Symptoms Experienced By Individuals Who Have Hemodialysis and Its Effect on Personal Well-Being

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ABSTRACT

Purpose: The aim of this study is to examine the symptoms experienced by individuals undergoing hemodialysis treatment and the effect of this situation on personal well-being.

Materials and Methods: The data of this descriptive study were collected between June and December 2021. The sample of the study consisted of 462 individuals who accepted to participate in the study and received hemodialysis treatment. Data; It was collected using the "Personal Information Form", "Dialysis Symptom Index" and "Personal Well-Being Index".

Results: In this study, the most common and most severe symptoms experienced by individuals receiving HD are; while feeling tired and decreased energy (55.8%) and muscle cramps (54.1%) were determined as the least experienced symptom (24.9%). In the study, it was determined that the participants got an average of 19.41±16.87 points from the Dialysis Symptom Index (DSI) and 63.68±19.49 points from the Personal Well-Being Index. According to the results of the regression analysis, it is seen that the dialysis symptoms of the patients have a moderately significant negative effect on their personal well-being.

Conclusions: Individuals receiving HD were determined to have low personal well-being levels. It is seen that the symptoms experienced by the patients due to HD are moderate. It has been determined that the dialysis symptoms experienced by individuals have a significant effect on their personal well-being levels.

Key words: Hemodialysis, personal well-being, nursing

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INTRODUCTION

End-stage renal disease (ESRD) is a progressive and irreversible disease that causes a series of biochemical, clinical and metabolic disorders that are directly or indirectly associated with high rates of morbidity, mortality and hospitalization. In end-stage renal disease, patients need renal replacement therapies (RRT) such as hemodialysis (HD), peritoneal dialysis (PD) and renal transplantation [1]. Today, worldwide, more than 2 million people live with dialysis treatment or transplantation due to ESRD. In our country, according to the joint report of the Ministry of Health and the Turkish Society of Nephrology (2020), for patients receiving ESRD treatment; HD was applied to 78.3%, PD to 10.13%, and kidney transplantation to 11.56% [2]. Hemodialysis treatment, which is a method that ensures the removal of metabolic wastes accumulated in the body, is a life-long treatment option for patients [2]. Hemodialysis is the most commonly used RRT method in our country. When the gender and age distribution of patients who received HD treatment, 84,364 of whom were at home, a total of 56,687 were examined, it is seen that 56.69% are men, 43.31% are women, and 44.14% are elderly patients aged 65 and over [2]. In patients receiving hemodialysis treatment; psychosocial problems can occur such as body image change, deterioration in lifestyle, decrease in self-confidence, anger, helplessness, introversion, loss of a role in family and work life, social isolation [3]. In individuals receiving hemodialysis treatment, factors such as less positive effects, andalcul more negative effect form the basis of personal well-being [4].

Personal well-being is the state of harmony in all aspects of a person's life. This completely subjective term refers to the level of satisfaction with one's own life and physical and mental integration [5]. Personal well-being is the most global term used to describe how people feel about their lives. It includes people's emotional responses, satisfaction with their living space, and global assessment of the quality of life [6]. Personal well-being; It corresponds to the subjective perception of quality of life with its subjective and objective dimensions and often these dimensions are mixed [7]. Having a good quality of life has always been important to people. Personal well-being is the mental component of quality of life [6]. Studies have shown that hemodialysis treatment negatively affects the lifestyle and well-being of patients [8]. When the literature is examined it is noteworthy that there are studies on many subjects such as quality of life, social well-being, and spiritual well-being for hemodialysis patients, but there are very few studies on personal well-being [9,10]. Based on this issue, it is thought that evaluating how individuals who receive HD perceive themselves will contribute to a better understanding of the disease and the effect of the disease on the current situation.

MATERIALS AND METHODS

Design

This study was planned as a descriptive study to determine the symptoms experienced by individuals undergoing hemodialysis treatment and their effect on personal well-being.

