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Assessing the Physiological, Psychological Stressors and Coping Strategies among Hemodialysis Patients in the Kingdom of Saudi Arabia

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***Abstract*—**Chronic kidney disease became a global health problem worldwide. Therefore, in order to maintain a patient's life and improve the survival rate, hemodialysis is essential to replace the function of their kidneys. However, those patients may complain about multiple physical and psychological stressors due to the nature of the disease and the need for frequent hemodialysis sessions. So, those patients use various strategies to cope with the stressors related to their disease and the treatment procedures. Cross-sectional, descriptive study was carried out to achieve the aim of the study. A convenient sample including all adult patients was recruited for this study. Hemodialysis Stressors Scale (HSS) and Jalowiec Coping Scale (JCS) were used to investigate the stressors and coping strategies of 89 hemodialysis patients, at a governmental hospital (King Khalid Hospital-Jeddah). Results of the study revealed that 50.7% experienced physiological stressors and 38% experienced psychosocial stressors. Also, optimistic, fatalistic, and supportive coping strategies were the most common coping strategies used by the patients with mean scores (2.88 + 0.75, 2.87 + 0.75, and 1.82 + 0.71), respectively. In conclusion, being familiar with the types of stressors and the effective coping strategies of hemodialysis patients and their families are important in order to enhance their adaptation with chronic kidney diseases.

***Keywords*—**Coping strategies, hemodialysis, physiological stressors, psychological stressors.

I. Introduction

THE incidence of chronic kidney disease (CKD) continues to increase and become a global health problem [1]. According to the Global Burden of Disease study in 2010, CKD jumped from 27th to 18th over the last two decades [2]-[4].

CKD is an irreversible disease, caused by glomerulonephritis, diabetes, hypertension, and polycystic kidney disease. Many patients cannot feel or complain about any signs or symptoms till the end stage of renal failure. In other hands some patients may complain about symptoms that are related to decreasing in kidney function. Which affect different systems, for example, the respiratory, cardiovascular, gastrointestinal, and nervous systems. Therefore, in order to maintain a patient`s physiological status, an artificial method (dialysis) is essential to replace the function of their kidneys [5].

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Hemodialysis is the most common method of treatment for CKD compared to peritoneal dialysis or kidney transplantation. It uses an artificial kidney, known as a hemodialyzer, to remove chemicals and waste product from the blood through a vascular access inserted surgically into blood vessels. This vascular access will allow a larger amount of blood to flow through the body to be filtered and purified during hemodialysis treatment [6].

Although, the advancement in hemodialysis decreases symptoms of the disease, maintains patient's life and improves the survival. But patients who require long-term HD can experience different levels of physical and psychological stresses. Those stressors can be related to financial problems, difficulty in holding a job, depression from being chronically ill and fear of dying. [1], [7]. In this regard, hemodialysis patients are still subjected to multiple threats and stressors that may worsen their health-related quality of life [8]. These threats/stress factors include physical dependence on devices, limitations in mobility, fluid restriction, taking large doses of medication, loss of appetite and energy and changes in sexual function. Psychosocial stress factors include loss of independence, not having enough time to perform dialysis, loss of job, changes in self-perception and fear of death [9]. In addition, patients on hemodialysis can experience physiological stressors that include fatigue, reduced physical function, hypotension, muscle cramps, nausea, and vomiting [10]. Moreover, the most frequently reported psychological concerns are unemployment, changes in body appearance, increased time on hemodialysis machine, disturbance in the sleeping pattern, and changes in the daily living activates as well as lifestyle. In addition, psychiatric disorders are common among hemodialysis (HD) patients and are associated with increased morbidity and mortality, and decrease in quality of life [5], [11].

Patients who receive HD can experience stresses of different nature related to their illness and the treatment procedures. So, stress in human life can be defined as a body's nonspecific response and can be associated with pressure, tension, and anxiety resulting from any diseases. It is also, a condition or feeling the person may experience when perceived demands exceed personal and social resources, the person is able to manage [12], [13]. Also, stress refers to environmental, social, or internal needs that result in psychological, physiological, or behavioral response. It may have an adverse effect on the disease, though physiological effects, behaviors, and practices that have implications for

health, in addition, scientists agree that stress can have implications for CKD and health outcomes [14]. So, to adapt with these stressors, the patients use different coping strategies. Coping can be defined as a continuous changing behavioral and cognitive efforts person uses to manage specific internal and/or external needs that exceed one's resources. Moreover, coping strategies are unconscious processes the person can use to face life stressors on a daily bases [7], [15]. In this regard, if coping strategies are applied effectively in CKD it can help in reducing anxiety levels, improving patient`s performance and concerns about these diseases [9]. Based on evidence, those patients adopt different ways to cope or adapt to the stresses of the disease and treatment procedures. The way of application in each of these methods depends on personal experiences, social support system, and individual beliefs, and in addition to the access of these support resources [16].

