

Factors Affecting Fatigue in Chronic Renal Failure Patients under Hemodialysis Treatment at Qena University Hospital in Upper Egypt

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Abstract

Fatigue is one of the most frequent complaints of haemodialysis patients and is associated with impaired health related quality of life. Fatigue is documented as a negative symptom experienced by a large number of patients with end stage renal disease undergoing hemodialysis. Fatigue is a distressing symptom, and the consequences of fatigue can be over whelming .The person with fatigue need more efforts to perform activities, physical and cognitive, compared with the effort required before the onset of fatigue. The purpose of this study was to investigating the factors affecting fatigue in patients under hemodialysis treatment. In this descriptive study, 59 patients with chronic renal failure treated with hemodialysis at Qena University Hospitals in Upper Egypt .Data collection tool was a personal information questionnaire based on demographic characteristics (age, sex, marital status, education, number of children, occupation, income and income sufficiency, type of therapeutic support and duration of reaching the hospital) and also information regarding the duration of illness, history of hemodialysis psychedelic drugs, levels of hemoglobin, urea, creatinine, systolic blood pressure and dry weight. The second data collecting tool was the fatigue severity scale. Inclusion criteria were the medical diagnosis of chronic renal failure according to patients' medical records, continuous and regular visit for treatment, having some degree of fatigue based on the fatigue severity index questionnaire, willingness to participate in the study, age of 19years and older, auditory and speech ability and an having enough consciousness for answering the questions. In this study there was no significant difference in terms of fatigue, between different age groups and the most fatigue was observed in the age group of 19-28 and above 69years. In this study fatigue showed an increase with the increase of dialysis history but this was significant only in terms of disease history. The frequency of fatigue is high in hemodialysis patients. Overall, men have more fatigue than women when treated with hemodialysis designing and developed illustrated booklet about interventions that can be tailored to meet individual needs should be available and distributed for each patient admitted to hemodialysis unit. Further research is needed to study associated factors with fatigue in the hemodialysis population.

Keywords: Fatigue, Chronic Renal Failure, Hemodialysis

Introduction

Chronic kidney disease is the progressive deficiency of renal function for months and years. When renal function decreases, the disease reaches life threatening (ESRD) stage which requires urgency replacement, in other words, dialysis or transplantation. Mortality can be delayed by these approaches Takhreem (2008). Chronic kidney disease (CKD) describes abnormal kidney function and/or structure. There is evidence that treatment can prevent or delay the progression of CKD, reduce or prevent the development of complications, and reduce the risk of cardiovascular disease (CVD NICE Clinical Guidelines (July 2014) The definition of CKD is based on the presence of kidney damage (ie albuminuria) or decreased kidney function (ie glomerular filtration rate (GFR) <60 ml/minute per 1.73 m²) for three months or more, irrespective of clinical diagnosis. Levey et al.,(2012). Hemodialysis (HD) still represents the main mode of treatment for ESRD in the El-Minia Governorate, Egypt, an area with a high prevalence of ESRD as we previously reported El Minshawy et al.,(2002) and El Minshawy (2006). In Egypt, the prevalence of dialysis patients is presumed to be increasing and the main causes of ESRD in Egypt, other than diabetic nephropathy, included hypertensive kidney disease, chronic glomerulonephritis, unknown etiology, chronic pyelonephritis, schistosomal obstructive uropathy and schistosomal nephropathy. Afifi and Karim.,(1999 \$ 2004).

In ESRD patients, untreated fatigue may highly affect the quality of life and lead to patients' increased dependency on others, weakness, loss of physical and psychological energy, social isolation, and depression. The elements that can affect the level of fatigue include depression, anemia, sleep disorders, and restless leg syndrome Kaba et al.,(2007).Non-medicational interventions such as nutrition therapy, sleep disorder treatment, stress management, sport, Yoga, depression treatment, drug abuse, and acupressure are used to lower hemodialysis patients' fatigue Jhamb et al.,(2008).Previous studies include a systematic review on the effect of acupressure medicine on hemodialysis patients' signs including fatigue Tsay (2004). Ahlberg et al. ,(2005). would counteract the brevity of the stress management interventions to decrease emotional distress and to improve overall quality of life including fatigue. Stress management and psychosocial interventions (e.g. relaxation training, meditation, psycho-education, communication, and social support. Similarly, study of

Yuurlknran et al.,(2007). Stated exercise and yoga have also effective measures in improve fatigue and quality of life.)Haemodialysis plays an important role in maintaining renal function. It filters circulating blood through a semi permeable membrane in an apparatus to remove waste products in case of kidney failure and it attempts in replacing Kidney Function Alexander (2012).The kidney works without a break, every day of the year and every hour of the day. Anything less is not ideal from the perspective of the function of removing excess of fluid and toxins from the body. Patients on hemodialysis experienced a range of symptoms, with considerable variation in the frequency of symptoms experienced and in the severity with which the symptoms affected the individuals. Symptoms expression was significantly associated with sleep problems, fatigue and poor physical functioning. There is considerable potential for enhancement of quality of life by minimizing the symptoms experienced. Liu and Sakhuja (2003\$2006).