Sample

The sample of the study was calculated using the probabilistic multiple regression analysis calculators, and it was determined that at least 223 nurses should be reached at 5% Type 1 error level by predicting 90% power, 0.15 (moderate) effect size and the number of independent variables in the study (Soper Daniel. Free Statistics Calculators. California; 2016. Available from: http://www.danielsoper.com/statcalc/). Then, between June and December 2021, 462 individuals were treated at the Dialysis Unit at University Health Application and Research Center and a private dialysis center located in Zonguldak province and its districts and accepted the research was formed.

Inclusion Criteria for Research

18 years old and over, can read and speak Turkish, have been receiving HD treatment for at least 1 year, no disability in reading and writing, individuals who volunteered to participate in the study.

Research Hypotheses

- H0: The symptoms experienced by individuals undergoing hemodialysis treatment don't affect on personal well-being.
- H1: The symptoms experienced by individuals undergoing hemodialysis treatment have an impact on personal well-being.

Data Collection

Data Collection Tools

"Personal Characteristics Descriptive Form", "Dialysis Symptom Index" and "Personal Well-Being Index" prepared by the researchers in the light of the literature [9,10,11] were used.

Personal Characteristics Descriptive Form

There are 12 questions in total. It includes information such as socio-demographic characteristics of individuals such as age, occupation, gender, marital status and educational status, as well as the presence of additional chronic diseases and the duration of diagnosis.

Dialysis Symptom Index

This index was developed by Weisbord et al in 2004 [11].

The Turkish validity and reliability study of the Dialysis Symptom Index (DSI) was carried out by Önsöz and Yeşilbalkan in 2013 [12].

DSI; assesses symptoms and severity of symptoms in individuals with end-stage renal disease. It consists of a total of 30 items and the answers are obtained with a 5-point Likert-type scale. According to this assessment,; it is evaluated as:

- "0=none,
- 1=somewhat,
- 2=sometimes,
- 3=very little,
- 4=a lot".

The total score of the scale is obtained by summing the obtained scores. Scoring ranges from 0 to 150. A value of "0" indicates the absence of symptoms. The increase in the total scores given to the answers towards 150 points indicates that the effect of the symptoms increased.

In the study, the Cronbach alpha of DSI was found to be .083.

Personal Well-Being Index

It was developed by the International Wellbeing Group in 2013, and its Turkish validity and reliability study was conducted by Meral in 2014 [7].

The internal consistency coefficient was calculated as 0.86.

Data Analysis

SPSS 21.0 program was used for data analysis. For continuous (quantitative) variables, descriptive statistics (mean, standard deviation, minimum and maximum) were expressed, while categorical variables were given as numbers and percentages.

The Shapiro-Wilk test, histogram, and normal Q-Q plot were used for tests of normality.

One-way ANOVA and independent-sample t-test were used to evaluate the difference between individuals' socio-demographic characteristics, independent variables, and Dialysis Symptom Index and Personal Well-Being Index score averages.

Linear regression analysis was performed on the prediction of dialysis symptoms in individuals receiving hemodialysis and their cwell-being levels. $p < 0.05$ was considered to be significant.

Ethical Considerations

Before starting the study, the scale permission was obtained electronically in order to be able to apply Dialysis Symptom Index and the Personal Well-Being Index.

Ethics approval was taken from Human Research Ethics Committee of a university in Turkey (2020-854) and the written permission was obtained from the Provincial Health Directorate by the letter number 10/12/2020-E.1173 taken from Zonguldak Atatürk State Hospital where the study was going to be carried out.

The study was conducted based on voluntary participation and ethical principles were adhered to during the study.

RESULTS

When the introductory characteristics of the participants are examined, it is seen that 52.4% are male, 82.0% are married. 51.5% are retired, 61.7% are primary school graduates. 92.6% don't have social security, 75.3% of them were equal to their income and expenses. In addition, 57.1% of the participants received hemodialysis treatment for 1-5 years. 88.7% received hemodialysis treatment three times a week. 83.8% didn't interrupt the hemodialysis session and 73.6% had an additional chronic disease.

