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The Effect of Itching on Fatigue and Quality of Life in Patients Receiving Chronic Hemodialysis Treatment: Descriptive and Cross-Sectional Study

Kronik Hemodiyaliz Tedavisi Alan Hastalarda Kaşıntının Yorgunluk ve Yaşam Kalitesi Üzerine Etkisi: Tanımlayıcı ve Kesitsel Çalışma

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ABSTRACT Objective: This research was conducted to determine the effect of itching on fatigue and quality of life in patients receiving chronic hemodialysis treatment. **Material and Methods:** The descriptive and cross-sectional study was conducted with 190 patients receiving hemodialysis treatment in four dialysis centers affiliated with hospitals in two provinces in the Black Sea Region of Türkiye between March and May 2023. The data were collected by using the face-to-face interview technique using a "Descriptive Characteristics Form", the "5-D Itch Scale", the "Fatigue Severity Scale", and the "World Health Organization Quality of Life Questionnaire (WHOQOL-Tr 8)". **Results:** It was found that 93.7% of the patients undergoing hemodialysis had itching. The total mean score of the patients was 9.77±3.60 on the 5-D Itch Scale, 47.06±12.42 on the Fatigue Severity Scale, and 25.77±4.70 on the WHOQOL-Tr 8. While a positive correlation was found between the patients' total mean scores on the 5-D Itch Scale and Fatigue Severity Scale, a negative correlation was found between their total mean scores on the 5-D Itch Scale and WHOQOL-Tr 8 ($p<0.05$). 5-D Itch Scale had a predictive effect on Fatigue Severity Scale and WHOQOL-Tr 8 ($R^2_{adjusted}$: 0.094, $R^2_{adjusted}$: 0.034). **Conclusion:** It was determined that the majority of patients experienced itching, and as the severity of itching increased, the severity of fatigue increased and the quality of life decreased. Pruritus has been identified as a predictor that negatively affects fatigue and quality of life in patients receiving hemodialysis treatment. It is recommended that hemodialysis nurses provide effective itching management in patients.

Keywords: Hemodialysis; itching; quality of life; fatigue; nursing

ÖZET Amaç: Bu araştırma, kronik hemodiyaliz tedavisi alan hastalarda kaşıntının yorgunluk ve yaşam kalitesi üzerine etkisini belirlemek amacıyla yapıldı. **Gereç ve Yöntemler:** Tanımlayıcı ve kesitsel tipte yapılan araştırma, Mart-Mayıs 2023 tarihleri arasında Türkiye'nin Karadeniz Bölgesi'nde yer alan 2 ildeki hastanelere bağlı 4 diyaliz merkezinde hemodiyaliz tedavisi alan 190 hasta ile gerçekleştirildi. Veriler, "Tanımlayıcı Özellikler Formu", "5 Boyutlu Kaşıntı Ölçeği", "Yorgunluk Şiddeti Ölçeği" ve "Dünya Sağlık Örgütü Yaşam Kalitesi Anketi [World Health Organization Quality of Life Questionnaire (WHOQOL-Tr 8)]" kullanılarak yüz yüze görüşme tekniği ile toplandı. **Bulgular:** Hemodiyaliz tedavisi alan hastaların %93,7'sinde kaşıntı görüldüğü saptandı. Hastaların 5 Boyutlu Kaşıntı Ölçeği toplam puan ortalaması 9,77±3,60, Yorgunluk Şiddet Ölçeği 47,06±12,42 ve WHOQOL-Tr 8 25,77±4,70 olarak bulundu. Hastaların 5 Boyutlu Kaşıntı Ölçeği toplam puan ortalaması ile Yorgunluk Şiddet Ölçeği toplam puan ortalaması arasında pozitif yönlü ve WHOQOL-Tr 8 toplam puanı ile negatif yönlü bir ilişki saptandı ($p<0,05$). 5 Boyutlu Kaşıntı Ölçeği'nin Yorgunluk Şiddet ve WHOQOL-Tr 8 üzerine yordayıcı etkisi vardır ($R^2_{ayarlanmış}$: 0,094, $R^2_{ayarlanmış}$: 0,034). **Sonuç:** Hastaların büyük çoğunluğunun kaşıntı yaşadığı, kaşıntı şiddeti arttıkça yorgunluk şiddetinin arttığı ve yaşam kalitesinin azaldığı saptandı. Kaşıntı, hemodiyaliz tedavisi alan hastalarda yorgunluk ve yaşam kalitesini olumsuz etkileyen bir yordayıcı olarak belirlendi. Hemodiyaliz hemşirelerinin hastalarda etkili bir kaşıntı yönetimi sağlaması önerilmektedir.

