

# Investigation of Fatigue in Hemodialysis Patients, Severity and Influencing Factors

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## Abstract

**Objective:** This study was conducted in a descriptive manner to determine the severity of fatigue in patients undergoing hemodialysis due to Chronic Renal Failure (CRF) and to determine the socio-demographic factors affecting fatigue severity.

**Materials and Methods:** The study was conducted between December 2017 and March 2018 on patients receiving treatment for CRF in the hemodialysis unit of the Malatya Training and Research Hospital. 225 hemodialysis patients were accepted who did not select the sample in the survey. In the evaluation of the data, the arithmetic mean, standard deviation and percentage parameters were used. In comparison, Oneway ANOVA, Kruskal-Wallis and Student t-test used.

**Results:** When we look at the sociodemographic characteristics of hemodialysis patients and fatigue severity scale points in the study. There was a statistically significant relationship between age, gender, perceived health status, working status, duration of hemodialysis treatment, hemodialysis frequency and fatigue severity scale score ( $p < 0.05$ ).

**Conclusion:** According to the results of the research; there was a statistically significant relationship between sociodemographic characteristics of hemodialysis patients and hemodialysis treatment duration and fatigue severity scale score.

**Keywords:** Hemodialysis, fatigue severity, chronic renal failure, nephrology nursing

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## INTRODUCTION

Hemodialysis (HD) is the most common treatment method used for chronic renal failure (CRF). CRF is the progressive loss of renal function without any reversal. As of the end of 2016, 74,475 patients received renal replacement therapy (RRT) in our country. The most common type of RRT is HD (76.1%), followed by transplantation (19.2%) and peritoneal dialysis (4.7%). The prevalence was calculated as 933 per million population, and the incidence was calculated as 140 per million population (3). End-stage renal failure is a serious public health problem worldwide and in Turkey because of its frequency, changing etiology, complex treatments, and high economic costs (1-3).

As with many chronic diseases, fatigue is an important symptom in individuals who undergo HD due to CRF.

With the effects of cardiovascular, hematopoietic, metabolic, and endocrine system functions in individuals with CRF, individuals experience significant fatigue, resulting in biological and psychological problems, and social differences and professional life may be adversely affected (4-6). In addition to the disease phenotype, limitations due to HD (diet and future plans), changes in body image (lack of urination and decrease in sexual activity), increased dependence, threat of death, changing of roles in the family, economic problems, decrease in social activities, negative attitudes of health workers, and lack of communication with health workers can lead to the emergence of various psychosocial problems, such as stress, anxiety, guilt, hostility, depression, anxiety, and self-worthless vision (6). Objectives of CRF nursing care are reducing symptoms, ensuring adequate and balanced nutrient intake, evaluating the effects of



pharmacological treatment, increasing exercise tolerance, preventing complications related to CRF, and educating patients and their families. Nursing care and patient education should be applied in accordance with the nursing process to optimize the patient's health. The rate of fatigue is 60%-97% in patients receiving long-term RRT. Although fatigue is a major problem for patients, it is largely ignored by the medical team (7). Fatigue may be an important problem in the lives of patients undergoing HD due to CRF and may affect patients' feelings about themselves, their daily life activities, their differences with others, and their quality of life. For these reasons, it is important to determine fatigue in patients with CRF and to minimize and to plan their daily living activities (8). In addition, fatigue is a factor that negatively affects the quality of life in HD patients. For individuals to be satisfied with life, the limiting effects of the factors affecting the quality of life should be minimized. To prevent the symptoms of fatigue from limiting the daily activities of the individual, it is necessary to evaluate fatigue and to provide effective activity planning with the appropriate symptom of this symptom (9). Additionally, to prevent the symptom of fatigue from limiting the daily activities of the individual, it is necessary to effectively deal with this symptom by evaluating fatigue and planning the appropriate activity (9). However, it is stated that nurses are largely unaware of the presence and severity of fatigue in dialysis patients (10). The present study is designed to overcome this deficiency in the literature.

## MATERIALS AND METHODS

### Aim and Type of the Study

The present study was performed in a descriptive manner to determine the fatigue severity in patients undergoing HD for CRF and to identify the socio-demographic factors affecting the severity of fatigue.

### Place and Time of the Study

The study was conducted between December 2017 and March 2018 with patients in the Hemodialysis Unit of Malatya Training and Research Hospital. There are a total of 350 registered patients receiving treatment at the Hemodialysis Unit in Malatya Training and Research Hospital. The aim of the present study was to reach the whole cohort without selecting the samples. Patients who did not agree to participate were excluded from the study. A total of 225 HD patients were included in the study.