Aim of the study

The purpose of this study was to investigating the factors affecting fatigue in patients under hemodialysis treatment

Study design: - This study was a descriptive study.

Setting of the study

The study was conducted in Hemodialysis Unit at Qena University Hospital, in (Upper Egypt).

Methods:- In this descriptive study, 59 patients with chronic renal failure treated with hemodialysis Unit at Qena university hospitals in (Upper Egypt). On obtaining the official permits, and after preparation of the study tools, the data collection in Hemodialysis Unit at Qena University Hospital over 3 months duration from (the first of March 2015 to the end of May 2015). In 2014 were selected by simple convenience sampling. Inclusion criteria were the medical diagnosis of chronic renal failure according to patients' medical records, continuous and regular visit for treatment, having some degree of fatigue based on the fatigue severity index questionnaire, willingness to participate in the study, age of 19years and older, auditory and speech ability and an having enough consciousness for answering the questions. Patients with chronic physical disorders such as disabling cardiac, respiratory, hepatic or psychiatric diseases like severe depression and cognitive disorders were excluded from the study. Sample size was taken as 59 participants with 5% confidence coefficient and the test power of 2%. Data collection tool was a personal information questionnaire based on demographic characteristics (age, sex, marital status, education, number of children, occupation, income and income sufficiency, type of therapeutic support and duration of reaching the hospital) and also information regarding the duration of illness, history of hemodialysis psychedelic drugs, levels of hemoglobin, urea, creatinine, systolic blood pressure and dry weight. The second data collecting tool was the fatigue severity scale. Fatigue score was obtained from the points which were taken from answering to 9 questions of this scale scored based on 7-option Likert scale (1=absence of fatigue, 2-4=moderate fatigue and above 4=severe fatigue). This scale is one of the best and most practical measures of fatigue, which is useful for measuring the changes in fatigue severity and studying the effect of therapeutic interventions on the severity of fatigue. Reliability of this scale has been confirmed by Shahabi, Rasouli, Zakeri Moghaddam and Tarbiat Modarres University's faculty members in different studies with a Chronbach's alpha coefficients of 0.94, 0.88, 0.91 and 0.83. Its content and face validity have been confirmed by **Schneider and Banner, Zakeri Moghaddam and Ghaffari** (2003,2007,2006,2008). Before the beginning of intervention, while taking written consent of the patients, they were assured that their information will remain confidential and without mentioning their names and the results will be ultimately reported as a whole. Employees working in the research environment were also assured that they will be aware of the results of the study. Data were analyzed by SPSS 17 Software using paired t-test and ANOVA.

Results

Table 1- Mean and standard deviation of fatigue rate in terms of gender, employment, income adequacy, marital status and therapeutic support:-

Criteria		number	%	Significance level
Gender	female	26	44.1	P=0.02
	male	33	55.9	
occupation	Employed	36	61.1	P=0.47
	Unemployed	23	38.9	
Income adequacy	Inadequate	46	78	P=0.01
	Adequate	13	22	
Marital status	Single	8	13.5	P=0.40
	Married	48	81.3	
	Widowed	3	5.2	
Health support	Insurance & Special patient	38	64.4	P=0.71
	Special	21	35.6	

(Table 1) show that which represented a severe fatigue; 26 patients (44.1) were experiencing moderate fatigue and 33 patients (55.9%) were suffering from severe fatigue and there is no significant difference between marital status and occupation with fatigue . the table also reveals that there was statistically significant between health support, income adequacy and fatigue in patient under heamodialysis treatment.

Table 2- Mean and standard deviation of fatigue in terms of Age, occupation, time of reaching to the hospital and the number of children :-

Criteria		Number	%	Significance level
Age	19-28	1	1.7	P=0.20
	29-38	3	5.1	
	39-48	9	15.2	
	49-58	13	22.1	
	59-68	23	38.9	
	69<	10	17	
job	Worker	7	11.9	P=0.42
	employee	5	8.5	
	Housewife	19	32.2	
	Self employed	9	15.2	
	Unemployed	13	22.1	
	Retired	6	10.1	
Duration of reaching the hospital (minutes)	1-15	11	18.6	P=0.82
	16-30	32	54.2	
	31-45	4	6.7	
	46-60	8	13.6	
	61-90	3	5.1	
	91-120	1	1.8	
Number of children	o	5	8.4	P=0.27
	1-2	9	15.3	
	3-4	27	45.8	
	5-6	13	22	
	6-8	3	5.1	
	8<	2	3.4	

(Table 2) display that 38.9% of patients were in the age group of 59-68 years and 22.1% in the age group of 49-58 years. there was no significant relationship between different age groups and fatigue, although the rate of fatigue in patients of 19-28 and over 69years age group were higher than other groups. Job type ,duration of reaching to the hospital and number of children had also no significant relationship with fatigue. Fatigue increased insignificantly with increase in number of children .

