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Do Future Physicians Know the Duties of District Health Directorates?

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What is already known on this topic?

- *In Türkiye, primary health care services are delivered through District Health Directorates (DHDs) and Family Health Centers affiliated with these directorates.*
- *Within the scope of the public health internship, general practitioners—who play a key role in the provision of primary health care after graduation—are introduced to the organization of primary health care services, with the aim of equipping them with the skills to identify, analyze, and develop appropriate solutions for the health problems of the communities they will serve.*

What does this study add to the existing knowledge?

- *This study demonstrates that the level of knowledge regarding the duties of DHDs among fifth- and sixth-year medical students approaching graduation is moderate and that knowledge gaps are are more pronounced particularly in relation to managerial responsibilities.*
- *To enhance students' knowledge and awareness, the public health curriculum within medical education needs to be strengthened through the development of both theoretical and practical training.*

Abstract

Objective: In Türkiye, district health directorates (DHDs) are the peripheral administrative units of the Ministry of Health operating at the district level. The aim of this study is to investigate the knowledge of the fifth and sixth grade students of 2 medical schools about the duties of DHDs regarding primary health care services.

Methods: This cross-sectional descriptive study was conducted in Istanbul, Türkiye between September and December 2024 with 331 medical students from 2 medical schools who voluntarily agreed to participate. In the absence of prior data, the minimum sample size was calculated as 210 based on assumptions, and a total of 331 students were reached in the study. Participants were recruited via convenience sampling among fifth and sixth-year medical students prior to their public health internship. Data were collected using a supervised self-administered 72-item questionnaire, which included sociodemographic variables and items assessing knowledge of District Health Directorate duties grouped under 5 domains.

Results: A total of 331 students participated (184 fifth year, 147 sixth year; 54.1% female). In the first group, studies on infectious diseases, 64.8%; in the second group, environmental health, 63.6%; in the third group, non-infectious diseases, children, adolescents, women, reproductive health, cancer early diagnosis and screening, and education center studies, 63.5%; in the fourth group, health management, 58%; and in the fifth group, other studies, 68.2% students answered the questions correctly. There were no statistically significant differences in total scores by gender ($P = .966$) or academic year ($P = .753$).

Conclusion: It has been determined that students have close to 50% or more correct knowledge of primary health care issues. However, this level is not sufficient, and it has been concluded that theoretical and practical training in public health courses in medical schools should be developed, and more research should be conducted on this subject.

Keywords: Chronic diseases, environmental health, health management, infectious diseases, medical student

Introduction

Primary health care is a comprehensive set of services that combine health promotion, preventive care, diagnosis, treatment, and rehabilitation, providing accessible, cost-effective, efficient, and widespread health services for individuals.[1] In Türkiye, District Health Directorates (DHDs), which operate under the Provincial Health Directorates, are responsible for the planning, coordination, and supervision of these services. DHDs collaborate with primary care institutions in the district [including Family Health Centers (FHCs)]; coordinate preventive programs such as immunization and surveillance; organize public health services such as environmental and school health; and supervise relevant units.[2] In districts, individual-oriented primary care services, including preventive, diagnostic, therapeutic, and rehabilitative practices, are provided through DHDs and FHCs affiliated

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with them.[1,3] These centers play a key role in protecting, improving, and maintaining individual and community health.[4]

In primary care—including FHCs and DHDs—preventive health services are addressed at 3 levels: primary prevention targets modifiable risks to reduce disease occurrence before it develops; secondary prevention ensures early diagnosis and timely treatment through screening before symptoms appear; and tertiary prevention aims to minimize functional loss after disease through physical, mental, and social rehabilitation.[5,6] This 3-level prevention framework constitutes the functional foundation of the comprehensive population-based services provided in primary care.

