

KNOWLEDGE ASSESSMENT OF HOME SELF-CARE PRACTICES IN HEMODIALYSIS PATIENTS: A DESCRIPTIVE STUDY FROM SUDAN

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Abstract

Background: Hemodialysis is a therapy that filters waste, removes excess fluid, and balances electrolytes (sodium, potassium, bicarbonate, chloride, calcium, magnesium, and phosphate) when the kidneys are in a state of renal failure. Home self-care is essential for hemodialysis patients, as it constitutes a significant part of their overall care. **Aim:** This study was conducted to assess knowledge about home self-care among hemodialysis patients. **Methodology:** This descriptive hospital-based study was conducted at Omdurman Teaching Hospital in Sudan. The target population included hemodialysis patients visiting the center to receive their treatments (n=100). A structured, self-administered, closed-ended questionnaire was used to collect data from the study subjects. Data were analyzed using the Statistical Package for Social Sciences (SPSS) and presented in the form of frequencies and percentages. **Results:** The study revealed that half of the participants had low knowledge about therapeutic nutrition, and more than half of the patients consumed fluids freely. **Conclusion:** The study concluded that approximately half of the patients were over 45 years old, with a majority being male. Most patients underwent regular hemodialysis twice a week for a duration of four hours. The study recommends the implementation of health education programs to enhance self-care among dialysis patients, enabling them to take a more active role in their care and supporting them in performing various tasks related to their dialysis according to their individual abilities.

Keywords: Hemodialysis Patients, Knowledge, Home Self-Care, Sudan.

INTRODUCTION

Hemodialysis is the most commonly used method for dialysis, with over 90% of patients requiring long-term renal replacement therapy undergoing chronic hemodialysis (Bello et al., 2022). The primary objectives of hemodialysis are to extract toxic nitrogenous substances from the blood and to remove excess water. Patients typically receive hemodialysis as a treatment for chronic kidney diseases or as a temporary measure until they can undergo a successful kidney transplant. Most patients receive intermittent hemodialysis, typically involving treatment three times a week, with each session lasting from 3 to 4 hours in an outpatient setting (Murdeshwar & Anjum, 2025).

Orem's Self-Care Model provides a framework for nurses to assist clients in maintaining an adequate level of self-care, tailored to the client's abilities. The degree of nursing care and

intervention can vary, encompassing wholly compensatory, partially compensatory, or supportive-educative approaches (Khademian, 2020).

Nursing assessment is crucial for improving the quality of life for patients receiving dialysis. Home care nurses observe and assess their clients' health, monitor vital signs and reactions to medications, and identify changes in behavior and condition. They report directly to the client's physician and family, especially regarding any new medical conditions or worsening health (Jui-Chin et al., 2024).

Self-care empowers patients to enhance their abilities by making informed decisions and assuming greater personal responsibility for their health. To promote healthy behaviors, health concepts and self-care strategies must be delivered in an understandable, accessible, and cost-effective manner. The more patients understand, the better equipped they are to make decisions about treatment and lifestyle changes that can improve their physical and emotional well-being (Martínez et al., 2021).

Nurses should convey a nonjudgmental attitude to encourage patients and families to discuss their options and feelings about those options. Team conferences are beneficial for sharing information and allowing every team member the opportunity to address the needs of the patient and family (Babaii et al., 2021).

It is essential for patients, families, and staff to adopt a positive attitude toward rehabilitation. Patients must learn strategies for successfully adapting to dialysis and maximizing their functional status. Promoting a positive attitude toward rehabilitation and teaching effective adaptation strategies are crucial components of community health nursing. These efforts ultimately help patients enhance their functional status and improve their quality of life.

RESEARCH METHODOLOGY

This descriptive, hospital-based study aimed to assess the knowledge of patients with end-stage renal disease undergoing hemodialysis regarding home self-care. The study was conducted at Omdurman Teaching Hospital, targeting hemodialysis patients visiting the center for treatment during the study period, with a total of 100 willing participants.

A structured, self-administered, closed-ended questionnaire was designed to collect data from the study subjects. The researcher established a scoring system that categorized responses into three levels to measure patient knowledge about home self-care: responses of 4 and 5 were considered indicative of good knowledge, 2 and 3 indicated fair knowledge, and responses of 0 and 1 were classified as poor knowledge.

The data collection tool was reviewed by an expert in the field, and their comments regarding the content and context were incorporated. Data were analyzed using the Statistical Package for Social Sciences (SPSS). The rights of participants were respected throughout the research process, and informed consent was obtained from all participants after providing a detailed explanation of the study.

RESULTS

Table 1 presents the demographic analysis of the participants, which included a total of 100 individuals. The findings indicate that 58% were over the age of 45, while 24% were between 36 and 45 years old. Participants aged 26 to 35 comprised 12%, and those aged 15 to 25 made up 6% of the sample.

