Sakarya Üniversitesi Holistik Sağlık Dergisi
Sakarya University Journal of Holistic Health

ISSN : 2687-6078
Publisher : Sakarya University

Vol. 7, No. 1, 61-70, 2024
DOI: https://doi.org/10.54803/sauhsd.1415058

Research Article

Relationship Between Fluid Control and Symptom Severity in Hemodialysis Patients

İkbal Demiralp[1], Feride Taşkın Yılmaz[2*]

[1] Istanbul Gelişim University Vocational School of Health Services, Istanbul, Türkiye, ikbaldemiralp42@gmail.com

[2] Sakarya University of Applied Sciences, Faculty of Health Sciences, Sakarya, Türkiye feridetaskinyilmaz@subu.edu.tr

*Corresponding Author

Abstract

Objective: This study was conducted to determine fluid control and symptom severity in hemodialysis patients, to reveal related factors, and to determine the relationship between fluid control and symptom severity.

Methods: The descriptive and correlational study was conducted with 150 patients receiving treatment in a private hemodialysis center in Istanbul between 01-30 April 2022. Data were obtained using a patient identification form, the Fluid Control Scale in Hemodialysis Patients and the Dialysis Symptom Index.

Results: The mean Fluid Control Scale in Hemodialysis Patients score of the patients was 50.75±8.13. The mean Dialysis Symptom Index score of the patients was 19.09±17.08. In addition, it was found that there was a weak negative correlation between the mean scores of the Fluid Control Scale in Hemodialysis Patients and the Dialysis Symptom Index (r=-0.349; p<0.05).

Conclusion: It has been determined that the fluid control of hemodialysis patients is generally at a moderate level, the symptom severity is quite low, and the symptom level may decrease as the level of knowledge, behavior, and attitude toward fluid control increases. It is recommended that nurses should regularly educate and counsel hemodialysis patients about the importance of fluid control and closely monitor the patient's compliance with fluid control.

Keywords: Hemodialysis, Fluid control, Symptom severity, Nursing care

Received: 05.01.2024
Accepted: 29.04.2024
Available Online: 30.04.2024

1. Introduction

Hemodialysis (HD) is the most preferred renal replacement treatment method, which allows the removal of toxic substances accumulated in the body due to end-stage renal failure and waste products resulting from metabolism and is based on the rules of physics (1). HD has advantages such as being easily accessible through health institutions, being administered by a health professional, and prolonging life (2). However, HD treatment also has various disadvantages in terms of requiring compliance with fluid and nutrition, causing loss of time and labor, performing invasive procedures in each HD session, and requiring surgical procedures for arteriovenous fistula or other intervention methods (3). Successful management of the HD treatment process is very important in improving the quality of life by reducing the morbidity and mortality rate in end-stage renal failure. The success of HD treatment; Patients' compliance with diet and fluid restriction, regular use of their medications, uninterrupted health checks and laboratory tests, and effective ultrafiltration (UF) have a significant impact (4).

Patients receiving HD treatment experience a wide range of symptoms such as constipation, diarrhea, nausea, loss of appetite, muscle contraction, edema, dyspnea, fatigue, insomnia, pain in bones or joints, dry skin, itching, and sexual dysfunction due to uremia caused by chronic renal failure. (5). HD treatment aims to prevent the development of uremic symptoms, fluid accumulation, fluid-electrolyte, and acid-

Cite as: Demiralp İ, Taşkın Yılmaz F. Relationship Between Fluid Control and Symptom Severity in Hemodialysis Patients. Sakarya Üniversitesi Holistik Sağlık Dergisi. 2024;7(1): 61-70. https://doi.org/10.54803/sauhsd. 1415058

This is an open Access paper distributed under the terms of Conditidions of the Creative Commons Attribution-NonCommercial 4.0 International License.

base balance disorders in the patient (6). In the effective management of the treatment process, patients' compliance with the treatment must be high (7).

The issue that HD patients experience the most stress and difficulty in adapting to treatment is fluid restriction (8). Fluid control in HD patients depends on the balance between daily sodium intake, fluid intake, urine output, and the amount of UF in dialysis sessions. HD patients are recommended to drink fluids at a rate of urinary volume + 500 mL/day (9). Due to increased fluid in patients, symptom burden, morbidity, and mortality rates increase. If the patient complies with the treatment and pays attention to fluid restriction, complications can decrease and quality of life can increase (10). It is stated in the literature that if interdialytic weight gain is not taken into consideration, complications and mortality rates such as hypertension, hypotension, muscle cramps, congestive heart failure, and ascites are high (11). In a study conducted by Kaplan and Karadağ (2022), it was found that symptoms were less in HD patients with high compliance with fluid control (12). In the study of Atik et al. (2020), it was found that patients experiencing symptoms of fatigue and decreased energy had poor fluid control (13). In another study, it was determined that the level of depression could decrease with compliance with fluid therapy (11). Therefore, maintaining fluid control in HD patients is of vital importance.

