Assessing Comfort Level in Hemodialysis Patients and Their Relationship to Symptom Burden: A Cross-Sectional Study

Abstract

Background: Patients with renal failure face challenges that severely hinder their independence and limit various aspects of their daily lives. Therefore, this study aimed to assess the comfort level of hemodialysis patients and their relationship to burdened symptoms.

Method A descriptive cross-sectional design purposive sampling method selected 257 dialysis patients from 6 hemodialysis centers. Chronic Kidney Disease Symptom Burden Index(CKD-SBI) and Hemodialysis Comfort Questionnaire were used to collect data during the period spanning from October 28, 2024 and ended on June 7, 2025.

Results: Patients' mean age was 38.67 years, and the majority of them were male and married. Most of their Education levels ranged from illiteracy to university education, and more than half (55.6%) suffered from chronic diseases. The results show that all patients (100%) had a moderate comfort level and most(75.1%)had moderate burden symptoms.There is a significant relationship(negative relationship)between Symptom burden and comfort level among the patients, as seen with a significant negative correlation at p-value= 0.01.

Conclusions: It was found that most dialysis patients reported an average level of comfort. Therefore, we found a significant and negative relationship between the symptoms of burden and the level of comfort in dialysis patients.These results indicate that to increase comfort levels, we must reduce the existing burden symptoms identified in this study and thus improve their quality of life.

Recommendation: Develop treatment protocols that target alleviating the most common and recurring symptoms (such as leg restlessness, muscle cramps, fatigue, and leg swelling) through: Providing physical therapy sessions to improve blood circulation.

Keywords: Symptoms Burden, Comfort Level, Hemodialysis Patients

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Introduction

The global community involved in dialysis is growing rapidly, with an estimated 2.5 million people receiving dialysis treatment in 2020, and this number is expected to rise to 5.4 million by 2030 [1,2]. Dialysis is characterized as a significant and resource-intensive medical intervention that places substantial financial, physical, and psychological demands on patients and their caregivers [3]. Individuals undergoing dialysis frequently endure profound symptoms, diminished psychological health, and heightened levels of stress [4].

Research indicates that sleep disturbances represent the predominant burden symptom experienced by hemodialysis patients. Moreover, an additional study indicated that a significant percentage of patients (exceeding 70%) reported the presence of fatigue and dry mouth. In contrast, symptoms such as myalgia and pruritus were noted in approximately 40–60% of the patient population[5,6]. This symptomatology's adversely influence the overall quality of life and frequently result in discomfort between or during dialysis sessions [7].

Burden symptoms, including fatigue, pruritus, sexual dysfunction, sleep disturbances, and pain, markedly affect patients' daily activities and overall well-being. These distressing symptoms may persist throughout and after dialysis treatments, ultimately influencing patients' daily existence, interpersonal relationships, and general quality of life [8,9]. The management of pruritic symptoms is critical for enhancing quality of life and alleviating sleep disturbances in individuals with renal failure [10].

These Patients face challenges that severely impact their independence and restrict various aspects of their daily lives [11,12]. These difficulties adversely affect their quality of life and sense of comfort [13]. Therefore, it is important to evaluate the comfort concept of dialysis patients regularly [14]. A study found that patients undergoing hemodialysis reported a medium level of comfort [15].

Focusing on patient comfort is one of nurses' key goals and responsibilities. Nurses are crucial in providing care for individuals with long-term kidney failure undergoing hemodialysis [16,17].

Effective hemodialysis procedures for individuals with kidney failure rely on patients following their prescribed treatment plans [18]. Noncompliance may lead to increased discomfort for patients between their hemodialysis sessions [9,19].

The accumulation of these symptoms can affect physical comfort and mental well-being, further decreasing overall life satisfaction [20]. Research highlights that symptom management should be a core focus for improving patient comfort levels, as symptoms like fatigue, pain, and sleep issues are linked to higher rates of depression and anxiety in patients [21,22].