It was determined that 51.9% of the patients with + chronic disease had a diagnosis of diabetes (Table I).

Table II shows the individuals experiencing the symptoms in the Dialysis Symptom Index in the last seven days. It was seen that feeling tired and decreased energy were the most experienced symptoms by 55.8%, muscle cramps 54.1%, numbness and tingling in the feet 46.1% and vomiting was the least experienced symptom with 24.9%.

In the study, it was determined that the participants scored an average of 63.68 ± 19.49 on the Personal Well-Being Index and 19.41 ± 16.87 on the Dialysis Symptom Index (Table III).

In the study, the Personal Well-Being Index and Dialysis Symptom Index of the participants were compared with the descriptive information of the scores. Accordingly, it was determined that the Personal Well-Being Index scores of the patients receiving hemodialysis treatment showed a significant difference according to the variables of educational status and presence of an additional chronic disease ($p<0.05$).

Compared to the patients who graduated from high school (70.56 ± 11.69), patients with other education levels; it was determined that the mean scores of the patients without a concomitant chronic disease (68.20 ± 19.26) were higher than those with an additional chronic disease (Table IV).

It was determined that the Dialysis Symptom Index scores of the participants showed statistically significant differences according to gender, education status, income status, presence of

additional chronic disease, and disruption of the hemodialysis session ($p<0.05$).

According to this, women (21.61 ± 17.78), faculty/school graduates (34.50 ± 17.67), those with a higher income than their expenses (26.27 ± 18.76), those with concomitant chronic diseases (20, 85 ± 17.61) and those who interrupted the hemodialysis session (28.72 ± 21.01) had higher mean scale scores (Table IV).

Table 1. Descriptive Characteristics of Individuals Receiving Hemodialysis Treatment (n=462)

Introductory Information *Age: $\bar{X}$ ± S: 64,0 ± 11,6; Min.-Max= 18,0-94,0*		**Number (n)**	**Percent (%)**
Gender	Female	220	47,6
	Male	242	52,4
Marital Status	Married	379	82,0
	Single	83	18,0
Working status	Yes	24	5,2
	No	438	94,8
Job	Employee	17	3,7
	Officer	13	2,8
	Housewife	178	38,5
	Self-employment	16	3,5
	Retired	238	51,5
Social Insurance	Yes	428	92,6
	No	34	7,4
Educational status	Literate	125	27,1
	Primary school	285	61,7
	Middle School	39	8,4
	High school	11	2,4
	College/faculty	2	0,4
Income status	Income less than expenses	46	10,0
	Income equal to expenses	348	75,3
	Income more than expenses	68	14,7
Hemodialysis treatment time	1-5 year	264	57,1
	6-11 year	167	36,1
	>11 year	31	6,7
An additional chronic disease condition	Yes	340	73,6
	No	122	26,4
An additional chronic disease condition	DM	240	51,9
	HT	195	42,2
	Other diseases	31	6,7
Frequency of hemodialysis treatment	2 per week	52	11,3
	3 per week	410	88,7
Disruption of hemodialysis session	Yes	75	16,2
	No	387	83,8

Table 2. Frequency of Symptoms Experienced by Individuals Receiving Hemodialysis Treatment According to Dialysis Symptom Index (n=462)