A multidisciplinary team approach is very important in the compliance of HD patients with treatment. Nurses who have direct communication with the patient have important roles in this team. Nurses' diagnosis of symptoms in HD patients, planning nursing interventions, and planning and implementing effective nursing interventions during complications contribute positively to the treatment (14). Additionally, nurses need to evaluate the treatment compliance process in HD patients. This study was conducted to determine fluid control and symptom severity in HD patients and to determine the relationship between fluid control and symptom severity. It is anticipated that the findings obtained in the study will guide nursing interventions on symptom management in HD patients and contribute to the literature.

Questions of study:

- What is the level of fluid control in HD patients?
- What is the level of symptom severity in HD patients?
- Is there a relationship between fluid control and symptom severity in HD patients?

2. Methods

2.1. Type, population, and sample of study

The study was conducted in a descriptive and relationship-seeking type. The population of the study consisted of patients who received HD treatment at a private dialysis center in Istanbul between 01-30 April 2022. The number of HD patients registered in this center, including acute/chronic, and guest/permanent, is 324. The annual average number of registered patients is 279. The study was conducted with 150 patients who met the inclusion criteria. To determine the reliable adequacy of the sample size, power analysis was performed using the G-Power 3.1 program. In the power analysis, it was determined that at the 0.05 significance level, the effect size was 0.80 and the power was 95%. The obtained values show that the number of samples is sufficient (12).

Inclusion criteria;

- Volunteering to participate in the study,
- Being 18 years or older,
- Having no problems with hearing, reading, and understanding,
- Having the cognitive competence to answer study questions.

2.2. Data collection tools

The study data were obtained using the patient diagnosis form, Fluid Control Scale in Hemodialysis Patients (FCSHP), and Dialysis Symptom Index (DSI).

Patient diagnosis form: The form was prepared by the researchers in light of the literature (2,4,11,16) and consists of 11 questions regarding the sociodemographic characteristics of the patients and 17 questions regarding the disease and treatment characteristics.

Dialysis Symptom Scale: The scale was developed by Weisbord et al. in 2005 from the short form of the Memorial Symptom Diagnostic Scale to measure the physical and emotional symptoms encountered by HD patients and the severity of these symptoms. The validity and reliability of DSI Turkish was made by Foreword and Master Yeşilbakan in 2013. DSI includes 30 physical and emotional symptoms. Patients are asked to answer yes or no to the symptoms they have experienced during the last week, and if yes, to evaluate the severity. Severity assessment is scored on a 5-point Likert scale, with 0 = not at all and 4 = very much. The scale score is determined by adding up the scores obtained from the results. The score range varies between 0-150, and it is seen that the severity of symptoms increases as the score increases. In the Turkish validity and reliability study of the scale, Cronbach's alpha coefficient was determined as 0.83 (15). In this study, the Cronbach's alpha value of the scale was found to be 0.87.

Fluid Control Scale in Hemodialysis Patients: The scale was developed by Coşar and Pakyüz in 2012 to measure the knowledge, attitude, and behavior about fluid restriction in HD patients. The scale is a 3-point Likert type and consists of 24 items. The scale has three sub-dimensions: knowledge, behavior, and attitude. Nine items on the scale are scored in the reverse direction. Scores between 7-21 can be obtained from the knowledge sub-dimension of the scale, scores between 11-33 from the behavior sub-dimension, scores between 6-18 from the attitude sub-dimension, and scores between 24-72 from the general sub-dimension. As the score obtained from the scale increases, fluid control compliance also increases. In the development study of the scale, the overall Cronbach alpha value was 0.88, the knowledge sub-dimension was 0.92, the behavior sub-dimension was 0.80, and the attitude sub-dimension was 0.67 (17). In this study, Cronbach's alpha coefficient for the overall scale was found to be 0.78, 0.78 in the knowledge sub-dimension, 0.77 in the behavior sub-dimension, and 0.83 in the attitude sub-dimension.