There are two major types of coping strategies: emotionally focused coping, which regulate a person's emotional responses to the situation/problem and problem-focused coping, which deals with the problem causing the distress. Preferred coping methods should be appraised relative to individual values, beliefs, norms, and orientation of a cultural group [17]. In this regard, some studies have found that problem-focused coping strategies were used more often than emotion-focused coping strategies among HD patients in response to those stressors. Others have found that HD patients use more elusive coping strategies and emotion-focused coping strategies [18]. Studies on the coping strategies are required because of the conflicting results of the published studies, and the impact of cultural differences in the experience of stressors in various communities [9].

From the literature review there are many studies that have examined the stressors of patients with CKD but very few studies done to assess the stressors and coping mechanism on HD patients in Saudi Arabia. Thus, the current study aimed to assess the physiological and psychological stressors and coping strategies among HD patients in Jeddah, Saudi Arabia.

The following research questions were developed to fulfill the aim of the current study:

1. What were the physiological stressors facing HD patients?
2. What were the psychological stressors facing HD patients?
3. What were the coping strategies used by HD patients?
4. What was the relationship between the stressors and coping strategies among HD patients?

II. Methods

A. Design

The non-experimental cross-sectional design was used in this study.

Study Area/Setting

The following study was carried out at ward 13 (Hemodialysis) at King Khalid Hospital, Jeddah. This ward can accommodate for approximately 18 patients at the same time. The number of patients admitted varies from month to month; however, the range of patients seen in a month is generally between 59 and 100.

B. Study Subjects

A convenient sample including, all adult male and female patients admitted to ward 13 for HD at King Khalid Hospital-Jeddah. Inclusion criteria: all patients who were willing to participate in the study and had the ability to communicate or speak clearly. Exclusion criteria: patients who have cognitive impairment or who have speaking or hearing problems.

C. Sample Size

The study included all male and female patients who met the eligibility criteria and agree to participate in the study. Sampling Technique: Non-probability convenience sampling method was used. The researcher opted for this sampling technique because is an easy for the research to obtain subjects [19].

Data Collection Methods

Three tools used in this study: 1. Demographic and medical data questionnaire. This questionnaire included a patient`s demographic information such as age, gender, marital status etc., and medical data such as duration of treatment and comorbidity diseases. 2. HSS. This questionnaire was developed by Baldree et al. [20]. The scale measures the level of stress experienced by HD patients. It consists of 32-items that describe the stressors mostly faced by HD patients in their life. The items consisted of a 4-point Likert scale ranging from (1-4) with higher scores indicating the greater severity of stress experienced. The 32-items scale is grouped into two stressors sub-scales: psychological (25-items) stressors, and physiological (7-items) stressors. 3. JCS. This questionnaire was reviewed and designed by Jalowiec in 1995. It was used to determine the type of coping mechanisms used by the patients. It is consisting of 60 items, each is a statement of the 4-point Likert scale ranging from 1 (never used/not helpful) to 4 (always used/very helpful) was used. Higher scores indicated a higher frequency of use and perceived helpfulness of coping strategies [21].

The current study adopted the Arabi version for HSS and JCS from Issa 2015 [22].

Reliability

HSS: The internal consistency Cronbach's alpha for the total stress scales from previous studies was 0.89 indicating good internal reliability [20].

JCS: The internal consistency Cronbach's alpha for the total use and effectiveness scales from previous studies were (0, 88) and (0, 91), respectively, indicating good internal reliability [21].

The internal consistency (Cronbach's Alpha) for the Arabic version were found to be (0, 80) for the coping scale and (0, 67) for the helpfulness of coping scale in Issa`s study [22].

D. Data Collection Process

The data collected for this study after permission was

obtained from the student research unit at the College of Nursing, Jeddah, KMARK, King Khalid Hospital's manager and IRB. After receiving the approval from IRB, the researcher contacted the manager/head nurse of ward 13 to explain the aim and objectives of the study and to obtain verbal approval. Then, the researcher approached HD patients at ward 13 over one month, October 2017. The researcher explained the purpose of the study and asked the participant to sign a written consent to participate in the study and to gain their cooperation. For those patients who are able to read and write, the researcher presented them with the tools for evaluation. First, the demographic and medical data questionnaire was given to the patients to fill out, and after, they were expected to complete the HSS and JCS questionnaires.

III. Results

After collecting the data, the data analysis was done by SPSS 20 software, and the results were as follows:

Participants' sociodemographic and medical information as shown in Table I, the mean age was 48.5 ± 16, 52.8 % were female and 23.6% had a university education. The duration of treatment less than 4 years in 51.7% with mean score 5.8 ± 5 and 47% of them had multiple comorbidity diseases.

