega ve %40 ince agrega kullanılmıştır.

2.1.3 Su

Beton için şehir şebeke suyu kullanılmıştır.

2.1.4 Makro Sentetik Polipropilen Lif

Makro sentetik fiber donatıları, yüksek performanslı polipropilen ham maddesinden üretilmiştir. Betonda birincil ve ikincil donatı olarak kullanılabilen fiber, beton içerisinde 3 boyutlu homojen dağılan özel tasarıma sahip olduğundan plastik rötre ve yük altında oluşabilecek yapısal çatlakların oluşmaması için betonun her noktasında etkin çatlak kontrolü sağlar. Makro sentetik liflerin özellikleri Tablo 3'te verilmiştir.

Tablo 3. Makro sentetik Polipropilen liflerin özellikleri

Özgül Ağırlık	0.91 g/cm3
Ham Madde	Polipropilen
Uzunluk	50/55/60 mm
Görünüm	Nervürlü
Çekme Mukavemeti	500-650 MPa
Uzaması	9%
Elastisite Modülü	5,85 GPa
Asit ve Alkali Dayanımı	Mükemmel Direnç
Su Emmesi	Yok
Erime Noktası	165-175 C

2.1.5 Karışım oranları

Sade betonu üretmek için %60 iri agrega ve %40 ince agrega kullanılmıştır. Su çimento oranı 0,5 olarak seçilmiştir. Bağlayıcı malzeme olarak CEM I 42.5 portland çimentosu kullanılmıştır. Lifli betonu üretmek için agrega, su ve çimento sabit tutularak karışımın hacimce %0,4 ve %0,8'i kadar makro sentetik lif eklenmiştir.

3. DENEYSEL ÇALIŞMA

Deneyde 150X150X150 mm boyutlarında küp numuneler ve 100x100x500 mm boyutlarında kiriş numuneler üretilmiştir. Her deney numunesinden üçer adet olmak üzere sade beton %0.4 lif katkılı beton ve %0.8 lif katkılı beton numuneleri üretilmiştir.
Lifli beton için kıvamın sağlanması amacıyla akışkanlaştırıcı kullanılmıştır. Deneyde üretilen numune çeşitleri Tablo 4'te verilmiştir.

Tablo 4. Numune serisi

Numune Serisi	
Numune	Lif Oranı
KS	0
KSL1	0.40%
KSL2	0.80%



(a) (b) (c) (d)

Şekil 1. İri agrega (a), iri ve ince agrega karışımı (b), İri ve ince agreganın Lif ile karışımı (c), Makro sentetik lif (d).

4. BULGULAR VE SONUÇLAR

Bu çalışmada başta çökme testi(slump) olmak üzere basınç deneyi, yarma deneyi, küp ultrasyon deneyi, eğilme deneyi ve çekiç deneyi yapılmıştır.

4.1 Çökme (Slump) Deneyi

Çökme deneyi TS EN 12350-2 ve ASTM C143 standartlarına uygun taze betonun kıvamı ve işlenebilirliği çökme (Slump) hunisi ile yapılmıştır.
Lifli betonların kıvamı sade betona göre düşük çıktığı için akışkanlaştırıcı eklenmiştir ve beton kıvamı uygun hale getirilmiştir.



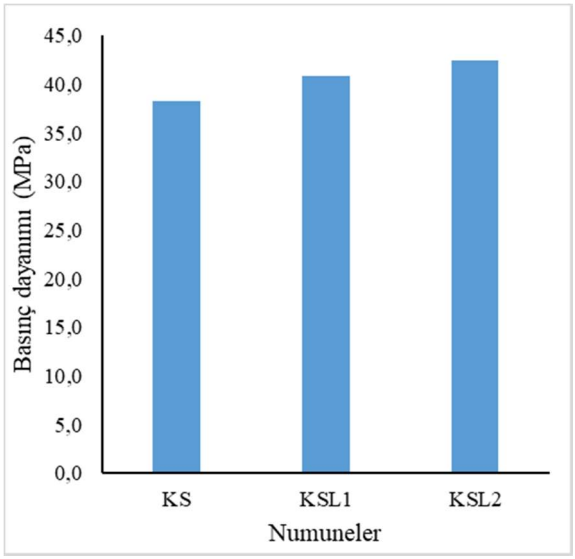
Şekil 2. Slump testi.

4.2 Basınç deneyi

Beton basınç dayanımı belirlemek için yapılan deneyde, EN 12390-1 / BS 1881:108 / ASTM C192, C39 / AASHTO T23, T126 / NF P18-400 standartlarına uygun küp kalıplarda numuneler hazırlanmıştır. 28 gün boyunca kür havuzunda bekletilen numuneler basınç deneyine tabi tutulmuştur. TS EN 12390-3 standardına uygun basınç dayanım deneyi yapılmıştır. sonuçlar Şekil 3'te verilmiştir.
Basınç dayanımı aşağıda verilen denklem yardımıyla elde edilmiştir.

$$f_c = \frac{F}{A_c}$$

Burada;
f_c Basınç dayanımı, MPa (N/mm2),
F Kırılma anında ulaşılan en büyük yük, N,
A_c Numunenin, üzerine basınç yükünün uygulandığı en kesit alanı, mm2
Basınç deneyi sonucunda Şekil 3'de elde edilen değerler incelendiğinde, lif katkısının belli oranlarda kullanılmasının betonun basınç dayanımını arttırdığı görülmektedir.



Şekil 3. Basınç dayanımı grafiği



Şekil 4. TS EN 12390–3 standardına göre basınç dayanımı deney düzeneği



(a) (b)

Şekil 5. Basınç altında sade beton (a) basınç altında lifli beton (b)

4.3 Yarma Deneyi

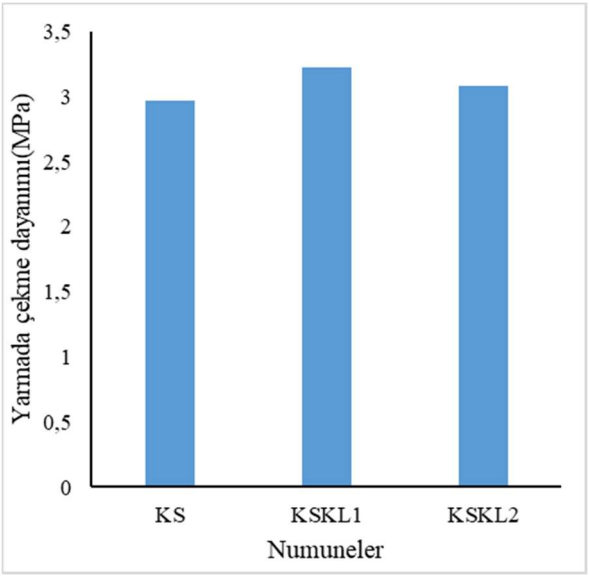
Betonun çekme dayanımını dolaylı yoldan ölçebilmek için EN 12390-6 standardına uygun yarma deneyi yapılmıştır. Deneyde, 150x150x150 küp numuneler 28 gün kür havuzunda bekletilmiş ve 28 gün sonra sudan çıkarılıp teste tabi tutulmuştur. Yarma ile çekme dayanımı Şekil 6'de verilmiştir.

Yarmada çekme dayanımı belirlemek için aşağıdaki denklem kullanılmıştır.

$$\sigma = \frac{2P}{\pi x a^2}$$

Burada;

P, basınç yükünü (N), ve a küp kenarlarının uzunluğunu (mm) ifade etmektedir.



Şekil 6. Yarma ile çekme grafiği

Yarma deneyi sonucunda Şekil 6'da elde edilen değerler incelendiğinde, beton içerisinde lif katkısının kullanılmasının betonun çekme dayanımını arttırdığı görülmektedir. Ancak lif miktarının daha fazla arttırılmasının çekme dayanımını daha fazla arttırmadığı hatta biraz düşürdüğü tespit edilmiştir.

4.4 Eğilme Deneyi

Eğilmede çekme dayanımı belirlemek için prizmatik numuneler hazırlanmıştır. Boyutları ise 100x100x500mm olarak standarda uygun bir şekilde hazırlanmıştır. Eğilme dayanımı belirlemek için iki yöntem uygulanır. Birinci yöntem üç nokta yükleme deneyi, ikincisi ise dört nokta yükleme deneyidir. Bu çalışmada üç nokta yükleme deneyi yöntemi uygulanmıştır. Eğilme deneyi için aşağıdaki denklem kullanılmıştır.

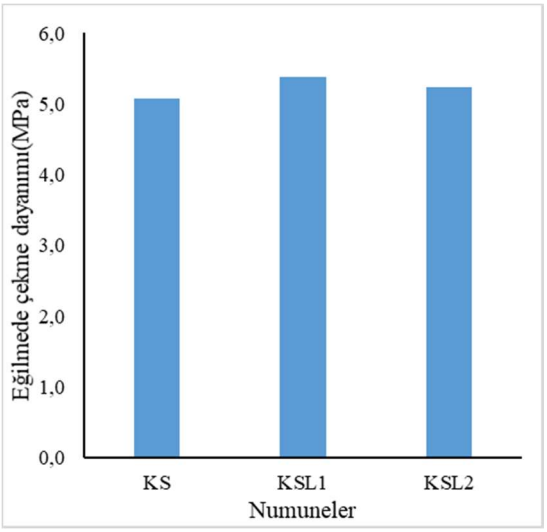
$$F_{cf} = \frac{3xFXL_m}{2xd_1xd_2{}^2}$$

Burada;

$F_{cf:}$ Eğilme dayanımı(MPa)

F: En büyük yük (N)

d_1 d_2: numunelerin boyutları(mm)



Şekil 7. Eğilme grafiği

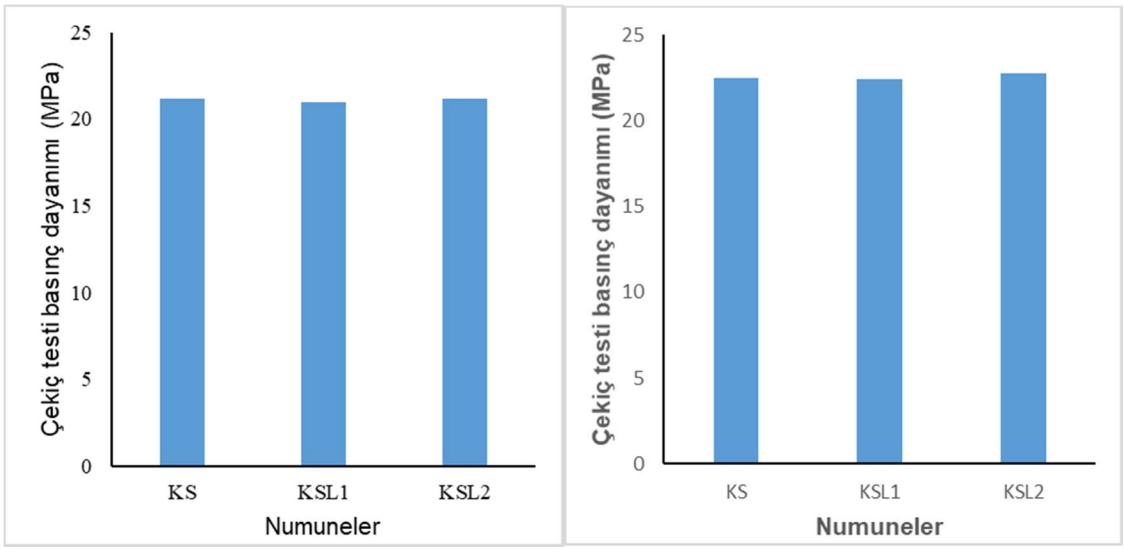


Şekil 8. Üç nokta yükleme deney düzeneği

Eğilme deneyi sonucunda Şekil 7'de elde edilen değerler incelendiğinde, lif katkısının belli oranlarda kullanılmasının betonun eğilme dayanımını arttırdığı görülmektedir. Ancak lif miktarının daha fazla arttırılmasının eğilme dayanımını olumsuz etkilediği tespit edilmiştir.

4.5 Schmıdt Çekiç Testi

ASTM C 805 standardına uygun Schmidt çekici deneyi betonun basınç dayanımını yaklaşık olarak bulmada kullanılan tahribatsız bir yöntemdir. Bu yöntem bize yaklaşık bir beton basınç dayanımı sonucu vermektedir. Bu çalışma kapsamında çekiç testi yapılmıştır. Sonuçlar Şekil 8 ve 9'de verilmiştir.



(a) (b)

Şekil 9. Küp çekiç deneyi fırından önce (a), fırından sonra (b)



Şekil 10. Schmidt çekici deneyi

Schmidt çekici deneyi sonucunda, Şekil 9'de görüldüğü gibi lif miktarının artmasının betonun basınç dayanımını çok fazla etkilemediği görülmektedir. Fırından önce bulunan Schmidt çekici deneyi sonuçları ile fırından sonra bulunan Schmidt çekici deneyi sonuçları arasında çok az miktarda artış vardır.

4.6 Ultrases Deneyi

Tahribatsız beton dayanım ölçme testlerinden birisi olan Ultrases testi beton hakkında mekanik bilgiler verebilmektedir. Bu bilgiler kesin değerler olmamakla birlikte beton hakkında bir önbilgi mahiyetindedir. Bu yöntemde, beton içerisinden geçen ses dalgalarının hızlarından yararlanılarak betonun dinamik elastisite değerleri aşağıdaki formül kullanılarak hesaplanabilmektedir.

$$E_d = \frac{v^2 n(1+\mu)(1-2\mu)}{(1-\mu)}(10^{-6})$$

Burada;

E_d : Dinamik elastisite modülü,(MPa)

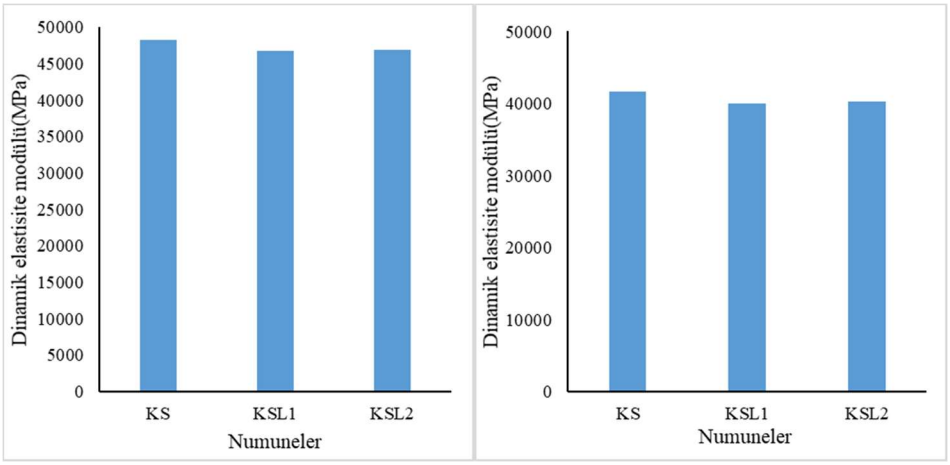
v : Puls hızı,(m/sn)

n : Betonun birim ağırlığı,(kg/m^3)

μ : Poisson oranı

olarak tanımlanır. Bu çalışma kapsamında hesaplanan dinamik elastisite modülü Şekil 10'da verilmiştir.

Şekil 11'da görüldüğü gibi lif miktarının artmasının betonun dinamik elastisite modülünü çok fazla etkilemediği görülmektedir. Fırından önce hesaplanan dinamik elastisite modülü değerleri, fırından sonra hesaplanana göre bir miktar düşmüştür. Bu duruma sebep olarak fırından sonra beton içerisindeki boşlukların artması gösterilebilir.



(a) (b)

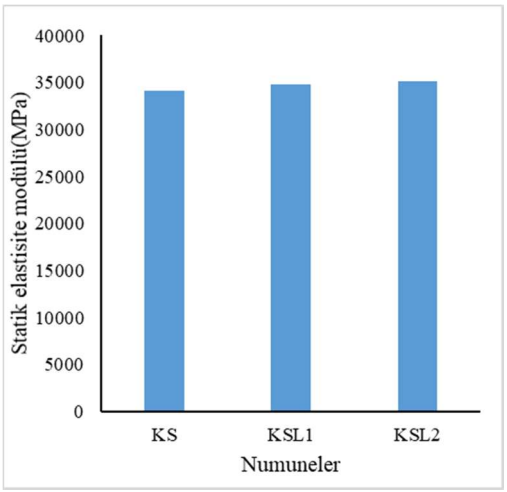
Şekil 11. Fırından önce (a), fırından sonra (b) dinamik elastisite modülü

5. STATİK ELASTİSİTE MODÜLÜ

TS 500 standartlarına uygun statik elastisite modülü 28 günlük kür havuzunda bekletilen küp numunelerin basınç dayanımından elde edilmiştir. Elastisite formülü aşağıdaki formül yardımıyla hesaplanmıştır.

$$E = 14000 + 3250 \times \sigma^{\frac{1}{2}}$$

Burada;
E: Elastisite modülü, (MPa)
σ : Betonun basınç dayanımı, (MPa)
Olarak tanımlanmıştır.
Şekil 12'de görüldüğü gibi lif miktarının artması betonun statik elastisite modülünü az da olsa arttırmaktadır.



Şekil 12. Statik elastisite modülü

6. SONUÇ

Bu çalışmada, makro sentetik lif katkılı betonun mekanik özellikleri araştırılmış ve aşağıdaki sonuçlar elde edilmiştir.

- Beton içerisine eklenen liflerin beton basınç dayanımını bir miktar arttırdığı görülmüştür.
- Lif yüzdesinin beton çekme dayanımı üzerinde etkili olduğu tespit edilmiştir. Fazla miktarda lif kullanılmasının çekme dayanımını daha da fazla arttırmadığı görülmüştür.
- Beton eğilme dayanımının lif kullanımıyla arttığı fakat belli bir lif yüzdesinden sonra eğilme dayanımının olumsuz etkilendiği anlaşılmıştır.
- Lif kullanımının Schmidt çekici deneyi sonuçlarını çok fazla etkilemediği görülmektedir.
- Ultrases deneyi sonucunda elde edilen veriler ışığında hesaplanan dinamik elastisite modülü değerlerinin lif kullanılması ile az miktarda düştüğü görülmüştür.
- Lif kullanımının statik elastisite modülü değerini biraz arttırdığı tespit edilmiştir.

KAYNAKALAR

1. Altoubat, Salah, et al. "Experimental study of the steel/CFRP interaction in shear-strengthened RC beams incorporating macro-synthetic fibers." Structures. Vol. 25. Elsevier, 2020.

2. Hasan, M. J., M. Afroz, and H. M. I. Mahmud. "An experimental investigation on mechanical behavior of macro synthetic fiber reinforced concrete." Int. J. Civ. Environ. Eng 11.3 (2011): 19-23.

3. Ghahremannejad, Masoud, et al. "Experimental investigation and identification of single and multiple cracks in synthetic fiber concrete beams." Case Studies in Construction Materials 9 (2018): e00182.

4. Altoubat, Salah, Ardavan Yazdanbakhsh, and Klaus-Alexander Rieder. "Shear behavior of macro-synthetic fiber-reinforced concrete beams without stirrups." ACI Materials Journal 106.4 (2009): 381.

5. Guerini, Veronica, et al. "Influence of steel and macro-synthetic fibers on concrete properties." Fibers 6.3 (2018): 47.

6. Kazmi, Syed Minhaj Saleem, et al. "Axial stress-strain behavior of macro-synthetic fiber reinforced recycled aggregate concrete." Cement and Concrete Composites 97 (2019): 341-356.

7. Daneshfar, M., et al. "Evaluating mechanical properties of macro-synthetic fiber-reinforced concrete with various types and contents." Strength of Materials 49.5 (2017): 618-626.

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NONLOCAL PROBLEM WITH VARIABLE EXPONENT UNDER STEKLOV BOUNDARY CONDITION

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Abstract

In this study, we concerned with Steklov boundary value problem involving $p(x)-$ Laplacian operator. Using the Mountain Pass theorem together with Ambrosetti- Rabinowitz condition, we prove the existence nontrivial weak of solutions in Sobolev spaces with variable exponent. The aim of this article is to study the following Steklov boundary value problem

$$\begin{cases} div(a(x,\nabla u)) = 0, x \in \Omega \\ a(x,\nabla u)\dfrac{\partial u}{\partial \upsilon} = \lambda f(x,u), x \in \partial\Omega, \end{cases} (1.1)$$

where $\Omega \subset \mathrm{R}^N$ $(N \geq 2)$ is a bounded with smooth boundary , $p \in C(\overline{\Omega})$, $f : \partial\Omega \text{ x } \mathrm{R} \to R$ is a Carathéodory condition, λ is a positive parameter, $\dfrac{\partial u}{\partial \upsilon}$ is the outer unit normal derivative on $\partial\Omega$, $a(x,\varepsilon) : \overline{\Omega} \text{ x } \mathrm{R}^{\mathrm{N}} \to R^N$ is the continuous derivative with respect to ε of the mapping $A(x,\varepsilon) : \overline{\Omega} \text{ x } \mathrm{R}^{\mathrm{N}} \to R^N$ and $div(a(x,\nabla u))$ is $p(x)-$ Laplacian type operatör[1][2][3].

In this study, we assume that A and a satisfy the following conditions:

(A1) $|a(x,\varepsilon)| \leq c\left(1+|\varepsilon|^{p(x)-1}\right)$, for all $x \in \overline{\Omega}$ and all $\varepsilon \in R^N$

(A2) $A(x,0) = 0$, for all $x \in \overline{\Omega}$

(A3). The monotonicity condition $(a(x,\varepsilon)-a(x,\eta)).(\varepsilon-\eta) \geq 0,$ holds for all $x \in \overline{\Omega}$ and all $\varepsilon,\eta \in R^N$, with equality if and only if $\varepsilon = \eta$

(A4) $|\varepsilon|^{p(x)-1} \leq a(x,\varepsilon).\varepsilon \leq p(x).A(x,\varepsilon).$ for all $x \in \overline{\Omega}$ and all $\varepsilon \in R^N$

(f1) $f : \partial\Omega x R \to R$ is a Carathéodory condition and $p^+ < q^- \leq q(x) < p^{\partial}(x)$ for $q(x) \in C(\partial\Omega)$

$$f(x,t) \leq c + c_1|t|^{q(x)-1}$$

(f2) $f(x,t) = o\left(|t|^{p^+-1}\right), t \to 0$; for all $x \in \partial\Omega$ and $p^+ < q^-$.

[1] K. Ben Ali, Existence results for Steklov problem involving the p(x)-Laplacian, Complex Var. and Elliptic Equ., 63,(2018), pp.1675-1686.
[2] M. Kratou and K. Saoudi, The fibering map approach for a sıngular elliptic system involving the p(x)-laplacian and nonlinear boundary conditions, Revista de la Unión Matemática Argentina, 62 (1), (2021), 171—189.
[3] Z. Yucedag, Existence results for steklov problem with nonlinear boundary condition, Middle East Journal of Science., 2019, 5,146-154.

(AR): Ambrosetti-Rabinowitz's condition; there exist $t^* > 0$ and $p^+ < \theta$ such that $0 < \theta F(x,t) \le f(x,t)t,\ |t| \ge |t|^*$, for all $x \in \partial\Omega$

Theorem 1.1. Assume that conditions (A1)- (A4), (f1), (f2) and (AR) are satisfied, then there exists a $\lambda^* > 0$ such that for any $\lambda \in (0, \lambda^*)$, problem (1.1) has a nontrivial weak solution

Keywords: Variable exponent Sobolev spaces, Variational methods, Ambrosetti- Rabinowitz condition

1.Introduction

In this article, the aim is to examine the following Steklov boundary value equation

$$\begin{cases} div(a(x,\nabla u)) = 0, x \in \Omega \\ a(x,\nabla u)\dfrac{\partial u}{\partial \upsilon} = \lambda f(x,u), x \in \partial\Omega, \end{cases} (1.1)$$

where $\Omega \subset \mathrm{R}^N\ (N \ge 2)$ is a bounded with smooth boundary , $p \in C(\overline{\Omega}), f : \partial\Omega \text{ x } \mathrm{R} \to R$ is a Carathéodory function, λ is a positive parameter, $\dfrac{\partial u}{\partial \upsilon}$ is the outer unit normal derivative on $\partial\Omega$, $a(x,\xi) : \overline{\Omega} \text{ x } \mathrm{R}^{\mathrm{N}} \to R^N$ is the continuous derivative with respect to ξ of the mapping $A(x,\xi) : \overline{\Omega} \text{ x } \mathrm{R}^{\mathrm{N}} \to R^N$ and $div(a(x,\nabla u))$ is $p(x)-$Laplacian type operatör .

A more general than the $p(x)-$Laplacian type operatör is the operatör $div(a(x,\nabla u))$, seen in (1.1),

$$\Delta_{p(x)} u := div\left(|\nabla u|^{p(x)-2}\nabla u\right)$$

This problem is that it generalizes the well-known p -Laplace equation.

In this study, we assume that f function, A and a operatör satisfy the following hypotheses:

(A1) $|a(x,\eta)| \le c\left(1 + |\mu|^{p(x)-1}\right)$, for all $x \in \overline{\Omega}$ and all $\eta \in R^N$

(A2) $A(x,0) = 0$, for all $x \in \overline{\Omega}$

(A3). The monotonicity condition $(a(x,\eta) - a(x,\mu)).(\eta - \mu) \ge 0,$ holds for all $x \in \overline{\Omega}$ and all $\eta, \mu \in R^N$, with equality if and only if $\mu = \mu$

(A4) $|\eta|^{p(x)-1} \le a(x,\eta).\eta \le p(x).A(x,\eta).$ for all $x \in \overline{\Omega}$ and all $\eta \in R^N$.

(A5) $A(x,\xi)$ is $p(x)-$uniformly convex: There exists a constant $c_0 > 0$ such that

$$A\left(x, \frac{\eta+\mu}{2}\right) \le \frac{1}{2}A(x,\eta) + \frac{1}{2}A(\eta,\mu) - c_0\|\eta - \mu\|^{p(x)},$$

for all $x \in \overline{\Omega}$ and all $\eta, \mu \in R^N$.

(f1) If $p^+ < q^- \le q(x) < p^\partial(x)$ for $q(x) \in C(\partial\Omega)$ hold, then $f(x,t) \le c + c_1|t|^{q(x)-1}$,where c and c_1 are positive constants.

(f2) $f(x,t)=o\left(|t|^{p^+-1}\right), t\to 0$; for all $x\in\partial\Omega$ and $p^+<q^-$.

(AR): Ambrosetti-Rabinowitz's condition; i.e., there exist $t^*>0$ and $p^+<\gamma$ such that $0<\gamma F(x,t)\le f(x,t)t,\ |t|\ge|t|^*$, for all $x\in\partial\Omega$.

Theorem 1.1. Assume that hypotheses (A1)- (A5), (f1), (f2) and (AR) are satisfied, then there exists a $\lambda^*>0$ such that for any $\lambda\in(0,\lambda^*)$, problem (1.1) has a nontrivial weak solution.
Moreover, throughout this paper,

$$p*(x)=\begin{cases}\dfrac{Np(x)}{N-p(x)}, & ifN>p(x)\\ \infty, & ifN\le p(x)\end{cases}\quad\text{and}\quad p^{\partial}(x)=\begin{cases}\dfrac{(N-1)p(x)}{N-p(x)}, & ifN>p(x)\\ \infty, & ifN\le p(x)\end{cases}$$

The study of differential equations and variational problems with nonstandard $p(x)-$growth conditions is interesting topic in the last decade [2,5,11,12,15].