Primary health care services, implemented with and for the population, include health promotion, disease prevention, diagnosis, treatment, rehabilitation, health education, maternal and child health (including family planning), and immunization. Primary care serves as the central component of integrated referral systems that facilitate access to comprehensive health services and is delivered by multidisciplinary teams. It also integrates public health activities such as improving food supply and nutrition, ensuring safe water and sanitation, and controlling communicable diseases, and it must have the capacity to meet the needs of the majority of the population.[7]

In Türkiye, the main services provided within the scope of Primary Health Care include Medicolegal Services, Child, Adolescent, Women's and Reproductive Health Services (CAWRH), Tuberculosis Control Dispensary Services, Cancer Early Diagnosis, Screening and Training Centers (CEDSTC), Services for Skin and Venereal Diseases, Malaria Control Services, Environmental Health Services, Occupational Health and Safety Services, Health Services for Migrants, Marriage and Reproductive Health Counseling, Prenatal Education Classes, Psychological Counseling, Smoking Cessation and Treatment Counseling, Dental Health Counseling, Nutrition/Healthy Living Counseling for Obesity and Chronic Diseases, Cancer Counseling, and other services specified in the Regulation on Community Health Centers (CHCs) and their Affiliated Units. These services are delivered by CHCs, DHDs, and their affiliated institutions.[3] At the primary care level—where all these fundamental health services are provided—Public Health and Family Medicine specialists, as well as general practitioners and physicians from various specialties, may serve.[8]

This multidisciplinary structure expands the scope of services while necessitating a consistent understanding of roles, workflows, and regulations. Public Health and Family Medicine internships that are included in the later years of medical education are the main learning settings that allow future physicians to understand the duties and responsibilities of DHDs, participate in field processes, and become familiar with relevant regulations. However, students' knowledge levels and awareness regarding the administrative and organizational components of primary care may vary.[9] International and national data suggest that although health professions students generally exhibit positive attitudes toward public health, knowledge gaps may exist regarding institutional programs and roles. For instance, Boyd et al (2021) reported that medical and pharmacy students in the United States had significant knowledge deficiencies about the national public health initiative *Healthy People*, despite demonstrating a strong inclination toward interprofessional collaboration. Similarly, a study conducted in Eskişehir, Türkiye, in 2018 reported that although intern physicians were generally familiar with the subject areas, more than half of the participants did not fully comprehend the duties and responsibilities of DHDs and DHD physicians. These findings indicate the need to strengthen learning outcomes in medical education concerning the organization of primary health care and the functioning of national programs, forming the rationale for the present study.[9,10]

This study aimed to assess the knowledge levels of fifth- and sixth-year medical students studying at one public and one private medical school in Istanbul regarding the duties of DHDs related to primary health care at the beginning of their Public Health internship, and to evaluate whether sixth-year (intern) students who have received theoretical public health training have different knowledge levels compared to fifth-year students prior to field practice. The findings are expected to contribute to better alignment of the medical curriculum with learning outcomes related to primary health care organization and the functioning of DHD–FHC collaboration.

Methods

The study was a cross-sectional descriptive study conducted between September 20, 2024, and December 30, 2024. The study population consisted of intern physicians and fifth-year medical students at İstanbul University Faculty of Medicine [1] and Okan University Faculty of Medicine [2] (n = 331). As a result of the calculation, the minimum sample size was determined to be 210 participants, including 105 fifth-year medical students and 105 intern physicians. Using a convenience sampling method, students who were enrolled as fifth-year medical students or intern physicians at the 2 medical schools where the study was conducted during the data collection period and who were reached prior to the Public Health internship were included in the study. Voluntary agreement to participate in the study was also among the inclusion criteria. Students who were not enrolled in the fifth or sixth year during the data collection period and those who declined to participate were excluded from the study. The questionnaires were administered using the supervised self-completion method. The total number of fifth- and sixth-year students enrolled at the 2 universities where the study was conducted was 790, and the coverage rate of the target population was calculated as 41.9%.

The questionnaire used in this study was developed by the researchers based on the relevant ministerial regulations and literature (2, 3). It was designed as a knowledge assessment questionnaire rather than a psychometric scale intended to measure a latent construct. Therefore, no formal construct validation procedure was conducted.