Table 3- Mean and standard deviation of fatigue in terms of dialysis history, duration of being affected, educational level and household dimension:-

Criteria		Number	%	Significance level
Dialysis history	<1	11	18.7	P=0.13
	1-3	23	39	
	4-6	13	22	
	7-9	5	8.4	
	10-12	3	5.1	
	13-16	4	6.8	
Duration of being Affected (years)	<1	3	5.1	P=0.05
	1-5	33	55.9	
	6-10	15	25.4	
	11-15	6	10.2	
	15<	2	3.4	
Educational level	Illiterate	15	25.4	P=0.22
	Primary education	23	39	
	Guidance school	12	20.3	
	High school	6	10.2	
	Higher education	3	5.1	
Household dimension	0	3	5.1	P=0.13
	1-2	17	28.8	
	3-4	30	50.8	
	5-6	6	10.2	
	7-8	3	5.1	

(Table 3) show that people who had primary education mentioned insignificantly more fatigue and those with 10 years experience of chronic renal failure mentioned a significant higher level of fatigue

Table 4- Mean and standard deviation of fatigue in terms of hemoglobin, creatinine and the systolic blood pressure

Criteria		Number	%	Significance level
Hemoglobin	10>	25	34.7	P=0.45
	10-12	31	43.1	
	>12	16	22.2	
Systolic blood pressure	120-140	18	34.6	P=0.35
	140-160	6	11.5	
	160<	7	13.5	
	<120	21	40.4	
Creatinine	3-5	9	21	P=0.62
	6-8	16	37.2	
	9-11	3	7	
	12-14	12	27.9	
	15-17	3	6.9	

Table(4) display that people who had a dialysis history less than a year, hemoglobin range of 12-14 g/d lit, systolic blood pressure above 160 mmHg and a creatinine between 6- 8 mg/dl had lower but insignificant fatigue

Table 5- Mean and standard deviation of fatigue in terms of urea level and dry weight:-

Criteria		Number	%	Significance level
Urea level	<30	1	1.7	P=0.92
	31-61	10	16.9	
	62-92	15	25.4	
	93-123	12	20.3	
	124-154	7	11.9	
	155-185	9	15.3	
	>185	5	8.5	
Dry weight	0-0.5	10	17	P=0.51
	0.5-1	6	10.1	
	1-1.5	1	1.7	
	1.5-2	17	28.8	
	2-2.5	9	15.3	
	2.5-3	13	22	
	>3	3	5.1	

Table(5) show that the patients with urea level lower than 30, or those who had weight loss about 1-1.5 kg during dialysis reported an insignificantly lower fatigue .

Discussion

Fatigue is an often debilitating symptom in those with ESRD on hemodialysis. As common and extreme as the symptom is in this population, little evidence is available that describes what the experience of fatigue is like for patients on hemodialysis or how they mitigate its effects Horigan et al ., (2013). Patients in the end-stage renal disease phase have two options in order to stay alive: life-long dialysis (hemodialysis or peritoneal dialysis) or kidney transplantation. Of these options, dialysis is considered the treatment of choice. Patients on hemodialysis account for approximately 92% of the overall dialysis population United States Renal Data System (2012). And endure a high symptom burden as they may experience troubling symptoms such as fatigue, decreased appetite, trouble concentrating, swelling in their feet and hands, muscle cramps, and itching]. Almeras et al., (2009)and Yong et al.,(2009) . All of which cause daily distress and negatively affects their quality of life. Weisbordand Jablonski .,(2005 \$ 2007).