As regard to physiological stressors, Fig. 1 shows that the most frequently experienced physiological stressors included fatigue (78.7%), loss of body function (61.8%), muscle cramps (51.7%), itching (48.3%) and joint stiffness (47.2%).

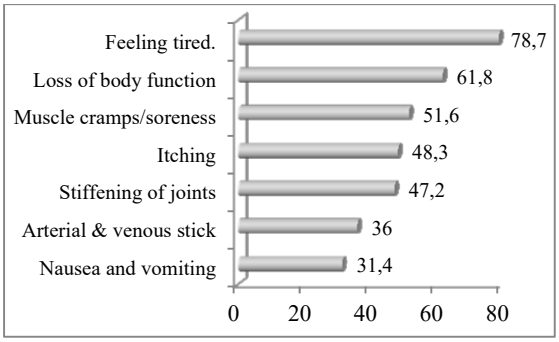

Fig. 1 Physiological stressors among HD patients

Fig. 2 shows that the most frequent psychological stressors include boredom (92.1%), complaints on the length of treatment (78.6.1%), frequent hospital admission (64.1%), changes in body appearance (57.3%), sleep disturbances (46.1%) and fear of being alone (43.7%). While the least frequent physiological stressors include the cost of treatment (3.4%), transportation to and from the unit (14.6%), uncertainty about the future (14.6%), and interference with a job (19.1%).

As regard to coping strategies, Table II shows that optimistic, fatalistic and supportive coping strategies were the most common form used by the patients with mean scores of 2.88 ± 0.75, 2.87 ± 0.75, and 1.82 ± 0.71, respectively.

TABLE I
Socio-Demographic Data of the Study Subjects (N=89)

Variables	Study Group n=89 No	%
Gender		
1.Male	42	47.2 %
2.Female	47	52.8 %
Age:		
1. 20 – <35 yrs	23	25.8 %
2. 35 – <50 yrs	28	31.5 %
3. 50 – < 65	25	28.1%
4. > 65	13	14.6 %
Mean ± SD	**48.5 ± 16**	
Variables	Study Group n=89 No	%
Level of Education:		
1. Illiterate	14	15.7 %
2. Read and write	16	18 %
3. Primary education	18	20.2 %
4. Secondary school	20	22.5 %
5. Tertiary education	21	23.6%
Duration of treatment:		
Less than 4 years	46	30.1
From 4 to less than 8 years	22	14.2
From 8 to 12 years	14	9.2
More than 12 years	7	4.6
Mean± SD	5.8 ± 5	
Comorbidity diseases:		
None	16	18
Diabetes (D)	2	2.2
Hypertension (HTN)	6	6.7
D and HTN	21	23.6
D and Respiratory diseases	2	2.2
Multiple comorbidity diseases	42	47

TABLE II
Ranking of the Eight Coping Strategies (N=89)

Coping strategies	Rank order	Mean score	Standard Deviation
Optimistic	1	2.88	0.75
Fatalistic	2	2.87	0.75
Supportive	3	2.82	0.71
Evasive	4	2.44	0.62
Self-Reliant	5	2.43	0.54
Confrontive	6	2.33	0.66
Palliative	7	2.10	0.56
Emotive	8	2.02	0.54

Table III shows that there is a positive correlation between the experienced physiological, psychological stressors with fatalistic, supportive coping strategies, as well as a negative correlation with confrontive and optimistic coping strategies among HD patients.