EThe questionnaire consisted of 72 questions in total. Five questions collected demographic information, including students' age, gender, and academic year. The remaining 67 items assessed students' knowledge regarding the duties of the DHD. These knowledge items were grouped under 5 categories: Management, Communicable Diseases, Environmental Health, Non-Communicable Diseases (NCDs)–Child, Adolescent, Women, and Reproductive Health (CAWRH)–Cancer Early Diagnosis,Screening and Training Center (CEDSTC) , and other duties. The distribution of the 67 knowledge items was as follows: duties related to communicable diseases, 5 items; environmental health, 8 items; NCDs–CAWRH–CEDSTC, 23 items; health management, 20 items; and other duties, 11 items.

The knowledge items were prepared and reviewed by 3 public health specialists. Items were included in the final questionnaire only after consensus was reached among these specialists. Since the questionnaire was not intended to function as a validated scale, no formal expert panel review for psychometric content validation was conducted. However, before the main data collection, the questionnaire was administered face-to-face to 5 individuals to assess the clarity and comprehensibility of the items. All items were considered understandable by these participants; therefore,

no revisions were made. These 5 individuals were not included in the final study sample.

For each of the 67 knowledge items, participants responded as "true," "false," or "I don't know." Each correct answer was coded as 1, whereas incorrect and "I don't know" responses were coded as 0. The total number of correct responses was used as a summary indicator of knowledge performance. No item weighting was applied, and the total correct response count was not interpreted as a validated scale score.

Statistical Analysis

Descriptive statistics were presented as mean and standard deviation for continuous data conforming to normal distribution, and as median and minimum–maximum values for non-normally distributed data. Counts and percentages were reported for categorical data. The Kolmogorov–Smirnov test and Skewness–Kurtosis tests were used to assess the normality of continuous variables. The Mann–Whitney *U*-test was used for comparisons between groups for continuous variables. Internal consistency reliability was assessed for the 67 dichotomously scored knowledge items using Cronbach's alpha. Reliability analyses were conducted for the overall knowledge section and separately for the 5 predefined knowledge categories. Statistical significance was considered at $P < .05$ with a 95% CI. Statistical analyses were performed using SPSS version 20.0. (IBM SPSS Corp.; Armonk, NY, USA)

Ethical Approval

Ethical approval for this study was obtained from the İstanbul University Faculty of Medicine Clinical Research Ethics Committee (Approval No: 2024/1675, Date: September 20, 2024). The study was conducted in accordance with the principles of the Declaration of Helsinki.

Informed Consent

Written informed consent was obtained from all participants prior to their inclusion in the study.

Results

A total of 331 participants took part in the study. Of these, 184 were fifth-year medical students and 147 were sixth-year medical students (intern physicians). The mean age of participants was 23.3 ± 1.6 years (range: 21-37 years). The mean age of fifth-year students was 22.7 ± 1.1 years (range: 21-27 years), while the mean age of sixth-year students was 24.1 ± 1.7 years (range: 22-37 years). Among the participants, 54.1% were female, with 54.4% in the fifth-year group and 53.7% in the sixth-year group.

The internal consistency of the 67-item knowledge section was high, with an overall Cronbach's alpha coefficient of 0.963. The standardized Cronbach's alpha was also 0.963. Domain-specific Cronbach's alpha coefficients were 0.912 for Management, 0.896 for NCDs–CAWRH–CEDSTC, 0.884 for Environmental Health, and 0.800 for other duties, indicating good to excellent internal consistency. The Communicable Diseases category had a lower Cronbach's alpha coefficient of 0.672. This lower value may be partly related to the small number of items in this category and the heterogeneity of the content covered. Therefore, findings related to this category should be interpreted with caution.

Students' knowledge regarding the duties of the DHD across different units was evaluated. Among the grouped duties, the most well-known category was "Other," which included medicolegal services, occupational health and safety, and migrant health, whereas the least known duties were in the "Management" category (Table 1).

Table 1. Mean Correct-Response Rates for Items Assessing Students' Knowledge of the Main Duty Groups of District Health Directorates (N = 331)

Group	Mean Correct-Response Rate Across Items, %
Communicable diseases (5 items)	64.8%
Environmental health (8 items)	63.6%
NCDs-CAWRH- CEDSTC- -(23 items)	63.5%
Management (20 items)	58.0%
Other duties (11 items)	68.2%

CAWRH, child, adolescent, women, and reproductive health; CEDSTC, cancer early diagnosis, screening and training centers; NCDs, non-communicable diseases.
For each duty group, the reported value was calculated as the arithmetic mean of the percentages of students who correctly answered each item within that group. It does not represent the proportion of students who answered all items in the group correctly.