Globally symptom burden has been recorded and measured in various chronic disease populations, such as heart disease [23,24], diabetes [25,26], renal failure [27,28], and even dialysis [29,30]. However, only a few studies have been conducted to assess symptom burden [31], especially among CKD patients or dialysis populations in Iraq.

2. Methodology

2.1 Design of the Study:

a descriptive cross-sectional design was employed to determine the relationship between the symptom burden and comfort levels of patients undergoing hemodialysis. The study was conducted from October 28, 2024 and ended on June 7, 2025.

2.2. Settings of the Study

It included three governorates in Iraq: Najaf, Karbala, and Diwaniyah. The kidney dialysis centers in these areas are Fatima Al-Zahra and Al-Hayat in Al-Diwaniyah; Al-Hakeem and Al-Sadr in Al-Najaf; and Habib Bin Mazahir Al-Asadi and Dr. Adel Al-Sabbah in Karbala.

2.3. Sample of the Study

The study sample was selected through the non-probability (purposive) sampling method was used to select 257 patients form dialysis centers. The sample was collected according to the inclusion and exclusion criteria that the researcher has determined:

2.3.1. Inclusion criteria: The participants were consisting of adults who are diagnosed with renal failure, undergoing hemodialysis, at least 18 years old of both sexes, agree to participate, able to read and write. Participation in this study is voluntary.

2.3.2. Exclusion criteria: Patients were excluded with cognitive impairments that would affect their ability to complete questionnaires, were unable to read or write, those who refuse to participate was excluded.

2.4. Study Instrument:

2.4.1 Part I: Demographic data form:

This part is about getting demographic information from the patients, which includes the age, sex, and level of education, occupation, marital status, do you have chronic diseases, the person you live with, family monthly income, duration of dialysis

2.4.2 Part II: CKD Symptom Burden Index (CKD-SBI)

CKD-SBI (Chronic Kidney Disease Symptom Burden Index), an Arabic version developed by Al-mutary et al. in 2015, is a tool designed to evaluate the symptoms experienced by individuals with CKD. To compute the total CKD-SBI score, the scores from each of the CKD-SBI subscales (prevalence, distress, severity, and frequency) are summed and then multiplied by 0.1008 (a constant). Consequently, the total score for the CKD-SBI scale ranges from 0 to 100, where a score of 100 signifies the highest possible symptom burden [32].

2.4.2 Part III: Hemodialysis Comfort Questionnaire

In 2018, Estridge adapted the General Comfort Questionnaire specifically for Hemodialysis Patients from the original Kolcaba scale and employed it in this study. The GCQ for Hemodialysis Patients consists of 48 items and utilizes a six-point Likert-type scale designed to measure comfort in patients undergoing hemodialysis, with higher scores reflecting greater comfort [9].

The instrument employed encompasses both positively and negatively framed items. The items within the instrument are systematically arranged in an interspersed manner, incorporating both positive and negative phrasing. Twenty-five negatively articulated inquiries were included in

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the instrument to mitigate potential response bias [9]. The instrument was administered at the commencement of the study to assess each participant's comfort level.

2.6. Data Collection and Analysis:

During the period spanning from December 19th, 2024 to March 28th, 2025. The statistical package for social science (IBM), version 26, was utilized for coding and analyzing the data. The distribution of data was not normal. Consequently, non-parametric statistical methods were applied. The Spearman's rho correlation, Mann-Whitney U-Test, and Kruskal-Wallis Test were employed.

Results:

Table 1. Distribution of the patients According to their Socio Demographic Characteristic