Anahtar Kelimeler: Hemodiyaliz; kaşıntı; yaşam kalitesi; yorgunluk; hemşirelik

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Hemodialysis (HD), is widely used in the treatment of individuals diagnosed with chronic kidney disease (CKD). While HD treatment reduces disease-related symptoms and prolongs life, it can also cause many physical, psychological and social problems in patients.[1]

Itching is one of the most common and very disturbing physical symptoms in patients receiving HD treatment.[1,2] Studies have reported that the frequency of itching in patients receiving HD treatment varies between 10-90%.[3-5] The onset, duration and severity of itching in HD patients varies depending on time and become more severe, especially at night. Moreover, itching in patients can be episodic or constant, general or local, and its intensity can vary from mild to severe.[6] Although the etiology of itching observed in patients receiving HD treatment remains unclear, it has been stated in the literature that many factors such as uremia, anemia, ion imbalance like calcium, phosphorus and magnesium, secondary hyperparathyroidism, inadequate dialysis, devices used during HD, and sensitivity to dialysate play a role in the pathogenesis of itching.[2]

Itching can cause patients to suffer from many symptoms such as sleep disturbance, depression, and fatigue, thus impairing their quality of life.[7] A previous study reported that itching observed in HD patients limited the patients physically and mentally and negatively affected the quality of life by causing insomnia and fatigue.[8] Other studies have also found that itching negatively affects all dimensions of quality of life in HD patients.[9,10]

Purpose

Alleviating symptoms that develop due to the disease and treatment in HD patients is important in improving the quality of life. Patients cannot always fully express symptoms that have low concrete indicators, such as itching and fatigue. Therefore, these problems, which are less reported by patients, may be overlooked by healthcare professionals. These and similar situations may cause patients' symptoms to become more severe and their quality of life to be more adversely affected.[11,12] In this context, it is thought that there is a need to improve patient outcomes by nurses following evidence-based practices to diagnose and manage existing symptoms and evaluate their impact on quality of life. Therefore, the aim of this study is to determine the effect of itching on fatigue and quality of life in patients receiving HD treatment.

RESEARCH QUESTIONS

- What is the severity of itching in patients receiving chronic HD treatment?
- What is the fatigue severity of patients receiving chronic HD treatment?
- What is the quality of life of patients receiving chronic HD treatment?
- Is there any correlation between itching, fatigue and quality of life in patients?
- Does itching have an effect on fatigue and quality of life in patients?

MATERIAL AND METHODS

STUDY DESIGN AND SETTING

This is a descriptive and cross-sectional study which was conducted between March and May 2023 with patients receiving HD treatment in four dialysis centers affiliated with hospitals in two provinces in the Black Sea Region of Türkiye. The researchers collected the data by using face-to-face interview technique when the patient felt comfortable, and during the patients' HD treatment. It took approximately 10-15 minutes to collect data, and the patients were informed before starting the research and their identities were kept confidential. The study was based on a voluntary basis and the participants' consent was obtained after they were informed with an informed consent form.

PARTICIPANTS

The population, included all patients treated in the dialysis centers of the specified hospitals (n=212). OpenEpi, version 3 (Centers for disease control and prevention, United States), publicly available statistical software was used to calculate the sample size and the sample size was determined as at least 137 patients at significance level of 0.05, confidence interval of 95% and ability to represent the population of 80%.[12]

Individuals who were 18 years of age or older, did not have any psychiatric diagnosis, could communicate verbally, and were voluntary to participate in the study were included in the study. In this context, verbal communication could not be established with 17 patients. 15 patients did not agree to participate in the study. The study was completed with 190 patients.