Among all duties asked in the questionnaire, the most widely recognized task among all participants was the planning and coordination of health services, which falls under management duties (90.6%). Conversely, the least known duty was also related to management—the task of carrying out organ donation application procedures (33.1%) (Table 2).

Regarding students' knowledge of the DHD's duties related to NCDs, CAWRH, CEDSTC and communicable diseases, the most well-known duties were educating the public on healthy nutrition and physical activity (89.8%) and ensuring the timely notification of communicable diseases (90.4%). In contrast, the least known duties were the recommendation that colorectal cancer screening is performed via colonoscopy in DHD-affiliated units (38.2%) and that tuberculosis patients receive directly observed therapy (37.5%) (Tables 3 and 4).

Regarding environmental health duties, the most well-known task was ensuring the inspection of environmental health services (87.3%), while the least known duty was the implementation of inspections of biocidal product sales sites by the District Health Directorate's Environmental Health Unit (50.3%) (Table 5).

For other duties of the DHD, the most well-known task was organizing health education activities (84.7%), whereas the least known duty was the planning of medicolegal services by the DHD (36.9%) (Table 6).

In the study, 3 students answered all questions correctly, and no student answered all questions incorrectly. The distribution of total correct responses to DHD duties questions was examined according to demographic variables such as gender, academic year, and course/internship completion status.

The mean total correct responses for female participants was 43.1 ± 13.1 (median 45, range 7-67), while for male participants it was 42.1 ± 16.4 (median 45, range 0-67). There was no statistically significant difference in total correct responses between genders ($P = .966$).

When evaluated by academic year, the mean total correct responses for fifth-year students was 42.5 ± 14.7 (median 45, range 0-67) and for sixth-year students 42.9 ± 14.8 (median 45, range 0-67). No statistically significant difference was observed in total scores between academic years ($P = .753$).

When evaluated by rotation completion status, the mean total correct responses for participants who completed the rotation were 44.8 ± 11.7 (median 46, range 19-67), whereas for those

Table 2. Students' Knowledge of the Management-Related Duties of the District Health Directorate*

Question	Fifth-Year Students, n (%)		Sixth-Year Students, n (%)		Total, n (%)	
DHD plans and coordinates health services.	166	**90.2**	133	**91.1**	299	**90.6**
The collection of health data is carried out at the DHD.	143	**78.6**	117	**80.7**	260	**79.5**
Family physicians operate under the DHD.	153	**84.1**	113	**79.0**	266	**81.8**
The DHD supervises public health institutions in the district.	143	**78.1**	110	**75.3**	253	**76.9**
Reporting of health data is performed at the DHD.	124	**68.5**	106	**74.1**	230	**71.0**
Analysis of health data is performed at the DHD.	127	**69.4**	103	**71.5**	230	**70.3**
The DHD manages the opening, closing, and relocation processes of Family Medicine Units.	119	**64.7**	102	**69.9**	221	**67.0**
Recording disciplinary and administrative sanctions given to personnel in health institutions is among the duties of the DHD.	112	**62.6**	81	**57.4**	193	**60.3**
Conducting disciplinary procedures for personnel in health institutions is among the duties of the DHD.	104	**58.4**	83	**59.3**	187	**58.8**
The DHD supervises traditional, complementary, and alternative medicine practices permitted by the Ministry and enforces measures in line with Ministry policies.	109	**59.6**	85	**58.6**	194	**59.1**
Executing processes related to disciplinary and administrative sanctions given to personnel in health institutions is among the duties of the DHD.	98	**55.1**	72	**51.1**	170	**53.3**
The DHD supervises private health institutions in the district.	97	**53.6**	73	**50.3**	170	**52.1**
The DHD conducts inspections of emergency, intensive care, and similar medical service units.	91	**50.8**	66	**47.1**	157	**49.2**
The DHD monitors emergency, intensive care, and similar medical service units.	91	**50.8**	60	**42.9**	151	**47.3**
The DHD conducts inspections of hospital beds.	86	**48.3**	64	**45.7**	150	**47.2**
The DHD carries out the registration procedures of hospital beds.	77	**43.0**	53	**37.6**	130	**40.6**
The DHD monitors hospital beds.	73	**40.8**	56	**39.7**	129	**40.3**
The DHD carries out the registration procedures of emergency, intensive care, and similar medical service units.	68	**38.2**	60	**42.6**	128	**40.1**
The DHD ensures the licensing of inpatient health institutions.	81	**44.5**	57	**39.6**	138	**42.3**
Handling applications related to organ donation is among the duties of the DHD.	59	**33.0**	47	**33.3**	106	**33.1**

