Importance of Home Visits in Peritoneal Dialysis

Rumeyza Kazancioglu, MD; Savas Ozturk, MD; Lamia Yucel, RN; Sinem Guvenc, RN; Serpil Ekiz, RN; Sevel Dogan, RN

Dr. Kazancioglu is clinical director, Dr. Ozturk is a nephrologist in the Nephrology Clinic, and L. Yucel, S. Ekiz, and S. Dogan are peritoneal dialysis nurses in the adult PD unit, Haseki Training and Research Hospital; S. Guvenc is a peritoneal dialysis product specialist at Eczacibasi-Baxter Hospital Products, Istanbul, Turkey.

BACKGROUND: Peritoneal dialysis (PD) is a treatment option that enables patients to perform dialysis in their own homes without being separated from social life. This study assessed the training provided by the PD unit to patients practicing self-treatment at home.

METHODS: Thirty-two patients (13 women, 19 men; mean age: 44.3 ± 15.3 years) answered a training assessment form comprising 31 questions during home visits. The answers were evaluated according to the incomplete/complete information system and assessed by percentage statistics.

RESULTS: The mean number of correct answers was 26.4 ± 3.28/31 (81%). Questions related to feeding, constipation, changing room, peritonitis, infections, medication, and material were those most often incorrectly answered.

CONCLUSIONS: Many patients were observed to perceive the said information in a detailed manner. Lack of information about food to be avoided proved the importance of a dietitian. Also, patients focused only on peritonitis and had incomplete knowledge about the symptoms of and how to prevent place-of-exit and tunnel infections. This indicates that training should be repeated and tested at predetermined intervals.

End-stage renal disease leading to renal replacement therapies imposes strict regulations on the lifestyle of our patients. Peritoneal dialysis (PD) is a treatment option enabling patients to have a higher quality life and to perform dialysis in their own homes without being separated from their social life.[1] Patients are taught their own type of dialysis in the PD unit before performing their therapies on their own. Generally, this education is carried out during a preset training period. The major aim is to implement the proper methods of performing PD as well as to give the minimum necessary information and skills needed to continue and manage any unwanted event during this treatment.[1]

The compliance of the individual becomes crucial to prevent potential complications.[2] Many studies have demonstrated a high noncompliance rate among PD patients.[3] Infectious complications of PD are one of the main reasons for a patient to transfer to hemodialysis (HD) and are the leading cause of hospitalization among PD patients.[4] Moreover, peritonitis is reported to be directly responsible for 1% –6% of deaths.[5] There are also data illustrating the decreased incidence of peritonitis and exit-site infection with home training, even in patients with learning difficulties or those assisted at home by a private nurse.[6-8]

Also, home visits and education may improve patient compliance with dietary restrictions on salt and fluid intake and thus improve patient fluid status.[9] This study assessed the effectiveness of the training provided by the PD unit to patients practicing self-treatment at home.

Material and Methods

Thirty-two patients followed up by our PD unit and practicing PD for more than 3 months were included in the PD training assessment study in 2006.

The patients were preinformed and visited at their homes by 2 people at the time most convenient time for the participant after obtaining necessary permission from the hospital's review board. During the visits, a training assessment form comprising 31 questions based on the routine PD education of our unit organized in 8 groups (nutrition, constipation, exchange room, peritonitis, infections, medications, personal hygiene, and dialysis materials) was filled in on the basis of answers supplied by the patients (*Table I*).

Answers were assessed according to the incomplete/complete information system. The mean values ± standard deviation ($X \pm SD$) and standard error ($X \pm SE$) were defined. Statistical evaluation of these results was carried out by SPSS pocket program. A p value less than 0.05 was considered statistically significant. Analysis of correlation was performed with the Pearson or Spearman's correlation test. Differences between group means and degrees of