Fatigue as a common disabling symptom has been reported in many hemodialysis patients Jhamb et al.,(2007).In our study more than half of hemodialysis patients had severe fatigue in male than female. This result is in harmony with Tsay and Chen(2003). Who reported that The higher numbers of male subjects in the present study and control group reveal that ESRD under hemodialysis treatment prevalence seems to be more prevalent among men. Also this finding was similar to the finding of the study conducted by Atlantic health science corporation which found that the majority of patients were male Varuglese et al.,(2007).In addition to Nasiri et al.,(2011) found out The higher number of male subjects of ESRD prevalence .On the other hand, some research results indicate that there is no significant difference, in terms of fatigue, between age groups of below 50 and above 50 years Mollaoglu (2009). Thus with patients' aging, the fatigue will also increase Salivan et al., (2007)and song et al., (2007). Our study shows that was no significant difference in terms of fatigue, between different age groups and the most fatigue was observed in the age group of 19-28 and above 69years. The reason for increase in fatigue with age is possibly related to physiological changes resulting from the nature of the chronic disease Mollaoglu (2009). Although presence of the spouse as a supporter can be effective in reducing stress, coping with chronic disease, following the diet, reducing disability and improving of the psychological condition of hemodialysis patients Rambod (2008). Results of some studies do not show any significant difference between fatigue severity and marital status . which are consistent with the findings of present study. Higher education level helps the individual use some fatigue relieving strategies study's results indicate that with increase in educational level, the fatigue is reduced Liu and Bonner (2006 \$ 2007).That in some studies this difference is not significant Nazemian et al.,(2006).In the present study the highest rate of fatigue was observed in patients with primary education, but the increase was not significant. Higher levels of activity are accompanied by fatigue relief in hemodialysis patients and employment directly affects the fatigue relief Salivan (2007).Unemployed hemodialysis patients, due to staying at home, losing social support and reduced activity and movement, experience more fatigue Liu (2006).and some research results also prove the existence of such correlation Ossareh et al.,(2003)and Nazemian et al.,(2006). In the current study, although unemployed people reported more fatigue, there was no significant relationship between fatigue and occupational or employment status .Fatigue is more prevalent in lower social classes. Studies conducted in South Korea have indicated the higher prevalence of fatigue in lower socioeconomic classes; in contrast, studies performed in high privileged French classes show a lower rate of fatigue Yong et al.,(2009). In the present study people with inadequate

income reported a significant greater rate of fatigue. Transportation and its related problems and consequently occupational and family limitations can all contribute to creation of problems and affect the psychological status of patients Navidian et al.,(2006).In this study, there was no significant relationship between fatigue and the duration of reaching to the hospital. Family and children are supportive resources. Supports that children provide for their sick parent reduce the depression, increase the family function and improve the life quality of hemodialysis patient Rambod et al.,(2008)., Therefore, the family support can be influential in the rate of fatigue Amy et al.,(2007).In the present study, there was no significant relationship between the number of children and family members with fatigue.

Social support directly affects the hemodialysis patient's fatigue . On the other hand, in some studies the above variable did not affect the fatigue Mccan and Bonner.,(2000 \$ 2007). In this study fatigue showed an increase with the increase of dialysis history but this was significant only in terms of disease history. Anemia is a factor which contributes to fatigue in dialysis patients and studies show the relationship between anemia and fatigue in patients with chronic renal failure and hemodialysis patients Amy et al.,(2007) And Santoro (2006). Although in some studies such correlation was not observed. In the present study, although the fatigue decrease was observed at the hemoglobin levels of 12- 14 g/dl, there was no significant correlation between different levels of hemoglobin and fatigue. In addition evaluating the fatigue rate based on urea and creatinine levels, no significant correlation was observed that is consistent with the findings of some studies Welch and Bonner.,(2006 \$ 2007). While in some studies there have been correlations between mentioned variables and fatigue rate Chang and Santoro., (2001 \$ 2006). There was no significant relationship between fatigue and the systolic blood pressure and dry weight, which is consistent with the results obtained from some studies Kim., and Welch., (2005\$ 2006), Página (2012). recommended that lifestyle changes, such as exercising more, relieving stress, and eating a healthy, well-balanced diet can help ease fatigue Also, these findings are in agreement with the results of Sabouhi et al.,(1013).

Conclusion

The frequency of fatigue is high in hemodialysis patients. Overall, men have more fatigue than female when treated with hemodialysis.. and there is no significant difference between age, marital status and occupation with fatigue. In this study fatigue showed an increase with the increase of dialysis history but this was significant only in terms of disease history.

Recommendations

Most hemodialysis patients suffer from fatigue. In order to improve patient care and promote patients' quality of life, nurses should identify fatigue, high risk patients and strategies for decreasing it.

Based on the results of the present study, the following recommendations are suggested:

- Designing and Developed illustrated booklet about interventions that can be tailored to meet individual needs should be available and distributed for each patient admitted to hemodialysis unit.
- Hemodialysis nurses who deal with patients must be taught that timely follow-up and evaluations of fatigue is essential to the care o f patients.
- Further research is needed to study associated factors with fatigue in the hemodialysis population.
- Replication of this study on a larger sample and in different hospital settings with increasing the duration of treatment is suggested for generalization of results.

Limitations of the study

- The research findings were limited and cannot be generalized because of the small sample size and it was selected from one geographical area in Egypt.
- The scope of the study was also limited as it was restricted to those patients who voluntarily agreed to participant

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