Problems of type (1.1) has been investiged by many authors[1,3,4,7,8,13,15,16]. In [3], the author has examined the existence and multiplicity of solutions, by a variation of the Mountain Pass without using the Ambrosetti-Rabinowitz type condition, for the following the problem

$$\begin{cases}\Delta_{p(x)}u=|u|^{p(x)-2}u, x\in\Omega\\ |\nabla u|^{p(x)-2}\dfrac{\partial u}{\partial\upsilon}=f(x,u), x\in\partial\Omega\end{cases}.$$

In [8], the authors provided the existence and multiplicity of solutions by using the Mountain Pass theorem, Ricceri three critical poinsts theorem under the condition (A1)- (A4), for the following Steklov problem with standard growth condition,

$$\begin{cases}div(a(x,\nabla u))=0, x\in\Omega\\ a(x,\nabla u)v=f(x,u), x\in\partial\Omega.\end{cases}$$

As a result of the above articles and similar studies, we have studied the existence of weak solutions of the problem (1.1)..

2.Preliminaries

Now, we define basic properties of variable exponent Lebesgue-Sobolev spaces $L^{p(x)}(\Omega)$, $W^{1,p(x)}(\Omega))$ and $W_0^{1,p(x)}(\Omega)$ [1,3,7, 9,10].

Set

$C_+(\overline{\Omega})=\{p;p(x)\in C(\overline{\Omega}),\inf p(x)>1,\text{for all } x\in\overline{\Omega}\}$.

For any $p(x)\in C_+(\overline{\Omega})$, we have

$$1<p^-:=\inf_{x\in\overline{\Omega}}p(x)\text{ and }p(x)\le p^+:=\sup_{x\in\overline{\Omega}}p(x)<\infty.$$

Define the variable exponent Lebesgue space by

$$L^{p(x)}(\Omega)=\{u|u:\Omega\to R\text{ is measurable, such that }\int_\Omega|u(x)|^{p(x)}dx<\infty\ \}.$$

Similarly, if $p(x) \in C_+(\partial\Omega)$, then we can write

$L^{p(x)}(\partial\Omega) = \{u | u : \partial\Omega \to R$ is measurable, such that $\int_{\partial\Omega} |u(x)|^{p(x)} d\sigma < \infty \}$.

We define a norm on this space with the following formula

$$|u|_{p(x)} := \inf\left\{\kappa > 0 : \int_\Omega \left|\frac{u(x)}{\kappa}\right|^{p(x)} dx \le 1 \right\},$$

and $\left(L^{p(x)}(\Omega), |u|_{p(x)}\right)$ becomes a Banach space.

The variable exponent Sobolev space is denined as

$$W^{1,p(x)}(\Omega) = \{u \in L^{p(x)}(\Omega) : |\nabla u| \in L^{p(x)}(\Omega)\},$$

and this is the norm in space

$|u|_{1,p(x)} = |u|_{p(x)} + |\nabla u|_{p(x)}$, for all $u \in W^{1,p(x)}(\Omega)$

The space $W_0^{1,p(x)}(\Omega)$ is denoted as the closure of $C_0^\infty(\Omega)$ in $W^{1,p(x)}(\Omega)$ with respect to the norm $|u|_{1,p(x)}$. For $u \in W_0^{1,p(x)}(\Omega)$, we can define an equivalent norm $\|u\| = |\nabla u|_{p(x)}$.

The modular of the $L^{p(x)}(\Omega)$ space is $\Theta_{p(x)}(u) : L^{p(x)}(\Omega) \to R$ defined as

$\Theta_{p(x)}(u) = \int_\Omega u(x) dx, \ \forall u \in L^{p(x)}(\Omega)$.

Proposition 2.1. [9,14] If $u, u_n \in L^{p(x)}(\Omega)$ (n=1,2,...) and $p^+ < \infty$, we have

(i) $|u|_{p(x)} = 1 (<1, >1) \Leftrightarrow \Theta_{p(x)}(u) = 1 (<1, >1)$

(ii) $|u|_{p(x)} > 1 \Rightarrow |u|^{p^-}{}_{p(x)} \le \Theta_{p(x)}(u) \le |u|^{p^+}{}_{p(x)}$

(iii) $|u|_{p(x)} < 1 \Rightarrow |u|^{p^+}{}_{p(x)} \le \Theta_{p(x)}(u) \le |u|^{p^-}{}_{p(x)}$

(iv) $|u_n|_{p(x)} \to 0 (\to \infty) \Leftrightarrow \Theta_{p(x)}(u_n) \to 0 (\to \infty)$,

(v) $|u_n - u|_{p(x)} \to 0 (\to \infty) \Leftrightarrow \Theta_{p(x)}(u_n - u) \to 0 (\to \infty)$.

Proposition 2.2. [4,7,8,16] Denote $\varphi_{p(x)}(u) = \int_{\partial\Omega} |u|^{p(x)} d\sigma, \ \forall u \in L^{p(x)}(\partial\Omega)$. Then

(i) $|u|_{L^{p(x)}(\partial\Omega)} > 1 \Rightarrow |u|^{p^-}{}_{L^{p(x)}(\partial\Omega)} \le \varphi_{p(x)}(u) \le |u|^{p^+}{}_{L^{p(x)}(\partial\Omega)}$

(ii) $|u|_{L^{p(x)}(\partial\Omega)} < 1 \Rightarrow |u|^{p^+}{}_{L^{p(x)}(\partial\Omega)} \le \varphi_{p(x)}(u) \le |u|^{p^-}{}_{L^{p(x)}(\partial\Omega)}$.

Proposition 2.3. [9,10,13]

(i) If $1 < p^- \le p^+ < \infty$ then the spaces $L^{p(x)}(\Omega)$, $W^{1,p(x)}(\Omega)$ and $W_0^{1,p(x)}(\Omega)$ are separable, reflexive and uniformly convex Banach spaces,

(ii) If $n(x) \in C_+(\overline{\Omega})$ and $1 \le n(x) < p*(x)$ for all $x \in \overline{\Omega}$ then the embedding $W^{1,p(x)}(\Omega) \to L^{n(x)}(\Omega)$ is compact and continuous,

(iii) If $n(x) \in C_+(\overline{\Omega})$ and $1 \le n(x) < p*(x)$ for all $x \in \partial\Omega$ then the trace embedding $W^{1,p(x)}(\Omega) \to L^{n(x)}(\partial\Omega)$ is compact and continuous.

(iv) Poincaré inequality, i.e. there exists a positive constant $C_1 > 0$ such that

$$\|u\| \le C_1 |\nabla u|_{p(x)}, \text{for all } u \in W_0^{1,p(x)}(\Omega).$$

3. Main Results

Let X denote the variable exponent Sobolev space $W_0^{1,p(x)}(\Omega)$. If we have for all $v \in X$

$\int_\Omega a(x,\nabla u)\nabla v dx - \lambda \int_{\partial\Omega} f(x,u) v d\sigma = 0$,

then $u \in X$ is a weak solution of **(1.1)**

The energy functional of problem **(1.1)** is defined as $J_\lambda : X \to R$

$$J_\lambda(u) = \Lambda(u) - \lambda I(u)$$

where $\Lambda(u) = \int_\Omega A(x,\nabla u) dx$ and $I(u) = \int_{\partial\Omega} F(x,u) d\sigma$.

Proposition 3.1. [8,13] Let $f : \partial\Omega x R \to R$ is a Carathéodory function satisfying (f1) . For each $u \in X$ set $I(u) = \int_{\partial\Omega} F(x,u) d\sigma$. Then $I \in C^1(X,R))$ and

$$\langle I'(u), v \rangle = \int_{\partial\Omega} f(x,u) v d\sigma,$$

for all $v \in X$. Moreover, the operator $I' : X \to X^*$ is compact.

Lemma 3.2. [10]

(i) A verifies the growth condition: $|A(x,\eta)| \le c_1 \left(|\eta| + |\eta|^{p(x)} \right)$,

for all $\eta \in R^N$ and all $x \in \Omega$.

(ii) A is $p(x)$ -homogeneous: $A(x,z\eta) \le A(x,\eta) z^{p(x)}$, for all $z \ge 1$, $x \in \Omega$ and all $\eta \in R^N$.

Lemma 3.3. [6,8,10,16]

(i) $\Lambda(u)$ is well-defined on X.

(ii) $\Lambda(u) \in C^1(X,R)$ and

$\langle \Lambda'(u), \upsilon \rangle = \int_\Omega a(x,\nabla u)\nabla \upsilon dx$, for all $u, \upsilon \in X$

(iii) $\Lambda(u)$ is weakly lower semi-continuos on X.

(iv) J_λ is weakly lower semi-continuos on X.

(v) J_λ is well-defined on X .

(vi) $\Lambda(u) - \Lambda(\upsilon) \ge \langle \Lambda'(\upsilon), u - \upsilon \rangle$, for each $u, \upsilon \in X$

(vii) For each $u, \upsilon \in X$ and $c_0 > 0$ is a constant

$$\Lambda\left(\frac{u+\upsilon}{2}\right) \le \frac{1}{2}\Lambda(u) + \frac{1}{2}\Lambda(\upsilon) - c_0 \|u - \upsilon\|^{p^-}.$$

Hence, from Proposition 2.2, Proposition 3.1 and Lemma 3.3, it is easily seen that $J_\lambda(u) \in C^1(X,R)$ and the critical points of J_λ are weak solutions of **(1.1)** . Moreover, the derivate of J_λ is the mapping $J_\lambda : X \to R$

$$\left\langle J_\lambda'(u), v \right\rangle = \int_\Omega a(x,\nabla u)\nabla v dx - \lambda \int_{\partial\Omega} f(x,u) v d\sigma,$$

for any $u, v \in X$ [6,8,14,16].

Lemma 3.4. Suppose (A1)- (A4), (f1), (f2) and (AR) hold. Then the following conditions hold:

(i) There exists two positive real numbers τ and r such that $I_\lambda(u) \geq r > 0$ with $\|u\| = \tau$,

(ii) There exists $u_1 \in X$ such that $\|u_1\| > \tau$ and $I_\lambda(u_1) < 0$.

Proof. (i) For $\|u\| < 1$, By (f1) and (f2), we get

$$|F(x,u)| \leq \beta |u|^{p^+} + c_\beta |u|^{q(x)}, \text{ for all } (x,u) \in \partial\Omega \times \mathrm{R} \text{ and } \beta > 0 \text{ is constant. } (1.2)$$

Then, using above ınequality (1.2), we have

$$J_\lambda(u) = \int_\Omega A(x,\nabla u) dx - \lambda \int_{\partial\Omega} F(x,u) d\sigma$$

$$\geq \int_\Omega \frac{1}{p(x)} |u|^{p(x)} dx - \lambda \int_{\partial\Omega} \left(\beta |u|^{p^+} + c_\beta |u|^{q(x)} \right) d\sigma$$

On the other hand, using Proposition 2.3 we can write

$$W_0^{1,p(x)}(\Omega) \to L^{p^+}(\Omega) \text{ and } W_0^{1,p(x)}(\Omega) \to L^{q^+}(\partial\Omega) \to L^{q^-}(\partial\Omega).$$

Thus, there exist constants $c_2, c_3, c_4 > 0$,

$$|u|_{L^{p^+}(\Omega)} \leq c_2 \|u\|^{p^+}, \ |u|_{L^{q^+}(\partial\Omega)} \leq c_3 \|u\|^{q^+} \text{ and } |u|_{L^{q^-}(\partial\Omega)} \leq c_3 \|u\|^{q^-}, \text{ for all } u \in X. \ (1.3)$$

Moreover, using Proposition 2.1 (iii), Proposition 2.2 (ii) ,(A4), (1.1) and (1.3) inequalities, we can write

$$J_\lambda(u) \geq \frac{c_5}{p^+} \|u\|^{p^+} - \lambda c_6 \left(\beta \|u\|^{p^+} + c_\beta \|u\|^{q^-} \right)$$

Choose $\beta > 0$ small enoughy that $\lambda c_6 \beta < \frac{c_5}{2p^+}$, we obtain

$$I_\lambda(u) \geq \|u\|^{p^+} \left(\frac{c_5}{2p^+} - \lambda c_6 c_\beta \|u\|^{q^- - p^+} \right).$$

Let us define the function $\gamma : [0,1] \to R$ by

$$\gamma = \frac{c_5}{2p^+} - \lambda c_6 c_\beta \|u\|^{q^- - p^+}$$

Since $p^+ < q^-$, the function γ is strictly positive in a neighborhood of zero. The conclusion of (i) holds true.

(ii) Let $u \in X$ and $t > 1$. Thanks to (AR), we obtain $|F(x,\upsilon)| \geq c_7 |\upsilon|^{\theta}$ for each $(x,\upsilon) \in \partial\Omega \times R$ and c_7 is positive constant. In that case, by Lemma 3.2 (ii), we have

$$J_\lambda(tu) = \int_\Omega A(x,\nabla tu)dx - \lambda \int_{\partial\Omega} F(x,tu)d\sigma$$

$$\leq \frac{c_8 t^{p^-}}{p^-} \int_\Omega A(x,\nabla u)dx - \frac{\lambda c_7 t^{q^-}}{q^+} \int_{\partial\Omega} |u|^{q(x)} d\sigma$$

where c_8 is constant. Since $q^- > p^-$, we conclude that $J_\lambda(tu) < 0$ as $t \to \infty$. There exists $u_1 = ut \in X$ such that $\|u_1\| > \tau$ and $J_\lambda(u_1) < 0$. The proof is completed.

Lemma 3.5. Suppose (A1)- (A5), (f1), (f2) and (AR) hold. Then J_λ satisfies the **(PS)** condition.

Proof of Theorem 1.1. From Lemma 3.4, Lemma 3.5 and $J_\lambda(0) = 0$ from (A2), J_λ satisfies the all statements of Mountain Pass theorem. Hence, J_λ has one nontrivial critical point, i.e., problem (1.1) has a nontrivial weak solution [14] . The proof is complete.

Reference

[1] Allaoui M. Continuous spectrum of Steklov nonhomogenous elliptic problem. Opuscula Math. 2015, 6:853–866.

[2] Antontsev S. N. and Shmarev S. I., A model porous medium equation with variable exponent of nonlinearity: existence, uniqueness and localization properties of solutions, Nonlinear Anal. 60 (2005), 515--545.

[3] Ayoujil A., On the superlinear Steklov problem involving the p(x)-Laplacian, EJQTDE (38) (2014) 1–13.

[4] Ben Ali K., Existence results for Steklov problem involving the p(x)-Laplacian, Complex Var. and Elliptic Equ. 2017.

[5] Chen Y, Levine S, Rao M. Variablee exponent, linear growth functionals in image processing. SIAM J Appl Math. 2006; 66:1383–1406.

[6] Fan X., Q. Zhang, and D. Zhao, Eigenvalues of p(x)-Laplacian Dirichlet problem, J. Math. Anal. Appl. 302, pp. 306–317, 2015.

[7] Deng SG. Eigenvalues of thep(x)-Laplacian Steklov problem. J. Math Anal Appl. 2008; 339:925–937.

[8] Karim, B., Zerouali A., and Chakrone O., Existence and multiplicity of a-harmonic solutions for a Steklov problem with variable exponents, Bol. Soc. Paran. Mat., 2018, (3s)v. 32 2(2018), pp. 125-136

[9] Kovăčik O. and Răkosnik J., On spaces L^{p(x)} and W^{k,p(x)}, Czechoslovak Math. J. 41 (1991), no.116, 592-618.

[10] Mashiyev R.A., Cekic B., Avci M. and Yucedag Z., Existence and multiplicity of weak solutions for nonuniformly elliptic equations with nonstandard growth condition, Complex Variables and Elliptic Equations, 57 (2012), no. 5, 579–595.

[11] Mihăilescu M. and Rădulescu V., A multiplicity result for a nonlinear degenerate problem arising in the theory of electrorheological fluids, Proceedings of the Royal Society A. 462 (2006), 2625-2641.

[12] Ruzicka M. Electro-rheological fluids: modeling and mathematical theory. Lecture notes in mathematics. Vol. 1784. Berlin: Springer-Verlag; 2000.

[13] Wei Z. and Chen Z. Existence results for the p(x)-Laplacian with nonlinear boundary condition, Applied Math., 2012. DOI:10.5402/2012/727398.

[14] Willem M., Minimax Theorems, Birkhauser, Basel, 1996.

[15] Zhikov VV. Averaging of functionals of the calculus of variations and elasticity theory, Math. USSR. Izv., 29, (1987), pp.33-66.

[16] Yucedag Z., Existence results for steklov problem with nonlinear boundary condition, Middle East Journal of Science., 2019, 5,146-154.

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SOLUTION FOR STEKLOV BOUNDARY VALUE PROBLEM INVOLVING THE $p(x)-$ LAPLACIAN OPERATORS

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Abstract

In this study, we deal with Steklov boundary value problem involving $p(x)-$ Laplacian. We establish under appropriate conditions that ensure the existence a nontrivial weak solution on variable exponent Sobolev spaces, by means of the variational approach.

We study the existence of solutions the nonlinear Steklov boundary value problem involving $p(x)-$Laplace type operator,

$$\begin{cases} div(a(x,\nabla u))=0, x\in\Omega \\ a(x,\nabla u)\dfrac{\partial u}{\partial \upsilon}=\lambda f(x,u), x\in\partial\Omega, \end{cases} \quad (1.1)$$

where $\Omega\subset \mathrm{R}^N$ $(N\geq 2)$ is a bounded with smooth boundary, λ is a positive parameter, $p(x)$ is continuous functions on $\overline{\Omega}$ such that $p^- := \inf_{x\in\overline{\Omega}} p(x)>1$ operatör, $\dfrac{\partial u}{\partial \upsilon}$ is the outer unit normal derivative on $\partial\Omega$, $a(x,\varepsilon):\overline{\Omega}\ \mathrm{x}\ \mathrm{R}^{\mathrm{N}}\to R^N$ is the continuous derivative with respect to ε of the mapping $A(x,\varepsilon):\overline{\Omega}\ \mathrm{x}\ \mathrm{R}^{\mathrm{N}}\to R^N$ and $div(a(x,\nabla u))$ is $p(x)-$Laplacian type operatör[1234].

The operator $div(a(x,\nabla u))$, which appears in (E), is a more general operator than the p(x)-Laplacian operator

$$\Delta_{p(x)}u := div\left(|\nabla u|^{p(x)-2}\nabla u\right).$$

In this study, we assume that f, A and a satisfy the following conditions:

(A1) $|a(x,\varepsilon)|\leq c\left(1+|\varepsilon|^{p(x)-1}\right)$, for all $x\in\overline{\Omega}$ and all $\varepsilon\in R^N$

(A2) $A(x,0)=0$, for all $x\in\overline{\Omega}$

(A3). The monotonicity condition $(a(x,\varepsilon)-a(x,\eta)).(\varepsilon-\eta)\geq 0,$ holds for all $x\in\overline{\Omega}$ and all $\varepsilon,\eta\in R^N$, with equality if and only if $\varepsilon=\eta$

(A4) $|\varepsilon|^{p(x)-1}\leq a(x,\varepsilon).\varepsilon\leq p(x).A(x,\varepsilon).$ for all $x\in\overline{\Omega}$ and all $\varepsilon\in R^N$

[1] A. Ayoujil, On the superlinear Steklov problem involving the p(x)-Laplacian, EJQTDE., 38, (2014), pp.1-13.
[2] I. Ekincioglu and R. A. Mashiyev, On Steklov boundary value problems for p(x)-Laplacian equations, EJMAA, 5 (2) (2017), pp. 289-297.
[3] A. Ourraoui, Existence and uniqueness of solutions for Steklov problem with variable exponent, Adv. in the Theory of Nonlinear Anal. and its Appl., 1 (5) (2021), pp.158 166.
[4] X.L. Fan, J. Shen and D. Zhao, Sobolev embedding theorems for spaces W^{k,p(x)}(Ω), J. Math Anal Appl., 262, (2001), pp.749-760

(f1) $f:\partial\Omega xR\to R$ is a Carathéodory condition and $p^+<q^-\le q(x)<p^\partial(x)$ for $q(x)\in C(\partial\Omega)$

$$f(x,t)\le c_3+c_4|t|^{q(x)-1}$$

(f2) $f(x,t)=o\left(|t|^{p^+-1}\right), t\to 0$; for all $x\in\partial\Omega$ and $p^+<q^-$.

(AR): Ambrosetti-Rabinowitz's condition; there exist $t^*>0$ and $p^+<\theta$ such that $0<\theta F(x,t)\le f(x,t)t,\ |t|\ge|t|^*$, for all $x\in\partial\Omega$

Theorem 1.1. If (A1)-(A4), (f1),(f2),(AR) and $1\le q^+<p^-, p^-<p^\partial(x)$ hold, then for all $\lambda>0,$ problem (**1.1**) has at least one nontrivial weak solution with negative energy.

Keywords: Variational approach, Steklov boundary value, variable exponent Sobolev spaces

1.Introduction

We discuss the existence of solutions the following nonlinear Steklov boundary value problem involving $p(x)-$Laplace type operator,

$$\begin{cases} div(a(x,\nabla u))=0, x\in\Omega \\ a(x,\nabla u)\dfrac{\partial u}{\partial \upsilon}=\lambda f(x,u), x\in\partial\Omega, \end{cases} (1.1)$$

where $\Omega\subset R^N$ $(N\ge 2)$ is a bounded with smooth boundary, λ is a positive parameter, $p(x)$ is continuous functions on $\overline{\Omega}$ such that $p^-:=\inf_{x\in\overline{\Omega}} p(x)>1$ operatör, $div(a(x,\nabla u))$ is $p(x)-$ Laplacian type operatör , $\dfrac{\partial u}{\partial \upsilon}$ is the outer unit normal derivative on $\partial\Omega$, $f:\partial\Omega xR\to R$ is a Carathéodory function and $a(x,\zeta):\overline{\Omega}\ \mathrm{x}\ \mathrm{R}^{\mathrm{N}}\to R^N$ is the continuous derivative with respect to ζ of the mapping $A(x,\zeta):\overline{\Omega}\ \mathrm{x}\ \mathrm{R}^{\mathrm{N}}\to R^N$ and $div(a(x,\nabla u))$ is $p(x)-$Laplacian type operatör.

Recently, the study of variational problems in the variable exponent Sobolev spaces is an interesting topic of research due to its significant role in many fields of mathematics [2,9,12,14].

Problems of type (1.1) has been intensively studied by many authors [3,5,7,8,15]. In [16], the authors investigated the existence and multiplicity of solutions, using the Ricceri three critical poinsts theorem for the following Steklov problem standard growth condition, under suitable assumptions

$$\begin{cases} div(a(x,\nabla u))+|u|^{p(x)-2}u=\lambda f(x,u), x\in\Omega \\ a(x,\nabla u)v=\eta g(x,u), x\in\partial\Omega. \end{cases}$$

In this study, we assume that A and a satisfy the following conditions:

(A1) $|a(x,\zeta)| \le c\left(1+|\zeta|^{p(x)-1}\right)$, for each $x \in \overline{\Omega}$ and all $\zeta \in R^N$,

(A2) $A(x,0)=0$, for each $x \in \overline{\Omega}$,

(A3) The monotonicity condition $(a(x,\zeta)-a(x,\xi)).(\zeta-\xi) \ge 0$ holds for each $x \in \overline{\Omega}$ and each $\xi,\zeta \in R^N$, with equality if and only if $\xi=\zeta$,

(A4) $|\zeta|^{p(x)-1} \le a(x,\zeta).\zeta \le p(x).A(x,\zeta).$ for each $x \in \overline{\Omega}$ and all $\zeta \in R^N$,

(A5) A is $p(x)-$uniformly convex: There exists a constant $M>0$ such that

$$A\left(x,\frac{\xi+\zeta}{2}\right) \le \frac{1}{2}A(x,\xi)+\frac{1}{2}A(x,\zeta)-M\|\xi-\zeta\|^{p(x)},$$

for each $x \in \overline{\Omega}$ and all $\xi,\zeta \in R^N$.

Throughout this paper, we define

$$p*(x)=\begin{cases}\dfrac{Np(x)}{N-p(x)}, & ifN > p(x)\\ \infty, & ifN \le p(x)\end{cases} \quad \text{and} \quad p^{\partial}(x)=\begin{cases}\dfrac{(N-1)p(x)}{N-p(x)}, & ifN > p(x)\\ \infty, & ifN \le p(x)\end{cases}.$$

The main results of the presents paper is the following Theorem 1.1

Theorem 1.1. Assume that (A1)-(A5) and the following conditions hold

(H1) $F:\partial\Omega xR \to R$ is a function such that

$F(x,ku)=k^{s(x)}F(x,u)(k>0)$, $\forall(x,u) \in \partial\Omega xR,$

where $s(x) \in C(\overline{\Omega})$. Put $F(x,\vartheta):=\int_0^{\vartheta} f(x,t)dt$.

(H2) There exists $\Omega_0 \subset\subset \partial\Omega$ with $meas(\Omega_0)>0$ such that $F(x,t)>0, \forall x \in \Omega_0, t \in R$.

(H3) $1<s^+<p^- \le p^+ < p^{\partial}(x)$ for all $x \in \partial\Omega$.

Then for all $\lambda>0$, problem (1.1) has at least one nontrivial weak solution with negative energy.

2.Preliminaries

In this section, we recall definitions and basic properties of variable exponent Lebesgue-Sobolev spaces $L^{p(x)}(\Omega), W^{1,p(x)}(\Omega))$ and $W_0^{1,p(x)}(\Omega)$[6,8,10,15].

Set

$C_+(\overline{\Omega})=\{p; p(x) \in C(\overline{\Omega}), \inf p(x)>1, \text{for all } x \in \overline{\Omega}\}$.

For any $p(x) \in C_+(\overline{\Omega})$, we define

$$1<p^- := \inf_{x\in\overline{\Omega}} p(x) \le p^+ := \sup_{x\in\overline{\Omega}} p(x) < \infty.$$

We define the variable exponent Lebesgue space by

$$L^{p(x)}(\Omega)=\{u | u:\Omega \to R \text{ is measurable, such that } \int_{\Omega}|u(x)|^{p(x)}dx<\infty\}.$$

Similarly,we can define $p(x) \in C_+(\partial\Omega)$

$L^{p(x)}(\partial\Omega) = \{u | u : \partial\Omega \to R$ is measurable, such that $\int_{\partial\Omega} |u(x)|^{p(x)} d\sigma < \infty \}$.

The norm on this space is defined as

$$|u|_{p(x)} := \inf\left\{\delta > 0 : \int_\Omega \left|\frac{u(x)}{\delta}\right|^{p(x)} dx \le 1 \right\}.$$

$\left(L^{p(x)}(\Omega), |u|_{p(x)}\right)$ becomes a Banach space.

The variable exponent Sobolev space is denined as

$$W^{1,p(x)}(\Omega) = \left\{u \in L^{p(x)}(\Omega) : |\nabla u| \in L^{p(x)}(\Omega)\right\}.$$

And the norm in this space is writed as

$|u|_{1,p(x)} = |u|_{p(x)} + |\nabla u|_{p(x)}$, $\forall u \in W^{1,p(x)}(\Omega)$.

The space $W_0^{1,p(x)}(\Omega)$ is denoted as the closure of $C_0^\infty(\Omega)$ in $W^{1,p(x)}(\Omega)$ with respect to the norm $|u|_{1,p(x)}$. For $u \in W_0^{1,p(x)}(\Omega)$, we can define an equivalent norm $\|u\| = |\nabla u|_{p(x)}$.