TABLE I. Training Evaluation Form

I. NUTRITION a. What do you pay attention to in your daily nutrition? b. Can you make a list of your daily diet? c. How much salt do you use in your meals?	V. INFECTIONS a. When did your transfer set get replaced? b. What should be done if transfer set or the tips of the bags are contacted with floor? c. How often should the transfer set be replaced? d. What should you use for catheter dressing? e. What are the signs of catheter exit site infection? f. How can you understand whether there is a hernia or leakage from dialysate?
II. CONSTIPATION a. Do you have constipation complaint? b. What kind of problems are due to constipation? c. What do you do when you get constipated? d. What do you pay attention in order not to get constipated?	VI. MEDICATIONS a. Who is measuring your blood pressure? b. Do you use IV injection? Who is giving it? c. How do you calculate the amount of fluid you will drink in a day? d. What may be the reason if your fluid is not completely discharged? What should be done in this situation? e. How do you understand that too much fluid is accumulated in your body? What should be done in this situation? f. How many times and in which hours do you make exchanges?
III. EXCHANGE ROOM a. How and how often do you clean the area where you perform dialysis? b. Is there anyone else entering to the room during dialysis? c. How should be the order of dialysis room? d. What is most difficult for you during the exchange?	VII. PERSONAL HYGIENE a. How often do you take a bath? b. How often do you wash your hands?
IV. PERITONITIS a. What is peritonitis? b. What are the signs of peritonitis? c. How many times did you get peritonitis? What should you do if you get peritonitis? d. What should you do in order not to get peritonitis?	VIII. MATERIALS a. How do you warm the solution bags if you don't have a heater? b. What are the favorable and unfavorable aspects of the peritoneal dialysis?

importance were determined by one-way analysis of variance.

Results

Thirteen of the patients were female, whereas 19 were male, and they had a mean age of 44.3 ± 15.3 years. Twenty-four patients (75%) were on continuous ambulatory peritoneal dialysis (CAPD), whereas 8 patients (25%) were on nocturnal ambulatory peritoneal dialysis (NAPD). The average time patients had been on PD was 13 months (3–28 months).

Examination of the answers given to all the questions revealed that the average number of correct answers was 26.4 ± 3.28/31 questions (81%). When each question was assessed separately, it became apparent that feeding, 1a; constipation, 2b; exchanging room, 3c; peritonitis, 4a; infections, 5b and 5f; use of medication, 6b and 6c; and material questions, 8a were the questions most often incorrectly answered.

Women were less educated than men, with a ratio of 80.6% in the former and of 77% in the latter ($p = 0.003$). Furthermore, sex did not effect the total right answer rate, but women answered questions related to drug use more correctly than men ($p = 0.019$). Educational level showed only a positive correlation with the right answer rate related to personal hygiene ($r = 0.364$, $p = 0.041$).

The right answer rate of questions related to infection showed a positive correlation with exchange room, drug use, constipation, and total right answer rate but a negative correlation with patient age ($r = 0.378$, $p = 0.033$; $r = 0.403$, $p = 0.022$; $r = 0.442$, $p = 0.011$; $r = 0.690$, $p = 0.001$; $r = -0.439$, $p = 0.012$, respectively). Total right answer rate showed negative correlation with patient age ($r = -0.39$, $p = 0.027$) but not with PD age.

Discussion

As PD is a type of treatment entailing the patient's active participation, it is undoubtedly highly important to train the patients and then to check their training. Studies have demonstrated high noncompliance rate among PD patients. Although patient survival did not differ, Bernardini et al. showed that the rate of being transferred to hemodialysis for uremia and the peritonitis rate were higher in noncompliant patients than in compliant patients (1.03/year vs.

0.66/year, $p < 0.03$), as were days hospitalized (908 per 100 patient-years vs. 1016 per 100 patient-years, $p < 0.04$). Technique survival was also lower in the noncompliant group.[2]

In our survey-type study, answers were recorded on the basis of information provided during standard training by our unit. Examination of the answers given to all the questions revealed that the average number of correct answers was 26.4 ± 3.28/31, indicating that the patients perceived the information provided to them in a detailed manner. However, the examination of question groups one by one revealed some shortcomings with some issues.

In particular, lack of information about food to be avoided in the diet for patient nutrition served once again to show the importance of a dietitian being employed by the unit.