Demographic Characteristics	Subgroup	f.	%
Age Group	22-30 year	81	31.5
	31-39 year	70	27.2
	40-48 year	39	15.2
	49-57 year	50	19.5
Mean ± SD 38.6693±10.63582	58 and more	17	6.6
Min- Max 22-60 years	**Total**	**257**	**100.0**
Sex	Male	233	90.7
	Female	24	9.3
	Total	257	100.0
Level of education	Read & write	82	31.9
	primary school	32	12.5
	Intermediate school	57	22.2
	reparatory	34	13.2
	University	52	20.2
	Total	**257**	**100.0**
Occupation	Jobless	122	47.5
	Employee	113	44.0
	Retired	20	7.8
	Student	2	.8
	Total	**257**	**100.0**
Marital status	Single	21	8.2
	Married	236	91.8
	Total	257	100.0
Do you have chronic diseases?	Yes	143	55.6
	No	114	44.4
	Total	257	100.0
The person you live with	With family	257	100.0
	Alone	--	-
	Total	**257**	**100.0**
Family monthly income (Iraqi Dinar)	Less than 300,000 IQD	124	48.2
	301,000_600,000 IQD	32	12.5
	601,000_900,000 IQD	78	30.4
	901,000_1,200,000 IQD	16	6.2
	1,201,000_1,500,000 IQD	7	2.7
	Total	257	100.0
Duration of dialysis	1 year	127	49.4
	2. years	70	27.2
	3 years	39	15.2
	4 years	17	6.6
	5 years	4	1.6
	Total	**257**	**100.0**

f: Frequency, %: Percentage M: Mean, SD: Standard Deviation

Patients were categorized according to their sociodemographic characteristics. Their mean age was 38.67 years, and 90.7% were male. Education levels ranged from illiteracy to university education, while 47.5% were unemployed. The majority were married (91.8%), and more than half (55.6%) suffered from chronic diseases. Regarding monthly income, 48.2% earned less than 300,000 Iraqi dinars. Regarding the duration of dialysis, 49.4% underwent treatment for one year.

Table 2: Assessment of Levels of Comfort levels of Hemodialysis Patients

Scale	Min- Max	M ± SD	Score	f	%
Comfort levels	129- 166	**144.751**± 7.70452	**Poor**	--	--
			Moderate	257	100.0
			Good	--	--
			Total	257	100.0

Frequency, %: Percentage, Min.: Minimum; Max.: Maximum, M: Mean for total score, SD=Standard Deviation for total score

(where, poor = 48-127, Moderate = 128-207, good= 208-288)

According to the table, the total comfort level scores ranged from 129 to 166, with a mean of 144.75 ± 7.70. The results show that all patients (100%) had a moderate comfort level, with no cases recorded in the "good" or "poor" comfort categories.

Table 3: Overall Assessment of Levels of Symptoms burden

Scale	Min- Max	M ± SD	Score	f	%
Symptoms burden	34.88- 57.96	**44.472**± 4.933	No \ Minimal Symptom Burden	-	-
			Mild Symptom Burden	64	24.9
			Moderate Symptom Burden	193	75.1
			Moderate to severe symptom burden	-	-
			severe symptom burden	-	-
			Total	257	100

Frequency, %: Percentage, Min.: Minimum; Max.: Maximum, M: Mean for total score, SD=Standard Deviation for total score

(where minimal = 0-20, Mild = 21-40, Moderate = 41-60, Moderate-Severe= 61-80, Severe= 81-100)

The distribution shows that the majority of patients (75.1%) have moderate levels of burden symptoms, which is consistent with the most common category on the scale (M ± SD = 44.472± 4.933).

Table 4: Correlation between Symptoms Burden and Comfort Level among Hemodialysis Patients (N=257)

Scales	spearman correlation	p-value
Symptoms burden	-.610	.01
comfort level		

**. Correlation is significant at the 0.05 level (2-tailed).

This table manifests that there is significant relationship (negative relationship) between Symptoms burden and comfort level among the patients as seen with significant negative correlation at p-value= 0.01.

Discussions

According to the data presented in Table 1, the average age of the study group was 38.67 years. The cohort consisted of 90.7% males. Among them, 31.9% were literate, while 22.2% had attained an intermediate level of education. Nearly half of the patients, specifically 47.5%, were unemployed.

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Regarding monthly family income, the largest segment, which comprised 48.2% of the patients, earned less than 300,000 Iraqi dinars.