The modular of the $L^{p(x)}(\Omega)$ space is the map $\Psi_{p(x)}(u) : L^{p(x)}(\Omega) \to R$ defined by

$$\Psi_{p(x)}(u) = \int_\Omega |u|^{p(x)} dx, \quad \forall u \in L^{p(x)}(\Omega).$$

Proposition 2.1. [6,7,11 ,13,15] If $u \in L^{p(x)}(\Omega)$ and $p^+ < \infty$, we have

(i) $|u|_{p(x)} = 1 (<1, >1) \Leftrightarrow \Psi_{p(x)}(u) = 1 (<1, >1)$

(ii) $|u|_{p(x)} > 1 \Rightarrow |u|^{p^-}{}_{p(x)} \le \Psi_{p(x)}(u) \le |u|^{p^+}{}_{p(x)}$

(iii) $|u|_{p(x)} < 1 \Rightarrow |u|^{p^+}{}_{p(x)} \le \Psi_{p(x)}(u) \le |u|^{p^-}{}_{p(x)}$

Proposition 2.2. [3,4,5,15] Let $\omega_{p(x)}(u) : L^{p(x)}(\partial\Omega) \to R$ and $\omega_{p(x)}(u) = \int_{\partial\Omega} |u|^{p(x)} dx$. For $u \in L^{p(x)}(\partial\Omega)$, we have

(v) $|u|_{L^{p(x)}(\partial\Omega)} > 1 \Rightarrow |u|^{p^-}{}_{L^{p(x)}(\partial\Omega)} \le \omega_{p(x)}(u) \le |u|^{p^+}{}_{L^{p(x)}(\partial\Omega)}$

(vi) $|u|_{L^{p(x)}(\partial\Omega)} < 1 \Rightarrow |u|^{p^+}{}_{L^{p(x)}(\partial\Omega)} \le \omega_{p(x)}(u) \le |u|^{p^-}{}_{L^{p(x)}(\partial\Omega)}$

Proposition 2.3. [1,6,9,10,11,13]

(i) If $1 < p^- \le p^+ < \infty$ then the spaces $L^{p(x)}(\Omega)$, $W^{1,p(x)}(\Omega)$ and $W_0^{1,p(x)}(\Omega)$ are separable, reflexive and uniformly convex Banach spaces,

(ii) If $s(x) \in C_+(\partial\Omega)$ and $1 \le s(x) < p^\partial(x)$ for all $x \in \partial\Omega$ then the trace embedding $W^{1,p(x)}(\Omega) \to L^{s(x)}(\partial\Omega)$ is compact and continuous,

(iii) Poincaré inequality, i.e. there exists a positive constant $C_0 > 0$ such that

$$\|u\| \le C_0 |\nabla u|_{p(x)}, \text{for all } u \in W_0^{1,p(x)}(\Omega).$$

3. Main results

Let X denote the variable exponent Sobolev space $W_0^{1,p(x)}(\Omega)$.

If we have function for all $\varphi \in X$ such that

$$\int_\Omega a(x,\nabla u)\nabla\varphi dx - \lambda\int_{\partial\Omega} f(x,u)\varphi d\sigma = 0$$

then, $u \in X$ is a weak solution of (1.1).

The energy functional of problem **(1.1)** is defined as $J_\lambda : X \to R$

$$J_\lambda(u) = \psi(u) - \lambda\Phi(u)$$

where $\psi(u) = \int_\Omega A(x,\nabla u)dx$ and $\Phi(u) = \int_{\partial\Omega} F(x,u)d\sigma$.

Proposition 3.1. [1,3,5] Let $f : \partial\Omega xR \to R$ is a Carathéodory function satisfying (H1) . For each $u \in X$ set $\Phi(u) = \int_{\partial\Omega} F(x,u)d\sigma$. Then $\Phi(u) \in C^1(X,R))$ and

$$\langle \Phi'(u), \upsilon\rangle = \int_{\partial\Omega} f(x,u)\upsilon d\sigma,$$

for all $\upsilon \in X$. Moreover, the operator $\Phi' : X \to X^*$ is compact.

Lemma 3.2. [9]

(iii) A verifies the growth condition: $|A(x,\zeta)| \le c_1\left(|\zeta| + |\zeta|^{p(x)}\right)$, for each $x \in \Omega$ and all $\zeta \in R^N$.

(iv) A is $\mathrm{p(x)}$ -homogeneous: $A(x,z\zeta) \le A(x,\zeta)z^{p(x)}$

for each $z \ge 1, x \in \Omega$ and all $\varepsilon \in R^N$.

Lemma 3.3. [6,9,11,13]

i) $\psi(u)$ is well-defined on X.

ii) $\psi(u) \in C^1(X,R)$ and

$\langle \Lambda'(u), v\rangle = \int_\Omega a(x,\nabla u)\nabla v dx$, for all $u, v \in X$

iii) $\psi(u)$ is weakly lower semi-continuos on X.

iv) Φ is weakly lower semi-continuos on X.

v) Φ is well-defined on X .

Remark 3.4. By assumption (H1) , there exist $M > 0$ and $c_1 > 0$ such that

$|F(x,u)| \le M|u|^{s(x)}$ and $f(x,u) \le c_1|u|^{s(x)-1}$, for all $x \in \Omega$.

Therefore, from Proposition 2.3, Proposition 3.1, Lemma 3.3 and Remark 3.4, it is easy to see that

So, as a result from Proposition 2.3, Proposition 3.1, Lemma 3.3 and Remark 3.4, we can write $J_\lambda(u) \in C^1(X,R)$. Moreover, the critical points of J_λ are weak solutions of (1.1) and the derivate of J_λ is the mapping $J_\lambda : X \to R$

$$\left\langle J_\lambda'(u), v\right\rangle = \int_\Omega a(x,\nabla u)\nabla v dx - \lambda\int_{\partial\Omega} f(x,u)v d\sigma,$$

for any $u, v \in X$ [7,8,11].

Lemma 3.5. If the conditions (A1)- (A5), (H1), (H2) and (H3) hold, then the functional J_λ is coercive on X.

Proof. For $\|u\| > 1$. Using Proposition 2.3 (ii), we know that the embedding $W^{1,p(x)}(\Omega) \to L^{s^\pm}(\partial\Omega)$ is continuous. So, we can find constants $c_2, c_3 > 0$ such that

$$|u|_{L^{s^+}(\partial\Omega)} \le c_2\|u\|^{s^+} \text{ and } |u|_{L^{s^-}(\partial\Omega)} \le c_3\|u\|^{s^-}, \text{ for all } u \in X.\ s^\pm$$

Moreover, by Proposition 2.1 (ii), Proposition 2.2 (i), Proposition 2.3 (ii) ,(A4) and together with above inequalities we have

$$J_\lambda(u) \ge \frac{c_4}{p^+}\|u\|^{p^-} - \lambda\left(c_2\|u\|^{s^-} + c_3\|u\|^{s^-}\right)$$

where constants $c_4 > 0$. Since $s^+ < p^-$, we conclude that $I_\lambda(u) \to \infty$ as $\|u\| \to \infty$. Then, J_λ is coercive on X.

Lemma 3.6. If (A1)- (A5), (H1), (H2) and (H3) hold, then there exists $\phi \in X$ such that $\phi \ge 0, \phi \ne 0$ and $J_\lambda(k\phi) < 0$ for $k > 0$ small enough.

Proof. Since $s_0^- < p_0^-$ from (H3), then let $\varepsilon_0 > 0$ such that $s_0^- + \varepsilon_0 < p_0^-$. Since $s(x) \in C(\overline{\Omega}_0)$, there exists an open set $\Omega_1 \subset\subset \Omega_0 \subset\subset \partial\Omega$ such that $|s(x) - s_0^-| < \varepsilon_0$ for all $x \in \Omega_1$. Thus, we can write that $s(x) \le s_0^- + \varepsilon_0 < p_0^-$ for all $x \in \Omega_1$.

Let $\varphi \in C_0^\infty(\Omega)$ be such that $\text{supp}(\varphi) \subset \Omega_1 \subset \Omega_0$, $\varphi = 1$ in a subset $\Omega_1' \subset \text{supp}(\varphi)$ and $0 \le \varphi(x) \le 1$ in Ω_1. Then, using (H2) and Lemma 3.2, we get

$$J_\lambda(k\varphi) = \int_\Omega A(x,\nabla k\varphi)dx - \lambda\int_{\partial\Omega} F(x,k\varphi)d\sigma$$

$$\le \frac{c_5 k^{p_0^-}}{p_0^-}\int_\Omega A(x,\nabla\varphi)dx - \lambda c_6 k^{s_0^-+\varepsilon_0}\int_{\Omega_1} F(x,\varphi)d\sigma$$

Therefore, $J_\lambda(k\varphi) < 0$ for $k < \delta^{1/(p_0^- - s_0^- - \varepsilon_0)}$ with

$$0 < \delta < \min\left\{1, \frac{\lambda c_6 p_0^- \int_{\Omega_1} F(x,\varphi)d\sigma}{c_5\int_\Omega A(x,\nabla\varphi)dx}\right\}.$$

Since $1 < s^+ < p^- \le p^+ < p^\partial(x)$, we can take $J_\lambda(k\varphi) < 0$, for $k > 0$ small enought. The prof of Lemma 3.6 is complete

Proof of Theorem 1.1. If we use the fact $J_\lambda \in C^1(X,R)$, then J_λ is weakly lower semi continuous from Lemma 3.3. Moreover, by Lemma 3.5., J_λ is coercive then here exists a global minimizer in X and using Lemma 3.6., there exists u that the $I_\lambda < 0$ [13]. The proof is complete.

Reference

[1] Allaoui M., El Amrouss A.R., Ourraoui A., Existence and multiplicity of solutions for a Steklov problem involving the p(x)-Laplace operator, Electron. J. Differential Equations 132, 1–12, 2012.

[2] Acerbi A. and Mingione G., Gradient estimates for the p(x)-Laplacean system J. Reine Angew. Math. 584 (2005)

[3] Ben Ali K, Existence results for Steklov problem involving the p(x)-Laplacian, Complex Var. and Elliptic Equ. 2017.

[4] Chen Y, Levine S, Rao M. Variablee exponent, linear growth functionals in image processing. SIAM J Appl Math. 2006; 66:1383–1406.

[5] Deng SG. Eigenvalues of the *p(x)*-Laplacian Steklov problem. JMath Anal Appl. 2008; 339:925–937.

[6] Fan X., Q. Zhang, and D. Zhao, Eigenvalues of p(x)-Laplacian Dirichlet problem, J. Math. Anal. Appl. 302, pp. 306–317, 2015.

[7] Ourraoui A., Existence and uniqueness of solutions for Steklov problem with variable exponent, Adv. in the Theory of Nonlinear Anal. and its Appl., 1 (5) (2021), pp.158 166.

[8] Karim, B., Zerouali A., and Chakrone O., Existence and multiplicity of a-harmonic solutions for a Steklov problem with variable exponents, Bol. Soc. Paran. Mat., v.2. 32 (2018), pp. 125-136.

[9] Mashiyev R.A., Cekic B., Avci M. and Yucedag Z., Existence and multiplicity of weak solutions for nonuniformly elliptic equations with nonstandard growth condition, Complex Variables and Elliptic Equations, 57 (2012), no. 5, 579–595.

[10] Mihăilescu M. and Rădulescu V., A multiplicity result for a nonlinear degenerate problem arising in the theory of electrorheological fluids, Proceedings of the Royal Society A. 462 (2006), 2625-2641.

[11] Kovăčik O. and Răkosnik J., On spaces L^{p(x)} and W^{k,p(x)},Czechoslovak Math. J. 41 (1991), no.116, 592-618.

[12] Ruzicka M. Electro-rheological fluids: modeling and mathematical theory. Lecture notes in mathematics. Vol. 1784. Berlin: Springer-Verlag; 2000.

[13] Willem M., Minimax Theorems, Birkhauser, Basel, 1996.

[14] Zhikov VV. Averaging of functionals of the calculus of variations and elasticity theory, Math. USSR. Izv., 29, (1987), pp.33-66.

[15] Yucedag Z., Existence results for steklov problem with nonlinear boundary condition, Middle East Journal of Science., 2019, 5,146-154.

[16] Zerouali A., and Chakrone O. Anano A., Existence and multiplicity solutions results for elliptic problem with nonlinear conditions and variable exponents, Bol. Soc. Paran. Mat., v. 2 (33), (2015), pp. 121-131.

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ÜNİVERSİTE GENÇLİĞİNİN SİYASAL RIZALARININ SOSYO-KÜLTÜREL DEĞİŞKENLER AÇISINDAN İNCELENMESİ

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Özet
İnsanlar hem yaradılışları hem de sosyal ve ekonomik farklılıkları bakımından değişik çıkar, fikir ve düşüncelere sahiptir. Bu değişik çıkar ve fikirlerinden dolayı da insanlar arası çatışma doğal bir sonuç olarak karşımıza çıkmaktadır. Bu çatışmanın temel sebeplerden birini iktidarı ele geçirme arzusu oluşturmaktadır. Siyasetin çıkış noktası da bu çatışmada yatmaktadır. Günümüzde modern demokrasilerde iktidarı ele geçirme seçim yoluyla olmaktadır. Modern demokrasilerde sistemin sürdürebilir olması siyasi süreçlerin her aşamasının halkın rızasının alınmasına bağlıdır.
Seçmenlerin oy verme davranışlarının oluşmasında onların rızalarının payı temel kriter olarak görülmektedir. Gizli oy açık tasnifin uygulandığı demokratik sistemlerde seçmen rızası dışındaki partilere oy vermemektedir. Seçmen, rızasının olmadığı hiçbir faaliyetin içine girmemektedir. Bu nedenle seçmenlerin rızalarını kazanma iktidara gelmek isteyenlerin en önemi amacı olmaktadır. Bu durumda siyaset yapıcılar için seçmenlerin oy davranışında bulunurken "rıza"larının nasıl oluştuğu önemli bir husustur.
Çalışma Tokat Gaziosmanpaşa Üniversitesi İktisadi ve İdari Bilimler Fakültesi'nde öğrenim gören öğrencilerin oy verme davranışlarının demografik ve sosyo-kültürel değişkenlerinin siyasal rıza bağlamında incelenmesini içermektedir. Seçmen düzeyindeki öğrencilerin oy verme davranışları ile siyasal rızaları arasında anlamlı farklar olup olmadığı bu çalışmanın ana amacını oluşturmaktadır. Siyasal rıza konusunda çoğunluğu z-kuşağından oluşan kişilere ilk olarak bu çalışmanın yapılması çalışmanın özgünlüğünü ve önemini ortaya koymaktadır. Çalışmada Ceylan ve diğerleri (2019) tarafından geliştirilen siyasal rıza ölçeği kullanılmış ve SPSS programı yardımı ile analizi yapılmıştır.
Çalışma genel olarak değerlendirildiğinde katılımcıların aday ve partiler hakkında araştırma yaparak ve liyakate önem vererek oy verme davranışında bulundukları görülmektedir. Ayrıca katılımcılar niyetinden şüphe ettiği, yalan söylediğini anladığı bir adaya oy vermeye yanaşmamaktadır.
Anahtar Kelimeler: Seçmen, siyasal rıza, siyasal kültür, oy verme

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EXAMINATION OF THE POLITICAL CONSENT OF UNIVERSITY YOUTH IN TERMS OF SOCIO-CULTURAL VARIABLES

Abstract

People have different interests, ideas and thoughts in terms of both their nature and their social and economic differences. Because of these different interests and ideas, conflict between people emerges as a natural result. One of the main reasons for this conflict is the desire to seize power. The starting point of politics lies in this conflict. Today, in modern democracies, the seizure of power is through elections. The sustainability of the system in modern democracies depends on obtaining the consent of the people at every stage of the political processes.

The share of the voters' consent in the formation of their voting behavior is seen as the main criterion. In democratic systems where secret balloting is applied, voters do not vote for parties without the consent of the voters. Voters do not engage in any activity without their consent. For this reason, gaining the consent of the voters is the most important goal of those who want to come to power. In this case, it is an important issue for policy makers how the voters' consent is formed while voting.

The study includes the examination of the demographic and socio-cultural variables of the voting behavior of the students studying at the Tokat Gaziosmanpaşa University Faculty of Economics and Administrative Sciences in the context of political consent. The main purpose of this study is whether there are significant differences between the voting behavior of the students at the voter level and their political consent. The fact that this study was conducted for the people, mostly z-generation, on the subject of political consent, reveals the originality and importance of the study. In the study, the political consent scale developed by Ceylan et al. (2019) was used and analyzed with the help of the SPSS program.

When the study is evaluated in general, it is seen that the participants are in voting behavior by doing research about candidates and parties and giving importance to merit. In addition, the participants are unwilling to vote for a candidate whose intentions they doubt and understand that he is lying.

Keywords: Voter, political consent, political culture, voting

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KOŞULSUZ ŞARTSIZ LİBERAL DEMOKRASİYİ SAVUNMAK: GİOVANNİ SARTORİ

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ÖZET
Günümüzde aydınlanma düşüncesinin zaferi olarak görülen demokrasi, neredeyse tek geçerli yönetim biçimi olarak kendisini ortaya koymaktadır. Özellikle modern ulus devletler söz konusu olduğunda demokrasi düşüncesi olmazsa olmaz bir konuma yükselir. Bu bakımdan tarihsel olarak karşımıza çıkan örneklerinden farklı bir biçimde modern demokrasi, yöneten yönetilen ekseninde belirli bir otorite ve bu otoriteye tabi olan yurttaşı bambaşka bir düzlemde ele alır. Bu demokrasi artık sadece kurumlar arası ilişkiyi düzenleyen bürokratik ilişkiler ağı değil, özgürlük, eşitlik ve haklar çerçevesinde bir ideale dönüşür. Bu bakımdan özellikle özgürlükler ekseninde demokrasi ile liberalizm arasında koparılamaz bir bağ olduğu düşüncesi ön plana çıkarken neredeyse liberal olmayan demokrasilerin demokrasi olmadığı ve eninde sonunda totaliter rejimlere dönüşeceği fikri öne çıkmaktadır. Bu türden bir düşüncenin kati savunucularından biri olarak Giovanni Sartori liberal demokrasiyi özgürlüklerin ve hakların korunmasının teminatı olarak görür. Demokrasi ona göre özünü ancak liberal demokrasi ile ortaya koyabilir ve problemlerini ancak liberal demokrasi ile aşabilir. Demokrasi adı altındaki diğer tüm teoriler demokrasi olmamakla birlikte onun özünü ve potansiyelini kavramaktan uzak eninde sonunda çökmeye mahkum örgütlenmelerden başka bir şey değildir. Liberalizm bu bakımdan demokrasiyi olanaklı kılar. Bu demokrasi anlayışının ise tarihsel olarak demokrasi ile olan ilişkisi ortak bir etimolojiye sahip olmaktan öteye gidemez. Ona göre günümüz liberal demokrasilerinin kendisini önceleyen Antik Yunan Roma gibi tarihsel deneyimlerle bir bağı kalmamıştır. Bu çalışmada idealleri ve ortaya koyduğu değerleri bakımından demokrasiyi tarihsel olarak yeni bir bağlamda yeni bir konumda ele almaya çalışan Sartori'nin halkın kendi kendisini yönetmesi, halkın iktidarı, seçimler, liderlik, elitizm gibi pratik değerlendirmeleri ile birlikte ideal demokrasi düşüncesinin gelişimine yönelik fikirlerine ve liberalizm temelli çözümlemelerine yer verilecektir.
Anahtar Kelimeler: Liberalizm, Demokrasi, Özgürlük, Yurttaşlık, Halk

UNCONDITIONALLY ADVOCATING LIBERAL DEMOCRACY: GIOVANNI SARTORI

ABSTRACT
Democracy is today seen as a triumph of the enlightenment movement and is almost the only valid form of government. When it comes to modern nation states, the idea of democracy rises to an indispensable position. In this respect, modern democracy manifests itself differently from its historical examples. In modern democracy, a certain authority on the ruler-administered axis and the citizen subject to this authority are handled on a completely different level. This democracy is no longer just a network of bureaucratic relations that regulates inter-institutional relations but turns into an ideal within the framework of freedom, equality and rights. From this point of view, it is argued that there is an unbreakable bond between democracy and liberalism, especially on the axis of freedom.

However, at the same time, the idea that illiberal democracies are not real democracies and will eventually turn into totalitarian regimes comes to the fore. Giovanni Sartori, one of the foremost advocates of this approach, sees liberal democracy as the guarantor of the protection of freedoms and rights. According to Sartori, democracy can reveal its essence only with liberal democracy and can only overcome its problems with liberal democracy. All other theories under the name of democracy are not democracies and they are nothing but organizations that do not understand the essence and potential of democracy and are doomed to collapse eventually. With this aspect, liberalism transforms democracy into a reality. However, the relationship between this kind of democracy and historical democracy cannot go beyond having a common etymology. According to Sartori, today's liberal democracies are no longer tied to historical experiences such as Ancient Greece and Rome. In this study, Sartori, who tries to deal with democracy in a historically new context and in a new position in terms of his ideals and values, together with its practical evaluations such as people's self-government, people's power, elections, leadership, elitism, and his ideas on the development of ideal democracy and liberalism will be reviewed.
Keywords: Liberalism, Democracy, Freedom, Citizenship, Community

GİRİŞ

Günümüzde demokrasi Modern çağın olmazsa olmaz yönetim biçimi olarak karşımıza çıkar. Hatta demokratik olmayan, ya da demokratik olmadığını ifade eden bir yönetim şekli meşru bir yönetim olarak da görülmez. Bu durum tamamen modern dönem ile ilgili bir tutumdur. Oysa tarihsel olarak demokrasi hemen her zaman en geçerli yönetim biçimlerinden biri olarak görülmemiştir. Hatta demokrasi, doğduğu topraklar, yani Antik Yunan söz konusu olduğunda pek de sıcak bakılmayan bir yönetim biçimidir. Antik Yunan'ın demokrasiden anladığı şey aslında iktidarın halkın eline geçtiği bir kaos ortamıdır. Yönetimin avamın eline geçmesi ya da başka bir deyişle aşağı tabakanın eline geçmesi onu yeterince tehlikeli bir yönetim biçimi haline getirir. Bu yönüyle demokrasi, kötü bir yönetim biçimi olarak düşünülmesinin yanında toplumun ana değerlerinin kaba kitlelerin ya da cahil halkın eline verilmesi şeklinde değerlendirilmiş ve dolayısıyla toplumun kazanımlarının da boşa çıkacağı yönünde bir düşünce yerleşmiştir. Yani günümüzden neredeyse tamamen farklı bir şekilde demokrasi pek de makbul olmayan bir yönetim biçimi olarak daha çok bozuk yönetim biçimlerinden biri olarak ele alınmış ve kendisine karşı çıkılmıştır. Bunun nedeni çoğunlukla *demos*[1] olarak halk ya da başka bir deyişle eğitimsiz cahil kitlenin kendi kendini yozlaşmadan yönetileceğine inanılmıyordu. O yüzden güç iktidar ya da erk olarak *kratos, demos*'un eline verilmemelidir. Örnekse Platon'a göre demokraside halk iktidarı ele geçirdiğinde kendi aralarında eşit paylaşarak toplumsal bir yozlaşmanın önünü açarlar. Başa geçecek olanlar bilgi birikim ile değil kura ile gelirler. Böylesi bir devlette herkes özgürce davranır bu özgürlük de aslında kurallara uymazlık olarak kendini göstererek bir kaos ortamı yaratır. Suçlular hırsızla özgürce dolaşır vs. tam bir yıkım getirir. Nitekim Platon da demokrasiyi görünürde oldukça güzel bir yönetim şekli gibi görünmesine karşın aslında sert bir şekilde eleştirerek bir anlamda oligarşinin bir sonucu ya da dönüşümü olarak görür. Ona göre demokrasilerde mahkumlar ve suçlular ortaya çıkan özgürlük ortamında ellerini kollarını sallayarak dolaşabileceklerdir. İsterlerse felsefe ile uğraşabilecek isterlerse devlet adamı olabileceklerdir.

[1] Yurttaşlar topluluğu anlamına geldiği gibi sıradan halk, avam, kalabalık anlamlarına da gelir.

Bu da bir noktadan sonra otorite krizini ortaya çıkaracak, oligarşiyle başlayan bu süreç tiranlıkla son bulacaktır. (Platon, Devlet, s. 240-242) Aristoteles de kötü ama aslında daha az kötü bir yönetim biçimi olarak demokrasiyi bozuk yönetim biçimlerinden biri olarak görür. Platon kadar keskin olmasa da Aristoteles'e göre de demokrasi başkanı olmayan bir aile gibidir ve yurttaşların sadece belli bir kısmını yani yoksulların çıkarlarını koruyarak toplumun genelini gözetmez. Ona göre "krallıktan tiranlık, aristokrasiden oligarşi, siyasal yönetim ya da çokluğun anayasal egemenliğinden ise demokrasi çıkar. Platon'da da olduğu gibi Aristoteles'e göre de demokrasilerde herkes eşittir ve istediğini yapma hakkına sahiptir ki bu da aslında yönetimi zayıflatan bir şeydir. (Aristoteles, Nikomakosa Etik, s.168)

Ancak Antik Yunan demokrasi pratiği göz önüne alındığında bu türden bir demokrasi anlayışının isim benzerliği dışında neredeyse günümüz demokrasi anlayışıyla örtüşen çok az yönü vardır denilebilir. Oy kullanmak, belli kararların alınması konusunda fikir belirtmek ve kısıtlı da olsa yasaların yapılmasına katkıda bulunmak dışında modern demokrasiyi andıran çok az özellik barındırır. Oysa günümüzde demokrasi özellikle bürokrasinin de gelişmesi ile devlet içerisinde hemen her kademede kendisini gösterme olanağına sahip olmuştur. Antik yunan ve Roma pratiklerinden sonra neredeyse Orta Çağ boyunca 1000 yıl unutulmuş bir tartışma olarak demokrasi devrimler çağında aslında küllerinden yeniden doğacaktır. Ama bu sefer özgürlük ve eşitlik ekseninde daha modern olgulara da yer verecek, örnekse etkin katılım, gündemin kontrolü, oy kullanma hakkı ve eşitliği, bilgilenme hakkı, seçme seçilme ve mevcut yönetime dahil olma hakkı gibi yeni olanaklar ortaya koyacaktır. (Dahl, 2001, s. 51-52). Tüm bu özellikleri liberalizmle birlikte düşünecek olan Giovanni Sartori meseleyi biraz daha ileri taşıyarak liberalizmi demokrasinin olanağı olarak değerlendirecektir. Bu çalışmada bir İtalyan siyaset felsefecisi olarak Giovanni Sartori'nin mutlak taraftarı olduğu demokrasi anlayışının liberalizmle kurduğu ilişkisine değinilecektir.

Liberalizm Zemininde Demokrasiyi Savunmak

Her ne kadar Carl Schmitt çağımızda öne çıkan liberal demokrasi ya da çoğulculuk gibi fikirleri egemen devleti sıradan bir kuruma dönüştüren, onu egemen olma görevinden uzaklaştıran ve yok olmanın eşiğine getiren ideolojiler olarak görse de (Schmitt, 1930, s. 29) tam zıt kutupta Sartori'ye göre liberalizm ile demokrasi arasında uyumlu bir ilişki vardır. Liberalizmin ilkeleri olan bireysel özgürlüğü, hukukun savunulmasını ve tüm bunlara bağlı kalan anayasal bir devlet anlayışının demokrasi düşüncesi ile tamamen ilkeler olduğunu dile getirir. Hatta ona göre demokrasiyi olanaklı kılan şey liberalizmdir ve hatta günümüz demokrasisi liberalizmin bir sonucudur. (Sartori, tarihsiz, s.233)

Bu yönüyle Sartori liberalizmi demokrasiyi birbirinden ayırmaz ve birbirini tamamlayan ögeler olarak görür. Ne demokrasi tek başına eşitliği sağlayabilir ne de liberalizm demokratik bir zemin olmadan özgürlüğü pratiğe dökebilir. Liberal demokrasi işte tam da bu noktada her iki düşünceye kendisisini gerçekleştirme olanağı sağlar. Özgürlük ve eşitlik gibi roller ancak liberal demokrasilerde paylaşılabilir bir hal alır. Liberal olmayan hemen her türden demokrasi baskıcı ve totaliter bir rejime dönüşmeye mahkumdur. Bu türden bir yönetimin arkasında istediği kadar halk olsun bu konuda bir şey değişmez ve rejim eninde sonunda merkezileşerek dayatmacı bir hal alarak özgürlükleri yok eder, despotik bir kölelik düzeni kurar.

Ancak Sartori'ye göre liberalizm ile demokrasi bu kadar iç içe geçmiş olmasına rağmen birbirine karıştırılmamalıdır. Hatta neredeyse birbirinin yerine kullanılan bu kavramlar aslında pek çok sorunun da kaynağı olabilmektedir. Yapılması gereken ayrımların ortaya konarak hangisinden neyin anlaşıldığının net biçimde belirlenmesidir.