DHD, district health directorates.*Percentages were calculated using valid responses to each item as the denominator; item-level missingness was minimal (<15 responses per item; <5.0%).

who did not complete the rotation it was 41.9 ± 15.7 (median 44.5, range 0-67). There was no statistically significant difference in total correct responses between the 2 groups ($P = .315$).

Discussion

In Türkiye, the implementation of the Health Transformation Program in the 2000s led to a significant increase in healthcare privatization.[11,12] Simultaneously, efforts to strengthen primary healthcare services were undertaken with the enactment of the Family Medicine Law in 2013 and the issuance of the Regulation on CHCs and Affiliated Units in 2015.[2,3] These reforms aimed to enhance the accessibility, coordination, and quality of first-line healthcare services across the country. In the following years, primary healthcare services continued to be strengthened in line with the decisions made at the Alma-Ata and Astana declarations.[13,14] Within the scope of primary healthcare services, existing DHD and CHC consist of multiple units and operate within a comprehensive framework.[15,16]

The findings of this study indicated differences in students' knowledge levels regarding the duties of various units of the DHD. When students' knowledge of DHD duties was evaluated according to duty groups, the highest level of knowledge was observed in the "Other" category (68.2%), whereas the lowest level of knowledge was found in the "Management" category (58%). This suggests that topics related to the management functions of DHDs may need to be addressed more comprehensively within the medical education curriculum.

Among the management-related duties of the DHD, the most well-known task was the planning and coordination of health services (90.6%). Conversely, the least known duty was that carrying out organ donation application procedures is one of the DHD's responsibilities (33.1%). This finding indicates that students are

Table 3. Students' Knowledge of the Duties of the District Health Directorate Related to NCDs, CAWRH and CEDSTC*

Question	Fifth-Year Students, n (%)		Sixth-Year Students, n (%)		Total, n (%)	
The DHD conducts activities to inform and raise awareness among the public about healthy nutrition and active living.	164	**91.1**	126	**88.1**	290	**89.8**
The DHD ensures the provision of cancer early diagnosis and screening services.	136	**75.1**	119	**83.2**	255	**78.7**
The DHD is involved in combating NCDs.	136	**76.4**	114	**80.3**	250	**78.1**
At the DHD, data from newborn heel-prick screening tests are entered into the system.	134	**74.9**	116	**80.0**	250	**77.2**
The DHD supervises pregnancy, childbirth, and postpartum care services.	137	**75.3**	110	**75.9**	247	**75.5**
The DHD develops projects to promote healthy lifestyle habits.	144	**79.1**	128	**88.9**	272	**83.4**
The DHD implements the National Tobacco Control Program at the district level.	156	**86.7**	113	**79.0**	269	**83.3**
The DHD provides child health and youth services.	146	**80.2**	118	**81.4**	264	**80.7**
The DHD ensures the provision of pregnancy, childbirth, and postpartum care services.	123	**67.6**	101	**69.7**	224	**68.5**
The DHD coordinates community-based mental health services.	119	**66.9**	99	**70.2**	218	**68.3**
Healthy Life Centers operate under the DHD.	126	**69.6**	89	**62.2**	215	**66.4**
The DHD conducts advocacy activities to eliminate stigma and discrimination against patients with mental disorders.	112	**62.6**	86	**61.0**	198	**61.9**
Mammography is used for breast cancer screening in units affiliated with the DHD.	94	**51.9**	92	**64.8**	186	**57.6**
Community Mental Health Centers operate under the DHD.	109	**60.2**	76	**53.1**	185	**57.1**
Human Papillomavirus (HPV) DNA testing is used for cervical cancer screening in units affiliated with the DHD.	89	**48.9**	81	**57.4**	170	**52.6**
Community mental health centers monitor patients with chronic severe mental disorders.	79	**44.1**	90	**62.9**	169	**52.5**
In DHD-affiliated units, intrauterine devices are provided as part of family planning services.	86	**47.0**	84	**57.9**	170	**51.8**
The DHD ensures the supervision of tobacco control inspections.	100	**54.9**	79	**55.2**	179	**55.1**
Individual mental health counseling is provided through social workers at the DHD.	108	**60.3**	69	**48.6**	177	**55.1**
Active cancer registration is conducted at the DHD.	85	**47.2**	65	**45.5**	150	**46.4**
Passive cancer registration is conducted at the DHD.	77	**42.8**	61	**43.0**	138	**42.9**
Community mental health centers provide treatment for patients with chronic severe mental disorders.	56	**30.8**	69	**48.6**	125	**38.6**
Colorectal cancer screening via colonoscopy is conducted in DHD-affiliated units.	75	**41.2**	49	**34.3**	124	**38.2**