2.3. Statistical analysis

The data obtained in the study were analyzed in a computerized environment with the SPSS 25.00 package program. While investigating whether the variables came from a normal distribution, the Kolmogorov-Smirnov test was used due to the number of units. In addition to descriptive statistics, the Spearman Correlation test was applied when examining the relationship between scales because they did not come from a normal distribution. $P<0.05$ was used as the significance level when interpreting the results.

2.4. Ethical dimension and implementation of study

To collect data in the study, written approval was obtained from the ethics committee of a university (date 24.02.2022, number 2022/ 02) and from the institution where the study was conducted (Approval date: 16/03/2022). The participants were informed about the purpose of the study, its plan, and where the data would be used, and the principle of "Respect for Human Dignity" was fulfilled voluntarily, the principle of "Respect for Autonomy" was fulfilled, and the principles of "Confidentiality and Protection of Confidentiality" were fulfilled by keeping the data confidential. Written permission was obtained from the participants by filling out an informed consent form. Data were collected by face-to-face

interview method. Information regarding the disease and metabolic parameters was obtained from the patient's file with his/her consent. Data collection took approximately 20-25 minutes.

3. Results

According to the study, 32% of the patients were over 65 years old, 76.7% were male, and 47.3% had completed primary school. The study also found that 78.7% of the patients were married, 91.3% were unemployed, and 69.3% had an income equal to their expenses. In terms of their general health status, 62.7% of the patients reported it as good. Lastly, 23.3% of the participants were smokers at the time of the study (Table 1).

Table 1. Distribution of Patients' Personal Characteristics (N=150)

Characteristics		**n**	**%**
Age	Under 65 years	102	68.0
	Over 65 years	48	32.0
Gender	Female	35	23.3
	Male	115	76.7
Education status	Not illiterate	5	3.3
	Primary school	71	47.3
	Middle school	32	21.3
	High school	22	14.7
	Licence	20	13.3
Marital status	Married	118	78.7
	Single	32	21.3
Working status	Yes	13	8.7
	No	137	91.3
Income status	Income exceeds expenses	24	16.0
	Income equals expenses	104	69.3
	Income is less than expenses	22	14.7
Place of residence	City center	149	99.3
	Town	1	0.7
Living status	Alone	10	6.7
	With family	140	93.3
Smoking status	Yes	35	23.3
	Left	74	49.3
	Never	41	27.3
Ability to perform daily living activities	Can do it alone	142	94.7
	Can do it with help	8	5.3

The average duration of kidney disease diagnosis of the participants was 99.87±81.73 months and the average duration of HD treatment was 67.23±56.85 months. It was determined that 21.3% of the patients started HD treatment due to chronic glomerulonephritis, and 12.7% had another chronic disease other than renal failure for which they were treated (Table 2).

The total score average of the patients on FCSHP is 50.75±8.13. When the sub-dimensions are examined, the total average score of the knowledge level is 17.93±2.06, and the average total score of the behavioral level is 22.75±5.64. The average total score of the attitude level is 10.06±3.82. The mean DSI total score of the patients is 19.09±17.08 (Table 3).

Table 2. Distribution of Patients' Disease-Related Characteristics (N=150)

Characteristics		n	%
Kidney disease duration (months)	99.87±81.73		
HD treatment duration (months)	67.23±56.85		
Disease causing kidney failure	Unknown	24	16.0
	Chronic Glomerulonephritis	32	21.3
	Diabetes Mellitus	29	19.3
	Hypertension	48	32.0
	Polycystic Kidney	17	11.3
Time to start HD treatment after diagnosis of disease	Within the first month	76	50.7
	One month later	74	49.3
Number of HD treatment days per week	Two times	28	18.7
	Three times	121	80.7
	Four times	1	0.7
HD treatment duration	3.5 hours	2	1.3
	4 hours	148	98.7
Transplantation history	Failed transplantation	8	5.3
	Waiting for transplantation	106	70.7
	Not planning transplantation	36	24.0
The presence of another member of the family receiving HD treatment	Yes	17	11.3
	No	133	88.7
Status of receiving education about her disease	Yes	142	94.7
	No	8	5.3
Person providing training	Health working	127	89.4
	Friend/neighbor	12	8.4
	Press-publication	3	2.1
Going for health check-up	Regular	138	92.0
	Irregular	9	6.0
	Irregular, family difficult	3	2.0
Having routine checks such as blood tests and blood pressure measurements	If his/her doctor wishes, he/she can have them all done completely.	126	84.0
	Even though his/her doctor wants him/her to do it, he/she won't do it.	21	14.0
	Even if your doctor requests it, if you have no complaints, you won't have it done.	3	2.0
Medication use status in the management of the disease	Organized	142	94.7
	Irregular, whenever you think of it	4	2.7
	Irregular, lots of complaints	2	1.3
	Does not administer medication	2	1.3
Diet application status regarding the management of the disease	Irregular, whenever you think of it	110	73.3
	Irregular, whenever you think of it	27	18.0
	Irregular, lots of complaints	8	5.3
	Does not follow a diet	5	3.3