DATA COLLECTION TOOLS

Data were collected through the "Descriptive Characteristics Form", the "5-D Itch Scale", the "Fatigue Severity Scale", and the "World Health Organization Quality of Life Questionnaire (WHOQOL-Tr 8)".

Descriptive Characteristics Form: This form, prepared upon the literature review, consisted of a total of 23 questions including 11 questions about socio-demographic characteristics and 12 questions about CKD and HD treatment.[2,4]

5-D Itch Scale: The scale, developed by Elman et al., in 2010, evaluates the duration, severity, course, distribution and limitation of itching experienced in the last two weeks. The scale consists of five subscales: duration, degree, direction, disability, and distribution, and the score of the subscales ranges between one and five.[13] The total score of the scale varies from *"5 points (no itching)"* to *"25 points (maximum severity)"*. The Turkish validity and reliability study of the scale was conducted by Altınok and Akyar and the Cronbach's alpha coefficient was found to be 0.60.[14]

Fatigue Severity Scale: The scale was developed by Krupp et al., in 1989.[15] The scale, whose Turkish validity and reliability study was determined by Armutlu et al., in 2007, consists of nine items. Each item of this seven-point Likert type scale is rated as *"one=strongly disagree and seven=strongly agree"*. In this context, the lowest and highest scores of the scale are 9 and 63, and high scores signify that the severity of fatigue increases. In the scale, Cronbach's alpha coefficient was found to be 0.94.[16]

WHOQOL-Tr 8: WHOQOL questionnaires are scales developed through studies conducted simultaneously in many centers. WHOQOL-Tr 8 is a quality of life scale consisting of 8 items created by taking certain items from the WHOQOL-Bref and WHOQOL-100 scales. Two of these questions are WHOQOL's questions on general health and general quality of life, the remaining 6 questions are questions taken from physical, spiritual, social and environmental factors, and the answer options are listed in a five-point Likert type. Higher scores signify that the quality of life also increases. Eser et al. conducted the Turkish validity and reliability study of the WHOQOL-Tr 8 scale in 2010 and found the Cronbach's alpha coefficient to be 0.85.[17]

DATA ANALYSIS

The data of the study were analyzed using the SPSS for Windows 22 package program (IBM SPSS, Türkiye). The data were assessed using numbers, percentage distributions, minimum and maximum values, mean and standard deviations as well as independent samples t-test when comparing pair-wise groups in normally distributed measurements, and Analysis of variance in comparing more than two groups (As advanced analysis; least significant difference in cases where variances are homogeneous and Dunnet C in cases where they are homogeneous), Pearson correlation analysis in correlational inferences, multiple regression analysis to calculate the effect size, Cronbach's alpha coefficient calculation to determine the internal consistency of the scale items, and kurtosis and skewness coefficient calculations to calculate the normality distribution of the data.

ETHICAL CONSIDERATIONS

Before starting the study, Karadeniz Technical University Ethics Committee approval (date: January 12, 2023, no: 2023/4) as well as written permission from the institutions where the study was conducted were obtained. Written permission was received via e-mail from the authors who conducted the validity and reliability of the scales. In addition, the patients included in the study were informed about the purpose of the study and their written and verbal consent was obtained within the scope of the principles of volunteering and willingness. During the research and publication process, the rules of research and publication ethics, the principles of the Declaration of Helsinki and ethical principles were followed.

RESULTS

The average age of the patients was 62.86±13.95, 66.8% were male, 39.5% were involved in the underweight/normal range of body mass index, 83.7% were married, 48.9% were primary school graduates, 90.5% had a nuclear family, 45.8% were living in the province, 90% had an income equal to their expenses and 48.9% were not smokers. 54.7% of the patients were undergoing HD for 5 years or less and 90.5% were undergoing HD three times a week, vascular access was arteriovenous fistula in 63.2% and 59.5% had a secondary disease. 87.9% of the patients were taking their medications regularly, 55.8% adhered to their diet regularly, and 54.7% adhered to fluid restriction regularly (Table 1).

TABLE 1: Distribution of descriptive characteristics of the patients.