Although in our study women were less educated than men, women correctly answered questions related to drug use more often than men did. Educational level showed a positive correlation with right answer rate related to personal hygiene ($r = 0.364$, $p = 0.041$). Russo et al. also demonstrated that a greater need for retraining for patients with a lower degree of education.[1] In that study, as in our study, sex had no effect on the need for retraining and, opposite to our results, younger patients (less than 55 years old) needed more retraining.[1]

In another study, it has been shown that the early-onset peritonitis group was younger than the control group and had a higher peritonitis rate (1.18 episodes vs. 0.28 episodes per patient-year).[10] The combined rate of technique failure and death in the early-onset group was almost twice as high as that in the control group (0.282 vs. 0.175 per patient-year).[10] The total right answer rate in our study showed a negative correlation with patient age ($r = -0.39$, $p = 0.027$) but not with PD age. In addition, Borras et al. showed that patients with learning difficulties were older.[7] Though our data did not include the peritonitis rate, if combined with the literature shown, it may be concluded that younger PD patient may have more need of retraining because of noncompliance and that older PD patients need more retraining because of the learning difficulties.

Infectious complications of PD are reported to be directly responsible for 1%–6% of deaths.[5,11] Effects of patient education on the peritonitis rate were also studied. There are data illustrating the decreased incidence of peritonitis and excite-site infection with home training, even for patients with learning difficulties.[6,7,12] It was interesting to find out that patients assisted at home by a private nurse have a higher risk of developing peritonitis than family-assisted patients, unless additional regular home visits are organized by the original training center.[8]

As far as the issue of infection is concerned, in the present study, it was also observed that patients mostly focused only on information about peritonitis and had incomplete knowledge about the symptoms of and how to prevent place-of-exit and tunnel infections.

In addition, in our study, the inquiry also indicated that patients were having serious problems in practice while heating up liquids.

Conclusions

Although the patients were adequately knowledgeable in daily practice, the theoretical base as well as practical knowledge about rarely encountered situations seemed to be insufficient. This indicates that training should be repeated and tested at predetermined intervals. D&T

References

1. Russo R, Manili L, Tiraboschi G, et al. Patient retraining in peritoneal dialysis: why and when it is needed. *Kidney Int.* 2006;70:S127-132.
2. Bernardini J, Piraino B. Compliance in CAPD and CCPD patients as measured by supply inventories during home visits. *Am J Kidney Dis.* 1998;31:101-107.
3. Bernardini J, Piraino B. Measuring compliance with prescribed exchanges in CAPD and CCPD patients. *Perit Dial Int.* 1997;17:338-342.
4. Fried LF, Abdi S, Bernardini J, et al. Hospitalization in peritoneal dialysis patients. *Am J Kidney Dis.* 1999;33:927-933.
5. Krishnan M, Thodis E, Ikonomopoulos D, et al. Predictors of outcome following bacterial peritonitis in peritoneal dialysis. *Perit Dial Int.* 2002;22:573-581.
6. Castro MJ, Celadilla O, Muñoz I, Martínez V, et al. Home training experience in peritoneal dialysis patients. *EDTNA ERCA J.* 2002;28:36-39.
7. Borràs M, Sorolla C, Carrera D, et al. Patients with learning difficulties: outcome on peritoneal dialysis. *Adv Perit Dial.* 2006;22:116-118.
8. Verger C, Duman M, Durand PY, et al. Influence of autonomy and type of home assistance on the prevention of peritonitis in assisted automated peritoneal dialysis patients. An analysis of data from the French Language Peritoneal Dialysis Registry. *Nephrol Dial Transplant.* 2007;22:1218-1223.
9. Quan L, Xu Y, Luo SP, et al. Negotiated care improves fluid status in diabetic peritoneal dialysis patients. *Perit Dial Int.* 2006;26:95-100.
10. Harel Z, Wald R, Bell C, Bargman JM. Outcome of patients who develop early-onset peritonitis. *Adv Perit Dial.* 2006;22:46-49.
11. Gokal R, Jakubowski C, King J, et al. Outcome in patients on continuous ambulatory peritoneal dialysis and haemodialysis: 4-year analysis of a prospective multicentre study. *Lancet.* 1987;1:105.
12. Seaward-Hersh A. Ensuring best practice in the treatment of peritonitis and exit site infection. *Nephrol Nurs J.* 2004;31:585-586.