Liberalizmden, demokrasiden ya da liberal demokrasiden söz etmek ancak bu şekilde mümkün olabilir. Fakat 19. yüzyılın ikinci yarısından sonra liberalizmin idealleri ile demokrasinin idealleri birbirine karışmaya başlamış, iç içe geçmiş ve bunun sonucu olarak da bir kafa karışıklığı söz konusu olmaya başlamıştır. Üstelik bu iç içe geçmişlik neticesinde liberalizm ile demokrasinin sınırları ile beraber özellikleri de neredeyse silinmeye başlamıştır. (Sartori, 1993, s. 397). Aslında her ne kadar bu türden ayrımlar önemli olsa da Sartori'ye göre demokrasi demek liberal demokrasi demektir. Ancak modern demokrasilerin merkeze yerleştiği günümüzde bu mutlu birlikteliğin neredeyse ayrışmaya başladığını ifade eder. Liberalizm ile demokrasi arasında evet vazgeçilmez bir ilişki söz konusudur ama liberal olmayan bir demokrasiyi ortaya koymak adına ya da liberalizm düşmanlığıyla demokrasiyi yok etmek gibi eylemlerden kaçınmak gerekir. Bunun için yapılması gereken onların yetkilerini ve görevlerini belirlemek ve ayırmaktır. Bu ayrımlar yapılmadığı müddetçe sanki daha iyi olana yöneldiğimizi zannederken elimizdekini de kaybetme tehlikesi ile karşı karıya kalırız. (Sartori, Tarihsiz, s. 226).

Bu bağlamda Sartori liberalizmi bireysel özgürlüklerin hukuku savunmanın, anayasacı bir devletin kuramı ve pratiği olarak değerlendirir. Bu bakımdan ona göre liberalizm ile demokrasi arasında çok eski bir ilişki söz konusudur. Her ne kadar demokrasi düşüncesi liberalizmden çok daha eski olsa da günümüzün demokrasi anlayışı ona göre liberalizmin bir sonucudur. (Sartori, Tarihsiz, s. 233).

Liberal demokrasi merkeze alındığında ille de liberalizm ile demokrasi arasında bir ayrım yapılacaksa eğer ona göre liberalizmin temelinde özgürlük vardır, demokrasinin temeli ise eşitliğe dayanır. Bu ikisi ancak liberal demokraside birbiri ile iç içe geçer. Yine de tüm eşitliklerin kaynağı demokrasi olmadığı gibi tüm özgürlüklerin temeli ise liberalizme dayanmaz. Özgürlüğün geniş kapsamlı geçmişi ve özü sadece liberalizme indirgenemez. Bu bağlamda özgürlük ve eşitliğin birleşmesi demek liberalizm ve demokrasinin birleşmesi demekse liberal demokrasinin görevi bunu bir uyum içerisinde bir araya getirmek olmalıdır.

Diğer taraftan demokrasi demek toplumsal birlikle ilişkiliyken liberalizm demek daha çok bireysel özgürlükle, yenilikle ve sivrilmeyle ilişkilidir ve bunlara değer verir. Bu yönüyle bakıldığında demokrasinin özü ve hatta simgesi olarak eşitlikte yapılmak istenen şey toplumu bütünlemek ve onu ahenkli kılmaktır, liberal anlamda özgürlük düşüncesinde ise merkezde aslında tedirgin olmak, müsrif olmak ve düzensiz olmak vardır. Burada esas ayrıma bakıldığında liberalizm özünde bireye işaret ederken demokrasinin ağırlık noktası kendisini topluma dayandırmasıdır (Sartori, Tarihsiz, s. 234-235).

Bu açıdan bakıldığında Sartori'ye göre eşitlik daha çok yatay bir dürtüye sahipken liberalizm dikey bir dürtüye sahiptir. Bu şu demektir; demokrasi sosyal birliğe ve dağıtıcı eşitliğe değer verirken liberalizm üstünlüğe ve kendiliğinden olmaklığa değer verir. Eşitliğin özünde bütenleşmek ve ahenk içinde olma isteği varken özgürlük daha zahmetli ve düzensizdir. Çoğulculuk demokraside çok az değer görürken liberalizm bunun aksine tam da çoğulculuğun bir ürünüdür. Bu nokta ikisi arasındaki esaslı ayrım, liberalizmin bireye demokrasinin ise topluma dayanması noktasında ortaya çıkar. (Sartori, 1993, s. 416).

Liberalizm daha çok devlet otoritesini ve iktidarını sınırlandırmak üzerinden şekillenirken demokrasi halkın iktidarını devlet içine sokma çabası içerisinde olur. Bu bakımdan bir liberali ilgilendiren temel mesele devletin aldığı biçimken bir demokrat için önemli olan şey o devlet için konan kuralların içeriğidir. (Sartori, Tarihsiz, s. 225).

Bu bağlamda bir liberal demokrasiyi oluşturan ögeler bu şekilde bir ayrımla ele alınırsa siyasal ve toplumsal anlamda çözümlemeler açığa çıkmış olur.

Bu noktada siyasi olarak demokratik bir devlet ile liberal bir devlet arasında önemli bir ayrım olmadığı görülür. Bu durumda denilebilir ki demokratik bir devlet ona göre aslında ortaya çıkan liberal devletin başka bir adıdır. Buradaki toplumsal demokrasi ise tam demokrasidir. Bu durumda söz konusu olan eğer liberal demokrasi ise bu, elimizde bir derleme ya da anlaşma olduğunu gösterir. (Sartori, 1993, s. 417-418). Liberalizm ile demokrasi arasındaki mutlak ilişki ve iç içe geçmiş olan yapı şu şekilde özetlenebilir. Liberalizm daha çok "çok siyasal bağlanma, bireysel girişim ve devletin biçimi sorunlarıyla ilgilenir; ikincisi de eşitlik toplumsal birlik ve refah siyaseti sorunlarına karşı hassastır." (Sartori, Tarihsiz, s.236)

SONUÇ

Demokrasi içerisinde liberalizm ya da liberalizm içerisinde bir demokrasinin var olup olmayacağı sorusu kilit soru konumundadır. Sartori için günümüzde demokrasiler aslında demokrasinin ve liberalizmin bir ürünüyse önemli olan şey ikisi arasındaki dengenin bozulmamasıdır. Denge bu anlamda onu oluşturan parçalardan birinin diğerine üstünlük sağlamaması anlamına gelir. Olası bir durumda parçalardan biri üstünlük çabası içerisine girerse bu engellenmelidir. Her ne kadar bu dengede liberalizm kronolojik olarak demokrasiden sonra ortaya çıkmışsa da bu demokrasi adına bir üstünlük sağlamaz. Burada önemli olan sav şudur; her ne kadar demokrasi liberalizme katkı sağlıyor olsa da asıl liberalizmin yapısı, demokrasiye kendisine katkı sağlama olanağı sunmaktadır. Daha fazla demokrasi arzusu liberalizmi dışlamak, dışarıda tutmak anlamına gelmemelidir. Olur da liberal özgürlükler yok edilirse eşitlik daha fazla ön plana çıkarılırsa demokrasinin dili yeniden ölü bir dil haline gelir. Günümüzde her ne kadar liberalizmin dışarıda tutulması gerektiği yönünde düşünceler ortaya çıkmışsa da gelecek adına asıl umut aslında liberalizm içerisinde bir demokrasiden başkası değildir. (Sartori, Tarihsiz, s. 238). 19. yüzyıl liberal ögenin ön plana çıktığı bir yüzyıl iken 20. Yüzyılda sarkaç tersine dönerek demokratik unsurlar daha ağırlık kazanmaya başlamıştır. Ancak bu durum bir kronoloji meselesi değildir. Öncelik ve sonralık durumu değere ilişkin bir durum değildir. Unutulmaması gereken şudur: "demokrasinin liberalizme katkıları aynı zamanda liberalizmin bir sonucudur. O halde demokrasiden, liberalizmin yerine geçen bir şey gibi söz etmek çok yanıltıcı olabilir. Nitekim demokrasi, liberalizmin yerine geçmemiş, onu bütünlemiş ve tamamlamıştır." (Sartori, 1993, s. 419). Aslında siyasal olarak demokrasi liberalizmden çok da fazla ayrılabilecek durumda değildir. Bu hususta iki şey ön plana çıkar; ilkin, daha fazla demokrasi istemek demek daha az liberalizm istemek anlamına gelmemelidir. İkinci olarak da ki bu daha çok ilk düşüncenin bir sonucu olarak ortaya çıkar, daha fazla demokrasiyi isterken aynı zamanda daha fazla liberalizm istemekte bir çelişki söz konusu değildir. (Sartori, 1993, s. 421) Biri adına diğerinin feda edileceği bir denklem söz konusu olmamalıdır.

Tüm bunların ışığında söylenebilir ki her ne kadar birbirleri ile olan dengeleri zamanla değişiklik gösterse de ne şekilde olursa olsun liberal olmayan bir demokrasi totaliter, merkezi ve baskıcı bir demokrasidir. Böylesi bir demokraside demokrasi sadece bir sözcükten ibarettir. Demokrasinin ne şekilde olursa olsun ne türden bir retorikle dile getirilirse getirilsin liberalizmle olan bağı koparıldığında üstelik arkasında halk desteği bile olsa en despotik kölelikleri bile onaylayacak türden bir demokrasiye dönüşme durumu söz konusu olacaktır. Halk adına hareket ettiği iddiasında olduğu için aynı zamanda meşru olduğunu iddia eden bu devletin liberalizmle olan bağı koptuğunda ne olursa olsun demokrat olmayan bir devlete dönüşecektir.

Kendi sözleriyle sonlandırılacaksa eğer "Bu, basit bir dille ifade edilecek olursa, çağdaş ya da eski biçimine işaret etmesine, kişinin özgürlüğüne dayalı bir demokrasi olmasına veya iktidarın kolektif *plenum*[2] tarafından kullanılmasını gerektirmesine bakmaksızın, liberal demokrasinin ortadan kalkmasıyla birlikte demokrasinin de ölmesi demektir. (Sartori, 1993, s. 425).

KAYNAKÇA

ARISTOTELES. (2007). Nikomakhos'a Etik, (S. Babür, Çev.). Ankara: BilgeSu Yayıncılık.

DAHL, R. A. (2001). Demokrasi Üzerine, (B. Kadıoğlu, Çev.). Ankara: Phoenix Yayınevi.

PLATON, (1995). Devlet, (S. Eyüboğlu ve M. A. Cimcoz, Çev.). İstanbul: Remzi Kitabevi.

SARTORI, G. (1993). Demokrasi Teorisine Geri Dönüş, T. Karamustafaoğlu ve M. Turhan, Çev.). Ankara: Türk Demokrasi Vakfı Yayınları.

SARTORI, G. (1997). Karşılaştırmalı Anayasa Mühendisliği, (E. Özbudun Çev.). Ankara: Yetkin Yayınları.

SARTORI, G. (2006). Görmenin İktidarı, Homo Videns: Gören İnsan, (G. Batuş, B. Ulukan, Çev.). İstanbul, Karakutu Yayınları.

SARTORI, G. (Tarihsiz). Demokrasi Kuramı, (D. Baykal, Çev.). Ankara: Siyasi İlimler Türk Derneği Yayınları.

SCHMITT, C. (1930). Staatsethik und Und Pluralistischer Staat, Kant Studien No:35 (http://tr.scribd.com/doc/86519112/Schmitt-Staatsethik-Und-Pluralistischer-Staat)

[2] Dolu, sıkışık, boşluksuz.

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ELECTIONS THEN AND NOW: EXAMINING SOCIO-ECONOMIC IMPLICATIONS OF ADOPTING TECHNOLOGY ON THE 2021 LOCAL GOVERNMENT ELECTIONS OF KADUNA STATE

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Abstract
Election is the substratum of any successful democracy. If the forgone assertion fits, it then follows that the success of any election determines the success of any given democracy. Though, electronic voting has been institutionalized in other climes. In Nigeria, the fragility of their democracy has made it difficult to suit the global competition in line with electronic election. The return of democracy in 1999 after some years of military rule has marked a number of developments at the national, state and local levels. Of particular concern to this study is the introduction of electronic voting by Kaduna state government. This development being the first of its kinds in Nigeria prompted the researchers to investigate the social and economic implications of the development by engaging some permanent and ad-hoc staff of Kaduna state electoral commission with a view to examining the difference between manual and electronic voting in the face of economic and social implications with specific concern to its operations by the staff and the electorates. The study is anchored on the unified theory of acceptance and use of technology (UTAUT). Methodological Triangulation is adopted using Quantitative and Qualitative approaches specifically Survey method to elicit data from the ad-hoc staff and also, In-depth interview with some permanent staff of Kaduna state electoral commission.
Keywords: Elections, socio-economic, implications, technology

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IRAN'S POSITION AS AN EMERGING POWER IN THE REGIONAL COALITION OF IRAN AND CHINA IN THE MULTIPOLAR SYSTEM OF INTERNATIONAL RELATIONS

(In the form of understanding of the 25-year co-operation document of Iran and China)

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ABSTRACT

The power center in the world, which has been in Europe at least three centuries in Europe and somehow in the West, are transferring to Asia and in particular the east, and in this transfer of power is one of the events, creating a coalition and fronts and blockings that a dynasty Asian, anti-Western coalition, coalition of regional and emerging powers are being formed. Here, we see those two powers in Asia, China in the east and Iran in the West, in this change of power transfer from Europe to Asia to Asia. China, as an emerging power and Iran, also tend to be a regional power so that they can work beyond normal relationships in a new coalition to provide their benefits. At the regional level, what happens in the West Asia or the Middle East. The great power of the American hegemony in the region has decided to focus on China's energy in the world instead of scattering its forces in the endophase region and reduced from other areas in the world. In such circumstances, the space is created so that new actors like China fill in the vacancy of the United States. Unlike several years ago, China and Iran were in a situation where the United States and the West could push. Now both are known as a power in its place, which can be released from the pressure that the West and the United States are imposed for them. From human rights to missiles and so on. Therefore, in such circumstances, wisdom requires their ability to rose and can rank in front of the United States and in this place, which is the result of signing such a memorandum. Another issue in signing the document is that Iran has already concluded that its conflicts on the nuclear issue will end. Therefore, it enters the game with the West and begins to negotiate the win-win, which is the result of it. In these circumstances, Iran provides part of its nuclear power to take economic points and can attract capital, but so far, Iran has acted into all its obligations, but they did not take any action, and not only the economic situation, but the pressure of the increase Finding and selling oil has reached zero. Now the question is that Iran, while the West did not work its obligations, and what should be pushed by Iran in terms of human, missile and regional rights. Did or not to do or don't do that. Therefore, not only is not given, but new pressures have also been added. Currently, China's cooperation in China has become competition and hostility, and China has come to the conclusion of the United States and does not play the game, and the other land does not compete, and the United States does not do anything to bring each blow to China. Since the entire world has grown up against China, it is growing in the Strait of Malaga to stop the transfer of energy and fuel to China, and uses countries that are coalition in the Gulf region with the United States. Stop the oil sales to China. The Americans took Iran into three corners and entered the maximum pressure and in front of China in hostility with the United States, and all of these issues concluded the two sides that sign a memorandum.

The document of the comprehensive cooperation program between Iran and China, which has been famous for a 25-year agreement among public opinion This research has been done using descriptive-analytic method. In this paper, it will attempt to conclude the main question of the article, both effective domestic and foreign factors up to two actors in the international arena, signed in such a cross section of such a memorandum. The hypothetical response is that, in order to better understand what is done in the form of a comprehensive strategic cooperation memorandum between Iran and China, economic pressure and US sanctions should result in two Asian powers in the East and Iran in the West to conclude so that understanding To sign a common letter. In such a situation, it requires that Iran and China will put their ability to put together and in the field of international relations against the huge power of the American hegemony.
Keywords: Iran, China, regional coalitions, the memorandum of the 25-year-old cooperation document of Iran and China، Emerging power, Multipolar system

Introduction

From the first social experiences of mankind and system wars, they are considered important international issues due to mass destructive works. The relationships and relations of great powers are considered as one of the most important headings of system wars. In this regard, China's behavior and how the country interacts with great powers is the basic topics that are considered by international policy researchers. A passive look at analytical frameworks of China's foreign policy behavior and how the country's interaction with great powers shows that, despite many efforts, the International Policy Discipline is still looking for an appropriate intellectual format for this issue. Today, a quarter of a century since William Overt predicted that the emergence of a threat to the order will be available, and since Daniel takes it as a future hegemony that weakens regional order and security, so in the passage of time and Over the past years, the concept of China's challenge for how global governance and governance has become an important discussion of the past three decades of China has experienced profound development, the scope of transformation in China is almost insignificant. The volume of its economy over three decades has doubled every eight years. (Zakaria 2009: p. 93).

One of the characteristics of the international system in the third millennium has been the new actors and the design of global power. This issue has been attributed to the views of global politics and reflections with the views of regional and international actors. Accordingly, in the current transition situation governing the world, countries and economic powers are looking for it, in order to form its place in the new world order through the formation of regional and international economic and economic blocks. Consolidate and strengthen. The start of the third millennium is combined with the emergence of a range of new economic powers, referred to as the power of emerging havers, mainly include Brazilian, Russia, India, China and South Africa (Brix). These countries have the bulk of the population and soil of the planet, gross productivity and global trade. The emergence of these countries has raised the idea of moving political-economic power globally. However, some other countries have expressed their tendency towards joining this group. The shape of the form and strengthening this group of countries has initiated the transformation of the structure of international political economy from the single-pole west-oriented shape to non-Western Polaris. The experience of long-term history, as indicating commercial cycles and periodic fluctuations occurred at intervals of 50 to 60, is also a displacement cycle in the hegemonic power.

The last thing from this displacement returns to the early twentieth century, in which the emerging power of the United Kingdom of Great Britain took the hegemonic power of the 18th and 19th centuries. England dominance on international political economy has continued for about a century since the end of Napoleon wars until the end of the First World War. (1815-1918).

The political economy points to phenomena that are at the center of attention of the fields of economics and politics, and explains how political power affects economic consequences, and how economic forces are effective in political behavior. The international political economy focuses on the activities of international actors, including governments, global companies, international organizations and social movements, and to some extent to respond to the weakness of the paradigm of realism in international relations, which maintains politics from the economy and mainly. Means political-military power. (Smith and others 1392: p. 1). In addition, international political economy is not limited to the level of international analysis, and international and transnational boundaries are not considered impermeable boundaries. Of course, this group is in this regard, features and limitations. In joining this group, Iran will have opportunities that will be discussed in the article.

Saying The Question

The international system that has been replaced by the regional powers in the 16th century has never had stability and continuity and has always been subject to change in history, which has been the most important change in the twentieth century and in several polar forms, Bipolar and single-polar appeared. Claim the theorists of the single-polar system that liberal capitalism

The end of history has been nicknamed and emphasized that the universal land of the United States is its superpower, the most obvious and most basic way to identify the type of international system, examining the number and quality of the powers inside this system. The history of international relations before the end of the Cold War has always witnessed the competition of great powers with each other, and at the same time experienced domination of a single power globally and not local, but during the Cold War period, we witnessed the two-polar system. Which had two great powers, the leadership of the east and west block and had a sharp competition to achieve victory over the other side. With the collapse of the east block, the system of bipolar mode outside and the United States as the only superpower remained, the axis of many discussions in international relations. In fact, after the Cold War, there was no doubt about anyone that the United States has been the unique power of the world, and the international system has become a bipolar in a single polar, but in recent years regional and seemingly small powers, in the security margin of the dominant superpower. Unless he wants, they have an opportunity to find the limb and unveils a new round of flourishing. These emerging powers in the form of the country, organizations under the coalition of several countries, cannot be deployed at a single polar level, but their high economic and political growth breath suggests that the international system is becoming multipolar.

China inspires both communist principles and ideals and defines its national interests in accordance with the internal needs and international transformation. The role of political and political identities in the formulation and implementation of foreign policy after the revolution has not been the same. After a half century, failure and failure against the West, Mao managed to unite Chinese farmers and with the communist revolution of the national authority lost in front of the West Restore.

After him, Deng Shiao Ping, who witnessed China's economic backwardness, decided to follow the principles of the free economy, provided the way for the arrival of multinational companies to China and the creation and growth of the private sector and market economy. The policy of engagement and economic success has led to the repetition of Hong Kong from Britain and Macao from Portugal as a shame in the loss of part of the territory of the nineteenth century. Chain Jin Ping also launched a new face of China, along with the abandonment of silent diplomacy, challenged the global political leadership of the United States and expanded its relations with Russia, India, Iran and other developing countries. Many of the theorists, in particular realistic thinkers and power transition, believe that the war and conflict will determine the order of order. After the end of the bipolar space, China as an emerging power claims the transformation of the structure towards a balanced and multilateral system, which looks at brix as an emerging country cooperation as an important tool for China's emerging power with the transition rule In the cold post grading system, it has been working to increase political and economic power while turning their foreign policy towards peaceful politics using institutions and coalitions in various fields, including the political-economic coalition between the Brink continents, its share of global power Increase and enhance the global structure towards a multilateral, fair, fair and balanced system for the context for the presence of other international actors. China, as one of the most important and most influential members of Brix, has a more favorable position than other members, due to its high economic growth and political influence in the global area. International is coordinated so that it can be in the form of a collective power while gaining more contributions from global power. The system leads to a multilateral system in which the power of different actors is divided and the possibility of the presence of players with different power levels. China has more power and power as one of the member countries of the inter-continental coalition due to the optimal political and economic status of other members.

Iran, due to the internal and international problems after the Islamic Revolution, 1357 remained entrance to the club and collapsed against the export of "emerging powers", its old industries, such as textile and shoes, one after the other. Today, the black women's tent market in Iran is almost monopoly of Asian industrial powers, and even part of the equipment used at the mourning ceremony of Muharram to Iran. Instead, the existence of "emerging powers" to the Islamic Republic allowed to deal with large economic powers from a broader maneuver. What is more open to Tehran in the multiphyletic world of economic world is having a history of oil in the first decade of the 21st century, although in transition from 2008 to the year 2009 AD was faced with relative but short-term decreasing. Having a hundred and thirty-seven billion dollars in foreign currency occurred only from the location of crude oil (regardless of the issuance of oil products) to Tehran with its own economic hardships West. In the diplomatic arena, "emerging powers" do not hide their dissatisfaction with the imposition of new economic punishments over the Islamic Republic. While Western powers have fallen into the movement to open up a new season of international sanctions against Iran, and it seems that Russia's support is still decisive, three emerging economic powers do not look at this initiative. One of them is a permanent member (China) and two other powers (Brazil and Turkey) an unidentified member of the UN Security Council. Altogether, the Islamic Republic, relying on the soft pillow of oil dollars from the multipolar world that "emerging powers" are one of its manifestations, benefits to escape from isolation and resistance to increasing pressure of Western countries.

However, in this unequal game, the main loser of the Iranian economy, which gives rallies from the raw road to imports of goods from "emerging powers", and to boost their job opportunities, move the wheel the manufacturing units accelerate in China and Brazil and Turkey.

Theoretical Framework

The three new theories are realistic, liberalism and neomarchism are suitable for systematic analysis of China's foreign policy, and each explain each of the specific aspects of the subject. (Roy, 1998: P11). Socialist teachings and Confucius have influenced China's foreign policy. From the point of view of realism and realism theory, the distribution of power among large powers is the basic principle of the determining of any international structure. Accordingly, to describe the structure of the international system, realism uses concepts such as monopolar, bipolar, and polar, reflecting the method of distribution of power. Using these concepts, they are trying to explain the relationship between the great powers and structural regulations of these relationships. (Simber, Reza, 1390: p.10).

Confucia's theories have played a special role in the China community and Guanzhi is in the heart of Confucius. Guanzhi means "having the right relationships" or "having a communication network to help people in sensitive positions", and when in addition to the principle of "Kuchi," means humiliating during negotiation and deal, it has a significant effect on foreign behavior of the state. The most important implications of Guanzhi are the formation of groupings in the Communist Party, and since China's foreign policy is usually identified with groups and characters, it is used to exploit theoretical analysis.

The international order has always been controversial in conceptual international relations, in such a way that different scholars have provided different definitions of different paradigms. John Maisimer defines the order: the order of a set of international inputs that help guide and manage the interaction between member states. (Mearsheimer, 2019: P9). Hedley Bull considers the international order model that includes the primary and main goals of the community of councils or international community, maintaining the community of countries and their independence, and ultimately the creation and maintenance of peace are one of the main goals. (Bull, 1995: P8).

Henry Kissing also defines the international order based on two elements: 1. A series of commonly accepted rules that specify the range of authorized applications. 2. The balance of power, which, in the event of breaking the rules, imposes limitations and prevents the government under its subjection. (Kissinger, 2014: P9). In other words, the institutions and balances are two attributes. The main international order knows. Contrary to the concept of order, the transition in international power and order, which is considered by the thinkers of the transition theory of power, has clear definitions and indicators. In this theory, there are three main elements that form a transition in the international system: 1. Power of population -2 economic performance-3 political capacity. In the Organic model, the change in each of these cases leads to a change in national power and the change in national power affects the international order that the government sponsored by the international order is challenged by an emerging power .

In this order, the dominant power determines the rules and principles of behavior. In such a system, some of the great powers are not completely linked to order, these are the potential challenges of order, and, in the face of their power, will support the government with the support of the existing order to conflict. (Organski, 1958: p281) in the context of the view that the common priorities of the coalition government stable shape, but satisfied and dissatisfied with the coalition powers will not last long. It can be said that the most important point and at the same time is the disadvantage of this theory in its prediction of the occurrence of war. In the roots of war and conflict in the international system of thinkers, this theory emphasizes two factors: -1 - 2 -Mam. In other words, the dissatisfied state should have the desire and opportunity to disrupt the existing order. For the formation of the opportunity, the following conditions are of the greatest importance. (Lemke & Werner, 1996: P240).
1- The equality of the power of dissatisfied state with the dominant state 2- of the dissatisfied state of the dominant government, but as the above factors and predictions will necessarily lead to the occurrence of war, and as explained in the next section, examining historical conditions indicates That the peaceful transition of power, even if they occur, is possible to join the above conditions. For this reason, this article seeks to provide combined indicators for the transition in international order, with the basis of the definition that Kissinger is in relation to order. According to his view for the transition in international order, there are two requirements: 1- institutional change - power change. In this way, the time order occurs when a major change in laws and institutions or distribution of power occurs. In fact, the two transition conditions interact with each other, so that institutional changes may change power in the international order, on the other hand, change in power among governments will also transform institutionalization. In institutionalization and in particular economic institutionalities, contributing governments are of the importance of two people, and the effort to find the new ally becomes more intense, because the resources of these countries can add to the overall capacity of each government sponsoring order or the government of ordering; Therefore, the direction of each of these governments towards each side can lead to the weakness of the other side. Organaki believes that this change in the direction of some governments is hard and sometimes unchanged, but it should be noted that he is looking at the Cold War and military valve. In the present time, although military alliances continue to be important and influential, but now military institutions and alliances have been able to act parallel. Globalization of economic activities has made it even next to some of the former rivals of alliance, and the banner of the trade flag may even weaken military alliances in favor of new services or new resources along with new communication, and the level of analysis of the first vendum (Individual and National) Keeps the reduction or the third level (international structure). The neo-state of the governments is divided into two domestic and foreign efforts: internal efforts: in the direction of increasing economic, military capabilities, and the development of clever strategy, foreign efforts: to strengthen its alliances or weaken the alliances of the other side. Neorealist theorists: Kenneth Waltz, John Mir Shamir, Robert Gilpin.

Neo Renalism and Alliances

The realists believe that there is no possibility of the formation of alliances and organizations, and if it is formed, will be temporary. In other words, if there is a common goal or enemy, we will be able to witness the alliances and temporary coalitions, but after the purpose and the common enemy destroys the existential nature of the coalition.