Characteristics				**n**	**%**
Gender	Female			63	33.2
	Male			127	66.8
Body mass index	Underweight/normal			75	39.5
	Overweight			65	34.2
	Obese			50	26.3
Educational background	Illiterate			41	21.6
	Primary school			93	48.9
	Secondary school			22	11.6
	High school			23	12.1
	University			11	5.8
Income level	Income equal to expenses			171	90.0
	Income more than expenses			13	6.8
	Income less than expenses			6	3.2
Smoking	Yes			24	12.6
	No			93	48.9
	Quitted			73	38.4
Duration of HD treatment	≤5 years			104	54.7
	6-10 years			55	28.9
	11-15 years			19	10.0
	≥16 years			12	6.3
Number of HD sessions	Twice a week			18	9.5
	Three times a week			172	90.5
Presence of a secondary disease	Yes			113	59.5
	No			77	40.5
Vascular access	Arteriovenous fistula			120	63.2
	Vascular catheterization			70	36.8
Use of drugs	Regularly			167	87.9
	Irregularly			7	3.7
	Partially			16	8.4
Dietary adherence	Regularly			106	55.8
	Irregularly			27	14.2
	Partially			57	30.0
Adherence to fluid restriction	Regularly			104	54.7
	Irregularly			16	8.4
	Partially			70	36.8
Numerical variables	**n**	**Minimum**	**Maximum**	**Mean**	**SD**
Age	190	20.00	93.00	62.86	13.95
Age of CKD diagnosis (Year)	190	1.00	89.00	51.97	16.93

HD: Hemodialysis; CKD: Chronic kidney disease; SD: Standard deviation.

It was determined that 93.7% of the patients stated that they had itching, 94.2% experienced itching for less than six hours a day, and 30.0% experienced mild itching. 84.7% of the patients stated that they scratched when they experienced itching, 31.4% stated that itching caused fatigue, and 37.6% stated that itching affected their quality of life (Table 2).

The patients' score was 9.77±3.60 on the 5-D Itch Scale, 47.06±12.42 on the Fatigue Severity Scale, and 25.77±4.70 on the WHOQOL-Tr 8. Cronbach's alpha coefficient was 0.89 on the 5-D Itch Scale, 0.94 on the Fatigue Severity Scale, and 0.82 on the WHOQOL-Tr 8 (Table 3).

TABLE 2: Distribution of the patients' itching-related characteristics.

		n	%
Presence of itching	Yes	178	93.7
	No	12	6.3
Duration of itching (days)	Less than 6 hours	179	94.2
	6-12 hours	9	4.7
	12-18 hours	1	0.5
	18-24 hours	1	0.5
Severity of itching	None	52	27.4
	Mild	57	30.0
	Moderate	56	29.5
	Severe	25	13.2
Practices in case of itching*	Scratching	161	84.7
	Applying cologne	63	33.2
	Taking a shower	60	31.6
	Using anti-histamines	50	26.3
	Taking sleeping pills	16	8.4
Does itching make you feel tired	Yes	56	31.4
	No	88	49.4
	Partial	34	19.1
Does itching affect quality of life	Yes	67	37.6
	No	80	44.9
	Partial	31	17.5

*More than one option is marked.

The score of the 5-D Itch Scale was significantly higher in those who used their drugs irregularly, adhered to their diet irregularly, had a secondary disease, experienced itching, scratched when they experienced itching, used anti-histamines, took a shower, applied cologne, and used sleeping pills ($p<0.05$). The difference between the duration of HD treatment and compliance with fluid restriction and the 5-D Itch Scale score was not statistically significant ($p>0.05$) (Table 4).

The Fatigue Severity Scale score was significantly higher in those who experienced itching, those who scratched when they experienced itching, and those who applied cologne when they experienced itching ($p<0.05$). The difference in the score of the Fatigue Severity Scale in terms of the duration of HD treatment of the patients, the status of using their medications and adhering to their diet, compliance with fluid restriction, vascular access, having a secondary disease, using antihistamines when experiencing itching, taking a shower and taking sleeping pills was not statistically significant ($p>0.05$) (Table 4).

