

# The Relationship between Social Support and Fatigue Severity among Hemodialysis Patients

Hanan Mohammed Garwai<sup>1</sup>, Iman Abdullah Mohammed Abdulmutalib<sup>2\*</sup>,  
Asmaa Hamdi Mohammed<sup>3</sup>

<sup>1</sup>Unit Manager, Maternity and Children Hospital, Makkah, KSA

<sup>2</sup>Medical-Surgical Nursing Department, Faculty of Nursing, Ain Shams University, Cairo, Egypt

<sup>3</sup>Medical-Surgical Nursing Department, Faculty of Nursing, King Abdulaziz University, Jeddah, KSA

\*Corresponding author: [immotaleb@yahoo.ca](mailto:immotaleb@yahoo.ca)

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**Abstract** Fatigue is a frequent complaint of hemodialysis patients and occurs after dialysis sessions. Dealing with fatigue in dialysis patients requires effective social support. Hemodialysis patients receive a high level of social support. The study aimed to assess the relationship between social support and fatigue severity among hemodialysis patients. A quantitative descriptive correlational research design was used. The study was conducted in the Artificial Kidney Unit at AL Noor Specialist Hospital, Makkah, Saudi Arabia. A convenience sample of 65 adult hemodialysis patients was recruited. Data were collected through two tools; Tool I, Fatigue Severity Scale which consists of two parts; Part I, Socio-demographic and clinical data. Part II, Fatigue Severity Scale to measure the severity of fatigue. Tool II, a Multidimensional scale of perceived social support to measure how much support a patient feels they get from family, friends and significant others. The study results showed that 40.0 % of the studied participants had no fatigue, 35.4 % had mild fatigue, while 23.1 % had moderate fatigue and 1.5 % had severe fatigue. It was found that 52.3 % had moderate social support, 44.6 % had high social support, and 3.1 % had low social support. There was a positive correlation with statistical significance between the severity of fatigue and total social support with p-value 0.016, particularly significant others and family support with p-value 0.001, and 0.030, respectively. It was concluded that there was a relationship between social support and fatigue severity among hemodialysis patients. The current study recommended raising the awareness of family, friends, and special person regarding the importance of social support for hemodialysis patients.

**Keywords:** *fatigue severity, hemodialysis, social support*

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## 1. Introduction

Hemodialysis (HD) has been considered a treatment for end-stage renal disease (ESRD). However, when the kidneys do not function effectively, waste products and fluid buildup in the blood. Dialysis captured part of the failed kidney function to remove fluids and waste. Dialysis is needed at approximately 90 percent or more of kidney function is lost [1].

The technique of hemodialysis has served to save millions of patients of ESRD since 1960. Patients on maintenance hemodialysis respond differently to the procedure due to several confounding factors. These factors include comorbid conditions like diabetes mellitus (DM), vascular disorders, hypertension (HT), compromised cardiac function, age, nutritional status, patient compliance and duration of the therapy, and session frequency per week [2]. While HD is a lifesaving procedure, it significantly leads to fatigue that affects patients' quality of life [3,4,5].

Fatigue is a common and often unknown symptom in patients with ESRD dialysis that is subject to maintenance. Various studies have reported that fatigue affects 60% to 97% of dialysis patients. However, fatigue seriously impedes physical and social performance, as it has been associated with lower quality of life and premature death in patients with chronic dialysis [5].

Hemodialysis recovery time is the time to recover from post-hemodialysis fatigue. Globally, 27 % of patients have reported 6 hours and longer dialysis recovery time while 68% of patients reported taking longer than 2 hours to recover from a hemodialysis session. In the US, approximately 86 % of patients experience post-hemodialysis fatigue ranging from mild-to-severe, and a recent report suggested 29 % of patients experience greater than 6 hours hemodialysis recovery time [1]. According to [4] a third of patients reported that they felt bad in the immediate hours after a dialysis session, while one in four reported severe or very severe fatigue after dialysis.

Fatigue after hemodialysis is a frequent complaint of dialysis patients that occurs after hemodialysis sessions.