HPV DNA: Human papillomavirus deoxyribonucleic acid, CAWRH, child, adolescent, women, and reproductive health; DHD, district health directorates, IUDs, intrauterine devices; CEDSTC , cancer early diagnosis, screening and training centers; NCDs, non-communicable diseases.
*Percentages were calculated using valid responses to each item as the denominator; item-level missingness was minimal (<15 responses per item; <5.0%).

generally aware of the DHD's managerial duties but have gaps in knowledge regarding certain specific duties. The lack of knowledge, particularly in an important area such as organ donation, suggests a need to enhance education and awareness activities in this field. Similarly, domestic studies have reported that healthcare professionals have insufficient knowledge about tissue and organ donation.[17,18]

Regarding the duties related to NCDs and CEDSTC units, the most well-known task among students was conducting activities to inform and educate the public about healthy nutrition and active living (89.8%). This finding indicates that students possess a general level of knowledge about preventive healthcare services and public health. The inclusion of these topics in undergraduate public health courses may have positively contributed to this knowledge.

For duties related to communicable diseases, the most well-known task was the timely notification of communicable diseases (90.4%). However, the least known task was that tuberculosis patients receive directly observed therapy (37.5%). This indicates that students possess theoretical knowledge about the prevention and control of communicable diseases and are aware that

Table 4. Students' Knowledge of the Duties of the District Health Directorate Related to the Communicable Diseases Unit*

Question	Fifth-Year Students, n (%)		Sixth-Year Students, n (%)		Total, n (%)	
Timely reporting of communicable diseases is carried out at the DHD.	164	**90.1**	128	**90.8**	292	**90.4**
The DHD ensures that necessary measures are taken to prevent potential outbreaks due to communicable diseases.	156	**86.7**	124	**87.3**	280	**87.0**
Tuberculosis control dispensaries operate under the DHD.	107	**58.8**	82	**57.7**	189	**58.3**
Monitoring of tuberculosis patients is conducted by the DHD.	86	**47.3**	78	**54.9**	164	**50.6**
Directly observed therapy (DOT) for tuberculosis patients is performed by the DHD.	67	**36.8**	55	**38.5**	122	**37.5**

DHD, district health directorates; DOT, directly observed therapy. *Percentages were calculated using valid responses to each item as the denominator; item-level missingness was minimal (<15 responses per item; <5.0%).

notifications are handled through the DHD, but they lack practical knowledge regarding the direct observation of tuberculosis treatment. On-site visits to Tuberculosis Control Dispensaries within the scope of public health courses could help fill these knowledge gaps and enhance students' practical skills.