The WHOQOL-Tr 8 total mean score of those who had itching and those who scratched when they experienced itching was significantly higher ($p<0.05$). The difference between WHOQOL-Tr 8 total mean scores of the patients in terms of the duration of HD treatment, use of drugs, dietary adherence, adherence to fluid restriction, having a secondary disease, use of antihistamines in case of itching, taking a shower, applying cologne, and taking sleeping pills was not statistically significant ($p>0.05$) (Table 4).

The patients' 5-D Itch Scale total mean score had a positive low-level correlation with total mean score of the Fatigue Severity Scale, and a negative

TABLE 3: Total mean scores of the patients from the scales.

Scale	n	Minimum	Maximum	$\bar{X}$±SD	Cronbach α
5-D Itch Scale	190	5	19.25	9.77±3.60	0.89
Fatigue Severity Scale	190	9.00	63.00	47.06±12.42	0.94
WHOQOL-Tr 8	190	15.00	38.00	25.77±4.70	0.82

SD: Standard deviation; WHOQOL: World Health Organization Quality of Life Questionnaire.

TABLE 4: Comparison of the total mean scores of the scales according to the patients' descriptive and itching-related characteristics.

			5-D Itch Scale		Fatigue Scale		WHOQOL-Tr 8	
		n	X̄±SD	p^{test}	X̄±SD	p^{test}	X̄±SD	p^{test}
Duration of hemodialysis treatment	≤5 years	104	9.50±3.52	0.394*	45.83±12.50	0.265*	25.50±4.38	0.191*
	6-10 years	55	10.48±3.86		49.73±12.79		25.96±5.15	
	11-15 years	19	9.46±3.19		47.53±11.08		25.00±5.21	
	≥16 years	12	9.33±3.68		44.83±11.30		28.42±4.03	
Use of drugs	Regularly	167	9.52±3.53^{a}	**0.025***	47.77±12.61	0.108*	25.66±4.74	0.657*
	Irregularly	7	12.32±5.00^{b}		42.57±10.13		27.14±4.63	
	Partially	16	11.31±3.01		41.69±9.90		26.25±4.48	
Dietary adherence	Regularly	106	9.25±3.43^{c}	**0.003***	47.71±12.02	0.416*	25.33±4.83	0.351*
	Irregularly	27	11.89±3.92^{d}		48.33±13.64		26.22±4.66	
	Partially	57	9.73±3.44		45.26±12.59		26.37±4.46	
Adherence to fluid restriction	Regularly	104	9.36±3.67	0.099*	47.00±13.49	0.801*	25.75±5.06	0.945*
	Irregularly	16	11.30±3.78		49.00±7.42		25.44±2.58	
	Partially	70	10.04±3.38		46.71±11.75		25.87±4.56	
Presence of a secondary disease	Yes	113	10.21±3.65	**0.041****	48.20±12.88	0.126**	25.49±4.63	0.318**
	No	77	9.13±3.45		45.39±11.59		26.18±4.80	
Presence of itching	Yes	178	10.08±3.51	**0.000****	47.90±11.60	**0.025***	25.54±4.53	**0.009***
	No	12	5.25±0.87		34.67±17.54		29.17±5.94	
Scratching in case of itching	Yes	161	9.99±3.53	**0.044****	49.08±11.07	**0.000****	25.38±4.58	**0.007****
	No	29	8.53±3.78		35.86±13.71		27.93±4.83	
Using anti-histamines in case of itching	Yes	50	12.52±3.17	**0.000****	48.58±11.12	0.316**	25.74±4.07	0.960**
	No	140	8.79±3.23		46.52±12.85		25.78±4.92	
Taking a shower in case of itching	Yes	60	10.55±3.19	**0.044****	46.70±14.38	0.785**	25.55±5.29	0.665**
	No	130	9.41±3.73		47.23±11.46		25.87±4.42	
Applying cologne in case of itching	Yes	63	10.86±3.42	**0.003****	50.40±9.43	**0.003****	24.86±3.99	0.060**
	No	127	9.23±3.58		45.41±13.39		26.22±4.97	
Taking sleeping pills in case of itching	Yes	16	11.81±3.97	**0.017****	50.56±6.45	0.052**	25.06±2.02	0.226**
	No	174	9.58±3.52		46.74±12.79		25.83±4.87	

a<b; c<d; *Analysis of variance; **Independent samples t-test; SD: Standard deviation; WHOQOL: World Health Organization Quality of Life Questionnaire.

low-level correlation with total score of the WHOQOL-Tr 8 ($p<0.05$). As the score of the 5-D Itch Scale increased, the score of the Fatigue Severity Scale increased, and the WHOQOL-Tr 8 the score decreased. Furthermore, there was a statistically significant, low-level and negative correlation between the score of the Fatigue Severity Scale and the score of WHOQOL-Tr 8 ($p<0.05$). As the score of the Fatigue Severity Scale increased, the score of WHOQOL-Tr 8 decreased (Table 5).