Table 3. Distribution of Patients' FCSHP and DSI Average Scores

Scales	Mean±SD	Min	Max
FCSHP			
Knowledge	17.93±2.06	10.00	21.00
Behavior	22.75±5.64	11.00	33.00
Attitude	10.06±3.82	6.00	18.00
General	50.75±8.13	30.00	67.00
DSI	19.09±17.08	0.00	84.00

In the study, a statistically significant relationship was determined between the FCSHP knowledge, behavior, and attitude sub-dimension of the patients and the general scale score average and DSI score average ($p<0.05$). The relationship between them has a weak reverse strength ($r=-0.266$; $p<0.05$). As the level of fluid control knowledge, behavior, and attitude increases, the symptom level decreases (Table 4).

Table 4. Comparison of Patients' FCSHP and DSI Score Averages

FCSHP	Test	DSI
Knowledge	r	-0.266
	p	**0.001**
Behavior	r	-0.210
	p	**0.010**
Attitude	r	-0.259
	p	**0.001**
General	r	-0.349
	p	**<0.001**

r= Spearman Correlation analysis

4. Discussion

Despite the developments in HD treatment, the increase in the quality of the materials used, and the equipment of the service group increasing day by day, mortality rates are still very high. Patients' compliance with their diet and fluid restriction, regular use of their medications, and effective UF affect the success of HD treatment (8). In this study, it was determined that the fluid control level of the patients was at a moderate level. Different findings were obtained in studies with similar scales in the literature. Consistent with this study, it was emphasized in the study by Karabulutlu and Yılmaz (2019) that the fluid control level was moderate (16). In a study by Kulaksız and Arslan (2018), it was determined that the fluid control level was above average (18). However, in the study of Kaplan and Karadağ (2022) and the study of Balım and Pakyüz (2016), it was stated that the level of fluid control was low (12,19). The finding obtained in this study shows that although the rate of patients receiving education about the disease is high, compliance with fluid control is not at the desired level. This may be due to the patient's perspective on the disease and the failure to create living conditions that would support adaptation to the disease.

In the study, it was determined that the level of knowledge in fluid control was high. Similarly, in the study of Karabulutlu and Yılmaz (2019) and Özkan et al. (2019), it was observed that fluid control knowledge was at a high level in HD patients (16,20). Despite this, in Balım and Pakyüz's (2016) study, it was observed that the level of knowledge was low (19). It is thought that the different results obtained from the studies are due to the difference in the education levels of the patients and the fact that the studies were conducted in different geographical regions.

In the study, it was found that the fluid control behavior level was at a moderate level. The study finding is similar to the study of Kaplan and Karadağ (2022), Karabulutlu and Yılmaz (2019), and Balım and Pakyüz (2016) (12,16,19). In this study, it is thought-provoking that although the patients' knowledge about fluid control was high, their behavioral level was low. This finding may be due to patients not being aware of the importance of fluid control.

In the study, it was found that the fluid control attitude level was low. The study findings are parallel to the literature. The attitude level was also evaluated as low in the studies of Kaplan and Karadağ (2022), Karabulutlu and Yılmaz (2019), and Özkan et al. (2019) (12,16,20). Although patients' knowledge levels regarding fluid control are high, their attitude levels are low, which may be related to their acceptance of the disease. Similarly, patients' attitudes towards fluid control may be negatively affected by reasons such as difficulty in fluid control and boredom with fluid control.

In the study, it was found that the symptom severity of the patients was quite low. In the literature, it is seen that the severity of symptoms assessed by DSI varies in HD patients. In the study of Yılmaz et al. (2020), it was reported that the symptom severity of the patients was low (1). In the studies of Dikmen and Aslan (2020), Akgöz et al. (2017) and Demiroğlu and Bülbül (2021), the symptoms were found to be of moderate severity (21-23). In Zamanian et al.'s (2014) study, it was stated that symptom severity was high (24). In this study, although the symptom severity should be low, it is thought that this may be due to the long duration of the disease and the duration of HD.