Symptoms	**Yes**		**No**	
	Number (n)	**Percent (%)**	**Number (n)**	**Percent (%)**
Vomiting	115	24,9	347	75,1
Feeling anxious	119	25,8	343	74,2
Worried	125	27,1	337	72,9
Decreased sexual satisfaction	131	28,4	331	71,6
Decreased interest in sexual intercourse	133	28,8	329	71,2
Chest pain	136	29,4	326	70,6
Diarrhea	143	31,0	319	69,0
Feeling uncomfortable	144	31,2	318	68,8
Feeling sad	145	31,4	317	68,6
Dry skin	146	31,6	316	68,4
Difficulty keeping legs still	147	31,8	315	68,2
Feeling angry	145	31,8	315	68,2
Muscle pain	149	32,3	313	67,7
Nausea	151	32,7	311	67,3
Difficulty concentrating	151	32,7	311	67,3
Decreased appetite	158	34,2	304	65,8
Difficulty maintaining sleep	165	35,7	297	64,3
Difficulty falling asleep	167	36,1	295	63,9
Cough	169	36,6	293	63,4
Dry mouth	172	37,2	290	62,8
Swelling in the legs	175	37,9	287	62,1
Headache	180	39,0	282	61,0
Bone or joint pain	188	40,7	274	59,3
Shortness of breath	198	42,9	264	57,1
Constipation	199	43,1	263	56,9
Drowsiness/dizziness	206	44,6	256	55,4
Itching	208	45,0	254	55,0
Numbness or tingling in the feet	213	46,1	249	53,9
Muscle cramps	250	54,1	212	45,9
Feeling tired or decreased energy	258	55,8	204	44,2

Table 3. Distribution of Personal Well-Being Index and Dialysis Symptom Index Scores of Individuals Receiving Hemodialysis (n= 462)

Variable	**$\bar{X}$ ± SS**	**Min.-Max.**
Personal Well-Being Index	63,68 ± 19,49	0,00-100,00
Dialysis Symptom Index	19,41 ± 16,87	0,00-105.00

Regression analysis was conducted to examine the effect of dialysis symptoms experienced on the personal well-being of the participants. Since the significance level was $p<0.05$, the established regression model is significant.

According to the results of the regression analysis conducted to predict the relationship, it is seen that the dialysis symptoms of the patients have a moderately significant negative effect on their well-being. The R2 value, expressed as the explanatory power of the model, was calculated as 0.110 (R= 0.332; R2=0.110; $p<0.05$). This value shows that 11.0% of the participants' well-being levels are explained by the dialysis symptoms they experienced. In the analysis performed, the Beta coefficient (β) was determined as -0.332 ($p<0.05$). Accordingly, dialysis symptoms experienced by individuals have a significant effect on their well-being levels (Table V).

Table 4. Personal Well-Being Index and Dialysis Symptom Index Scores of Individuals Receiving Hemodialysis by Descriptive Characteristics

Introductory information		**Personal Well-Being Index**		**Dialysis Symptom Index**	
		X̄ ± SS	**test/p**	**X̄ ± SS**	**test/p**
Gender	Female	62,40 ± 19,19	t=-1,347 p=0,179	21,61 ± 17,78	t=2,688 p=0,007
	Male	64,85 ± 19,73		17,42 ± 15,77	
Marital Status	Married	63,10 ± 19,02	t=--1,284 p=0,202	20,06 ± 17,30	t=-1,748 p=0,081
	Single	66,37 ± 21.42		16,49 ± 14,48	
Working status	Yes	63,20 ± 21,18	t=-0,695 p=0,392	15,58 ± 15,61	t=--1,144 p=0,253
	No	63,60 ± 19,42		19,63 ±16,93	
Job	Employee	60,14 ± 28,32	F=0,384 p=0,820	20,29 ± 16,69	F=0,678 p=0,608
	Officer	67,21 ± 19,04		19,92 ± 12,35	
	Housewife	62,90 ± 18,87		20,78 ± 17,42	
	Self-employment	63,59 ± 25,40		15,37 ± 15,58	
	Retired	64,34 ± 18,90		18,58 ± 16,79	
Social Insurance	Yes	63,59 ± 19,43	t=-0,373 p=0,709	19,83 ± 17,00	t=-1,877 p=0,061
	No	64,88 ± 20,47		14,20 ± 14,34	
Educational status	Literate	54,74 ± 19,95	F=4,398 p=0,002	23,92 ± 17,73	F=4,870 p=0,001
	Primary school	65,99 ± 18,91		18,40 ± 16,49	
	Middle School	63,75 ± 20,78		14,58 ± 15,13	
	High school	70,56 ± 11,69		9.09 ± 7,59	
	college/faculty	68,12 ± 0,88		34,50 ± 17,67	
Income status	Income less than expenses	68,88 ± 14,83	F=2,371 p=0,095	16,41 ± 15,04	F=7,074 p=0,001
	Income equal to expenses	63,55 ± 18,31		18,47 ± 8,02	
	Income more than expenses	60,86 ± 26,50		26,27 ± 18,76	
Hemodialysis treatment time	1-5 year	64,17 ± 20,01	F=2,610 p=0,075	19,83 ± 17,16	F=0,208 p=0,812
	6-11 year	61,72 ± 18,93		18,98 ± 16,88	
	>11 year	70,08 ± 16,68		18,25 ± 14,47	
An additional chronic disease condition	Yes	62,06 ± 19,35	t=-3,017 p=0,003	20,85 ± 17,61	t=3,439 p=0,001
	No	68,20 ± 19,26		15,41 ± 13,91	
An additional chronic disease condition	DM	66,05 ± 19,64	t=-0,828 p=0,448	18,25 ± 18,01	t=-0,530 p=0,596
	HT	63,38 ± 19,47		19,56 ± 16,74	
Frequency of hemodialysis treatment	Other diseases	59,95 ± 17,79	t=-1,951 p=0,054	28,72 ± 21,01	t=4,357 p=0,000