Regarding environmental health duties, the most well-known task was ensuring the inspection of environmental health services (87.3%). However, conducting inspections of biocidal product sales sites was the least known duty (50.3%). Similarly, duties related to inspecting the production and usage sites of biocidal products were also poorly recognized. This indicates that while students are generally aware of environmental health inspection services, the specific relationship between biocidal products, environmental health, and the DHD is not fully understood. The inclusion of a DHD rotation within public health internships, and the fact that some students coincided with periods when biocidal product inspections were being conducted, may explain the findings and demonstrate the educational value of these rotations, supporting their continuation.

Among other duties of the DHD, the most well-known task was organizing health education activities (84.7%), whereas the least known duty was the planning of medicolegal services (36.9%). This indicates that while students are aware of the existence of education and awareness activities at the DHD, most are not aware that medicolegal services are planned by the DHD at the district level. Medico-legal duties within DHDs can be reinforced for students during both public health and forensic medicine rotations.

When the distribution of total scores was examined, no statistically significant difference was observed between fifth- and sixth-year students in terms of knowledge levels. Similarly, no significant statistical difference was found between gender and total scores.

Although no study exactly comparable to the present study was found in the national or international literature, there are studies investigating medical students' knowledge levels regarding primary healthcare services, health education, and health consultancy services.[19-21]

In a study conducted by Çalışkan[19] and colleagues with fifth-year medical students in Ankara, it was found that physicians' knowledge and skills regarding oral and dental health in primary healthcare services were satisfactory in 11.7% of students and partially satisfactory in 36%.

Table 5. Students' Knowledge of the District Health Directorate's Environmental Health Duties *

Question	Fifth-Year Students, n (%)		Sixth-Year Students, n (%)		Total, n (%)	
The DHD ensures the supervision of environmental health services.	157	**86.7**	126	**88.1**	283	**87.3**
The DHD environmental health unit participates in research and development activities to ensure the provision of safe drinking and utility water in settlements.	128	**69.9**	106	**72.6**	234	**71.1**
The DHD environmental health unit collects network water samples and conducts the necessary analyses.	125	**68.3**	97	**66.4**	222	**67.5**
The DHD environmental health unit collects packaged water samples and conducts the necessary analyses.	115	**62.8**	85	**58.2**	200	**60.8**
The DHD environmental health unit collects swimming pool water samples and evaluates water quality.	100	**54.6**	95	**65.1**	195	**59.3**
The DHD environmental health unit supervises the production sites of biocidal products.	102	**55.4**	85	**59.0**	187	**57.0**
The DHD environmental health unit supervises the usage sites of biocidal products.	96	**52.5**	86	**58.9**	182	**55.3**
The DHD environmental health unit supervises the sales points of biocidal products.	87	**47.3**	78	**54.2**	165	**50.3**

DHD, district health directorates. *Percentages were calculated using valid responses to each item as the denominator; item-level missingness was minimal (<15 responses per item; <5.0%).

Table 6. Students' Knowledge of the Other Duties of the District Health Directorate*

Question	Fifth-Year Students, n (%)		Sixth-Year Students, n (%)		Total, n (%)	
The DHD organizes health education activities.	146	**81.6**	126	**88.7**	272	**84.7**
The DHD conducts activities on occupational accident prevention.	148	**82.7**	118	**83.7**	266	**83.1**
The DHD coordinates processes related to occupational health and safety.	146	**81.6**	113	**80.1**	259	**80.9**
The DHD provides or ensures the provision of healthcare services in collective living places such as prisons and military facilities.	136	**74.7**	97	**67.8**	233	**71.7**
The DHD ensures the organization of healthcare services during natural disasters and other emergencies.	134	**74.0**	97	**67.4**	231	**71.1**
The DHD ensures the preparation of emergency and crisis management plans in the health sector.	119	**65.4**	105	**72.9**	224	**68.7**
The DHD ensures the implementation of emergency and crisis management plans in the health sector.	123	**67.2**	95	**66.0**	218	**66.7**
The DHD provides health services required under migrant health programs.	109	**59.2**	101	**69.2**	210	**63.6**
Joint OSGB operate under the DHD.	115	**63.5**	88	**62.4**	203	**63.0**
The DHD plans death notification services.	117	**64.6**	76	**53.1**	193	**59.6**
The DHD plans forensic medical services.	67	**36.8**	53	**37.1**	120	**36.9**

DHD, district health directorates; OSGB, joint occupational health and safety units. *Percentages were calculated using valid responses to each item as the denominator; item-level missingness was minimal (<15 responses per item; <5.0%).