### Inclusion criteria for the study

- Being older than 18 years
- Being an HD patient for at least 6 months
- Being cooperative to interaction

### Data Collection

Data of the study were collected by using the Introductory Information Form and Fatigue Severity Scale (FSS) prepared for HD patients. Necessary permissions were obtained for the planning and execution of the research. The aim and content of the study

were given to the patients in the study. Verbal consent was obtained from the patients to participate in the study.

### Descriptive Information Form

As a result of the literature review (2), the patient information form developed by the researchers consisted of nine questions to identify different data for the disease and HD treatment.

### Fatigue Severity Scale

FSS was developed by Krupp et al. (11). The Turkish validity and reliability were performed by Armutlu et al. (12). On this scale, there are nine different questions with fatigue. Patients are asked to give points to these questions from 1 to 7. As a result of the evaluation, a score of 9-63 is obtained. An increase in score shows that the intensity of fatigue increases.

### Statistical Analysis

Data entry and evaluation procedures were analyzed by the SPSS for Windows program (SPSS Inc., Chicago, IL, USA). Arithmetic mean, standard deviation, minimum, maximum, and percentage parameters were used for the distribution of data, whereas one-way analysis of variance test, Kruskal-Wallis test, and Student's t-test were used for the comparison of data. A  $p < 0.05$  was accepted as statistically significant.

## RESULTS

Of the 225 HD patients included in the study, 33.3% were aged  $\geq 51$  years, 54.7% were male, 78.7% were married, 62.7% were perceived as middle, 41.8% were primary school graduates, 55.6% were ill, 74.7% did not work, 31.1% were HD patients 6 months-3 years, and 59.6% had 3 sessions/week in dialysis (Table 1).

When the socio-demographic characteristics of HD patients and the scale score of fatigue severity were examined, a statistically significant difference was found between age, gender, perceived health status, working status, duration of HD treatment, and frequency of HD and FSS score ( $p < 0.05$ ). In the study, no statistically significant difference was found between marital status, educational level, perceived income level, and FSS score ( $p > 0.05$ ) (Table 2).

## DISCUSSION

A statistically significant difference was found between the ages of HD patients and the severity of fatigue. Accordingly, it was determined that the severity of fatigue increased as the patients' ages progressed. Similar to our study in the literature, a statistically significant difference was found between the age and fatigue levels of dialysis patients; as age increased, fatigue increased (8, 9, 13-17, 23). The increase in the level of fatigue in accordance with the increase in the age of HD patients can be interpreted by the decrease in physical activity caused by the physiological changes as a result of the progression of the age and the increase in the number of chronic diseases due to age and the psychosocial effects of these diseases.

**Table 1.** Socio-demographic characteristics of hemodialysis patients (n=225)

Demographic characteristics	N	%
<b>Age group</b>		
20-30 years	21	9.3
31-40 years	70	31.1
41-50 years	59	26.2
≥51 years	75	33.3
<b>Gender</b>		
Female	102	45.3
Male	123	54.7
<b>Marital status</b>		
Married	177	78.7
Single	28	12.4
Divorced	20	8.9
<b>Perceived income level</b>		
Low	52	23.1
Middle	141	62.7
High	32	23.1
<b>Educational level</b>		
Literate	35	15.6
Primary	94	41.8
High school	82	36.4
University	14	6.2
<b>Perceived health status</b>		
Good	8	3.6
Moderate	92	40.9
Poor	125	55.6
<b>Working status</b>		
Working	57	25.3
Not working	168	74.7
<b>Duration of hemodialysis treatment</b>		
6 months-3 years	70	31.1
4-6 years	69	30.7
7-10 years	57	25.3
≥11 years	29	12.9
<b>Hemodialysis frequency</b>		
3 sessions/week	134	59.6
1-2 sessions/week	91	40.4

A statistically significant difference was found between the gender of the HD patients and severity of fatigue. According to this, FSS score was higher in females than in males. Similar to our study, fatigue levels were higher in women than in men in the literature (17-22). The reason for the high level of fatigue in women is that women’s responsibilities, such as housework, child care, and food preparation, continue during the dialysis process, and that women may express disease-related effects more easily than men.