Patients who suffered from fatigue after hemodialysis needed approximately five hours of sleep to recover after the session and were suffering from more depression, insomnia and body aches than those who did not experience fatigue after hemodialysis. Moreover, patients with post hemodialysis fatigue have limitations on their functional independence and their participation in social activities on hemodialysis day [6].

Dealing with fatigue in dialysis patients requires effective social support. As the level of social support increases for people with dialysis, they improve more pleasure outside of life, deal with stress and fatigue more easily and their depressed mood and load of disease decrease. It is very important for nurses to help dialysis subjects endure fatigue by stimulating their social support systems. When nurses deal with symptoms of fatigue and the patient's social support systems go into effect, this positively affects the patient's quality of life [7].

Nursing intervention is an essential part of the management of hemodialysis patients and must take a proactive role in assisting the patient to learn measures that may ease their sensation of fatigue. Hence, nurses have an important role in bringing social support and dealing with fatigue symptoms [7]. In general, fatigue negatively affects physical and mental functioning, but the studies lack detailed descriptions of other domains that fatigue may affect [6,8].

### 1.1. Significant of the study

It was found that hemodialysis patients are negatively affected in their work, leisure activities, enjoyment of life, and relationships with their families and friends, and this was closely related to fatigue [7].

Fatigue is one of the most important problems of hemodialysis patients. It is an unwanted feeling, complex and debilitating disorder that causes physical and psychological disorders and severely affects their life [9]. Coping with fatigue in patients on hemodialysis requires effective social support [7].

Social support is clearly one of the most effective ways to facilitate long-term treatment success and patients' disease adjustment. Higher social support is associated with more effective disease management. This beneficial effect of social support can be achieved through psychological, medical, and biochemical factors [10].

### 1.2. Study Aim

The current study was conducted to assess the relationship between social support and fatigue severity among hemodialysis patients.

### 1.3. Objectives

- 1- Assess the fatigue severity among hemodialysis patients.
- 2- Assess social support among hemodialysis patients.
- 3- Investigate the relationship between social support and fatigue severity among hemodialysis patients.

### 1.4. Research Question

Is there a relationship between social support and fatigue severity among hemodialysis patients?

## 2. Subjects and Method

### 2.1. Research Design

A quantitative descriptive correlational research design was used to achieve the study aim.

### 2.2. Setting

The study was conducted in the Artificial Kidney Unit (AKU) at AL Noor Specialist Hospital, Makkah, Saudi Arabia.

### 2.3. Study Sample

A convenience sample of 65 adult hemodialysis patients who agreed to participate in this study was recruited from the previously mentioned hospital (female and male).

### 2.4. Tools of the Study

The researchers used two tools for data collection:

#### Tool I. Fatigue Severity Scale

This tool consists of two parts as follow:

##### Part I: Socio-demographic and clinical data:

This part was constructed by the researchers in the Arabic language. It includes; gender, age, marital status, educational level, employment, comorbidity diseases, years of hemodialysis, number of hemodialysis sessions /week, duration of hemodialysis session, hemodialysis discomfort, and problems during a hemodialysis session.

##### Part II: Fatigue Severity Scale (FSS):

The FSS is a 9-item valid and reliable scale that measures the severity of fatigue and how much it affects the person's activities and lifestyle in patients with a variety of disorders. This scale was developed by [11] and translated to the Arabic Language by the researchers. The FSS has high reliability with a Cronbach alpha coefficient of 0.88. The scale is a Likert-type scale and consists of nine statements concerning respondent's fatigue, e.g., how fatigue affects motivation, exercise, physical functioning, carrying out duties, interfering with work, family, or social life. The items are scored on a 7 point scale with 1=strongly disagree to 7=strongly agree. The minimum score=9 and maximum score possible=63. A high score indicates increased fatigue severity. A total score of fatigue severity is categorized as follow: less than 36 no fatigue, 36 to 45 suffering from mild fatigue, 46 to 54 suffering from moderate fatigue, and 55 to 63 suffering from severe fatigue