This is similar to the findings of previous studies on dialysis patients show that most male and married and low education level (read and write and intermediate) and jobless and freelance work [33,34]. A report published in the Iraqi National Journal of Medicine found that the majority (34.4%) of hemodialysis patients were jobless [35]. In light of these findings, it is evident that a considerable proportion of hemodialysis patients face substantial financial constraints. The high levels of unemployment and precarious work among this patient group have significant implications for their financial stability, access to healthcare, and overall well-being.

Concerning the duration of dialysis, (49.4%) patients had been undergoing treatment for one year, (27.2%) patients for two years. This distribution of duration majority of them (one year) was less than Iraqi hemodialysis patients that was in previous studies (2-8) years [35,36]. These results indicate a new number of patients with chronic kidney failure in recent years.

Tables 2 indicate a moderate patient comfort level. Comfort level scores varied between 129 and 166, with a mean of 144.75. These findings reveal that all patients (100%) experienced moderate comfort. Compared to the study by Bilgiç and Cebeci, titled "Stressors and Comfort Level in Hemodialysis Patients," it was noted that hemodialysis patients had a moderate perception of stressors [37].

In contrast, their comfort levels exceeded the average. Furthermore, research titled "Post-dialysis Fatigue and Comfort Levels of Patients Receiving Hemodialysis Treatment" highlighted that both post-dialysis fatigue and comfort levels were above average, with post-dialysis fatigue having a negative impact on patient comfort [8]. It is imperative that the healthcare teams, the hospitals responsible, and the patients themselves exert considerable effort to ensure optimal comfort both prior to and throughout the hemodialysis procedure [8,38].

The distribution shows in Table 3 that most patients (75.1%) have moderate burden symptoms, consistent with the most common category on the scale (M ± SD = 44.472± 4.933). Notably, these results are consistent with those obtained from prior studies that found that the hemodialysis symptoms experienced by patients were generally moderate in severity [39,40]. Proactive interventions are necessary to effectively manage these symptoms, lessening their impact on health-related quality of life [41].

Table 4 manifests that there is significant relationship (negative relationship) between Symptoms burden and comfort level among the patients. Notably, these results are consistent with those obtained from a prior study which show that symptoms related to hemodialysis treatment negatively influenced patients' comfort levels [38].

Moreover, study by Huiskes reported that increased comfort, and reduced symptom burden significantly improved health-related quality of life [42]. By enhancing the factors that influence comfort and quality of life, it is possible to improve patients' overall comfort and increase their quality of life [43].

These symptoms significantly affect patients' daily routines and overall comfort. It can persist both during and after dialysis, ultimately harming patients' daily lives, their relationships, and their overall comfort levels [8,9]. The accumulation of these symptoms can affect physical comfort and mental well-being, further decreasing overall life satisfaction. Research highlights that symptom management should be a core focus and routinely evaluated by nurses in patients receiving hemodialysis treatment to improve patient comfort levels [8,21].

As symptom burden increases, physical and mental health quality of life scores decrease [44]. The prevalence and severity of symptoms such as restless legs, muscle cramps, fatigue, leg swelling have indicated the need for better symptom management strategies. Other research shows that the lack of effective interventions for symptoms like insomnia and restless leg syndrome further impacts patients' overall comfort, stressing the need for more targeted therapies [45].

fatigue experienced by individuals undergoing hemodialysis arises from a multitude of determinants, including nutritional inadequacies, physiological alterations, hemoglobin concentrations, urea levels, and disturbances in sleep patterns [46]. Also, Symptoms such as pain,

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muscle cramps and dry mouth may become chronic. Continuous experience of these symptoms may negatively affect patients' daily lives, relationships with their environment, and comfort levels [39].

Conclusions

Most patients were young males with a mean age of 38.67 years, married, and had been receiving dialysis treatment for one year. Measuring the comfort level of dialysis patients, it was found that most of them reported an average level of comfort. Therefore, we found a significant and negative relationship between the symptoms of burden and the level of comfort in dialysis patients. These results indicate that to increase comfort levels; we must reduce the existing burden symptoms identified in this study and thus improve their quality of life.

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