But contrary to the realists' view, despite the destruction of the Soviet Union and the Warsaw Treaty, NATO continued to live and the failure of this theory to the survival of the organization after the collapse of its Soviet Union. Joseph expresses his hegemony as a position in which a country is powerful to rule relations between countries. (Waltz, 1998) It forms and unions such as NATO are some kind of mechanism. The American hegemony allows the country to provide positive or negative incentives for the formation and maintenance of political institutions. Establishment of NATO from the very beginning, based on the interests of the United States, and its continued continuity in the aftermath of the Cold War in the same framework. Brzezinski believes that the Eurasian geo-strategic area plays an important role in completing the American hegemony, and NATO and the main American actor are considered to control Eurasia. Becomes. (Brzezinski Despite the cooperation of the vast opportunity, despite resource constraints with access to boiler resources to facilitate their goals. The main motive for cooperation between governments is to increase mutual efficiency to achieve well-being and security. News are believed to believe: what makes the cooperation is primarily difficult, precisely the issue of distribution of power. Governments are heavily sensitive to reducing their relative abilities by an interest in survival and independence.

The anarchicity of the international system is not in the sense of chaos, but in the sense of the lack of power and authority of the Mercy in the international arena to guarantee and implement the rules, so governments are unwilling to guarantee their security and power. Each alliance is two factors: Mianan is a degree of threat and consensus of two or more countries to deal with it. There are two problems in creating a consensus between countries to create an alliance. The newerists accept it. Losing freedom of action Agree with the consequences of the foreign commitment of governments for the action and degree of political, military, economic, and real resources required (wealth, human strength, substance, technology, equipment.) In fact, only alliances when They come to believe that the beneficiaries of alliance are higher than that. Losing freedom of action and adherence to the benefits of alliance. And this is the benefit of the alliance that justifies NATO after the end of the Cold War in the Novari. Neorealists emphasize relative achievement against absolute achievement. The realists believe in the view of the zero algebra collectors that in the international anarchical conditions, the purpose of each state is to provide maximum profits to other governments. Because the profit and security of the one side means to stay and insecure others. Nutlers have a balanced view based on profit and Heene profits between stakeholders. Therefore, the novels believe that in the framework of alliances such as NATO, members can achieve relative achievement in parallel. Kent Waltz considers two levels of first analysis (individual) and the level of the second (national) level of reduction and the level of third (international system) from the best ideas. In terms of neoorealists, the power of system function has a system and is based on how to distribute that international structure. After NATO’s viewpoint, the union is at the international macro level, which, after the collapse of the Soviet Union, has become a powerful US tool and under the leadership of the United States through the definition of new goals.

Nutlers focuses on the occurrence and emergence of relatively new threats for NATO during the end of the Cold War, which was an excuse to stabilize and expand NATO: confronting international terrorism, anti-Islamism and Islamism, confronting emerging powers such as Russia-China-India-Iran and ... and the disobedient governments and liberal movements that destabilize the global order, the control of the Islamic Revolution, creating stability and guaranteeing the flow of Middle East oil To the west, the use of instability in the eastern European countries due to the collapse of the Soviet, nuclear and chemical and microbial weapons, human rights debate, immigration and drug problem, etc.. News in explaining the reasons for survival and of course spread NATO in the ultra-bipolar era, which ultimately turned the organization into the instrument of applying US development policies, compared to Other theories are preferable and better.

China's uprising and other emerging powers about the goals of this country and ambiguity aboutThe future of international order has raised. But what seems obviously seems to be a transformation in the American international order and being in a period that can be called the transition of the international order. From a view of many thinkers, a realistic approach, like John Misimer, and, in particular the transition theorists of power, during the transition and equality of power, which forms the future of order, is a major and large war that brings up the new order. (Cheginizadeh, 1398: p. 36-29).

Research Findings

The issue of emerging powers has been the main issue of the debates of recent years on both regional and global levels. International movements of these powers are the fact that members of this grouping are tailored to system conditions International and its position in it follow the spectrum of options, from convergence to divergence. Consider that the process Regionalism is one of the most important characteristics of contemporary international relations, emerging powers Statformed with this process and seeking regional facilities for upgrading its international actor and actor in this regard, "the region" is the starting point for the global view of these countries. Another coordinates of regionalism in this period is the historical rotation in the role of the Asia continent in global economic and political equations. The belonging of the most important powers in this area, the geopolitical displacement of the gravity center of the global power of the Atlantic to the Pacific Ocean and the transformation of an ancient continent into the economic power and the political actor of the international system, has led to the conversion of the century to the Asian century " In the literature of politics and the international economy, it is widespread. Accordingly, China in the macro perspective sees itself as the power of the Asian index and looks at actor in the peripheral and international system. Russia removes its ties with the former Soviet domain. The Shanghai Collaborative Organization has been important and has become a tool for Russia's institutional, China and Central Asian countries. Emerging powers have fluctuated between two competition and cooperation options. Given that China to East China-based, India to the Southern Ocean of India, Russia to the Caucasus and Central Asia-based Russia-based and Brazil to Southern Brazilian and South Africa to the Black Africa, but each with obstacles and challenges. In realization, these goals are faced. On the other hand, emerging powers, all belong to the southern world and developing countries, the areas and geographical areas of the non-Western geographic regions.

For this reason, the continuation of this process will also create the concepts of the "Third World" and "Southern Universal", because in these conditions, emerging powers have influenced the structure of the international system in redefining the concepts. It should be noted that so far, the economy has been the main axis of moving emerging powers and traditional powers, But the only aspect of the centralization process does not form the traditional powers and the displacement of global power and has simultaneously challenged geopolitical works and challenged the international economic and military discipline. In the next few decades, the process of transferring or moving power "will be one of the most important indicators of global politics and the decisive factors in traditional powers and emerging powers. For developing countries, such as Iran, which do not have a sudden entry into free trade, regionalism can be the most favorable way to open the national economies of these countries and merge in the global economy. China's neighborhood policies and Central Asia Neighborhood Policy in China's foreign policy are more focused on ASEAN and Central Asia.

Iran the reason for a unique geostatic position in the center of environmental equations, Iran is essentially affected by the process of redistribution of power and wealth in the international system. Emerging powers, such as Iran, once due to the material domination of a western order of the international system, have now gained an unprecedented opportunity to challenge the power with the revisionist actors to challenge the dominant order. Place themselves in focusing on international and regional change policies. This is based on the anarchical order of the international system, NATO members and other countries in the world to cooperate with each other in the form of unity and coalition in the form of unity and coalition. The international system maintains the fact that the threat to the emergence of unity is necessary, but not enough.

Importance and implications of signing 25-year co-operation document of Iran and China

Since the 25-year-old comprehensive cooperation plan between Iran and China in January 1394, following the president of China, Shi Jin Ping to travel for Secretary of State, Wang Yi to the Middle East and signing the document of cooperation program in April 1400 (2021), a low issue and Kiev promotes relations between Iran and China in the focus of national and international political circles. The existence of controversies, conflicting views and various political and economic analyzes from the very beginning of the document suggests that it has not yet been obtained from the nature of this cooperation, the scope of its activities and its positive or negative consequences. In order to understand the consequences of signing a 25-year comprehensive cooperation for domestic and international observers, the structural changes in the international system, regional developments and internal policies of Iran are overview. In the structural aspect, now the world is witnessing that the rush of the beginning of the American hegemony after the end of the Cold War and the collapse of the Soviet Union, which was interpreted to the end of the "history" and the permanent set of liberal order in the International System, and with the advent of A new challenge called China subsets. Shock out of this transformation in the international order was as much as Francis Fukuyama, with retreat from his previous theory, spoke of "delaying the end of history" and the liberal order of the drain.

The implication of the transition of power in the 21st century and the change from the "American century" to the "Asian Millennium" is interpreted; Therefore, the order in the past halfway with the hegemonic leadership of the United States and its regulatory norms and regulatory rules, with the power of China, and in particular the intensity of the tensions of China and the United States in recent years, are transition from a hierarchical structure to a flexible structure and dual hierarchy; Although it is still unable to talk about the result of this change in the distribution of power (bipolar or multiplication). The effect of this dichotomy has the power center, the challenges and opportunities for moderate powers in different parts of the world, including the Middle East, and Iran is not excluded from this rule and can experience new activism. The point is that Iran has not even been in such a partnership, and much later than even the Middle Eastern countries, has signed such strategic partnerships, countries that are even friends and allies and allies. As a result, the logic of alliance and coalition has also been transformed in the new millennium, and does not necessarily have a former logic.

This issue, as it mentioned, takes into account the logic of alliance and coalition on the past, and affects the strategy of the powers of the region and even the average and small countries of the region. Since the assessment of the countries of the region from a strategic environment will be heavily influenced by the competition of great powers, including the United States, China and Russia, their preferences and strategies are no longer necessarily based on the United States. In fact, as in the east and southeast of Asia, we see the formation of the "immunization" strategy by the average and small powers of this region, as a result of the competition in China and the United States, are signs of the emergence of such preferences in the regional strategies of the United States and US partners in the Middle East. The strategy, which is in the middle of two baldness's and homogenization, enables regional governments to avoid the selection of one of the two powers of China or the United States against the other and maintain its relative independence; Therefore, despite its security-security-security treaties with the United States, they also participate in economic interactions with China as a rival and enemy of the United States. Such a strategy will overcome the scope and power of the impact of coalitions and alliances of the United States, and adds to the regional influence of China in the Middle East, because it can turn its economic influence gradually to political influence, and the US balance strategy in this Challenge the area. This, especially if independent power such as Iran is with comprehensive strategic partnerships alongside China, can increase the ability of Tehran in the region and to balance or reduce the threats arising from the normalization of Israel and the Arab relations and their possible treaties. That's why Iran and China's security cooperation and its consequences have become one of the major concerns of America and its regional allies; Therefore, it seems that with more active China in the Middle East and the revelation of great powers in this region, we will see the transformation of the security order of this region.

Regarding the system developments and the region that mentioned, now the fact that Iran has as a regional power of relative ability and seeks to adjust the roles in proportion to its power, but should see how to implement these roles in practice. And what strategies are followed up in order to maintain or change the regional parameters. Iran from the Islamic Revolution has under the pressure from the hegemonic state of the United States. Sanctions have also become a strategic tool in its foreign policy in relation to Iran and in opposition to competitors and its strategic partners, such as China and Russia. For this reason, Iran is planning to play a more active role by strategic assistance in the security environment.

Signing the 25-year-old strategic cooperation document reflects the intellectual maturity of Iran's political sovereignty in adopting a strategic action of penduli orientation in looking at the east or west. So as long as Tehran acts in opposition to the international order and as long as the goal of controlling and pressing the Western powers, the signature of this document can open the way for future strategic partnership programs with other important powers as Russia, with the help of the Strategic with partners in competition with the liberal order of the West or parallel to the act of geopolitical and geoelectric arena. What matters meant that the signature of future contracts under this document does not depend on the unwanted route.

Apart from the political and security importance of this document, in the economic dimension of this document, this document is confirmed on the more sustainable presence of China in the Iranian economy, according to sanctions, to help the national economy. Assuming the sustainability of sanctions in the predictable future, Tehran-Beijing cooperation document reduces the risk of investing Chinese companies in Iran. Of course, sanctions continue to overcome the economic cooperation of the two countries due to China's dependence on the global economy and the international financial network, but open the way for the arrival of small and medium-sized companies in China to the Iranian market and moving the Iranian economy. On the other hand, since China has also been exposed to US sanctions and it seems to be added to the scope of these sanctions, it needs partners in different regions to deal with unilateralism and multilateralism. For this reason, Iran should seek to attract the cooperation of such countries and become the establishment of the Club of the Club, or at least long-term anti-term cooperation and strengthening multilateralism policies to active activism in this field. The signature of this document can be considered in this path. Of course, it should be realistic in this regard, because the logic of the great powers' relationships, such as China and Russia with the United States, which is based on a combination of cooperation, competition and hostility, is different from the behavioral logic of emerging power because Iran faces hostility with the United States. The issue will have its implications on the form of Iranian cooperation with China and Russia.

China acts in line with its national interests and has faced the cooperation projects in this Iran, but never played and interact with us with the Iranian card to fulfill its interests. He has not yet needed more than ever in competition with the United States to cooperate with countries like Iran. Now Iran must use the opportunity and actively from the current international developments, and by expanding the scope of such strategic partnerships to other major global and regional powers, in regulating contracts to maximize their national interests in the agenda and from asymmetric dependence on current relationships. Cut yourself with China.

Although the 25-year comprehensive participation document represents the roadmap of partnerships, there is still no understanding and understanding of the nature and scope of cooperation within the framework of this document. Most concern over the United States and its allies return to the security consequences of this cooperation, because they are aware of the economic dimension, although it reduces the effective performance of sanctions against Iran and the influence of the sanctions regime in international politics, China continues to comply with sanctions due to the dependence on financial and economic networks. Is the world; Of course, at the inside, the reactions and opposition to this document, due to previous historical experiences, will return to its economic dimensions. The history of China's financial and economic agreements with countries in question has caused a significant concern of the people of the country towards the nature of the conclusion of future contracts under this document.

In general, in terms of the evolution of the international system and the change in the four dimensions of power structure (financial, economic, security and knowledge), in favor of emerging powers, such as China and the relative decline in the economic power of developed countries, a comprehensive strategic partnership with emerging powers will be a positive step; But to recognize the nature and scope of contracts that are signed below this partnership and its consequences for Iran should wait for China to Iran and the signature of the final agreement of the 25-year agreement on the 7th place of the 1400, said: Based on the pretext of this issue again, the problem of promotion And the development of the relationship between Iran and China and the interrogation of the 25-year-old Iranian cooperation program in China and the intellectual circles of our country has raised. Importantly, it is still uncertain at the level of scientific circles and political elites in our country, while when we look at Iran as an actor in international politics, the lines and coordinates around its actors remain constant.

In order to balance, pursue national goals and interests, Iran should sit alongside elders and superpowers. Iran should work with the elders to stay in the game, in the world that quickly head emerging powers, and their power increases progressive, if so, they will be compromised by our head and make us easily Will sell. Most importantly, they will abandon our country from the bargaining talks on the rules governing the future order.

In the future world, there will definitely be the rules of the global order as much as directly in direct relations with American prescriptions, but until that day, and Iran should remain at least on the arrangements of the West Asian region in order and in order negotiations. Learn with the elders. Of course, this game cost and should be alert to repeat bitter experience. While sanctions are mixed with the essence of the Islamic Republic of Iran and to draw a better perspective, we must enter a safe and secure relationship with the world's most important powers and areas of the world, including the world of emerging powers, said that relationship with China should not be seen as a function of the current sanctions, because the sanctions always And as long as the Islamic Republic of Iran pursues this mission and role, we do not think we can work with the West and get rid of US sanctions. Basically, experienced experiences showed that neither the Islamic Republic of Iran becomes the "normal" actor, and not Americans and west of our head. Nevertheless, is it wise to sit next to the sink and see the development and progress of the power and wealth of our countries. Alaska negotiations China's arrival of great power revealed serious power, the text of Alaska talks between China and the United States, the tone and level of the parties and body language all and all; The story of Beijing's more serious arrival in competition. Given the gradual transfer of power and wealth towards East Asia and with the focus of China, the international order gradually loses the nature of the monopoly order led by the United States, and we can interpret that kind of power transfers in the international structure.

The driving engine of this transfer of power and entering the multiparitive order of China, with increasing economic power and increase production, change in the balance of power and capital accumulation, shakes the foundations of Western hegemonic order and the international developments indicate the decline of the West and increase the acting of this Country. China is now looking for an international order to increase international cooperation in various economic and commercial areas, creating an investment fund, participating in environmental policy and climate change, human rights, the fight against global terrorism and the policy of non-proliferation, efforts to maintain. Peace, reconstruction and stability in East Asia, Afghanistan, West Asia, Africa.

The role of China in four aspects of financial, productive, security and knowledge in the world has been transformed, China is a multilateral actor and opposition of modernism. Beijing has prevented the order of regulation in the international system. The tension between China and the United States is increasing. The domain of China's security penetration is expanding to the world. Accordingly, China can rely on a "strategic partner". China is not a security threat, cultural, serious economic for Iran, and the unprecedented expansion of China's relationship is a requirement and mechanism for exiting isolation of various international constraints. Also, there is not much concern for the effects and consequences of the "Alliance" pattern and "coalition" with China, Iran can work with the country only within the framework of the "partnership" model. The pattern of participation has its own coordinates and has the negative consequences and effects of the relationship based on the alliance and coalition.

The second decade of the 21st century; The new regional and global order

In sum, by examining the contemporary West of Asia, it can be argued that Western powers have pursued their interests in the region's instability. The treaty, Sur, Balfur, the collapse of the Ottoman Empire, the conflict in Palestine, the overthrow of the National Government of Mossadegh and supporting the intense Pahlavi tyranny, numerous coups in the countries of the region in the Cold War, injected and fueling nationalist currents, support for the Ba'ath regime in the Starting and continuing war with Iran, the attack on Afghanistan, the attack on Iraq, the empowerment of power in these countries and the emergence of extreme-terrorist groups such as al-Qaeda and ISIL, supporting the regional separatist claims, interfering with the governments of governments, assassination of government official characters, use Western media tools to create inflammation and chaos in opposition countries, use the economic sanctions tool, attacking Libya and its division, support for the Saudi coalition against Yemen, the heavy sales of weapons to the Gulf Cooperation Council countries, and so on, including evidence that they can be Citation and concluded that the role of Western powers has been the main role in regional instability.

The events occur in the region in the 2nd decade of the twenty century and one new dynamic in this geographical area. In fact, the Western region has moved to a new order in the last decade, in which some of the components of the previous order have changed or changing to new components. On the other hand, global arena dynamics also indicate a change in global order and becoming more prominent as the role of Asian actors. Meanwhile, some international relations scholars believe that the post-ammonia system has begun and we should wait for the multipolar international system in the world that other actors play in it. Therefore, global and regional dynamics announce the formation of modern regional order and multilateral order in the global arena that their structures have appeared.

Stability; Development proceeds in West Asia

In China's foreign minister's visit to Iran, a 25-year strategic document was signed between two emerging Eastern powers; A document that specifies the path to interactions between the two countries. In recent years, China has based on five principles of peaceful coexistence with different relations with different countries. Mutual respect for the sovereignty and territorial integrity, lack of militancy, lack of interior affairs, equality and mutual benefit, and ultimately peaceful coexistence, has been five main issues that China has put on its foreign policy as rock.

The signature of this strategic document between the Islamic Republic of Iran as a regional power and China as a challenging power in the field of hegemonic order of the West will be important in the transition space to regional and global order for both countries. Increasing the relationships of two Eastern emerging power can lead to many benefits in the short and long run for both countries that have an anti-colonial and anti-imperialist approach.
Unlike the United States and Western partners, the Eastern emerging powers define their interests to stabilize the West of Asia, as it was said before; Western powers have taken intervention in the affairs of the nations of the region as the main principle in its foreign policy procedure over the course of a century, and their goal has benefited unilateral governments and not the governments of the region. But based on the Chinese approach to international relations, China's position in the Western Asian requires that the country see its interest in the stability of the region. Therefore, its foreign policy, unlike Western powers, is to provide national interests in the interests of the nations of the region. In other words, Western powers have defined their interests in the instability of the Western Asia region, and this procedure continues from the beginning of their presence and interventions, while China defines its interests in the stability of the region. The initiative of a single road can be tracked in a stable region. Undoubtedly, stability will be ahead of regional development in West Asia, and Western powers are aware of this fact. Therefore, it is natural that this strategic coalition will challenge Western interests. Especially after the West failed to practice the trust of the nations of the region, especially the government and the Iranian nation in providing the interests of the Islamic Republic through the prominent and more operational policies, not operational. In the future, the question should be answered that these two emerging eastern powers seek to seek regional stability can deal with coherent factors that have foreign origin? It is natural that the United States and its regional and regional allies will not be easily allowed to pursue the regional stability and order outside their interests and interventions.

Conclusions

The change in the structure of the international system is obvious and over the past centuries, the international system has witnessed a different structure due to the emergence and fall of great powers. Soviet collapse in the last decade of the twentieth century and the powerful power of the United States in different dimensions Economic, political, military, cultural, etc., and the weakness of other countries, many analysts have claimed to claim that the structure of the international monopolar system and this structure will continue in the 21st century. But the beginning of the twenty-first century and the occurrence of some developments for the plan for the claim provided that the structure of the international system in transition from single polar to multipolar. The International system now entered an important transition step towards the formation of new international relations with unprecedented features. In this transition, the forward move to change the political, economic and cultural domination of the West is seen in an heterogeneous international system, which is not emerging in Emerging Aobazists. They only seek to secure their interests, but also expand their distinctive views At the end of the twentieth century, China prepared forwardly to create changes in its foreign policy and find a political weight equivalent to its economic weight in global equations. Changing the leadership in the United States and China accelerated Beijing's participation in leadership. Multilateralism divided its place.

The United States of many international organizations and conventions Based on bilateral agreements, China's development and strengthening and the beginning of the process of promoting economic power in the international system in the international system are among the most important phenomena after the Cold War. China's uprising as a great power in the region and the world has challenged the power of the United States. China has been able to grow in the aftermath of the Cold War and in the single-polar world, which as the representative of emerging powers against the United States as a symbol of traditional powers in the form of representation of two rival and contradictory global streams in the twenty-century century. Where the way in China's relationships and interactions are very important for the United States, which is the possibility of turning it into the biggest problem for the world, and the emergence of China is very different from the former Soviet as one of the blocks of the power of the bipolar world. evaluates. Emerging powers, especially China, have been so powerful and shaken the American hegemony that Biden confesses in its remarks at a kind of inauguration, and criticizes the reduction of US power in the Trump government and confess to this downward trend. Slow down. "All the factors that have led to the global power of the United States today are changing and goes to the American hegemony a few months ago:" All the factors that led to the global power of the United States today. "The collapse of the American superpower is hard, but with global developments, has lost its strength". China has become almost global power, although in some cases it is still possible, but it has been able to make a diplomatic skill and economic alertness and by filling the Soviet vacuum to the world's superpower in the world. What Kissinger refers to and says: "China is a great power that can be removed or ignored, and the only way for the United States is to coexist with this power while inhibiting it". In this paper, it was attempted to provide a modern conceptualization of the situation and the transition situation in the international order to investigate the solutions of the challenges to increase the power of hydromemon, especially parallel institutionalization against American order after the collapse of the bipolar system of the Cold War and the ruler The transition system of various actors, including China, has tried to increase its share of global power while establishing a multilateral space. One of the characteristics of the International System in the Third Millennium, the emergence of new actors and the proposal of the displacement of global power with the power of regional and emerging international actors. One of these emerging organizations, which is currently more economic aspect, is the "Brix" group. The group consists of five Brazilian countries, Russia, India, China and South Africa, the center of global economic growth of North America, Western Europe and Japan towards China, India, Russia, Brazil and other countries in the Asian region and the interpretation of societies. Developed to developing areas. The geopolitical displacement center of the global power of the Atlantic Ocean into the Pacific Ocean and the conversion of an ancient continent to economic power And the political actor of the first level of the international system has led to the conversion of the twenty-headed century to the "Asian Century" in literature Politics and international economy, widespread prevalence of "multilateralization" interpretation of the global system and predict relative reduction The power of the traditional Western actors in the West has risen to increase the power and influence of emerging actors. Also, the spread of institutions Multilateral and unofficial replacement of the twenty group instead of the seven group, the most important part of the cooperation International Economic, the consequence of the economic crisis and a sign of geopolitical displacement from the West and the Atlantic to the east and the ocean it is quiet.

For developing countries like Iran, which do not have a sudden entry into free trade, regionalism can be the most effective way to open the national economies of these countries and their integration in the global economy. In addition, energy is one of the important sounds for expanding cooperation between Iran and the Brix Group.

Asian countries, especially China, became a continuation of economic growth in the main pole of trade and the international economy, and China's foreign policy reflects the tendency to reform in international order by creating parallel institutions with American order structures. This means that developing countries that do not fall from Western powers, from distributing power in Current institutions and regimes, especially in the field of financial and monetary institutions, are not satisfied and demanding the role and consolidation of its place in the international system. With the interpretations of this article, it is considered that the change in power led to the formation of monetary-financial institutions and the economic value chain with more financial attractiveness that can attract other Sirids. Because the change in economic directions towards Asia and China will give them more benefits in the era whose growth and climbing West, and this change in the long-term economic change will change the direction of political direction, and China in practice without engaging in A big hard war will exceed its place in the hierarchy of power forty years of China's reforms, which began in the era of globalization and the liberation of trade and the entry of foreign capital and foreign technology, converted China to the largest exporter and the world's second world economy. China's foreign policy took an invasive and realistic approach so that the political weight could find its economic weight in the field of international relations, in contrast to China, strengthened its regional politics and with a new definition of neighboring policy in attracting their western neighbors. Tried bilaterally. In parallel, using international organizations and Regional arrangements are searching for their goals and interests in a multilateral framework, and in the target countries, it has been competing with the United States. The result of two years of negotiations in China and the United States was more stressful. A new era began that with titles such as the new Cold War, commercial war and technology warfare between the United States and China and Russia are on the other. The construction and strengthening of regional institutions such as a belt and one way, the Sikha and the Shanghai cooperation organization have been done in the same field, and the Asian Security Program by Asians in Sika Indicates China's obvious goal along with the American regional arrangements. The design of China's leader's demands about the Asian security operating structure, the Russian leader in increasing economic convergence, Iranian president about working with common positions against other countries and the president of Turkey on more Sika property by members It is important in this regard to Beijing can safely secure their western borders and Synkianng province calmly and securely securely and secure the country's economic agreement, as the agreement of the comprehensive economic participation of the regional economic participation. "With its eastern neighbors in ASEAN, signed it in order to win regional competition with Japan and Korea, its western neighbors participated in the design of a belt and one way, and with the implementation of infrastructure projects in the field of energy, transportation, agriculture In the market, its presence in the market reduced the influence of American and European companies and ensured its long-term presence in the security and trade of the region. Although geographically, eastern Asia, China's natural influence of China, China's investment in that area is very important and remarkable, the process of convergence among its ASEAN members and the high convergence of some of its members such as Singapore, Thailand and Philippines.

With the United States, China has caused China to conclude that since then, Central Asia and West Asia have talent, speed and desire for security and economic cooperation. The use of an organic regional arrangements and their collective responsibility can replace China as an alternative regional partner in the West and Russia to avoid direct conflicts and conflict with other global power poles. At the moment, this issue is important that the Islamic Republic of Iran, as a regional power, is negotiating in the 25-year co-operation program with one of the global superpowers, and perhaps for the first time the management initiative with a global superpower is achieved. No English, not the Russians and not Americans never had never been to bilateral relations. Even before, we even had the management of relations with the Chinese, and we were more likely to be controlled, but according to the characteristics of the 25-year cooperation program, we could hope to control this program. We get in. The claim of the deficiencies of the current relationship between Iran and China or the existence of no technical issues in the two-year bilateral cooperation program is two countries, but there are some facts that neutral analysis can not ignore it and the principle of "relationship has the consistency and system" with the Question the country below. Iran can not illustrate the increase in the power of regional and global governments, and it must define its role next to large powers to attend the negotiations of the regional arrangements and appeals in global future order. Relations with China, tools and diplomatic initiative of Iran for military work with elders and is better evaluated in this regard.

References

Persian

Anayatollah Yazdani, Tall-Traver leader, Rostam Bahrami, (1396), the role of Russia and China in the transition of the international system of monicles. Quarterly Journal of Political Studies. 9th year, number, 36 summer 139. Pages: 90-65.

Cheginizadeh, Gholamali, (2007), China's Powering: Theoretical Approach to Change in International Politics, "Quarterly Journal of Rights and Politics, Ninth, No.2.

Dehmehri, Mohammad Reza, Bahrami, Zahra, (1394), China's strategic look at Brick, Central Asia Quarterly and Caucasus, No., 89 Spring 1395.62.

Gholamali Cheginizadeh, (2007) China emerging: probable scenarios of rights and politics / year, number, 23 autumn and winter 1 p. 18-54.

Mashadeh, Homira. (2007), Transformation in International Relations Theories, Tehran: Side publications.

Simber, Reza; The victim, Arsalan, (2009), international relations and peace diplomacy in the global transformation system, second edition, Tehran: side.