**Table 2.** Comparison of socio-demographic characteristics and Fatigue Severity Scale scores of hemodialysis patients

Demographic characteristics	N	Fatigue severity Avg±SD	p
<b>Age group</b>			
20-30	21	36.61±21.4	KW2=9.521 p=0.023*
31-40	70	38.84±20.1	
41-50	59	46.20±15.9	
51 and over	75	48.08±16.8	
<b>Gender</b>			
Female	102	43.29±14.1	t=2.349
Male	123	38.73±14.7	p=0.020*
<b>Marital status</b>			
Married	177	43.75±13.7	KW2=5.145 p=0.076
Single	28	39.98±14.1	
Divorced	20	43.90±19.0	
<b>Perceived income level</b>			
Low	52	43.51±12.9	F=0.327 p=0.722
Middle	141	44.40±14.6	
High	52	40.61±15.4	
<b>Educational level</b>			
Literate	35	40.50±27.2	KW2=3.539 p=0.316
Primary	94	43.93±18.6	
High school	82	42.13±18.6	
University	14	35.22±18.9	
<b>Perceived health status</b>			
Good	8	36.62±14.6	KW2=6.910 p=0.032*
Moderate	92	41.92±14.0	
Poor	125	46.08±14.6	
<b>Working status</b>			
Working	57	41.28±14.2	t=2.324 p=0.021*
Not working	168	46.59±16.6	
<b>Duration of hemodialysis treatment</b>			
6 months-3 years	70	37.56±17.2	F=3.531 p=0.016
4-6 years	69	40.81±15.2	
7-10 years	57	43.07±11.6	
11 years and more	29	46.74±14.5	
<b>Hemodialysis frequency</b>			
3 sessions/week	134	45.44±18.1	t=2.689
1-2 sessions/week	91	38.61±19.5	p=0.008*

\*p<0.05

In some studies, in the literature, contradictory to our study, no significant difference was found between gender and fatigue level in our study (17, 23). It is thought that the lack of similarity

between our study and the study findings mentioned may be due to the sample group characteristics and sample size differences.

There was no significant difference between the educational level of the patients and severity of fatigue. However, as the educational level increased, the severity of fatigue decreased. Similar to our study, Nazemian et al. (24) did not detect a significant difference between the level of education and fatigue. In many studies in the literature, it was found that as the level of education increased, fatigue decreased, and a significant difference was found between them (16, 20, 25, 26). A decrease in fatigue severity as the level of education increases is thought to be due to the higher level of knowledge of these individuals about the diseases and symptoms of individuals and thus may deal better with fatigue.

**200** In the study, a statistically significant difference was found between the perceived health status of HD patients and fatigue severity. It was determined that the majority of HD patients perceived their health status as poor, and that the patients perceiving themselves with poor health status had higher fatigue severity scores. In HD patients, many negative effects, such as lack of adjustment of fluid-electrolyte balance; failure of hematopoietic, metabolic, and endocrine functions; and negative effects of dialysis treatment on physical, psychological, and social lives, may adversely affect the health status of the patients and cause increase in fatigue severity.

In the study, a statistically significant difference was found between the work status of HD patients and severity of fatigue. Accordingly, it was found that the fatigue severity was lower in patients who worked than in those who did not work, and that there was a significant difference between them. Similar findings to our study were found in the literature (16, 24, 27-30). According to this, in HD patients, working in any job increases their physical capacity, their socialization, and the capacity of coping with fatigue as a result of increased social support opportunities, which enable their coping with fatigue, whereas the perceived severity of fatigue in non-working patients can be interpreted by reducing the level of physical activity and social support.

A statistically significant difference was found between the duration of HD treatment and fatigue severity. Accordingly, it was determined that as the treatment duration of HD patients increased, FSS score increased. Similar to our study in the literature, it was determined that the duration of treatment of HD patients increased as fatigue levels increased, and that there was a statistically significant difference between them (8, 10, 16, 17, 20, 24, 29, 31). Depending on the progress of the HD treatment, the burden increases as a result of changes in the physical, mental, and social lives of the patients, and the inability to cope with this situation and the burnout may lead to increased fatigue in the patients.

In the study, a statistically significant difference was found between the frequency of dialysis and the severity of fatigue. Accordingly, it was determined that the FSS score of patients who underwent 3 sessions/week was higher. In studies in the literature, similar to our study, it has been found that as the frequency of HD patients increased, fatigue levels increased (8-10). It is thought that the fatigue severity may increase due to changes in blood parameters of patients who underwent into dialysis 3 times/week.

## CONCLUSION

According to the research results, a statistically significant difference was found between the socio-demographic characteristics of the HD patients (e.g., age, sex, perceived health status, and working status) and the duration and frequency of HD treatment and the FSS score.

According to these results:

- Patients undergoing HD should be taught the methods for coping with fatigue.
- Training on the planning of daily activities should be given.
- Coping mechanisms and social support systems regarding dealing with psychosocial problems caused by HD treatment should be developed.
- HD compliance should be increased.

**Ethics Committee Approval:** This study was approved by the İnönü University/Scientific Research and Publication Ethics for Medical Sciences.

**Informed Consent:** Informed consent was obtained from all participants included in the study.

**Peer-review:** Externally peer-reviewed.

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