The number and severity of symptoms increase in patients who do not comply with a liquid diet. Excess fluid that cannot be removed from the individual's body affects the quality of life and increases the mortality and mortality rate (7). In the study, it was determined that there was a weak negative relationship between the level of knowledge, behavior, and attitude of the patients toward fluid control and the level of symptoms. Accordingly, as patients' fluid control levels in knowledge, behavior, and attitude increase, dialysis symptom levels may decrease. In the literature, Kurt et al.'s (2011) study stated that complications such as pulmonary edema, hypertension, and cardiovascular complications due to fluid load in the body are frequently experienced in patients who do not comply with fluid control. In the same study, it was emphasized that symptoms such as edema, dyspnea, headache, chest pain, and numbness in the feet were frequently observed in patients due to fluid overload (25). In a study by Atik et al. (2020), it was stated that headache symptoms were frequently encountered in patients without fluid control, and symptoms of loss of appetite and anxiety were observed when patients did not control their fluid consumption (13). In some studies, the amount of intradialytic fluid in patients who do not maintain fluid control increases, resulting in nausea, vomiting, cramps, hypotension, etc. It has been emphasized that it may increase the severity of symptoms (19,26). The study finding, which is consistent with the literature, emphasizes the importance of fluid control in reducing symptom severity in HD patients.

5. Conclusions and Recommendations

In this study, HD patients had moderate fluid control; It was determined that the symptom severity was low. Additionally, it has been determined that the symptom level may decrease as the level of knowledge, behavior, and attitude toward fluid control increases. In line with these findings, it is recommended that HD patients and their relatives be educated and counseled about the importance of fluid control in symptom management at regular intervals. Additionally, applications that will support fluid control in HD patients, such as taking notes and filling out charts, can be developed and taught to patients. In each HD session, patients' compliance with fluid controls should be evaluated with applications such as charts and tables to support fluid compliance. In addition, it is recommended to conduct qualitative studies on the variables that support and hinder compliance with fluid control in HD patients.

Limitations

The study contains several limitations. First, the study was conducted in a single center and over a specific period, so the findings cannot be generalized. In addition, the patient's symptom level and compliance with the fluid control level were evaluated with the HHSKS and DSI, and these data forms were filled out based on the patient's self-report. However, variables that would affect fluid restriction or symptom level were not excluded from the study. Despite these limitations, our study provides important data to support disease management in HD patients.