Simber, Reza; The victim of Sheikh, Arsalan, (1390), elements and trends affecting the international system, two theoretical policy research, the new period, Number 9, 2010 and spring 2011 p. 125-10.

Tarmy, David, Mohammad Ali Pipur, Farideh, (1398), NATO position in the design of the American strategy of the Cold War, with an emphasis, the Quarterly Journal of the Fourth year, number, 42 spring 43, pages: 14-6.

Mehdi Fakari, (1400) The Effect of Regional Arrets on China's Foreign Policy in Central Central Orrians, Period, 14 Number, 1 Spring and Summer, 1400 Pages 274-251 Patients – Research.

English

Acemoglu, Daron & Robinson, James A. (2002), Economic Backwardness in Political Perspective, NBER Working Paper No. 8831.

Bull, H. (1995). The anarchical society: a study of order in world politics. Macmillan International Higher Education.

Buzan, Barry, (2009), America and great powers, Abdul Hamid Heidari, Research Institute of Strategic Studies.

Buzan, Barry (2004), From International to world Society?, Cambridge: Cambridge: University Press

Buzan, Barry; Weaver, Al, (2006), regions and powers: International Security Structure, Translation of Rahman Champour, Quarterly Security, Fifth Year, No. 1 and, 2 Autumn and Winter.

Eikenbury, John, (2002), The only superpower, Tehran: Tehran contemporary publishing.

Fukuyama, Francis (2006), "America at the Crossroads; Democracy, Power and the Neoconservative", United States of America: Yale University Press, New Haven.Available at: http://www.revistascisan.unam.mx/Voices/pdf. Accessed on: 2014/2/20.

Ikenberry, G. John. (2018). "The End of Liberal International Order?" International Affairs, 94 (1): 7–23.

Glosny, Michael, A, (2010), "China and the BRICs: A Real (but Limited) Partnership in a Unipolar World", Northeastern Political Science Association,Volume 42, Number 1.

Gilpin, Robert (2001). Global Political Economy: Understanding the International Economic Order. Princeton and Oxford: Princeton University Press

Organski, A.F.K (1958). World Politics. New York: Knopf.

Lemke, D., & Werner, S. (1996). "Power parity, commitment to change, and war". International Studies Quarterly, 40(2), 235-260.

Keneth, waltz (1998). reflection on theory international politics: a respons to my critics, in r. keohan, neorealism and its citics, New York: Columbia university press: 322-345.

Keukeleire, S., James Dobbins, Seth G. Jones; Keith Crane; Christopher S. Chivvis; Andrew Radin; F. Stephen Larrabee; Nora Bensahel; Brooke K; Stearns & Benjamin W. Goldsmith (2009). Europe's Role in Nation-Building: From the Balkans to the Congo by (RAND Corporation, Pittsburgh, 2008). European Foreign Affairs Review, (14).

Mersheimer,John,J.(2006).China's Unpeaceful Rise. Current History ,Vol. 105, No. 690.

Roy, D. (1998), "Chinese Foreign Policy and International RelationsTheory", in: China's Foreign Relations, London: Palgrave.

Waltz, Kenneth, H (1979). Theory of International Politics, New York: Random House

Waltz, Kenneth. N (1979). The Origins of War in Neorealist Theory, in Robert I. Rotberg and Theodore K. Rabb, eds., The Origin and Prevention of Major Wars, New York: Cambridge University Press.

Zakaria, Fareed (2008), The Post-American World and the Rise of the Rest, New York.

Zakaria, Fareed. (2008), "The Future of American Power", Foreign Affairs. Alfred W. McCoy, "The Decline and Fall of the American Empire", The Nation, DECEMBER 6, 2010.

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IRAN'S FUNDAMENTAL CONSTRAINTS ROOTS IN ATTRACTING FOREIGN CAPITAL IN THE FUTURE LEADING IBRAHIM RAISI GOVERNMENT

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Abstract
The continuity of the unfavorable economic performance of Iran has become a prominent issue in the public sphere and academic assemblies in Iran. Our current conditions are economically specific conditions. International sanctions and international exchanges limit the importance of attracting foreign capital. The attraction of foreign capital in the current situation requires that the fundamental and institutional roots of Iran in attracting foreign capital in the future of the leading head of the thirteenth and most important main challenges of the next four-year-old government of the future of Ayatollah Ibrahim Raisi and the unfavorable economic performance of Iran to attract foreign capital and continuity. In previous governments. Therefore, it is imperative that the institutional root of this weak function identifies and the roots of ineffective and non-inclusive institutions dried it an important point that Douglas Sisal North and Acme Oghlu and James Robson present in their ideas, which is the most important factor in the fundamental institution of economic growth " Institutions "knows. The main question of this research is what fundamental factors have restricted Iran's unfavorable economic performance and Iran's economic emergence in international political economy? The opportunity for the research is that the inappropriate institution of fundamental and institutional roots of Iran in attracting foreign capital in the future is the leading leader of the thirteenth government of Iran's undesirable performance attracting foreign capital and continuing in previous governments. In the scene of political economy, it has limited. The method of collecting data and resources in this research is library and Internet and ..... Therefore, according to this content framework, if institutional structures are closed with the law of limited political access order, as a result of the unfavorable economic performance of Iran in the international political economy. Therefore, it is important that solutions and institutions in this field are the use of foreign investment as a catalytic economic growth in the future and the completion of the internal investor. Obviously, foreign investment can lead to technology and technical transmission, easier access to international markets and more. In order to realize foreign investment, it is necessary for the political-economic stability, the security of property rights, reforming the rules of economic, economic policies, decreasing rents, and economic corruption, etc. in institutional economic literature. New, the role of institutions and their quality and quantity of economic growth and political development are considered. The way for distributing foreign direct investment and how to absorb and influence the economy of countries is heavily influenced by the quality and quantity of institutions and economic conditions, political and coordinates of the country's capital. Forces and political institutions that support such a political institution in the form of government and elites are analyzed.
Keywords: Best regards, Iran, Ibrahim Raisi, foreign investment, institutional factors limiting economic growth, non-financial institutions, limited access order law

This research includes ideas and fundamental issues that have engaged the thought and mind of every human being who can contemplate man and understand your understanding of the world around your surroundings (politics and economics and cultivation) involved with it the fundamental form is transformed.

Vorya Shabrandi

"No science of economics, nor politics, cannot explain the process of modern social development. The fact that developed societies always have developed economics and developed politics indicate that the link between economics and policy science should be the fundamental part of the development process.
"North and colleagues

Introduction

The Iranian economy is fundamentally and structurally inherited many problems that both academic spectra, as well as the elites and the statesmen, are acknowledged. But the point is that, despite the confession of all the statesmen in the past decades, the existence of these problems and aristocrats towards them, but over the past decades, almost the root and long-term work for their fundamental economic reforms from governments and governors in the past Has not been done. If we want to list a few of these main problems, you can: Extreme budget addiction and government to oil revenues, inefficiency of banking and tax systems, Rent of corruption and system, widespread bureaucracy and extensions of non-inclusive state institutions, lack of Attention to national production and the presence of different constraints and obstacles in the production and manufacturer, lack of transparency in economic processes, liquidity and abundant inflation and wandering in the country ... and a few otherwise points out that in this article Do not address all of them. But researchers point out the continuation of Iran's undesirable performance in international relations as many causes. Subject to government and elite interference, the monopoly of activities in this field, lack of competition, lack of private sector, investment in research and economic development, and lack of effective monitoring of economic and productive functions, war, sanctions between The challenges and ignorance of management and the lack of effective strategies of all of these have been successful in the non-successful factors inside Iran, but our present study seeks to understand the communication of limited access theory (North). From this path, we analyze the root of Iran's unfavorable economic performance. If we are looking for the continuity of Iran's unfavorable economic performance, instead of blaming the external and external factors, we must search for Iran's internal fundamental factors in the substrates. This is not new and everyone knows, but it is unaware.

In principle, the issue of the basic problems of the country's economy of the state is most of the former presidents, but the main question is why in all these governments did not take fundamental actions for permanent overcome? In addition to the important question, which has a variety of dimensions, it is difficult to implement institutional and fundamental programs, and in skill, knowledge, a lot of science, and governments often empty their responsibility under the load. Performing institutional and fundamental evolution, although in a long time in the country, but in the short term and in the early years of the implementation of institutional transformation, there are several consequences and problems that none of the past governments have been presented to accept the responsibility for its implementation. Not Usually governments, and in particular former presidents, have not done institutional actions.

Which see the results of its positive work in our presidency period and use it as your workbook and practice. If the implementation of fundamental and structural programs sitting in the duration of the test. The conflict of interest, government organizations, group and party and personal. In other words, the implementation of an institutional and structural and fundamental program for the country is limited due to the personal interests of the minority group, with the exertion of pressure and hidden hands in the decision and operational structures of the state and the country or with the populist media pressure and promotional pressure. They are and make it limited and hydraulic. Broderies and bureaucracy and the government, which, incidentally, is one of the institutional and structural problems of the country, which must have an institutional and fundamental thought and an automatic and barrier, and limits many essential and necessary operational programs. This category of institutional and structural problems in general has led to the institutional and structural problems of the state to the other government during the former governments, and both the replacement of the past government blamed and without a plan to go out. With the work of the Thirteenth Government of Mr. Hojjat al-Islam Ibrahim Raisi, according to their specific attitude, which has been shown to work and among the field of struggle and economic transformation, and its determination has been determined by the economic problems of government and people. The right opportunity has been provided that the new government and the president of Mr. Hojjat al-Islam Ibrahim Raisi,, president with self-sacrifice and no attention and consequences that its government may face, refers to structural and fundamental problems in the main and special priority And in the way, it arrives in this problem and the darkness of the country's numerous problems, and for their institutional and fundamental excretion, do not suffer from any effort and sacrifice.

Vorya Shabrandi

Saying The Question

The continuation of the unfavorable economic performance of Iran has become a prominent issue in the public sphere and academic assemblies in Iran, this means that the unfavorable economic performance of Iran is from two perspectives of wealth and national capital and national power, because wealth and national capital of the consequence of performance It is desirable and durable economic growth, and on the other hand, in the modern age of wealth and national capital has become based on the production of national power and elites, in this regard, foreign investment, precondition and necessity to achieve growth and development in Iran and Every country is. The capital of the catalyst is the growth and boom of the production cycle, and the growth of value added, income, prosperity, employment. Accordingly, its modern and developed government, the requirement of the necessary laws and regulations, the optimal use of resources, specific, establish institutions and structures and improving infrastructure and the use of principled and scientific management and capabilities, capacity, capacity The growth and progress of the country is provided by the ruling elites and the ruling statesmen. The most important purpose of this research is to analyze issues and problems of attracting foreign investment and provide appropriate strategies for attracting foreign investment. "The problem here is what causes the continuation of unfavorable economic performance Iran has been in the growth and attraction of foreign investment in Iran and the thirteenth government of Mr. Raisi?

If the relative contribution of wealth and capital of the world affects the position and position of the government and the elite in the international political economy, what are the fundamental factors that restrictions on the advance of the republic. Islamic Iran and the future government will be Mr. Ebrahim Raisi? In other words, if we divide the growth factors into two categories of fundamental factors and immediate factors, and if we divide the consequences of rapid and durable economic growth into wealth, and on the other hand, we divide the increase in the internal resources of national power. , This research seeks to answer the question of what fundamental factors lead to the continuation of the unfavorable economic performance of Iran in attracting foreign investment in the future of Mr. Ebrahim Raisi? Which is the consequence of this performance of this wealth and national capital of Iran as a country for power and security. National has not experienced a favorable increase in the international competitive system in coalitions with emerging powers. Today, economic growth has become a national demand, while some researchers believe that economic growth and development is not necessarily associated with justice, others believe that solving issues such as foreign investment is the economic growth. The importance of growth and development has been assumed in advanced industrial countries as an obvious and obvious. How internal institutional constraints on Iran's economic growth and the growth and attraction of foreign investment in the international competition Distinct foreign investment field.

In general, in the lack of development and growth and economic development and mechanisms of Iran in attracting foreign investment in the fundamental causes of economic, political, social growth, socialization is not written on these articles and books and books and theses And the focus of human researchers focuses on immediate factors and limited effects on the fundamental causes of non-growth and development of Iran's foreign investment from subsequent institutionalism: political-economic-historical-cultural-cultural council are not addressed. The research method is an explanation that deals with the causal relationship between the variables of the research problem. In fact, in the international political economy, the factors of growth of foreign investment are divided into two categories, first fundamental and secondary factors, in this research, in this research try to explain the causal relationship between the independent variable and the dependent variable. The focus of this research on internal fundamental factors that limits the growth and attraction of foreign investment in Iran in the international political economy. The research method is documented and analytically comparable. In this research, in addition to the fundamental review of development discussions and institutions, rules and concepts raised in some articles and books written by Douglas Sisal North . Robinson and Iranian universe theorists, such as Ali Reza Gohil, are also examined. The method of collecting data and evidence in this research is in the library and Internet and .... means that data Evidence and evidence are published to test the hypotheses of valid books and articles and valid scientific specialized bases will be used. The research method is an explanation that deals with the causal relationship between the variables of the research problem. In fact, in the international political economy, they divide growth factors into two categories, first of the fundamental and second factors of immediate factors, in this research try to explore the causal relationship between the independent variable and the dependent variable and the focus of this Research on internal fundamental factors that restrict Iran's social economic growth in the international political economy. The time efficiency of this research is the time of the Islamic Republic of Iran (1979 to 2021) (1357 - 1400 AH).

And the thirteenth government of Mr. Abraham is involved in Raisi, and the subject matter of this research focuses on fundamental factors affecting Iran's economic performance during this period. It should be noted that in examining some events, it will be necessary to pay attention to their history, so it will inevitably escape the years before this range.

Aims of Research

1. Relations and explanation of fundamental and institutional factors in the continuation of Iran's unfavorable economic performance in attracting foreign investment from 1979-2021 and the thirteenth government of Mr. Ibrahim Raisi.
2. Explaining the consequences of the growth and attraction of Iran's foreign investment for domestic and international political economy.
3. Explaining the agency of the inappropriate and ineffective institutions, or in other words, the role of political and economic institutions forces of political elites in the continuation of the factors of the unfavorable economic performance of Iran in the growth and attraction of Iran's foreign investment in the international political economy.

The main question of the article

What fundamental and institutional factors contribute to the continuation of the unfavorable economic performance of Iran in the lack of growth and attraction of foreign investment in the thirteenth government of Mr. Ebrahim Raisi in the domestic and international political economy?

Sub-article questions

- How did economic- non-political economic institutions cause the continuation of the lack of growth and attracting foreign investment in the thirteenth government of Mr. Ebrahim Raisi in Iran's political economy?
- How Iran's rapid growth attracts foreign investment in the thirteenth government, Mr. Abraham Raisi, is realized in the field of political and international economics?
- Institutional constraints to grow and attract foreign investment in the thirteenth government of Mr. Ebrahim Raisi in Iran's political economy?

The main hypothesis of the article

- The inner institutional structure of institutional constraints in the growth and attraction of foreign investment in the thirteenth government of Mr. Ebrahim Raisi in the international political economy.

Sub-paper hypothesis

- Political-economic institution - non-inclusive and exploitative and exploited and exploited - ineffective - political elites and the government and the political elites of the benefit and the economic economy and the robust economy in Iran, which as the constraints of economic development and economic growth, cause It was found that the growth and attraction of foreign investment in the thirteenth government of Mr. Ebrahim Raisi is remembered in the field of international political economy. On the other hand, Iran's rapid growth and attraction of foreign investment can increase the resources of Iran and transform Iran into an emerging power in international political economy.

Theoretical foundations and research frameworks

But for understanding the fundamental root communication of Iran's undesirable performance, the constraints of development and economic growth, internal political growth led to the lack of growth and attraction of Iran's foreign investment and the obstacles of the government of Mr. Ebrahim Raisi in the field of international conformity among the massive theoretical frameworks in circles. Is conventional academic. This treatise is without prejudice in terms of the subject and theoretical framework of the present treatise on institutionalism. The framework of multi-facial alignment theory is selected because the new multifaceted institutional approach has this comprehensive feature. That the interaction of culture and history on the economy and politics on each other in the contemporary era of research in the political economy. One of the main applied the theoretical framework provided to describe this two-way impact is the theoretical framework of the law of social order. This more theoretical framework has been used to analyze macro policy. Based on the culture and Enriched and politics and economics and in deep bonding. In the law, limited access order is the power of government and elites of coalitions, and prevent the emergence of violence by producing rents and its distribution. And so much of the root of the root and the cause of continuity of the unfavorable performance of Iran in international relations and the reason for the difference in the share of countries from power and wealth and capital through attracting foreign investment in the world. Economic development is economic growth along with fundamental changes in the economy and increase production capacities, including physical, human and social capacities. In economic development, little growth will be produced, but next to it, social institutions Will also change. In recent years, the attention of economists in an effort to find an explanation for stout economic growth in East Asia and the failure of most African and American countries in achieving the goals of development in the second half of the twentieth century, on the long-term debate of growth and development, in particular the share of politics Government and elites, and formulation and function are not only focused and new ideas have been raised in this regard. In new discussions on the function of institutions, it is emphasized that by forming an incredible institution can provide productive activities in communities or restrict its way. It seems that there is a significant difference in the nature and function of institutions among different countries, one of the most important causes of differences in the level of development of countries. Institutions, including formal and informal, determines the motivations and limitations of economic and can explain some of the causes of the success or failure of development processes in different countries.

The concept of an institutional economy

Institutionalism is a kind of economic analysis and an economic point of view that refers to the formulation of social, political and economic institutions in determining the economic procedure. This thought emerged from American economists since the late nineteenth century. The first economists who explained this economic school were "Torstein Webern and" John Rajkamonz. " In other words, the institutional school, believes in the existence of benefits, considers the human being to survive the collaborative interests and their two strains with others. The institutional theory of the social reform program supports the fair distribution of wealth and wealth. In terms of methodologically, the institutional school prefers the inductive method on the method of governments, and it is believed that more detailed studies should be obtained to improve the economic system. One of the most important new institutions is Douglas Sisal North, which has received the Nobel Prize for his theories.

As one of the most named representatives of new institutionalism, North believes that institutions are an irradiance that identifies the conditions of economic activities in societies.

Institutional structure and economic growth

• Definition of Douglas Sisal North and institutions

"North" defines institutions as follows:

Institutions are play laws in civil society, or in more precisely, rules are imposed on human beings that form mutual interactions of humans with each other. As a result, institutions lead to institutionalizing the motivations of human exchanges, whether these political exchanges, whether economic and social exchanges. According to North, institutions are composed of informal constraints (such as crimes, sanctions, customs, traditions and behavioral laws and formal laws, such as the constitution, rules and rules of ownership. From his point of view, institutions throughout history to create law and order law Reducing uncertainty in exchange has been thought to be thoughtful ... and introduced the incentive institution of their economy towards economic changes towards growth or recession.

North in its book "institutions, institutional changes and economic performance" (North, 2006: p.). It states that: institutions are the basic factor of long-term economic performance, developing countries are poor because institutional constraints tell a set of economic-political developments that do not encourage productive and productive activities. It also states that the weakness of societies in implementing the cost reduction and effective contracts is the most important source of historical recession and contemporary economic performance of the Third World and South countries.

Good and suitable institutions that strengthen economic growth and development are the default economic growth of a country. In other words, institutions play an important role in the risk of work, effort and drake. Institutions such as property laws can have a positive impact on work and effort and investment and power. The military in which people are not reliable and the administrative organization is deterrent or the rules of ownership, lead to wasting resources and capital and national wealth, eventually civil society will not grow. Undeveloped countries (South) should bring these institutions under difficult competitive conditions with developed countries in the global market. (North, 1385: p.).

North has been defined by the institutions as follows

Institutions are restrictions that human nature impacts on the interactions of humans. In this definition, limitation is limited by institutions instead of the rules. North re-returned from the previous definition position and has defined the institutions defined the rules of societies. In this statement, he expressed their informed norms, informal norms, their formal laws and their executive characteristics that institutions determine how individuals form their mutual interactions in a clear field. A brief study of the definitions of North shows that, despite the physical differences in definitions, there are also shareholders between them. In most definitions, the attention of most researchers on human mutual interactions and the second sharing of most definitions, people's focus on uncertainty and formulation of institutions in reducing it.

Acme Oghlu is an economist of Turkey, known and professor at the University of MIT. Acme Oghlu and his colleagues (including a doctor. Robinson the valuable work of Aseem Oghlud is looking at the economy of "new institutional".

In terms of Acme Oghlu, the main cause of the development and lack of growth in different countries in the past centuries is the big difference between these countries in their comprehensive and non-inclusive institutions. Official laws and institutions, especially non-inclusive political institutions (such as democratic and dictatorship institutions), have fundamental formulation in lack of economic growth and development.

Darron Acme Oghlu and James O Robinson in the book why nations fail to know the problem of undeveloped countries in slightly scholars who dominate society and in the pretext of maintaining security all sources. In terms of these two, although economic institutions are characterized by a poor country or prosperous, but these policies and political institutions that determine what economic institutions are. But North and his colleagues were well able to consider many aspects of the issue. They explain that during human history, three types of social order law have been created. (Acem Oghlu & Robinson, 2012: P56) The law of the first order, including hunter communities, has been the ruling line before the invention of the line. Here's not important to address it. The second law of social order is the limited access order law that has dominated over the past ten thousand years. This type of social order law resolves the problem of violence through their rents and distribution between elites and communities. Therefore, the second type of political order law enforces the economy to solve the problem of violence to produce rents. Therefore, by confirming the direct relationship between the government and the elite, the rents and the preservation of the law of order, political and economic theory can be combined in a new manner. The third order rule is open access that is based on competition, open access to organizations, and the rule of law maintains coalition. In these societies, the use of competition and institutions will be in the interest of political authorities to consider the sovereign rules that include political control over all organizations against the main violence. This kind of law of political order began for three hundred years ago and now communities Westerners have such a law. (North, 2006: P4-5).

The Act of the Law of North and his colleagues who are considered by new institutional economists have recently taken into account many researchers who have the ability to explain many economic and social issues. This development approach considers the movement of society from the law of social order with limited access. If one of the important factors in the existence of corruption, the characteristics of the social order law with limited access are in such a way that it is possible to create non-nonsense rents. Therefore, it seems that the law of social order with limited access has corruption and rents. Therefore, it seems that it is enough to adopt anti-corruption and rental politics, so that conditions for the movement of societies from the law of law with limited access to law We provide order with open access. Corruption indicators indicate that corruption and rents in Iran are high. Although there are no official statistics on Iran's corruption in the past years, but the characteristics of the law of order in Iran indicate that at the time of 1300 to 1357 (the time of the first and second), the law of social order governing this type of access is limited, so Deep corruption in Iran existed. The point of the index of this time was the lack of a dual balance between politics and economics. Also, the characteristics of the social order law after the revolution of 1357 to 1400 also indicate the law of social order with limited access and, as a result, the high extent of corruption.

The rule of social order of Douglas Sisal North with limited access

In the history of human political economy, there were three types of order law or three evolutionary rules of law enforcement in societies. Three types of order law are like chemistry in solid, liquid and gas. That is, obviously different from each other, and the transition between different forms of law occurs only under special conditions. For example, the law of limited access order is achieved by providing valuable privileges to any potential violent group.

The law of the initial social order that there were small hunters and food collectors. The second order of the social order law is limited access that make serious economic and political rights only in the ring of elites and coalitions. And finally, the law of social work order, which are free capitalist democracies, and economic and political rights in the majority of citizens, in the law of primary order, government and elites, and the degree of expertise and division of labor in such economies is heavily limited. Civilizations first appeared in 10,000 years ago, or what we called "government and natural elites," they were able to achieve important achievements and allowed human beings to achieve the benefits of the first agricultural economic revolution. The government and the natural elite support economic expertise, including identifiable groups that make up the government and the elite. The state and the natural elaterites to limit access to the positions of power within political, economic and religious systems. What the authors of the "Open Access Order Act" were starting at around 1700. Open communities are well-known with political and economic competition, unlike the government and the natural elites that only elite have limited economic and political privileges. (North, Wallis and Wing, 2006: p. 1). According to the definition, societies through the law of social order are institutions that support certain forms of organizations. In fact, institutions and organizations are the law of social order. Institutions are the rules of the game and organizations are created and sustained through institutions. Organizations can be affiliated with the institution or vertical board to a particular person or independent of the institute and with non-identity. Organizations also have a small lifetime or unlimited lifetime. The law of social order identifies the type of access to organizations and system and motivation resulting from the organizational model. (North, Wallis and Wing, 2009: p. 1). Based on how social order law supports institutions.

Types of law of social order of Douglas Sisal North

1. Limited Access Order Act

2. Act of open access order

1- Limited Access Order Act

North begins with the fundamental assumption that the main purpose of any social order law is to inhibit violence and violence. ... The property of the limited access order is a small number of institutions. The small number of existing institutions are mainly related to the government, the government and elites are strongly concentrated and non-focused, social interactions are defined based on personal criteria, and the rules of the game in the community are unequal and discriminatory. (North, Wallis and Wing, 2006: p. 14).

In the law of open access order, political and economic competition that maintains social stability and inhibits violence. Open access communities are defined by many diverse institutions, government and decentralized and inclusive elites, as well as non-indecision social interactions, rule of law, secure property laws, and justifications of justice and equality. (North, Wallis and Wing, 2006: p. 51).

Three types of order laws are like solid, liquid and gas. That is, clearly different from each other, and the transition between different forms of law occurs only under the specific conditions of societies. Limited access order law, by providing valuable privileges to any potential violence group, is equilibrium, for example, the elite or the ruling elite, in order to prevent the coup (violence), has to have many opportunities to achieve personal profits. The way of corruption. The powerful characters who cannot buy should be imprisoned, exile or killed. However, in the limited access system of coups, it may happen, such a military is still a relatively continuous formula. When the coup occurs in societies, the deep distribution of power does not occur, but only a displacement on the top. In the limited access system, the rights of the masses should be limited. If anyone has the same political and economic rights, so rulers do not have something special to give them power to calm potentially power. Potential political rivals can only be purchased when they receive legalities that are privileged and exclusive, but giving exclusive rights to a group, necessarily the need to restrict the rights of other groups has a limited access order law. The limited access order law allocates power in a way that keeps and convinced organized and potentially violent groups.

Table 1: Analogy of types of law of social order limited access (natural condition)

Complete Natural conditions	Normal Natural Status conditions	Fragile Natural condition	Features of the law of social order of North
Public rights institutions by The state and the elite are created	Law institutions Public by State and elite be	Very weak and survival The state and elite also with the issue Faced.	Organizations and institutions)Include rules and procedures, and Government and elite companies, parties Political government and elite
Private organizations and organizations Independent of the state and the dominant elite Has the main contribution to The authority of institutions and organizations Private dependent on the government and the dominant elite Is	Institutions and organizations Private dependent on The state and the dominant elite of existence has it	Does not exist	Organizations and private institutions)Include rules and supporters Private sector, Companies Private, parties and groups Political independent of state and elite
Average	high	(Severe) policy as Economy and economy Same as policy	Effectiveness of the economy and Policy of each other
Both types of limited and unlimited they exist.	limited	limited	Life of organizations
Most affiliated and some organizations Independent of the Board of Institute	dependent	A complete dependent	The degree of independence of organizations from Board of Institute

The institutions as the main institutional fundamental institution in long-term growth of countries

Acem Oghlu, Johnson and Robinson, from the perspective of theoretical and empirical, which is the difference in fundamental institutional economic structures in the difference in economic development. By investigating the division of Korea, two parts with very different economic structures, as well as the global exploitation that occurred by European powers in the fifteenth century, is experimentally addressed by the value of institutional structures. In the following, they will explain why economic institutions are different in different countries.