#### Tool II: Multidimensional scale of perceived social support

This scale was developed by [12] to measure how much support a patient feels they get from family, friends and significant others. This tool was translated into the Arabic Language by the researchers. It is including 12 items; 4 items to identify support from family (3, 4, 8, & 11), 4 items for friends support (6, 7, 9, & 12), and 4 items for significant others support (1, 2, 5, & 10). The scale is a Likert scale that consists of seven ratings (1 to 7 points) ranging from "very strongly disagree" to "very strongly agree." The lowest score obtained from each sub-scale is 4

and the highest score is 28. The lowest score obtained from the entire scale is 12 and the highest score is 84. The highest score means a level of high perceived social support. For calculating the mean score for each subscale, its corresponding scores are summed up then divided by 4, for the total scale, the score of all 12 items are summed up and then divided by 12. Mean total scale score ranging from 1 to 2.9 was considered low support; a score of 3 to 5 was considered moderate support, and a score from 5.1 to 7 was considered high support.

## 2.5. Ethical Consideration

Official approval was obtained from the ethical committee of the faculty of Nursing, King Abdulaziz University. Additional approval from the Ethical Committee of Al Noor Specialist Hospital (Review Board Committee) was obtained. In addition, the researchers obtained verbal approval from the studied participants after providing full information to them with the preservation of their right to withdraw from the study at any time. Also, the researchers assured that their anonymity and information confidentiality is protected.

## 2.6. Pilot Study

The pilot study was conducted on 10% of the participants (8 patients) to test the feasibility of the study and the clarity and simplicity of the questionnaires. After the pilot study, no changes were made to the data collection tool, so this sample was included in the study.

## 2.7. Validity and Reliability

Content validity was ascertained by a panel of 7 experts from the Faculty of Nursing King Abdulaziz University, to judge the clarity, simplicity, relevance, accurateness, comprehensiveness, and representation of the tool. The recommended changes were made accordingly.

The reliability of tools was assessed using Cronbach's Alpha for the domains of fatigue severity scale was 0.952, and it was 0.949 for social support, while the total Cronbach's Alpha for the instrument was 0.98. This value is considered excellent, meaning that the instrument is reliable to assess the aim of the study.

## 2.8. Data Collection Procedure

1. Data were collected in single individual interviews; for each patient individually, and explained the study's goal for the studied sample wishing to participate. Confidentiality and privacy were also guaranteed and there was no known risk to the participants. The sample collected from the Artificial Kidney Unit at AL Noor Specialist Hospital.
2. Patients were assessed 2 days /week during the morning shift for three months. The data collection was started from the first of January 2019 until the end of March 2019.
3. The researchers filled out the questionnaire according to the patients' answers. The total time

spent with each patient for filling the questionnaire ranged from 20 up to 30 minutes.

## 2.9. Statistical Analysis

Data were collected and analyzed using SPSS (Statistical Package for the Social Sciences program) version 22. Descriptive and inferential statistics were used to analyze the collected data. Tests such as frequency, percentage, mean, standard deviation, and mean percent were used for descriptive statistics. Pearson coefficient (r), T- independent samples test and the one-way ANOVA test (F) were used for inferential statistics.

## 3. Results

**Table 1** shows the distribution of the studied participants according to sociodemographic data. It is clear from the table that, 55.4 % of the study participants were females, 72.3 % of the studied participants are educated, and 67.7 % of the studied participants were married. As regards employment, 70.8 % of the studied participants were not employed, while 29.2% are employed.

**Table 2** reveals the clinical data of the studied participants. Regarding the comorbidity disease, 50.8 % were hypertensive, 18.5 % were diabetic and 30 % had other diseases (e.g. heart disease, respiratory disease, etc.). In relation to the duration of hemodialysis, 24.6 % of the studied participants have been on hemodialysis since 1 to 3 years, 24.6 % of them have been on hemodialysis for more than 3 years to 5 years, while the rest (50.8 %) have been on hemodialysis for more than 5 years.