Table 5. Regression Analysis of Dialysis Symptoms in Predicting Personal Well-Being Levels of Individuals Receiving Hemodialysis

Independent variable	**The dependent variable**	**B**	**Std. Error**	**(β)**	**t**	**R**	**R2**	**F**	**p**
Dialysis Symptom index	Personal Well-Being	37,724	2,535	0,332	14,88	0,332	0,110	57,011	0,000

DISCUSSION

In this study, the most common symptom experienced by individuals receiving HD; feeling tired and decreased energy (55.8%). In parallel with our finding, Akgöz & Arslan (2017) [13], Delmas et al. (2018) [14], Hintistan and Deniz (2018) [15], Dikmen (2020) [16] and Tayaz & Koç (2020) [17] also found that feeling tired and decreased energy symptoms were the most experienced symptoms. Tiredness is defined as 'muscle weakness, accumulation of waste products, an uncontrollable sense of exhaustion that occurs with inflammatory processes' (O'Sullivan & McCarthy, 2009) [18]. Many bio-psychosocial factors affect fatigue in individuals receiving HD treatment (Sayın & Candansayar, 2007) [19]. Especially; physiological processes such as fluid-electrolyte imbalance, the slowdown in endocrine system function, and anemia resulting from decreased erythropoietin production contribute to fatigue (Azak, Altundağ, & Dündar, 2012 [20]; Akgöz & Arslan, 2017 [13]). In addition, being a chronic disease, being dependent on machinery, compliance with diet regimen, and limitation in social relations are among the reasons why he experiences the symptoms of fatigue intensely (Yurtsever and Beduk, 2003) [21].

In this study, muscle cramps (54.1%) were among the most common and severe symptoms experienced by the patients. Possible causes of muscle cramps in HD patients are changes in muscle cell morphology (Hintistan and Deniz, 2018) [15]. Intense ultrafiltration, low sodium in the dialysate solution, muscle cramps with hypotension near the end of dialysis due to excessive weight gain between two dialysis, and carnitine deficiency are thought to be the main causes of muscle cramps (Kral and Yurtsever, 2013 [22]; Prabhakar et al.2015 [23]). When the literature is examined, the cases of experiencing muscle cramps Delmas et al. (2018) [14] 50.4%, Akgöz & Arslan (2017) [13] 45.3%, Tayaz and Koç (2020) [17]38%, Hintistan and Deniz (2018) [15] 74%, Dikmen (2020) [16] 35% . According to the results, it is seen that HD patients experience muscle cramps in the range of 35-74%.