"Institutions as a fundamental structure in long-term growth," economic institutions represent the incentives and limitations of economic activists and, in other words, form an economic outlet. This output includes social decisions and their results. Due to the conflict in social decisions, groups and individuals benefit from different economic institutions, and ultimately wins the group that has more political power. Where does this political power come from? The distribution of political power in a country is characterized by political institutions and how resources distribution. Acme Oghlu, Johnson and Robinson believe that economic institutions encouraging economic growth when political institutions divide power among groups that have deep ownership rules. Which puts restrictions for the owners of power and reducing their discretion issues are also factors of encouraging economic growth. Using historical examples, it expresses the value of institutions in long-term economic growth.

Concepts of research

Institutions and non-inclusive institutions (utilization)

The first concepts that complement each other are "inclusive institutions" and "utilizing institutions." For inclusive institutions, including political and economic institutions, institutions that provide free activities for all citizens. Interesting institutions are at the opposite side of the public entry into political power and economic activities and provide benefits to specific elites. All that has dominated institutions has dominated, the coalition has grown economic growth and happiness; And, in contrast, societies that have been subjected to the enthusiasm of the tyranny and thunderstorms are inclusive institutions; These are institutions that have seen the interests of all economic actors in the coalition or stakeholders, so they all are motivated to grow. In other words, all actors of these institutions feel that by adhering to existing institutional laws, they can provide more and longer profits in the current economic cycle. (Ajama Oghlul, Robinson 2012: p.). Why are nations fail? Interesting institutions: Interesting institutions; There are institutions that only have the interests of certain people. In the works of political economy, there is also a distinctive phrase about the interests, North refers to limited access institutions, and Asem Oghlu and Robinson refers to closed institutions in this regard. (Acem oghlu, Robinson 2012: p.). Why are nations fail?

In fact, the main cause of continuity of Iran's unfavorable performance in the growth and attraction of foreign investment is more political and international arena than economic. The main problem of countries like Iran, which has a limited access order law and the monopoly and finalization of the field of politics and economy and culture, are more than the node to resolve economists, nodes in the hands of the government and the elite and the owner of the non-passion of the Do not make any institutional reform. This group has a personal interest that does not make any transparency and accountability, and probably to get their short-term personal interests to use violence, even if the long-term national interests will sacrifice short-term interests. In other words, when the playground has provided so much that it is completely one-way to the profit of the government and the special elites, they are equipped and prepared for all tools for their personal interests, and no exposition of institutional and root evolution in the modification of the situation in the domestic arena And international cannot even expect from the best economists in the country. Throughs such as Iran who has access law Limited is the reason for the undesirable performance of Iran, the monopoly and robust and looting institution to play politics and elites and coalitions in the country, the best and the most elite economists of the neck.

But if economists have adequate courage and thoroughness, with a transparent and understandable analysis of the country's economic situation to the public, and the factors and historical constraints of the Iranian economic backwardness, whose roots originate from, wake up public opinion so that they are less fooled by slogans We are deceitful to do those who have become a homeland mask of friendship and justice.

Background and research literature

In general, in the field of lack of development and growth and economic development, there was no basis for the fundamental causes of economic, political, social security and many articles, and the focus of human researchers focused on immediate factors and limited effects on the fundamental causes of Iran's lack of development. From the dimension of institutionalism: historical, cultural, political, economic, economic, has not been addressed. In search of theses and articles in IRANDAK and SILKA, and .... The thesaurus and Persian articles were not found with thesis and article titles. But in the field of literature of growth and development, Iran's lack of development can be attributed to valuable and informative works that can be available and informative available:

Among the academic works of institutionalism, the unfavorable economic performance in the growth and attraction of foreign investment in Iran can be divided into two categories of domestic and foreign (Douglas Sisal North, Oliver Williamson and Elinor Strome) and some other institutionalists Acem Oghlu et al., Including the most named economists, will be addressed. The institutions in the new institutional literature are categorized into four levels; At the first level, the introduction of an informal village, which includes culture, traditions, religion, and religion. Second level: official rules or official institutions, which all official laws such as ownership and prosecution laws are located. On the third level: the environment where the elites and coalitions and institutional changes are included in all contracts between economic actors as institutional tools necessary for institutional change, the fourth level involves the introduction of institutional changes in economic actors, and issues such as allocated issues. Resources, employment, and so on. (Williamson, 2002) Why do countries fail? "Darry Acem Oghlo James Robinson. In 2014, deals with the formulation of comprehensive political and economic institutions in creating yourselves and economic growth, and with the mention of historical examples of different countries, the causes of development refuses have been examined. In all works of most countries North and Ahram Poulloo have examined the rear of the rear of countries and poverty and lack of growth, and they have not talked about Iran in the book, and in the second category: Homayoun Katouzian domestic institutional domestic thinkers, Ali Reza Qali Vala. Ahmad Seif ,. Farshad Momeni. Seif pointed the bean.

Forough Khalili Farf (1391) in his master's termination: good economy and well-being on direct foreign investment in developing countries with an emphasis on Iran: Mazandaran University. In this treatise, Mr. Khalil far expresses one of the effective limits in the growth path of the countries is, in particular developing countries. Hence, over the past centuries, the use of foreign investment sources as a nutrition of domestic resources, among these countries, has a special place. Among the types of currency and capital income sources to developing countries, foreign direct investment due to features such as superior and efficient management, advanced technology, easier achievement to global markets and abundant and inexpensive capital.

Be Foreign direct investment is under political, economic and social factors. Meanwhile, the environmental existence of a proportional and sustainable environment and security in an investment environment is one of the most important indicators for the decision-making of foreign investors. The importance of a sustainable institutional environment is that multinational companies act more on their political and legal changes in terms of traditional components of the FDI absorption. To determine the quality of the institutional environment of the countries, various components are used. Mr. Khalil far used the six components of the World Bank ruler, and in 2002-2006, (2002-1385), the effects of its effects along with other factors affecting foreign direct investment in 23 countries Developing with emphasis on Iran. The research results of the investment model using combined data and stable effects show that the market, the degree of openness of the economy, wages and labor efficiency has a positive impact and exchange rate fluctuations have a negative impact on the FDI input process to the capitalist country. Is. Also, the effect of good governance on the positive and significant FDI absorption indicates that institutional constraints as a sustainable factor and investment security of each country are considered as a precondition for attracting foreign capital. Mohammad Eskandari (1397) in his master's termination: Analysis of Iran's economic development in the second Pahlavi era from the perspective of the institutional political economy: Allameh Tabataba'i University, at the Faculty of Law and Political Science. In this treatise, Mr. Eskandari expressed: Pahlavi Second, as one of the most important sections of the history of contemporary Iranian political economy, it is effective in Iran's economic growth. The study and examination of how economic growth developments during this period is an important challenge, and so far, there has been a different approach. One of the new approaches to analyzing economic growth is an approval of political economy that economic growth It considers the institutional path, and therefore, the process of growth depends on economic and political institutional structures. The purpose and idea of the researcher and the researcher and the process of economic growth in the second Pahlavi era (1320-1357) is from the policy of institutionalism. In this treatise, after applying the theoretical framework of the book "Why are countries fail?!" Darling Ajme agho and James. Robinson deals with the structures of political and economic institutions in this Pahlavi era based on the criteria of inclusive and non-freedom institutions. In order to achieve the idea of the researcher, eight independent factors and an independent operating variable were considered and in three sections 1320-1332, 1332-1341 and 1341-1357, these factors were studied. The method of this research was based on a historical comparative study and fuzzy logic has been used to finalize the data. In data analysis and arbitration, the research hypotheses have been used for FS / QCA and Excel software. Research findings According to a sufficient condition test, the main idea of the researcher is that the learning of political and economic institutions during the second Pahlavi era is the main condition for Iran's economic growth. In the above thesis, the above is discussed on the fundamental factors of over adorn and analyzes and analyzes It is concluded and does not speak of institutional and structural factors.

If North Iranian (a description of the history of Iran's policy and culture But less attention has been written. In the new institutional economy, history has found another concept because in the view of this school, institutions and important institutional history, because yesterday's institutions affect today's choices and today's choices will affect future decisions. Ali Reza Gholi, in the book, if North Iranian, plundered institutions in the Iranian economy are trying to understand how to understand this ultra-poor historical performance of the Iranian economy?

Answer, and in this regard, they explain that the Iranian economy is not a competitive economy in the exact sense of the word with the themes that the neoclassical economists (the conventional and convergent theories of economics) are not known as developed economies. Not that market, and not that competition, and not that ownership, and ... but what is streamlined as "Rental Economics" and perhaps more severe and its name, in total, "loot economy", which with the themes of historical economics of Iran and With our historical-historical literature, we are more consistent, economic literature, which, even in Farshad Mumbani and Ali NikonsbTi 1394 in his article titled: Institutional Approach to Development and its implications for Iran, Journal of Economic Journal - Seventeenth, No. 64, Spring 1396 Pages 241: They attempted to show that in addition to the differences in the economy of ancient and new institutionalism, the economy is not integrated and independent. There are also major differences in the research method and the issue of research between the new institutional economy and the neoclassical economy. In the end, institutional approach has led to major changes in policy requirements for economic growth. One of these changes to the continuation of this approach in institutional importance and informal power and organizations, the value of the firm, the importance of paying attention to institutional approach acknowledged. Comparative study of institutional and neoclassical approach to economic growth The title of the most important growth factors indicates that the institutional approach has a stronger analysis power and leads to a variety of policy. Institutional approaches show that creating a comprehensive institutional structure is the basis of economic growth and the necessary implementation of proper economic policies. However, in need of poverty and inequality, should be considered. Accordingly, the pathway of inclusive institutional structures is the most important institutional reform that should be taken in Iran. These actions are the only practical solution to reduce the distance and gap and growth of Iran in Iran's mystical literature, and it reflects the depth of the performance of the Iranian economy.

Analysis of the continuity of Iran's unfavorable performance in the lack of growth and absorption of foreign investment

But researchers point out the continuity of the unfavorable performance of Iran in the lack of growth and attraction of wealth and foreign investment in international relations in many causes. Subject to government and elite interference, the monopoly of activities in this field, lack of competition, lack of private sector, investment in research and economic development, and lack of effective monitoring of economic and productive functions, war, sanctions between The challenges and forgiveness of management and the lack of effective strategies of all of these are successful factors in Iran. But our present study seeks to understand the communication between the theory of law and limited access (North), and from this pathway, the root of Iran's unfavorable economic performance in the lack of growth and attraction of wealth and foreign investment are created. Analyze. If we are looking for the continuity of undesirable economic performance, the lack of growth and attraction of wealth and foreign investment in Iran, instead of guilty of knowing external and external factors, we should search for Iranian fundamental factors in the substrates. This is not new and everyone knows, but it is unaware.

But in order to understand the fundamental root communication of Iran's undesirable performance in the lack of growth and attraction of wealth and foreign investment in the field of international conformity among the massive theoretical frameworks that are conventional in academic circles. This treatise is without prejudice in terms of the subject and theoretical framework of the present treatise on institutionalism. The framework of multi-facial alignment theory is selected because the new multifaceted institutional approach has this comprehensive feature. That interaction of culture and history on economy and politics on each other in the contemporary era of research in the political economy. One of the main applied the theoretical framework provided to describe this two-way impact is the theoretical framework of the law of social order. This more theoretical framework has been used to analyze macro policy. Based on the culture and Neriche and politics and economics and in deep bonding. In the law, the limited access order is the power of government and elites and coalitions, and by producing rents and its distribution of the emergence of violence Prevent. And so much of the root of the root and the cause of the continuation of the unfavorable performance of Iran in the lack of growth and attraction of wealth and foreign investment in the international relations and the reason for the difference in the share of countries from the power and wealth and capital in the world.

This theory eradicates government and elite actions correctly. The angle of view is that the government and the elite are accounting activists and make rational choices, but with other views, and it is that the government and elites are in the form of rational institutional form. Based on the limitations and interests of itself, it arises to choose and seek their personal interests. In this approach, the government and elites are profitable that they seek to maximize their interest in the institutional framework in which activities and governance. The main point of this approach, the theory of new institutionalism: the law of social order of *Douglas Sisal North*, the dual institutions of the Akhoglu, Robinson, the implementation of these ideas with the government and elites of Iran, using the institutionalist views of *Ali Reza Qali and Ahmad Seif, and Farshad Momeni and Seif*, Birthday ... in political economy. The approach of the new multifaceted institutionalism and the law of the North American Social Office, which in undeveloped countries, considers both economic and political systems together and describe their institutional relationships and changes. The indicators that this theory has led to the root of the challenges of underdeveloped countries, and able to resolve the crisis and dilemma and undesirable economic performance and a small share of these countries from the power and wealth and capital in the world towards other countries. To analyze well.

In fact, the main cause of the continuation of the unfavorable performance of Iran in the lack of growth and attraction of wealth and foreign investment in the domestic and international arena is more than economically political. The main problem of countries like Iran, which has a limited access order law and the monopoly and finalization of the field of politics and economy and culture, are more than the node to resolve economists, nodes in the hands of the government and the elite and the owner of the non-passions of the Do not make any institutional reform. This group has a personal interest that does not make any transparency and accountability, and probably to get their short-term personal interests to use violence, even if the long-term national interests will sacrifice short-term interests.

In other words, when the playground has provided so much that it is completely one-way to the profit of the government and the special elites, they are equipped and prepared for all tools for their own interests, and no institutional exposition in the modification of the situation in the domestic arena and International cannot be expected even by the best economists in the country. such as Iran, which has a limited access order law, the reason for the unfavorable performance of Iran is a monopoly and release entity to the chess of politics and elites and coalitions in the country, the best and elite of the poor nuts. But if economists have adequate courage and thoroughness, with a transparent and understandable analysis of the country's economic situation to the public, and the factors and historical constraints of the Iranian economic backwardness, whose roots originate from, wake up public opinion so that they are less fooled by slogans We are deceitful to do those who have become a homeland mask of friendship and justice.

The continuity of the unfavorable economic performance of Iran in the lack of growth and attraction of wealth and foreign investment is rooted in history in non-financial and economic hostilities of historical institutions of societies on political performance on economic performance, reviewing the history of the best and easiest route to explain the issues of growth and development And the backwardness of Iran is, but since students and knowledge of economics in Iran have no studies in Iranian history and culture, so they are not able to provide a good pattern for economic-political developments. "Students and professors who graduate from faculties of humanities, especially the Faculty of Economics, do not often read about the history of Iran's political economy and its historical challenge or are not interested in reading. With this situation, the main purpose of Iran's non-economic institution has been in place and has an impact on Iran's unfavorable economic performance, and elsewhere, how many features have in the current situation in Iran, perhaps less research is written in this area. In order to understand the root of the poor and poor performance of Iran's economy in the lack of growth and attraction of wealth and foreign investment, historical characteristics should be studied so that we can find it for it. In fact, regardless of the historical institutions of the political economy of Iran and non-economic institutions that affect economic performance. A achievement cannot be seen even in theoretical literature for Iran's political economy. The main challenge is how the historical institutional characteristics of societies affect poor economic performance; How the political system has affected how the economic system and economic performance and how the interpretation of the economic performance of the political, cultural and social system has been in Iran's history. In spite of the main theoretical framework that this research has raised, has not had a research effect on the study of the roots of the continuation of Iran's unfavorable economic performance in the lack of growth and absorption of wealth and foreign investment from the perspective of institutionalism. . The leading treatise seeks to examine the institutional formulation of political elites in the development process and growth in the Islamic Republic from a different perspective. The reason for this difference is the use of institutional approach. The institutional approach with emphasis on the exchange of institutions in literature developed great development. Despite the existence of full articles in the development of institutionalization by Douglas Sisal North and Acem Oghlu and James Robison, thinkers such as Douglas Sisal North in Persian in Persian in the analysis of the institutional approach to the post-revolution of the Islamic Republic Is.

Regarding the interdisciplinary feature of this approach, in analyzing the issues of development, the special attention of the world's thinkers and institutions, such as the World Bank, intends to consider the formation of institutions in the development and growth and development process in the lack of growth and The absorption of wealth and foreign investment in the Islamic Republic (post-revolution), the future of the government of Mr. Abraham Raisi.

The dependence of the continuity of Iran's unfavorable economic performance to the performance and efficient political elite

Nevertheless, the development and growth in each country depends on the performance and efficient of the ruling political elite, the Islamic Republic of Iran was not excluded from this issue, and paid attention policy based on intellectual and religious frameworks. Accordingly, after the imposed war, the political elite of construction and reforms with the progress of developmental sets of development in Iran. With the beginning of 2005, on the efficiency of the government and the new elites, the CIA, where the political elite with a huge depth, led to the new elite that left the previous ruling elites with the slogans of the fight against corruption and aristocracy. The displacement of this reflects the lack of consensus of the political elite coalition in order to form development in Iran. In this paper, the purpose of growth is to grow in all aspects of economic, political and cultural dimensions, which promotes the place of Iran in the field of growth and development and increasing the growth and attraction of wealth and foreign investment in the domain of international diabetes. However, since the growth in each country depends on the efficient performance of the ruling political elite, the Islamic Republic of Iran has not exempted this issue, and policy marketization of growth and development was considered due to the theoretical and religious frameworks. Accordingly, after the imposed war, the political elites made reform and construction by implementing development policies towards the creation of conditions for development and growth in Iran. With the onset of 2005, the policy of the government and the new elite, the politics of political elites with a very sharp acceleration, led to the new elite, with the aim of fighting corruption and aristocratic elites. The turnover of the lack of political elite coalition is aimed at developing and growth. In this research, the purpose of growth is a comprehensive development in all aspects of economic, political and cultural dimensions, which promotes Iran's position in the development process of growing and attracting wealth and foreign investment in the international domain.

Study of the performance of government and elites and differences between political elites and their formulation in the continuation of the unfavorable economic performance of Iran during the post-revolutionary period

The lack of coalition of the ruling political elite and the existence of a limited competitive system and the lack of inclusive political and economic institutions continues to continue the unfavorable economic performance of Iran at the four-time Revolution. At four times the performance of the CIA's elite in the form of the constitutional revolution, so far, the efforts of political-intellectual elites for coalitions provided the continuation of Iran's unfavorable economic performance to the developed countries and various components and gongvia models, but from views.

The prominent in the public sepehr and academic assemblies in Iran continued the unfavorable economic performance of Iran in Iran's international relations, development in the Islamic Republic of Iran from different angles and within the framework of various theories. Among the approaches in this area is the relationship between the development process and institutional approach in Iran. The political economic approach has been fluent. This intentional approach of the presence of popular culture and social behaviors is to understand the limitations of undesirable economic performance. To understand the nature of political development, especially with the coalition approach and the classification of political systems, focusing on the phenomenon of political culture of the elite is very important. By asking, the lack of growth or development or undesirable political economic benefits with the ideology and view of political elites, so that changes in the process of political development are effective. The political economy, almost for all concentration of wealth, social classes, and political-political demands, has a political similarity with the centrality of political power.

In fact, the kind of political view of the ruling elite, which is influenced by their political culture, has undoubtedly a lot of political action. The views and political behavior of the elite in the strength or weakness of the areas of political growth and development and the attraction of the participation and competition of the majority of social groups are more criminal than general political culture. In the right, the political culture of elites is on general political culture. According to the historical experience of various developed countries, the transition to democracy and the achievement of political growth and political development needs the basic movement, at the beginning of the thinking and action of political elite, which should be the same with the foundations of development and political growth and then That can be this kind of thought and action among the general public. This article, according to the arguments above, seek to analyze this issue after identifying the theoretical foundations of the relationship between political culture and its position and its relationship with the unfavorable political economic performance in attracting foreign investment, political elites with undesirable economic performance In the government and elders, then the 1979 revolution and the continuation of the unfavorable economic performance of Iran in the international relations.

Therefore, the main objective of the present research is to determine the relationship between culture and the position of the history and accumulation of historical storage of science and knowledge of sovereignty with the law of the limited access order of Iran during the post-revolutionary period, among the theories of the political economy, the theory of new institutionalism Academic dignity and more journal reputation. This theory is the result of the efforts of the Douglas Sisal North and **A**cem Oghlu and James Robison, in the study of the institutional causes of the continuation of the undesirable and weak performance of Iran, the lack of inclusive institution does not have the lack of law and the existence of the lack of law. Analyze the loot system ruling over different regions of the country. In this theory, elitism and government and elite- nation and dual tyranny show the critique of the content of the people.

The root root of the continuation of Iran's lack of economic growth since the constitutional time

The unfavorable Iranian economic performance of the constitution has been well-known and has been struggling for their removal, but success has not been developed in this area. In a fundamental and analytical look, we want to know why in the past, the development of Iran has not been removed and there are problems now. Since the man emerged, there was a problem with resources. In fact, two deep gaps occurred in human history, the deep gap was the first gap of human hunting, and the second-deep gap was the advancement of technology and changing resources due to science. Man has added resource productivity by entering science. The first deep gap in Iran occurred when Iranians had achieved groundwater and agriculture industries in Iran's plateau. Europeans have not had a laxative problem, while Iranians perhaps spend billions of dollars to bring a glass of water. The second-deep gap in Europe was carried out and led to resource productivity, but in Iran with oil money, and the technologies also dried all underground resources. In this case, the government and the current elites cannot support efficient property rules. To get out of this crisis, historical routings should be made.

Table 2: Economic performance - Political government after the revolution

The main achievements	Name of state and elite
Doing affairs for the transition and consolidation of the Islamic Republic system	State and Temporary Elite (Mehdi Bazargan)
-Without any achievement	Government and elite of Bani Sadr
The unity and empathy of revolutionary forces	The state and elite of Shahid Rajaee
Provide the power of the transition and holding presidential elections	State and Temporary Elite (Ayatollah Mahdavi)
War administration, repair and reconstruction of damaged areas and industries in sanctions, acceptance of resolution	Government and Elite Sacred Defense (Ayatollah Khamenei - Mousavi Engineer)
Reconstruction of the infrastructure facilities of the country, the presence of 20 million people in the presidential election	Government and Elite Construction (Ayatollah Hashemi Rafsanjani)
Conducting the first election of the councils, the formation of currency storage, the idea of dialogue for civilization, increasing political participation of people	Government and Elite Reforms (Hajato llylamalm Seyed Mohammad Khatami)
Seal housing, Provincial travels, gasoline quotas, targeted subsidies	Government and Elite Mehr (Dr. Mahmoud Ahmadinejad)
Trying to resolve the nuclear issue and fix sanctions	Government and Elite Tadager and Hope (Hajtallaham and Rouhani Hassan Rouhani)

Analysis of the 4th entity of the backwardness and continuity of the undesirable performance of Iran's political economy in attracting foreign investment

1- Cultural institutional formulation

The root causes of Iran's economic backwardness in attracting foreign investment priority to cultural factors give cultural analyzes in explaining social phenomena (including backwardness) of strong and traditional roots in the history of coalition. Culturalists who eradicate Western development are usually causes in some special cultural traditions such as rights and homework from the tradition of Roman law and church laws, overcoming the culture of work and the prosperity of the Protestant religion, the culture of the Jewish world, the phenomenon of human values, rich, Strength and individualism find in the new West. The most influential these analyzes, Max Weber, a great German coalition, presented in the book of Protestant Ethics and the Spirit of Capitalism.

In this regard, thinking arguments believe that the roots of Western development in the new age have been rational philosophical traditions in ancient Greece, which was revived after the Renaissance and founded the new progressive movement, while the eastern coalition lacks these scientific and rational traditions and to Instead of attention to the world has given priority to the hereafter, and its ideas are formed in transplantation with religion and mysticism. In Iran, from the beginning of the West and the emergence of backwardness, the roots of culture and thought as factors behind the retardation had. The first Iranian intellectual efforts such as Molkmakhan, Akhundzadeh and Aga Khan were from the general cultural situation, people's knowledge, lack of awareness and lack of ethics in favor of development.

In contrast to secular intellectuals, and in accordance with the concerns of the Islamic world who consider the entrusts of Islam, another group of intellectuals with intellectual criticism, the roots of Iran's backwardness in the new era, the intellectual self-destruction of Iranians against the West and not reliance on indigenous culture and thought They know. At the head of this group, Jalal Al Ahmad and the book "Westernization" has been very influential.

2. Economic institutional formulation

The root causes of Iran's economic backwardness in attracting foreign investment in the formulation of economic institutions and institutions emphasize the issue of backwardness. In the analyzes of Western developers, it often emphasizes the issue of capital accumulation in the uprising of the new world. In addition to Weber, which emphasizes the formulation of capital accumulation, Verner Sambhart in the book of "Jews and Modern Economic Life" is the accumulation of capital of Jews in their reflection as the basis for capitalist uprising. Marx and Engels, the founders of the analysis based on the priority of the economy on other social sectors, saw the root of the transformation of contemporary Europe in the late medieval and economic development of the middle ages and the elevation of the middle class in those European countries that the Navani of the medieval destruction, the uprising of the cultural order law They called new political and social. Marx emphasizes that: While the institution and livelihood in the West, since the beginning, was based on feudalism and a special way of exploiting land, in the east, this method never existed. In the west, due to the abundance of water, economic formation was made in such a way as limiting authoritarian powers, and, in contrast, the consolidation of feudal entity in Europe. In Iran, the analysis of the situation is considerably considered; Dr. Ahmad Seif, Dr. Homayoun Katouzian and Dr. Mustafa Vatnkhah, including this.

In addition to the above-mentioned analysis, Katazian and many others in their economic analysis in the root of the causes of retardation have emphasized the oilstorm of the Iranian economy as an aggressive institutional backwardness and weakness of its dynamics and production. These analyzes, often under consideration of the debate of the government and the elite of Rentier (or the government and the elite of the lecturer), are indicative of the influence of oil and its revenue in strengthening the authority of the government and the elite, which virtually, this income has somehow our economy It has been bored with corruption and laziness among us and has covered our inefficiencies.

3- Institutional formulation of politics

In analyzing economic growth, in the area of attracting foreign investment, mainly emphasize the constructive and destructive formulation of political factors in progress or after the country. This thinking has the basis and basis of stability in theoretical and empirical arena, and its verification has founded it in two initiators of progressive political philosophy, Nicolao Machiavell and Thomas Hobbes, and their followers in the next century expanded it and in various forms in their arguments. Have entered. Machiavell and Hobbes, in fact, promote its main politics and actor, the government and the elite to the main position and its motor stimulus, and put it in a structural institutional agent of progress or reluctance and the evolution of other factors as margins. On that, the institutional structure considers. Consequently, many political and developmental philosophy studies have also emphasized the priority of political factors in the development and developmental analysis in the field of development and development studies. What comes from the remarks of the aforementioned thinkers about the greatness and degeneration of nations and societies is that the will of the leaders of these societies, their thoughts and performance, the form of government and elites and approaches and the way of government and elite decision making in the progress or recovery of these countries are formed. Has played the final and decisive. Many studies on the political development of the Third World countries have considered the definitive institution of the third world, the formation of the government and the elite - the nation in these societies, and is often said that the lack of government and elite elites with the elites with the insight and its future in the Third World, has led It is so many energies and capabilities of these communities are wasted during blind and populist movements, and what emerges is social destruction. Among the Iranian thinkers of Mirzatqakhan Amir Kabir, in its non-written theory of development of Iran, only the solution to the developmental coalition, which would be able to facilitate any form of constructs with thousands of restrictions, to figure out the powerful government and elites, with authority, social constraints And abandon foreign interventions and open the way for development and development. A specified example of analyzes that focus on the issue of the government and political elites can be seen in the book Dr. Mohammad Reza Miley. Referring to the formulation of the government and elites, such as the "brain" of the coalition, believes that the construction of the government and elites in the West, like the "function" institution, forms other dimensions of social life, while in the Third World Coalition, the state and elite An independent institution that has a decisive formulation in development and development due to its power.