Concerning the number of weekly hemodialysis sessions, 84.6 % of the studied participants were undergoing hemodialysis three times per week. Regarding the duration of hemodialysis session 81.5 % of the studied participants, underwent hemodialysis for more than 3 hours per session. Moreover, 38.5% of studied participants had anorexia related to hemodialysis discomfort, 35.4 % of them had psychological changes, (e.g. aggression, low self-esteem, etc.), while 26.2 % had other symptoms. (e.g., itching, body ache, sleep disturbance). The same table also reveals that 67.7 % of the studied participants, encountered disconnection of the tubing during hemodialysis, and 20.0 % of them encountered tube clotting.

**Figure 1** reveals the distribution of the studied participants according to fatigue severity. This figure shows that 40.0 % of the studied participants had no fatigue, 35.4 % had mild fatigue, while 23.1 % had moderate fatigue and 1.5 % had severe fatigue.

**Table 3** demonstrates the distribution of the studied participants according to the level of social support. Regarding the level of family support, it is clear that 50.8 % had moderate support, 44.6 % had high support, and 4.6 % had low support. Pertaining to the level of friend's support, it was found that, 64.6 % had moderate support, 32.3 % had high support, and 3.1 % had low support. Regarding the level of significant others social support, it is clear that 47.7 % had moderate support, 43 % had high support, and 9.2 % had low support. Concerning the total social support, it was found that 52.3 % had

moderate social support, 44.6 % had high social support, and 3.1 % had low social support.

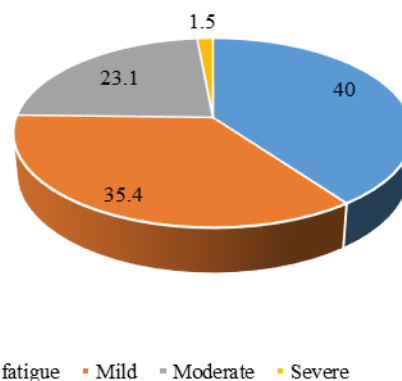
Table 4 reveals the correlation between the severity of fatigue and social support among the participants studied, this table reveals that there was a statically significant positive correlation between the severity of fatigue and overall social support with p-value 0.016, particularly significant others and family support with p-value 0.001, and 0.030, respectively.

**Table 1. Distribution of the studied participants according to socio-demographic data (n=65)**

Socio-demographic data	No.	(%)
Gender		
Male	29	44.6
Female	36	55.4
Age groups		
18 - 32 years	18	27.7
33 - 46 years	31	47.7
47 - 60 years	16	24.6
Mean $\pm$ SD	37.97 $\pm$ 12.30	
Educational level		
Illiterate	18	27.7
Educated	47	72.3
Marital status		
Single	16	24.6
Married	44	67.7
Unmarried (Divorced or Widow)	5	7.7
Employment		
Employed	19	29.2
Not employed	46	70.8

**Table 2. Distribution of the studied participants according to clinical data (n=65)**

Clinical data	No.	(%)
Comorbidity diseases		
Diabetes Mellitus	12	18.5
Hypertension	33	50.8
Other	20	30.8
Years of hemodialysis		
1 - 3 years	16	24.6
> 3 - 5 years	16	24.6
> 5 years	33	50.8
Number of sessions /week		
2 / week	5	7.7
3 / week	55	84.6
> 3 / week	5	7.7
Duration of hemodialysis session		
2 hours	1	1.5
3 hours	11	16.9
>3 hours	53	81.5
Hemodialysis discomfort		
Anorexia	25	38.5
Psychological changes	23	35.4
Others	17	26.2
Problems during hemodialysis session		
Clot within the tube	13	20.0
Disconnection	44	67.7
None	8	12.3



**Figure 1.** Distribution of the studied participants according to fatigue severity (n=65)

**Table 3. Distribution of the studied participants according to the level of social support (n=65)**

Social support Dimensional	Low Support		Moderate Support		High Support	
	No.	%	No.	%	No.	%
Family support	3	4.6	33	50.8	29	44.6
Friend support	2	3.1	42	64.6	21	32.3
Significant others	6	9.2	31	47.7	28	43.1
Total level of social support	2	3.1	34	52.3	29	44.6

**Table 4. Correlation between fatigue severity and social support among the studied participants (n=65)**

Social support dimensions	Fatigue Severity	
	r	p value
Significant others	0.399	0.001*
Family support	0.270	0.030*
Friend support	0.216	0.084
Total Social support	0.299	0.016*

P-value  $\leq$  0.05 is significant

P-value  $\geq$  0.05 is non-significant.