References

1. Ersoy FF. Hemodiyalizin fiziksel temelleri: Hemodiyaliz. Hekim El Kitabı 3.Baskı, Samsun; 2010.
2. Taşkın Yılmaz F, Sert H, Karakoç Kumsar A, Aygin D, Sipahi S, Genç A. Evaluatıon of hope, symptom control, and medication compliance/adherence in hemodialysis patients. Acıbadem Üniversitesi Sağlık Bilimleri Dergisi. 2020;11(1):35-43. doi: 10.31067/0.2019.197
3. Topbaş E, Bingöl G. With the psychosocial persperctive, dialysis treatment and nursing interventions towards adaptation process. Nefroloji Hemşireliği Dergisi. 2017;12(1):36-42.
4. Özkurt S, Sağlan Y, Gölgeli H, et al. Assessment of compliance with treatment in hemodialysis patients. Ankara Med J. 2017;4:275-283. doi:10.17098/amj.364140
5. Alkın Demir C, Özer Z. The relationship of symptoms and comfort in patients receiving hemodialysis. Nefroloji Hemşireliği Dergisi. 2022;17(1):10-27.
6. Yangöz ŞT, Özer Z. The effect of motivational ınterviewing on adherence to fluid ıntake, diet and drug management in the ındividuals receiving hemodialysis treatment: Systematic review. Türkiye Klinikleri Hemşirelik Bilimleri Dergisi. 2020;12(3):419-429.
7. Görgen Ö, Topbaş E, Bingöl G. Turkey in dialysis nursing curriculum ınvestigations of nursing course contents and student views of this course. Nefroloji Hemşireliği Dergisi. 2018;2(13):62-70.
8. Güçlüel Y, Güneş N. Fluid control and affecting factors in ındividuals undergoing hemodialysis treatment. Nefroloji Hemşireliği Dergisi. 2023;18(3):144-150.
9. Kavala A, Enç N. Importance of nutrition education and alternative methods in patients with chronic kidney failure. Nefroloji Hemşireliği Dergisi. 2022;17(1):29-38. doi: https://doi.org/10.47565/ndthdt.2022.51
10. Doğan S, Bardak Perçinci N. The effect of nutrition education on some biochemical parameters and diet compliance in hemodialysis patients. Türkiye Sağlık Araştırmaları Dergisi. 2021;2(1):16-25.
11. Washington T, Hain D, Zimmerman S, Ney IL. Identification of potential mediators between depression and fluid adherence in older adults undergoing hemodialysis treatment. Nephrol Nurs J. 2018;45(3):251-258.
12. Kaplan A, Karadağ S. The determination of adherence to fluid control and symptoms of patients undergoing hemodialysis. Afr Health Sci. 2022;22(3):359-368. doi: 10.4314/ahs.v22i3.38
13. Atik D, Karatepe H, Özcan Yüce U. The relationship between fluid control and disease adaptation levels with symptoms in patients undergoing hemodialysis. Journal of Basic and Clinical Health Sciences. 2020;4(3):264-270.
14. Akbal Y, Nural N. Nursing Approaches in Intradialitic Complications. In. Urinary System Diseases and Nursing Approaches. Türkiye Klinikleri, Ankara; 2021. s.56-62.
15. Önsöz HB, Usta Yeşilbalkan Ö. Reliability and validity of the Turkish version of the Dialysis Symptom Index in chronic hemodialysis patients. Turk Nephrology Dialysis and Transplantation Journal. 2013;22(1):60-67.
16. Karabulutlu EY, Yılmaz MÇ. Level of concordance with fluid restriction in individuals receiving hemodialysis. Acibadem Universitesi Sağlık Bilimleri. 2019;10(3):390-398. doi: 10.31067/0.2018.97
17. Coşar AA, Pakyuz SC. Scale development study: The fluid control in hemodialysis patients. Japan Journal of Nursing Science. 2016;13(1):174-182.
18. Kulaksız AT, Arslan S. Adaptation to liquid ıntake restriction by persons undergoing hemodialysis treatment. STED. 2018;27(6):407-414.
19. Balım S, Çınar Pakyüz S. Evaluation of hemodialysis patients' compliance with fluid restriction. Nefroloji Hemşireliği Dergisi. 2016;11(1):34-42.
20. Özkan ZK, Ünver S, Çetin B, Ecder T. Determining of compliance of patients receiving hemodialysis for fluid control. Nefroloji Hemşireliği Dergisi. 2019;14(1):10-16.

21. Dikmen RD, Aslan H. The effects of the symptoms experienced by patients undergoing hemodialysis treatment on their comfort levels. Journal of Clinical Nephrology and Renal Care. 2020;6:60.
22. Akgöz N, Arslan S. Examination of symptoms in patients who are on hemodialysis treatment. Nefroloji Hemşireliği Dergisi. 2017;12(1):20-28.
23. Demiroğlu S, Bülbül E. The relationship of patients receiving hemodialysis with depression, anxiety, stress conditions and dialysis symptoms. Nefroloji Hemşireliği Dergisi. 2021;16(3): 124-133. doi:https://doi.org/10.47565/ndthdt.2021.40
24. Zamanian H, Kharameh ZT. Translation and psychometric properties of the Persian version of the dialysis symptom index in hemodialysis patients. Nephro-Urology Monthly. 2014; e23152. doi:10.5812/numonthly.23152
25. Kurt YT, Erdem E, Karataş A, Arık N. The effect of education given to hemodialysis patients on blood pressure and weight gain. Türk Nefroloji Transplantasyon Dergisi. 2011;21(1):39-44.
26. Correa S, Pena-Esparragoza J, Scovner K, Causland F. Predictors of intradialytic symptoms: an analysis of data from the hemodialysis study. Am J Kıdney Dis. 2020;76(3):331-339. doi: 10.1053/j.ajkd.2020.01.004

Article Information Form

Author(s) Notes: The author(s) would like to express their sincere thanks to the editor and the anonymous reviewers for their helpful comments and suggestions.

Author(s) Contributions: All authors contributed equally to the writing of this paper. All authors read and approved the final manuscript.

Conflict of Interest Disclosure: No potential conflict of interest was declared by the author.

Copyright Statement: Authors own the copyright of their work published in the journal and their work is published under the CC BY-NC 4.0 license.

Supporting/Supporting Organizations: No grants were received from any public, private or non-profit organizations for this research.

Ethical Approval and Participant Consent: It is declared that during the preparation process of this study, scientific and ethical principles were followed and all the studies benefited from are stated in the bibliography.

Plagiarism Statement: This article has been scanned by iThenticate.