4. Institutional formulation of coalition

Limitations develop in attracting foreign investment within the social formation of a coalition, in the sense that they believe that communities have the ability or lack of ability to move in terms of specific social institutions, special institutions, and in the entirety of the special relations. Are the development. In this sense, the social institution of a coalition or its institutions can provide opportunities for progress or constraints for progress. The analyzes of the coalition are somehow the most common type of analyzes about the causes of backwardness and development opportunities, and therefore deeply interlaced with other approaches about the causes of retardation. This entanglement is especially high among coalition and economic analysis. In the analyzes of coalition, there are usually issues such as the formulation of coherence or lack of social cohesion, the degree of homogeneity of social factions, the level of social construction, the amount of distances in the relations and the severity of social disputes, and ultimately the existence of classes in agrees with their development and their ability to coalition with The opposite classes of development are considered. For example, in analyzes that are presented from the causes of Japan, usually the social construction of that country and the lack of social differences around religion, language and ethnicity are among the reasons for the development of that country. While we usually know many Asian or African countries that continued social institution and social differences in a restrained movement. Essentially, the level of social differences in a coalition, the opportunities for adopting an efficient approach to development will be lower. In Iran, since the beginning of reflection about the causes of retardation, social institutions have been highlighted. Within the initial analysis, this is usually considered as a shortage of modernists within the coalition with the traditional institution. A while later, a specific awareness of aristocratic anti-development formulation Qajari, landowners, Eliot and the master system were created. In this sense, they seemed impossible to develop the social institution. Hence, since the start of the thought of the reform of land reform, the agenda was on the agenda. The point that should not be far away is that there is no doubt that in the series of analyzes above, a set of geographic and geopolitical and psychological analyzes can be added, and therefore the institutions mentioned in the above analysis include not all reasons for retardation. For example, geography-based analyzes, on the geographical formulation of the country and geopolitical analysis, focus on the formulation of the geography of the country in the global formulation as an influential institution in encouraging or slowing development, which can be correct, but since we divide themselves. According to the dimensions of the development coalition (cultural, economic, economic, political and social), we naturally remain out of our discussion of our discussion. The other thing is to avoid falling into the livestock and pessimists about development. Unfortunately, the thought of development has begun with optimism, and some of it meant the negation of traditions, values, and ultimately western. The interpretations that were rooted in self-esteem and in practical arena has always caused the trend of the West to their fertilization of other nations and fearful identity and values. This self-centered approach, led to the formation of an extremist, severely pessimistic and westernized, which, with the development of development in the sense of Westernization, denied its identity, and in such a response to blindly celebrating the traditions and identities. This phenomenon has been observed in Iran. Past mid-term experiences have taught us that development does not mean Western self-identity. Many countries have tried their development paths in a path other than Western paths.

Traditional elements have been developed in many cases and have given it in a particular way, and therefore there is a high potential for homework. Today's man needs tradition and modernity, commitment and modernity, commitment, and wealth, and our fundamental assumption is that the orientation of the Islamic system and its fundamental discourse focuses on the genuine experience in the direction of a Development is native. Therefore, many things that are brought in the definition of development and its dimensions are not inherent in development. For example, development is not necessarily accompanied by secularism, the sanctions of values, Westerners, a deep gap of family interactions, postpartum properties, but development in its functional scope indicates a continuous and continuous flow that over through the human coalition with many issues and opportunities Faced. Therefore, it can be concluded that the discussion of non-growth and development in the attraction of foreign investment in Iran has various factors that require more studies, which is not valid in this article.

Northern stated that the duties of the government and the elite control of violence and the creation of law. The rule of state of the theory is based on this basis that every government and elite seek to create order in the coalition of law and control violence. Accordingly, in human history, three types of order rules are formed:

The rule of first order: The law was a practical order before human history, and there was a long time for ten thousand people in small groups, and they were looking for food and skill. This was the first rule of order that my help was destroyed.

The second order law: Simultaneously with human written history, and about ten thousand years old, the law of access order is limited. That man concludes that to control violence and prevent the conflict, the government and elites should be formed, and a group form that a range of privileges between themselves, and in this way, based on the distribution of rents in the civil society of law, order law. To be stable rents, they should limit others to people; This means that there is a specific privilege for a specific person. When special people come to understand and do not engage in the entire civil society, the law of order is created. This civil society has a very long step and many communities are controlled by such a law. This law is limited to a certain type of government, such as dictatorship, or republic. The types and types of government can establish the law of order.

The law of the third order: the law of order in civil society was the law of open access order. The open access order rule, unlike the previous order law, does not limit access to individuals and forms on the basis of competition, and all people can enter political and economic competitions according to the framework that exists and compete with each other and in this way in civil society law. to form. Economic and political markets are in the same way as there are strong oversight, and all people can compete together; Similarly, the competition replaced rents.

The rule of law of open access order is returned to the industrial revolution, and it's about 300 years old. North Describes that societies are developed to have an open access order law. The only way to develop communities is to move limited access to open access. The limited access order law is based on restriction, rents distribution and government and civil society elites, and its normalization is based on the distribution of rents, restrictions and monopoly. These are the main features of the law of access order, and these are exactly the same things that create rents and corruption, and in fact they create three sides of corruption and corruption. One side of it is lack of accountability and lack of transparency; One side is monopoly; One side of that government and the elite of the coalition.

Natural oil or raw resources, or anything else, become Ranny in the hands of the government and the elite. The government and various elites, which were affiliated with oil resources, became the government and the elder who were distributed rents and corruption. This is exactly what the government and the dominant elite require limited access order law. It was said that in limited government access and the dominant elite should be divided between their members to create stability in civil society. One of the best tools to create a natural resource rents. Major revenue that comes in the hands of the government and the elite and divides the government and its elites between the members of the government and the elite and through this Creates stability. Therefore, it is limited to the best tool for strengthening the law of access order. On the other hand, it is a tool for being suppressed with rents and corruption. Therefore, the law of the limited access order is a law that is self-resting and corrupt. Therefore, corruption is formed in an institution that the law of social order of which law is limited access. The institution forms economic corruption and makes the law of limited access order and formulate corruption.

The reason for the continuity of Iran's unfavorable economic performance in attracting foreign investment, which is formed by the government and elites in civil society, is not what itself owns itself and the elites in its civil society. The decision of the government and the elites of the coalition is to commit the verb verb and corruption based on the institution in which activities. Therefore, the discussion is the type of analytical type that we can analyze according to the government's verbs and the elite of the coalition. We identify the variables that help understand the limited access, and in this way the basis for the continuation of the continuity of the unfavorable economic performance of Iran in attracting foreign investment. Create. If we seek a reason for the continuation of the unfavorable economic performance in attracting foreign investment in Iran, instead of blaming the external and foreign factors, we should search for the internal factors of Iran. This is not new and everyone knows, but it is neglected.

The fundamental causes of the 4th in the continuity of the unfavorable performance of Iran's econometric in attracting foreign investment in the last five decades

1- The first inner institutional factor: the state addiction is oil and crime revenues

We heard many times, and I have seen that, as we know the Iranian economy has become an oil economy for decades, a situation that imposes its particular requirements to the system. An example of this issue is the behavior of the government and the previous elite from the middle of the 1380s, which, by using a collection of populist policies that were previously implemented, led the coalition to consumerism and oil culture, and even the situation. Became a behavioral framework in the form of long-term habits. Special groups and elites and coalitions that had political power were in these circumstances to provide countless resources and economic benefits and increase their current cycle.

The government and oil elite are dependent on natural resources in general and the elite of the driving and prone to rents and corruption. Now we want to analyze how corruption is formed in an institution where the government and its elites are dependent on natural and raw resources. The first thing that happens is that the natural resources of oil and raw sales or anything else turn into Rarity in the hands of the government and the elite. The various government, dependent on natural oil and raw sources or anything else, became the government and the elder who were distributed rather and corruption. This is exactly what the government and the dominant elite need limited access.

The limited access of government and the dominant elite should be divided between their members to stabilize in civil society. One of the best tools for creating natural oil and raw resources rents or anything else. The huge earn of the government and the elite, and the government and its elite divides between members of the government and the elite, and in this way stability. Therefore, it is limited to the best tool for strengthening the law of access order. On the other hand, it rents becomes a means of continuing the unfavorable economic performance of Iran.

The government and elites, who rents the natural resources of oil and raw foreigners or anything else, are the main institutional continuity of the unfavorable economic performance of the government and the elites and the administrative system, which had been a rarity of oil-rich money, has a relaxed every day and The more null and empty of the brain and thought of the right decisions. This was a chief legacy that left the government and the past elites for his next government and elites. In such an institution and a defective bed and rents are unlikely to succeed without a serious invitation from the forces of the Cardan as well as to enter a few economists of thought and idea. Believing and positive viewing is that by asking for an experienced business and cornel to join the government and elite economic team, the country from the cycle and the violence that we have to be withdrawn and in the developing circuit. Of course, this is not all the story. Despite the fact that it can not deny the impact of a better economic team and more coordination in improving economic performance, the set of external constraints should not be ignored along with internal constraints. The limitations that each economic team will be faced with each level and in the process of reform, to a large extent, the policy and foot policy to exit the status quo.

And with its distribution, it can prevent the fight against corruption, and practically the fight against corruption in this institution is very difficult. The government and the elites, which are affiliated with natural oil and raw resources or anything else, do not need other resources such as taxes and coalitions, no need for abnormal resources. There is no need for accountability and reduces transparency. Easily distributes and distribute rents and does not require anyone. The government and elite loses its transparency in this environment. Because they are not dependent on people and are dependent on natural resources of oil and rag or anything else, not the people and masses of the coalition and in its performance are transparent and continues to its driving activities. This government does not have an incentive for correction. There are no incentives to leave the limited access order law and move to the law of open access order. When its resources are provided, people do not have content, and it does not require answering, and as a result, institutional change does not occur. The government and the alienists who have the rents of natural resources, with its distribution, can prevent the fight against corruption, and practically the fight against corruption in this institution is very difficult. The government and the elite, which are affiliated with natural resources, does not need other resources such as taxes and coalitions, there is no need for abnormal resources. There is no need for accountability and transparency decreases.

The government and the elain’s that such resources are available through supportive spending can control the opposition. A coalition, especially in the field of the Persian Gulf and give people a lot of supportive expenses. Even if people oppose that government and elites, they do not react, and this makes the dominant government and elites remain strong; Because no places are formed to correct it. These were some of the things that directly and indirectly natural resources by them lead to the strength of the government and the dominant elite and the law of access order.

The development path is to move on to open access, but the government and the elites who are dependent on natural resources are emotionally, nor compressions from the outside to move to open access and continue the unfavorable economic performance and continues. There is still a bed of corruption and foot rents. The share of Iranian oil resources from the entire resources proportional to the state of the country had fluctuations that oil alignment or government budget and elites were somewhat low, but the average of the past year was about 37% of the state and elite budget through oil resources. This average time is 50 years old. So, in order to distance corruption in the country, we must reduce the dependence of government and elites to natural resources.

2- The second inner institutional factor in attracting foreign investment: government and elites

If the rant of the state and the elite forms, competition in the coalition is reduced to the private sector can not compete. This is exactly what the government and the predominant elite are seeking. The main goal of the government and the elite is to limit the competition and the entry and departure of individuals to political and economic institutions. When the government and elite and institution of the public sector are raised, this coalition occurs in itself, and the dominant government and elites are strengthened. On the other hand, the government and the elbaites that are enlarged are monopoly and the opportunities for renting. The government and its great elites create corruption and rents in the process of corruption and rents, and this corruption and rents in the government and the dominant elite between its members and can create limited access order law. The main goal of the government and the elite is to limit the competition and the entry and departure of individuals to political and economic institutions. When the government and elite and institution of the public sector are raised, this coalition occurs in itself, and the dominant government and elites are strengthened. On the other hand, the government and the elbaites that are enlarged are monopoly and the opportunities for renting. The government and its great elites create their own trends, and this rant divides in the dominant government and elites between their members and can create limited access order law. The government and the coalition elite decide and choose in the institutional framework. When the government and elites are the coalition in an institution, there are large elites and receive various types of services from the government and the elite themselves that they commit corruption and rents. Therefore, the structure to the government and the elite of the coalition option, the power of choice, motivates the mental institution. Consider the institution that all types of services in the hands of the government and the elite of the coalition are self-sufficient for corruption and rents.

3- Third internal institutional factor in attracting foreign investment: comparative and extent of government and elite institutions

The institutions of the government and the elites of Iran are very large. One of the indicators that exists is the size of the government and the elite as much as GDP. This indicator has had fluctuations. Its fluctuations depending on oil revenues and government and elite revenues, some years have been reduced. But its average in the last forty-year intervals was 15 to 20 percent. In the last forty years, the government and elite budget were 15 to 20 percent of GDP. It seems that according to other indicators we did not examine, the size of the government and elites in Iran is large, and so has led to a form of corruption and rents in the country.

To fight corruption and rents, instead of dealing with corruption, we must eliminate the field. Collision comes with corrupters, but the government and elite should be small. The government and the elite that enlarge will create a lot of rental opportunities. The government and the elders who are great will lead people's motives for corruption. Therefore, this government and elite should be reduced, and some of the duties of the government and the elite that have not been developed from the government and the elite and form a general overview of the government and elites, and to try the government and elites to be small and smaller. Until corruption.

4- The fourth factor in the inner institutionalization of foreign investment: inflation or direct gradient taxes for poor rubber

Inflation or direct coarse tax is weak for the prosperous darkness that is very chronic in the country and is over half a century, and all of us touch it with their meat and skin. Inflation or uncontrollable coefficient taxes for the prosperous darkness in direct and indirect ways of the law sustain the limited access order, causing the country to remain in an undesirable economic performance. We do any action for open access to move towards economic development and attracting foreign investment. Inflation or direct cortex grade taxes are restricted to the prosperous darkness and is destructive to the law of access order. Inflation or direct gross coefficient tax for the prosperous darkness increases poverty. Increasing poverty makes the significant part of society from political and economic competitions. Even if they want to enter the competition, in an economy that has livelihood problems. Limited people can enter political and economic competitions, which makes the law of open access order. A community that deals with poverty can move toward open access. These livelihood problems affect our actors and makes motivation to commit corruption.

Inflation or direct grazing taxes for the prosperous darkness are completely direct and transparent inequality, and the distribution of income. This is something that does not need to explain. Inequality causes the law of limited access order and society does not move toward development. Even if government and elite policies are inequality and move towards unequal reduction, but despite the inflation or uncontrollable risk of a weak pressure, it will not be successful for the prosperous darkness. We must eliminate the swelling or direct grazing tax for the prosperous darkness so that we can move the income distribution to the equal. The swelling or direct coarse tax is sustained for a prosperous darkness in direct and indirect ways of the law of limited access order, causing society to remain in undesirable economic performance. We do any action for open access to move towards development. Inflation or direct gradient taxes are restricted for the prosperous darkness and destructive the law of open access law.

The recent 50-year-old returns only in six years of inflation or straight-line gradient tax for our prosperous darkness has been single digit. Single-digit has been 9%. Based on the latest statistics of the International Monetary Fund, the average inflation or uncontrollable donor tax has been 3.1% in all countries in all countries in the world last year. The average swelling or high pressure grazing tax for the prosperous darkness in the last 20 years is 17%; In the last 47 years, it was 18.7%. The government and the other elites came to different policies and approaches, but the average of all of them is between 19 and 20%. We encountered the government and elites that have a continuous budget deficit and provided it from methods, which are mainly direct swelling or tax-free coefficient for the prosperous nature, causing the average liquidity growth in all government and elites over 20%.

The government and the elders who have a continuous budget deficit cannot fight corruption. This government and unwanted elite generate a growth of liquidity and context corruption and rents. We cannot have a country that the government and the elite constantly have a budget deficit, high liquidity growth, swelling mutations, or low-pressure grazing taxes for a prosperous darkness, but there is no corruption. If we have a strong and powerful judiciary, and constantly seeks to capture corrupters, we will not go so much so that corruption substrates are still legged.

When they have open and comprehensive economic institutions and with other countries, the relationship and change in business institutions themselves will reduce their opportunities. Economic, which has high tariffs and commercial areas, cannot establish an institutional change with the world. Economic can change institutionalization that reduces constraints. When restrictions decrease, the opportunities for Rent and the corruption bed also decreases. One of the ways that produces privileges and rents for the dominant government and elites. And with tariffs that are up and down, rents are produced and distributed among members of the government and the dominant elite, and the economy remains closed. The economy that opens these opportunities is lost, one of the tools of the government and the dominant elite to control members and the establishment of order law. They have no choice but to compete. Economic can compete with the world that is competitive within it. Economic can have an exported product that its institutional structure is an institution that its products are competitive. In countries where the law of order is limited when the government and elites of the community have low income, it is motivated to personalize the exchange. Even the regulations and things that are there are ignoring and pay rents with their personal discretion. Limited access is based on a solid discretion that makes the government rents and dominant elites become more solid. The lower group's income makes the government's motivation and the elites of the community are changed and personal exchanges are formed and limited access to limited access.

The reason for the continuity of Iran's unfavorable economic performance in the growth and attraction of foreign investment should be the main cause of foreign factors, but also in the factors and fundamental factors and in terms of domestic and internal exploitation. The main reason in Iran is the existence and continuation of the limited access order law. The basis of politics and economics are closely linked to each other. In the law, the finite access order of the elite forms the power of the state and the elite and prevent violence by producing their rents and its distribution. The government and elands are not allowed to keep rents in their monopoly, allowing members to members of the community and, in fact, non-government members and elites. When the environment is closed for political activities, allowing activities in the economic arena will certainly be closed. For this reason, the private sector and inclusive institutions are not formed, and naturally, the inclusive institutions will not be competitive in work, and the productivity will be meaningless. The government and elite are a square and exclusively all activities. But in the open access order law, which, for example, South Korea gradually completed over a few years from the law of access order and opened open access, has opened the environment for political activities and open openness in the political environment in an economic environment. had. The balance that has been established between the two (the theory of the dual balance of North) has contributed to the ruling of appropriate industrial and economic policies.

Douglas Sisal North Nairst Development Economy Attracting foreign investment moves from the law of social order limited access to open access;

Douglas Sisal North Development Economy Attracting foreign investment moves from the law of social order limited access to open access; This means distance from the main bed of corruption and rents. If we move toward development, institutions are formed in accordance with the developed country, which makes the context of corruption and rents, and even the likelihood of disclosure of corruption and rents; For example, in an institution developed, there are strong regulatory organizations that greatly increase the disclosure of corruption and rents, and individuals cannot easily commit corruption and rents. In a developed institution, in addition to coalition and open access, social norms change. Social norms in an undefined institution are proportional to the same institution, and sometimes seen corruption becomes an abnormality, and it is spilled, and everyone is readily talk about corruption and rents. In an institution developed, there are strong regulatory institutions that greatly increase the disclosure of corruption and rents, and individuals can not easily commit corruption and rents. According to the World Bank, our economic growth has been under 1.9 percent in recent years. With short-term meanings, all of them were about 2.5%. With this economic growth, one of the substrates of corruption and rents will continue to stand. Therefore, to resolve corruption and rents, we need to move towards economic growth of sustainable foreign investment.

Conclusion

In order to understand the cause of the continuation of the unfavorable economic performance of Iran in the growth and attraction of foreign investment, international relations are among the many theories that are common in academic circles. This treatise is without prejudice, in terms of the subject and theoretical framework of the present treatise, is institutionalization. The framework of multifaceted institutionalization has been selected as the approach of multifaceted institutionalism. Basically, this approach has been used to analyze public policy. And for this reason, there is a lot of use in the lack of growth and development and the reason for the difference in the share of countries from power and wealth and capital. About the approach of the theory of the law of North Social Order: In this theory, both economic and political systems have equilibrium and their balance should be considered simultaneously or both open or limited access. This is the theory of communities based on the law of social and institutional order that societies. So, in analyzing the framework of the theory of the law of social order of Douglas Sisal North, Acme Oghlu, Robinson, and in this approach, the main emphasis in our assumption is based on the viewpoint of North, Acem Oghlu, Robinson. Law Open access order, unlike the previous order law, does not limit access to individuals and forms based on competition, and all individuals can enter political and economic competitions, according to the framework that exists, and compete with each other and in this way in the rule of law. . Economic and political markets are in the same way as there are strong oversight, and all people can compete together; Similarly, competition replaces rents and corruption. The rule of law of open access order is returned to the industrial revolution, and it's about 300 years old. Northern societies are developed to have an open access order law. The only way to develop communities is to move limited access to open access.

Economic growth and development studies are that growth is a topic about economic management and, hence, politics has been considered as a low and sub-economic rationality, but this research showed that the government and political elites can be institutionalized Called the main development and economic growth, the government and political elites may or impossible. This analytical framework can show that development and growth in the growth and attraction of foreign investment in Iran has been caught in the twist of political faction games, which is not thoughtful to enter the government and the strategic elites for growth and development. Not the benefits of political games, they allow them to form a government and strategic elite development. In addition, the initiatives of political actors who, for the success of political conflicts, are non-developed tactical elites, and in some cases, anti-development, has also been a boost of part of the state and elite in Iran. All of these, to the economic policy cycle in Iran, has given an unstable move of opposite policy development and growth to development policy in terms of crisis. The government and political elite show that both the unsuccessful past understanding and find out the paths of the existing situation may be reviewed and analyzed by the type of political actors in the text of the deep institutional changes of the government and the elite. Why the development of economic growth and the growth and attraction of Iran's foreign investment is a false process, there is a question that this article presented a new analytical framework and a fundamental new look of the transformation of the institutional structure of the government and the political elite, to respond.

Resources

Persian Resources

Al Ahmad, Jalal, (1356), Westerners, Persal Publishing, Second Printing.

Reza gohli, Ali, (1398), Templed Coalition: Ghaem, Amir Kabir, Mossadegh: Analysis of some roots.

Reza gohli, Ali. (1372), a. Economic development and worldwide. Development book. Number 6.This: Development Publishing, First Printing.

Reza gohli, Ali. (1372), b. Development and traditional coalition. Development book. Number 5. Thorns: Development Publishing, First Printing.

Reza gohli, Ali. (1377). The elitist Tehran: Publishing, Fourth Printing. Technology ... Publishing New Year Printing: 98.

Reza gohli, Ali, (1370), autocratic coalition, publishing.

Reza gohli, Ali, (1374), elite coalition, desert publishing.

Reza gohli, (1374), Ali North, Journal of Economics

Reza gohli, Ali, (1398), if North Iranian was a quarterly and coalition quarterly:

Reza gohli, Ali, (1398), North Quarterly Economics and Coalition

Reza gohli, Ali, (1398), if Northern Iran was (a description of the history of Iran's policy and culture economy) publisher: structuralist (affiliated with the Institute of Religion and Economy Studies).

Reza gohli, Ali, (1398), Autocratic Coalition: Analysis of Coalition of Zahak Mardosh, Tehran: Publishing New, 1367.

Reza gohli, Ali, (1398) ,, Template Coalition, Amir Kabir, Mossadegh: Analysis of the coalition of some of the historical roots of tyranny and retardation of Reza gohli, Ali, (1398), in Iran, Tehran: Publishing New, 1998 (until May 2018) 44 had reached)

Reza gohli, Ali, (1398), if North Iranian, Tehran: Nonprofit Institute for Religion and Economics, Structural, 1398.

Asem Oghlu, a placeholder; Robinson, James. , (1394), why nations fail. Translation Mohammad Hussein Naeimipour and Mohsen Mirdamadi "has been published by publishing. Fourth edition, 1394

Acem Oghlu, Daray, Libson, David and List, John (1397), General Economics, Translation Seyed Alireza Beheshti Shirazi and Mohammad Hussein Naeimipour, Tehran: Publications.

Acem Oghlu, Daron; Robinson, James (1394), the economic roots of Dictatorship and Democracy, translated by J. benevolence and Ali Srzym, Tehran: desert, Second Edition,

Consistory, doctor Mohammad Ali H., (1379), and a coalition government and elite in Iran, the extinction of the Qajar and Pahlavi establishment, translated by Hassan Afshar, publishing center, Tehran.

C. Douglas Sisal North et al., (1395), in the shadow of violence, political, economic and development issues. Translation Mirdamadi and Mohammed Hussein Pour Naimi. Tehran, published by Aperture.

North Douglas (1385), structural change and economic growth in America; Douglas North and Lance Davis, 1971

North Douglas (1385), The Rise of the West: New economic history; Douglas North and Robert Paul Thomas, 1973

North Douglas (1385), Structure and Change in Economic History, Douglas North, 1981 (translated)

North Douglas (1385), structure, Tghyratghyr structural and economic performance, Douglas North, 1990 (translated)

North Douglas (1385), empirical studies on structural Tghyratghyr, Lee Alston, Sryn Agrtsvn and Douglass North, 1996

North Douglas (1385), understanding the process of economic transformation, Douglass North, 2005

North Douglas (1385), violence and social orders law framework for the interpretation of the content of human recorded history, Douglas North, John Wallis and Barry Weingast, 2009 (translated).

North Douglas (1385), new structural economics and development. Translation Farshad Momeni. All-round development of political economy. the first number

North, Douglas (1385), "The structure, structural changes in the economy". Country, deputy administrative, financial and human resources. second edition.

North, Douglas. Wallis, management experts, Joseph John. Weingarten, Cargo (1395), Violence and Social Order Act, a framework for interpreting the content recorded history of mankind. Translation Jfrkhyrkhvahan and R Mjydzadh. Tehran: bullseye.

North, Douglas, (1379), the translation of GH Zadarmky Nshrny Vdgrgvny economic history.

North, Douglas, (1379), Structure and Change in Economic History, Reed Publishing.

North, Douglas, Wallis, Joseph, Weingast, time, Byvb, Steven, (1395), political, economic and development issues in the wake of the violence, the translation Mirdamadi and Mohammed Hussein Naimi Pvr.nshr bullseye.

North Douglas in 1981. Structure and Change in Economic History. The first edition, 1379. Translation GH release (Armaki). Tehran: Ney.

North Quarterly Journal of Economics and coalition Reza gholi

English resources

Acem Oghlu, Daron & Robinson, James A. (2002), Economic Backwardness in Political Perspective, NBER Working Paper No. 8831.

Acem Oghlu, D., & Robinson, J. A. (2012). The role of institutions in growth and development. Review of Economics and Institutions, 1(2), 1 -33.

Acem Oghlu, D., Johnson, S., & Robinson, J. A. (2005). Institutions as the fundamental cause

of long-run growth. In Ph. Aghion and, & S. Durlauf (Eds.). Handbook of Economic Growth. Elsevier. p. 385.

Acem Oghlu, D., Robinson, J. A. (2006). Economic origins of dictatorship and democracy. New York: Cambridge University Press. p. 21.

Acem Oghlu, Daron., Johnson, Simon., &Robinson, James. A. (2001). The Colonial origins of comparative development: an empirical investigation. American Economic Review, Vol91, No5, Pp 1369- 1401.

North, D. C. (1995). The new institutional economics and third world development. In J.

North, D. C. (2005). Understanding the process of Economic Change. Princeton University Press.

North, Douglas C. and Robert P. Thomas (1973). The Rise of the Western World: A New Economic History, Cambridge University Press, Cambridge UK.

North, D. C., Wallis, J., Joseph, W., & Barry, R. (2008). Violence and Social Orders, In: Governance Growth and Development Decision-making. World Bank

North, D. C., Wallis, J., Joseph, W., & Barry, R. (2009a). Violence and social orders: A conceptual framework for interpreting recorded human history. Cambridge University Press. p.13.

North, D. C., Wallis, J., Joseph, W., & Barry, R. (2009b). Violence and the rise of open access orders. Journal of Democracy, 20(1), Pp 55 -68

North, Douglas c. (1992), The New Institutional Economics and Development; Washington University،Herbert Simon.

North, Douglas C., J. J. Wallis and B. R. Wingate (2009), Violence and Social Orders, Cambridge University Press.

North, D (1990). Institution, institutional change and economic performance. cambridge university press

North D.C. et al (2009), Violence and Social Orders, Cambridge.

North, D.C, (1990), Institutions, Institutional Change and Economic Performance, Cambridge.

North, Douglas, (1991), "Institutions", Journal of Economic Perspectives, Vol. 5, The Economic Growth of the United States 1790-1860, Douglass C. North, 1961.

North Douglas C. and Robert P. Thomas A Documentary History of American Economic Growth, 1607-1860, , 1968.

North, Douglas C and Lance E. Davis, 1971Instilutional Change and American Economic Growth,

North, Douglas C, Institutions, Institutional Change and Economic performance,1990.
North. Douglas C and Robert P. Thomas, 1973 ,The Rise of the Western World: A New