## 4. Discussion

The sociodemographic and clinical data of the study revealed that more than half of the studied participants were female, while less than half were male. These findings are inconsistent with the findings of [13] which showed that 59.7 % of the patients were males and 40.3 % were females. In addition, these findings are not similar to the findings of [14] which showed that 58.0 % of the renal failure patients are male, while 42.0 % are females. Moreover, these findings are not also similar to the study of [15] in Egypt, which showed that 54.3 % of the patients were males, while 45.7 % were females.

Regarding the age of the participants, around half of the studied participants were between 32 to 46 years old and, one-third of them were 18 to 32 years. While less than one third were between 46 to 60 years old. These findings were similar to the findings of [14] which showed that 12.0 % were aged between 18 to 30 years, 22.0 % were aged between 31 to 40 years, and 15.0 % were aged between 41 to 50 years. In addition, these findings are similar to the study of [15] which revealed that nearly half (49.5%) of the patients were between 30 to 50 years and another half (50.5%) were more than 50 years old.

Regarding patients' education, less than three-quarter of the studied participants were educated, and less than one-third of them were illiterate, these findings are similar to the findings of [13] which showed that 21.1 % of the studied participants had a university degree, 32.0 % had a primary school, and 24.2 % had secondary school. In the same line, [14] reported that 10 % of the patients were not educated, while 32 % completed primary education, 39 % were secondary educated, and 20 % had colleges or universities. The study findings contrast with the study of [15] which revealed that 15.2 % of patients have a university degrees, and 57.1 % were illiterate.

Regarding the marital status of the studied participants, more than two-third of the studied participants were married, and one quarter were singles. These findings are to some extent similar to the findings of [13] which showed that 59.7 % of the patients are married, and 17.1 % were widowed or divorced. On the other hand, the findings of the current study are similar to the findings of [14] which showed that 68 % of the patients were married.

In relation to the employment status, more than two-third of the studied participants were not employed, while less than one-third of them are employed, these findings are similar to the findings of [14] which showed that 76 % were unemployed, and 24.0 % were employed. This could be attributed to the fact that patients with renal failure cannot work normally as healthy individuals due to their disease process, and its accompanying symptoms in spite of their middle age. While the same finding is contradicting [13] who reported that, 23.3 % of the patients were not employed and 76.6 % were working.

According to years of hemodialysis, half of the studied participants were on hemodialysis for more than 5 years, one-quarter of the studied participants were on hemodialysis for 1 to 3 years and the last quarter were on hemodialysis from 4 to 5 years. In the same context, the findings of [15] revealed that 61.0 % of the patients have been on hemodialysis for less than 5 years, while 39.0 % have been on hemodialysis for 5 years or more.

Regarding the number of dialysis sessions/week, the current study indicated that the majority of participants studied underwent dialysis three times per week. This finding is incongruent with the study done by [14] which reported that 64 % of their study subject was receiving three sessions per week.

More than 2 million people worldwide take 3 traditional blood wash sessions every week to save a life. Usually, each hemodialysis treatment lasts about four hours and it is done three times per week [16]. This is congruent with the finding of the current study, which revealed that the majority of the studied participants underwent more than three hours per session, while the minority of them lasts more than three hours per session.

As regarding hemodialysis discomfort, more than one-third of the studied participants had anorexia and round one-third had psychological changes (aggression, low self-esteem ...etc.) while one-quarter had other symptoms (e.g., itching, body ache, sleep disturbance). This finding could be due to the process of hemodialysis itself.