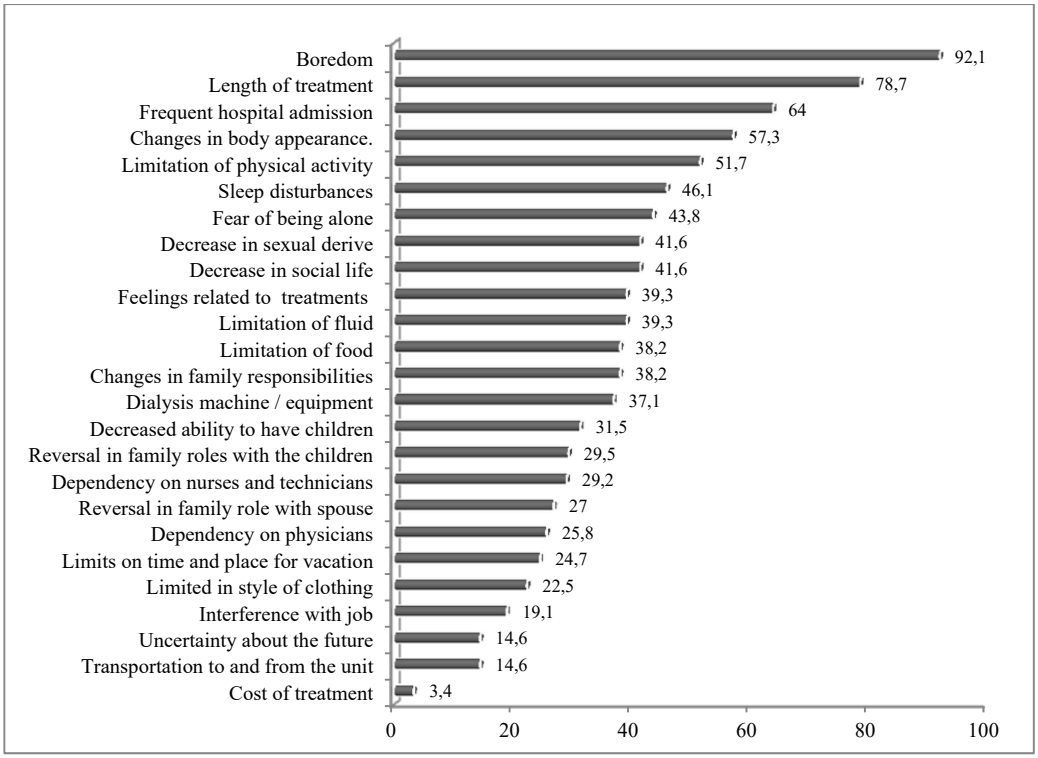

Fig. 2 Psychological stressor among HD patients

TABLE III
CORRELATION BETWEEN HD STRESS SCALE AND JCS OF THE STUDY SUBJECTS (N=89)

Coping strategies	Physiological stressors		Psychological stressors	
	r	P. value	r	P. value
Confrontive coping	-0.286**	0.007	-0.222*	0.036
Evasive coping	0.083	0.441	0.146	0.173
Optimistic coping	-0.386**	0.001	-0.368**	0.001
Fatalistic coping	0.397**	0.001	0.390**	0.001
Emotive coping	0.052	0.627	0.167	0.117
Palliative coping	-0.151	0.158	-0.262*	0.013
Supportive coping	0.263*	0.013	0.404**	0.001
Self-reliant coping	-0.030	0.781	-0.007	0.945

* Significant at the $p < 0.05$ probability level

IV. DISCUSSION

The present study showed that approximately half of the study subjects were females and more than one-third of the study sample age was between 35 years and 50 years old with a mean age 48.5 $\pm$ 16. Duration of treatment of less than 4 years was reported in more than half of all patients in the study. This was supported by another study [22], which reported that all HD patients, more than a third were in the age groups of 40-49 years and 50-65 years, two thirds were male, while the duration of treatment for about half of them was for a period of less than three years.

The current study also revealed that more than half of the sample experienced physiological stressors, while more than one third experienced psychosocial stressors. This finding was supported by another study done in a CKD clinic at an urban academic teaching hospital in Canada. In this study the researcher found participants scored higher on the physiological subscale than psychosocial subscales [23]. In contrast, some researchers reported that most of the study subjects (88.6%) experienced psychosocial stressors more evident than physiologic stressors [24], [25]. In this regard, the current study reported that the most frequently experienced physiological stressors included fatigue, loss of body function, muscle cramps, itching, and joint stiffness, and the most frequent psychosocial stressors included boredom, length of treatment frequent hospital admission, changes in body appearance, and fear of being alone. This is in accordance with a study by Cinar, and Issa, who mentioned that the top four stressors experienced by HD patients were length of treatment, frequent hospital admission, fear of being alone about future and boredom [2], [22].

With regard to coping strategies, the current study showed that the most common forms used by the patients were optimistic, fatalistic, and supportive. From the optimistic coping strategies, more than 70 participants agreed they "Hoped that things would get better" and "Tried to keep your life as normal as possible and not let the problem interfere". This result supported in a study done in Kahnouj, Iran in which the researcher reported that the optimistic coping strategy was the coping strategies with the highest percentage for use were [25].

Among the fatalistic coping strategies, the majority of patients reported that they "Accepted the situation because very little could be done". Other research found that "Fatalistic Coping Strategies" was the second highest coping strategies among the study subjects [22]. Moreover the third copying strategies used in the current study were "supportive

coping strategies" in which 100% of the patient believes in leaving their condition to God as evident by selecting the following statement "Prayed or put your trust in God". In this regard, another study done on 179 patients with advanced CKD found that HD patients relied more heavily on social support coping strategies compared to patients who were on peritoneal dialysis [26].

V. Conclusion

HD patients complained of many physiological as well as psychological stressors and as a way to deal with those stressors, they practiced many coping strategies. So, understanding the different types of stressors and coping strategies are important in order to plan an educational program. That program can help patients and their families in acquiring the necessary knowledge and skills that facilitate their adaptation to CKD.

VI. Recommendation

Based on the study findings, we recommend that future researches should be directed toward improving the patient's knowledge and skills in dealing with physical and psychological threats, minimizing potential complications of this disease, and decreasing cost and enhancing quality of life.

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