TABLE 5: Correlation between the 5-D Itch Scale, the Fatigue Severity Scale, and WHOQOL-Tr 8.

Scales		Fatigue Severity Scale	WHOQOL-Tr 8
5-D Itch Scale	r value	0.315	-0.199
	p value	**0.000**	**0.006**
	n	190	190
Fatigue Severity Scale	r value		-0.404
	p value	-	**0.000**
	n		190

Pearson's correlation analysis; WHOQOL: World Health Organization Quality of Life Questionnaire.

A significant correlation was determined between the patients' the 5-D Itch Scale and Fatigue Severity Scale ($R=0.315$, $R^2_{adjusted}=0.094$, $F_{(1.188)}=20.693$; $p=0.000$). The 5-D Itch Scale accounted for 9.4% of the variation in the Fatigue Severity Scale. According to the results of the regression analysis, the regression equation predicting fatigue is as follows; Fatigue=(1.086x5D Itch Scale score)+(36.449). There was a significant correlation between the 5-D Itch Scale and the WHOQOL-Tr 8 ($R=0.199$, $R^2_{adjusted}=0.034$, $F_{(1,188)}=7.733$; $p=0.000$). The 5-D Itch Scale accounted for 3.4% of the vari-

TABLE 6: Multiple regression analysis between scores of Fatigue Severity Scale and WHOQOL-Tr 8 and 5-D Itch Scale.

	Fatigue Severity Scale						
	Beta	Standard error	Standard beta	t value	p value	95% confidence interval	
Constant	36.449	2.486		14.662	**0.000**	31.545	41.353
5-D Itch Scale	1.086	0.239	0.315	4.549	**0.000**	0.615	1.557
			WHOQOL-Tr 8				
Constant	28.303	0.971		29.142	**0.000**	26.388	30.219
5-D Itch Scale	-0.259	0.093	-0.199	-2.781	**0.006**	-0.443	-0.075

WHOQOL: World Health Organization Quality of Life Questionnaire.

ation in the WHOQOL-Tr 8. The regression equation predicting Quality of Life is as follows; Quality of Life=(-0.259x5D Itch Scale score)+(28.303) (Table 6).

DISCUSSION

It triggers the development of itching, fatigue and other symptoms that are common in patients receiving HD treatment and can impair the quality of life. In this regard, the present study in which itching was evaluated multidimensionally using the 5-D Itch Scale, examined the effect of itching on fatigue and quality of life and the findings were discussed in line with the literature in this section.

In this study, itching was found in 93.7% of the patients receiving HD treatment. In 94.2% of the patients, duration of itching was less than six hours a day, 29.5% had moderate itching, and 13.2% had severe itching. According to the 5-D Itch Scale, the itching degree of the patients (9.77±3.60) was below average. When the related studies were reviewed, it was reported that the prevalence rate of itching in patients receiving HD treatment varied between 10-90%.[3,5,18-21] In another study, it was found that nearly half of the patients receiving HD treatment (49.3%) had itching, 40.3% had an itching duration ranging between 6-12 hours, and 30.4% had itching and their itching degree was moderate (13.97±4.11).[4] In another study, it was determined that 44.7% of HD patients' itching lasted less than six hours a day and the itching was moderate (13.97±4.11) according to the 5-D Itch Scale.[22] According to these results, it can be asserted that patients receiving HD treatment experienced itching symptoms at a high rate and at moderate and mild degrees.