In studies conducted by Limnili G and colleagues with university students in İzmir, when students were asked about their needs from primary healthcare services, 84.9% reported seeking examination when ill, 67.4% reported needing prescriptions, 48.9% reported needing health reports, and 5.4% reported visiting primary healthcare institutions for consultation.[20] The requested consultation topics were identified as general health education (34.3%), psychological counseling (25.7%), nutrition counseling (22.9%), reproductive health counseling (11.4%), and smoking cessation counseling (10.6%).[20]

In Pakistan, a cross-sectional study was conducted to assess undergraduate medical students' knowledge and attitudes toward primary healthcare, as well as to compare students from public and private medical schools. The Primary Health Care Questionnaire (PHCQ) was administered. Students' total knowledge scores ranged from 8 to 17, with a mean score of 12.6 (SD = 1.398). Total attitude scores for all participants ranged from 59 to 82, with a mean score of 71.12 (SD = 4.382).[21] Unlike the previous study, female students in this study demonstrated higher knowledge levels than male students. The results indicated that undergraduate medical students in Pakistan had good knowledge of the fundamental concepts of primary healthcare and generally held positive attitudes toward primary healthcare.[21]

In a study conducted in Vietnam, final-year medical students were found to have a high level of knowledge regarding activities in primary healthcare, including health promotion and education (98.3%), food safety and security (92.8%), provision of safe water and basic sanitation (95.8%), maternal and child care and family planning (98.8%), expanded immunization programs (98.8%), prevention of epidemic diseases (95.8%), treatment of common diseases and injuries (69.5%), provision of essential medicines (84.8%), and community health management (94.3%).[22]

In China, a study investigating medical and nursing students' willingness to work in primary care and rural health found that the majority of students were willing to practice in primary care (55% of medical students and 59% of nursing students).[23] As emphasized in student education, primary healthcare services are not limited to patient care but also include health promotion and development activities. The above studies, similar to the findings, indicate that students recognize the importance of receiving counseling and health education from primary healthcare services for any health-related reason.

Limitations

This study has several limitations. First, due to the use of a convenience sampling method, the sample may not fully represent all fifth- and sixth-year medical students; this may introduce selection bias and limit the generalizability of the findings. In addition, the study was conducted in only 2 medical schools within a single city (Istanbul), which may further restrict external validity. The cross-sectional design also limits the ability to draw causal inferences. Moreover, because the study was primarily descriptive, multivariable regression analysis was not performed; therefore, independent predictors of knowledge level and adjusted associations between student characteristics and knowledge performance could not be evaluated. Furthermore, the use of a non-standardized measurement tool and self-reported questionnaire data may introduce information bias, including recall bias and social desirability bias, potentially affecting the accuracy of the measured knowledge levels. Therefore, these limitations should be taken into account when interpreting the findings.

Primary healthcare services hold a crucial place within health systems both globally and in Türkiye. The duties of DHDs and CHCs, which operate and manage services at the frontline of the

system, are therefore highly important. It is essential for fifth- and sixth-year medical students (intern physicians), who will begin their professional practice in these units, to be familiar with their responsibilities before graduation.

In this study, students correctly answered 64.8% of questions related to the first group, communicable diseases; 63.6% for the second group, environmental health; 63.5% for the third group, NCDs, CAWRH, and CEDSTC activities; 58% for the fourth group, management; and 68.2% for the fifth group, other duties. The fact that approximately half or more of the students provided correct answers across all categories indicates their willingness to learn about these topics.

Although the results are generally positive, it is concluded that theoretical and practical education in public health should be reviewed and strengthened to further enhance students' knowledge levels in this area. Additionally, conducting further research in this field is recommended.

Data Availability Statement: The data that support the findings of this study are available on request from the corresponding author.

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