As related to problems during hemodialysis sessions, about two-third of the study participants encountered disconnection of the tubing during hemodialysis, while

less than one-quarter of them encountered tube clotting. This finding could be related to patients' behaviors or the machine itself or some time any other unexpected causes.

By measuring the fatigue severity among the study participants using the fatigue severity scale. It was found that less than two-third of them had fatigue with different severity; more than one-third of them had mild fatigue severity, less than one-quarter of them had moderate fatigue, while a very few numbers of them had severe fatigue. The finding related to the number of patients who experience fatigue in this study is consistent with the result of the [5] which revealed that 52.69 % of chronic kidney disease patients experience fatigue. On the other hand, the study of [3] showed that, 81.5 % of the patients who had chronic kidney disease and undergoing hemodialysis-experienced fatigue. Furthermore, the current study is not in the same line with [17] who found that .41.9 % of the patients with chronic kidney disease experienced fatigue.

The current study results are not consistent with the results of [4] which revealed that approximately 86 % of the patients experience post-hemodialysis fatigue ranging from mild to severe. In addition, this result is consistent with the result of [18] which showed that the prevalence of fatigue has been reported between 42 and 89 % among patients with chronic kidney disease. In addition, the result of the current study is in the same context with the result of [5] which revealed that 52.69 % of chronic kidney diseases patients experience fatigue. This finding agrees with the study done by [13] who stated that 47.3 % were fatigued, and 13.7 % of patients were extremely fatigued. Furthermore, this result is consistent with the result of [4] which showed that one in four indicates severe to very severe intensity of fatigue after the hemodialysis. These results were similar to a study conducted by [3,19] and it was mentioned that fatigue is one of the most common symptoms in kidney disease patients.

Social support can provide better treatments, adherence to medications and nutrition, leading to better clinical outcomes. Low levels of social support were associated with an increased risk of death and less commitment to treatment [22].

Regarding total social support, the current study results found that, more than half of the studied participants had moderate social support, while, less than half of them had high social support. The family support was the highest social support provided to the hemodialysis patients, followed by significant others then friends.

These findings is supported by [23,24] who stated that family members play an increasingly vital role in improving self-care behaviors and facilitating patients' adjustments to illness. Also, the results of the current study are similar to the study of [23,25] which demonstrated support provided by family as the highest one.

The current study result is not similar to the results of [26] which showed that the patients with chronic kidney disease felt highly supported by their significant others and their family, and less of their friends. Also, it is not similar to the results obtained by [27] which showed that patients with chronic kidney disease obtained high support from significant others and family while the lower support was obtained by friends.

From the researcher's point of view, the family support was the highest social support could be related to the fact that more than two-third of the studied participants were married, so they get their support from their partner.

Regarding the relationship between the severity of fatigue and social support among the participants studied, there was a positive correlation between the severity of fatigue and overall social support, especially significant other and family support.

The results of the current study are not the same as a study [7] in Turkey that revealed a significant relationship in the negative direction between the severity of fatigue, the support of friends, a special person, and total support.

Also, the results of the current study are not similar to the results [28,29] that revealed that kidney patients suffering from severe fatigue feel less social support than friends and family.

On the other hand, the current study results are not similar to the results of [30,31,32] which revealed that there was no significant association between social support and fatigue in the renal patients.

The positive correlation found between fatigue and social support could be owing to the presence of social support within renal patients' life lead to feeling secure and helpful, thus they are free of fatigue and other negative symptoms because the issue of social and psychological health and well-being is considered very important for the patients.

## 5. Conclusion

Based on the results of the study, it was concluded that more than half of the studied participants had fatigue, with different levels. Most of the studied participants found to be received moderate to high social support. Moreover, there was a relationship between social support and fatigue severity among hemodialysis patients.

## 6. Recommendation

The current study recommended activating social support systems to help hemodialysis patients withstand fatigue and raising the awareness of family, friends, and special person regarding the importance of social support for hemodialysis patients.

## Conflicts of Interest Disclosure

The authors declare that there is no conflict of interest.

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