Degree of itching was found to be lower in patients who used their drugs regularly and followed their diet regularly. Even though the reason behind this situation is not clearly explained in the literature, itching may develop in patients receiving HD treatment due to many reasons such as skin dryness, metabolic and neurological abnormalities, inflammation, secondary hyperparathyroidism, increased serum urea, magnesium, calcium, phosphate and histamine levels, proliferation of sensory nerves, anemia, and vitamin and iron deficiency.[23] It is thought that drug treatment and dietary restriction in HD patients will prevent the development of symptoms such as patients' disease and treatment-related itching and help control the risk factors that pave the way for its emergence. It has been determined that the degree of itching is lower in patients who use their medications regularly and follow their diet regularly.

It was determined that when experiencing itching, the majority of patients (84.7%) scratched, one third (33.2%) applied cologne and took a shower (31.6%). The degree of itching was higher in patients who scratched when they experienced itching, took a shower, used antihistamines, applied cologne and used sleeping pills. In another study, it was determined that 26.2% of HD patients experiencing itching scratched, 18.8% used antihistamines, and 5.8% took a shower and applied cologne.[24] According to these results, it was thought that patients experiencing itching felt desperate and sought different solutions for itching management, but they could not find a solution, so their itching degree was higher.

Fatigue is one of the most common symptoms in patients receiving HD treatment.[25] In our study, it was determined that HD patients suffered from high levels

of fatigue, and the severity of fatigue was higher in patients who itched, scratched and applied cologne. A previous study reported that 61.6% of HD patients had fatigue and their fatigue level was moderate.[26] According to these results, it can be suggested that fatigue is common in HD patients and is at moderate or severe levels. Furthermore, the methods used by the patient to manage itching (scratching, applying cologne) are not effective in relieving the symptoms of fatigue.

In our study, the quality of life of patients receiving HD treatment was moderate (25.77±4.70) and those experiencing itching had a lower quality of life. Likewise a study in the literature revealed that patients receiving HD treatment had a moderate quality of life.[27] In a different study, the quality of life of patients receiving HD treatment was significantly lower than that of patients not receiving HD treatment.[28] Other studies concluded that the quality of life of patients receiving HD treatment was lower than the general population.[29,30] According to these results, it can be asserted that the quality of life of HD patients was moderate to low due to their negative experiences with the disease and treatment, and the presence of itching and scratching impaired the quality of life.

It was determined that itching caused fatigue in approximately one-third of patients and negatively affected the quality of life. Patients with itching had higher fatigue severity and lower quality of life. As the degree of itching increased, the severity of fatigue increased and the quality of life impaired. Likewise, it has been determined in different studies that itching in HD patients significantly reduces the quality of life.[31,32] In the literature, there are results reporting that itching contributes to the development of fatigue symptoms in HD patients and impairs their quality of life.[4,33] According to these results, itching affects fatigue and quality of life in HD patients. When itching is present and its severity increases, the severity of fatigue may increase and quality of life may impair. Nurses should be aware of this problem experienced in patients receiving HD treatment and provide appropriate evidence-based care.

LIMITATIONS

A limitation of this study is that the data are based on the forms created by the researchers and the scales used. Another limitation is that the results of the present study were based on the patients' verbal expressions and were associated with the way they perceive the symptoms.

CONCLUSION

In this study, the effect of itching on fatigue and quality of life in patients receiving HD treatment was determined. The patients included in the study experienced itching at a high rate, the degree of itching was below moderate, the fatigue severity was high and their quality of life was moderate. As the degree of itching increased, the severity of fatigue increased and the quality of life decreased. Itching negatively affects fatigue and quality of life in HD patients.

Based on these results, HD nurses should evaluate multidimensionally itching to ensure an effective itch management in HD patients. HD nurses need to recognize and manage itching and be aware of its impact on other symptoms and quality of life. It is thought that multidimensional itch evaluation and management will prevent the development of other symptoms such as fatigue and improve quality of life. Moreover, there is a need for descriptive, prospective, cohort and randomized controlled studies that examine itching in HD patients multidimensionally with a larger sample group and evaluate its effect on fatigue and quality of life.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Zeynep Pehlivan Köksal, Müge Tezel;* ***Design:*** *Zeynep Pehlivan Köksal, Müge Tezel, Nesrin Nural;* ***Con-***

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