Vomiting (24.9%) was found to be the symptom experienced at the lowest rate in this study. In the study of Delmas et al. (2018) vomiting was found to be the least experienced symptom with a rate of 12.6% [14]. In the study of Tayaz and Koç (2020) [17], the rate of nausea-vomiting is 67%, in the study of Hintistan and Deniz (2018) [15] it is 31.4%, and in the study of Dikmen (2020) it is stated as 21.8% [16].

In the study, it was determined that the participants got an average of 19.41±16.87 points from the Dialysis Symptom Index (DSI) and 63.68±19.49 points from the Personal Well-Being Index. In the study of Dikmen (2020) [16], it was determined that the patients got 67.72±24.56 points from DSI and the symptoms they experienced were moderate. This rate was determined as 45.88±26.36 in the study of Hintistan and Deniz (2018) [15] and 38.1±22.8 in the study of Göriş et al. (2016) [24]. The low score in this study indicates that individuals experience symptoms less frequently. Also in this study; It was determined that the mean score of the scale was higher in those who had Dialysis Symptom Index scores, were female, graduated from faculty/school, had a higher income than their expenses, had a comorbid chronic disease, and interrupted the hemodialysis session. Consistent with the literature, Caplin et al. (2011) [25], Göriş et al. [24] and Hintistan and Deniz (2018) [15] found that women's scores were higher and more significant than men in the case of experiencing symptoms. Delmas et al. (2018) also state that the prevalence and severity of psychological symptoms and the prevalence of gender-related symptoms are also affected by the cultural context of the patients [14]. Similar to our finding; In the studies of Akgöz and Arslan (2017) [13] and Hintistan and Deniz (2018) [15], it is seen that education status and the presence of another chronic disease negatively affect DSI score averages.

In this study, HD patients got 63.68±19.49 points from KIO-I. Inel et al. (2021) show that elderly people with chronic diseases have a lower level of personal well-being [26]. The perception of personal well-being of the Australian adult sample was calculated between 73.7% and 76.7% (average 75.2) (Cummins, Woerner, Weinberg, Perera, Gibson, & Collard, 2007) [27]. According to these findings, it can be said that the level of personal well-being of individuals who received HD in this study was low. Since the individuals in this study were both chronically ill and their mean age was 64, a low KIO-I score is an expected result. When the relationship between KIO-I score and socio-demographic characteristics is examined; It was determined that the mean score of the scale was higher in high school graduates and patients without a concomitant chronic disease.

In this study, it is seen that the dialysis symptoms of the patients have a negative and moderately significant effect on their well-being. In a study conducted abroad, it has been observed that individuals receiving HD have a decrease in dialysis-related side effects such as fatigue and muscle cramps by traveling by a bus that provides hemodialysis service and taking a vacation. In addition, the KIO-I score was found to be significantly higher (Sims et al, 2017) [28]. It should not be forgotten that mental well-being is among the factors affecting the quality of life of hemodialysis patients (Ebrahimi et al, 2014) [29]. According to Song and Hanson (2009), well-being should be the main outcome of HD treatment [30].

STUDY LIMITATIONS

Research data is limited to hemodialysis centers located in a province of Turkey. This may be a limitation of the present study.

CONCLUSIONS

In this study, the most common symptoms experienced by individuals receiving HD were; feeling tired and decreased energy and muscle cramps, the least experienced symptom was vomiting. It was determined that individuals who received HD had low KIO-I scores. In addition, it was determined that individuals experienced fewer hemodialysis-related symptoms. It has been determined that the dialysis symptoms experienced by individuals have a significant effect on their personal well-being levels. It is observed that the severity of hemodialysis symptoms both reduces the quality of life of individuals and negatively affects well-being as it affects their physical health and mental state.

SUGGESTIONS

- Hemodialysis nurses should determine the level of personal well-being of individuals, and they should plan special care for individuals with low levels of this level,
- It should be known that the most common symptom experienced by patients receiving hemodialysis is feeling tired and decreased energy, and environmental comfort should be increased for this,
- It is recommended that different studies be conducted with a large sample examining the effects of hemodialysis symptoms on personal well-being.

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Conflicts of interest

The authors certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.

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