Table 1: Study group's demographic data (n= 100)

Age	Frequency	Percentage
15-25	6	6%
26-35	12	12%
36-45	24	24%
>45	58	58%
Total	100	100%
Gender	Frequency	Percentage
Male	64	64%
Female	36	36%
Total	100	100%
Educational level	Frequency	Percentage
Illiterate	6	6%
Primary school	24	24%
Secondary school	38	38%
University education	32	32%
Total	100	100%
Occupation	Frequency	Percentage
Employed	42	42%
Un employed	58	58%
Total	100	100%
Number of years in dialysis	Frequency	Percentage
Less than three years	18	18%
(3-5) years	22	22%
(5-10) years	40	40%
(10-15) years	12	12%
Over 15 years	8	8%
Total	100	100%
Number of dialysis session per week	Frequency	Percentage
Once /w	4	4%
Twice /w	90	90%
Three /w	6	6%
Total	100	100%

In terms of gender distribution, 64% of the participants were male, and 36% were female. Regarding educational attainment, 38% had completed secondary school, 32% had university education, 24% had attended primary school, and 6% were illiterate. Employment status revealed that 42% of participants were employed, while 58% were unemployed. When considering the duration of dialysis, 40% of participants had been on dialysis for 5 to 10 years, 22% for 3 to 5 years, 18% for less than 3 years, 12% for 10 to 15 years, and 8% for over 15

years. Most participants received dialysis sessions twice a week, accounting for 90% of the sample, while 6% had three sessions per week and 4% had only one session. **Table 2** indicates the sources of health education among the study participants (n=100). A significant majority, 80%, received their information from nurses. In contrast, only 15% reported obtaining health education from doctors. A small percentage, 3%, learned from other patients, while 2% of participants had never received any form of health education.

Table 2: Study group according to their source of health education (n=100)

Item	F	%
Doctor	15	15%
Nurses	80	80%
Another patient	3	3%
Never	2	2%
Total	100	100%

Table 3 showed that the study assessed the participants' knowledge about their fistula care at home (n=100) and found that 64% rated their knowledge as good. Additionally, 20% of participants considered their knowledge to be fair, while only 6% reported having poor knowledge regarding fistula care.

Table 3: Study group's knowledge about their fistula care at home (n=100)

Item	F	%
Good	64	64%
Fair	20	20%
Poor	6	6%
Total	100	100%

Table 4 illustrates that the dietary habits of the study participants (n=100) were assessed across three categories. Regarding protein intake, 15% of participants reported consuming protein sources such as chicken, fish, red meat, and eggs every day, while a significant majority, 75%, ate these foods sometimes, and 10% did so rarely.

Table 4: Study group's distribution according to their diet (n=100)

Eating protein (chicken, fish, red meat, eggs)	F	%
Everyday	15	15%
Sometimes	75	75%
Rarely	10	10%
Total	100	100%
Eating fruits and vegetables	F	%
Everyday	73	73%
Sometimes	17	17%
Rarely	10	10%
Total	100	100%
Drinking milk	F	%
Everyday	82	82%
Sometimes	10	10%
Rarely	8	8%
Total	100	100%

In terms of fruit and vegetable consumption, 73% of participants indicated they ate these foods every day, 17% reported doing so sometimes, and 10% rarely included them in their diet.

Milk intake was notably high, with 82% of participants drinking milk every day, 10% consuming it sometimes, and 8% rarely drinking milk.

Table 5 showed that the study evaluated participants' knowledge about fluid intake and recognition of signs of fluid overload (n=100). Regarding fluid intake, only 18% of participants reported following prescribed guidelines for daily fluid intake, while a significant 66% indicated that they took fluids freely. Additionally, 10% based their fluid intake on their weight, and 6% did so according to output.

Table 5: Study group's knowledge about fluid intake: (n=100)

Daily fluid intake	F	%
According to order	18	18%
Take fluid freely	66	66%
According to their weight	10	10%
According to out put	6	6%
Total	100	100%
Signs of fluid over load	F	%
Good	70	70%
Fair	4	4%
Poor	26	26%
Total	100	100%

When assessing knowledge of signs of fluid overload, 70% of participants rated their understanding as good, whereas 26% considered their knowledge to be poor, and only 4% rated it as fair.

Table 6 indicates that the study assessed the participants' knowledge about their medication use (n=100) and found that an impressive 96% reported adhering to the prescribed timing and dosage of their medications. In contrast, only 3% indicated that they neglected their medication schedules, while 1% admitted to taking their medications only when they remembered.

Table 6: Study group's knowledge about their drug use (n=100)

Item	F	%
You adapt on time and dose	96	96%
Neglect it	3	3%
Take when you remember	1	1%
Total	100	100%

Table 7 illustrates that the study examined the participants' daily activity levels (n=100) and found that 72% reported being independent in their daily activities. Meanwhile, 15% indicated that they needed some assistance, and 10% were completely dependent on others for daily tasks. Additionally, 3% of participants required special assistance.

Table 7: Study group's distribution regarding to their daily activity (n=100)

Item	F	%
Depending on your self	72	72%
Needed assistance	15	15%
Complete depending on other	10	10%
Special depending	3	3%
Total	100	100%

The data in **Table 8** explored the participants' self-esteem levels (n=100) and revealed several important findings. A significant 65% reported actively cooperating with their family and community, indicating a strong sense of connection. However, 15% expressed feelings of isolation, highlighting a critical area of concern. Additionally, 10% described themselves as sensitive, while only 1% indicated a fear of death. Furthermore, 5% felt they had no role in their community, and 4% expressed satisfaction with their current situation.

Table 8: study group's distribution regarding to their self-esteem (n=100)

Item	F	%
Feel isolated	15	15%
Cooperate with family and community	65	65%
Sensitive	10	10%
Fear of death	1	1%
Haven't role in community	5	5%
Satisfy	4	4%
Total	100	100%

Table 9 shows that the study assessed the mode of follow-up among participants (n=100) and found that 85% attended regular hemodialysis sessions, indicating strong adherence to their treatment regimen. Furthermore, 11% reported regularly visiting an outpatient clinic for follow-up care. In contrast, only 4% of participants indicated that they had no regular follow-up and only sought care when experiencing complaints.

Table 9: Study group's distribution according to their mode of follow up (n=100)

Item	F	%
Regular with hemodialysis sessions	85	85%
Regular in out-patient clinic	11	11%
No regular follow up, just with complain	4	4%
Total	100	100%

DISCUSSION

This descriptive study assessed the knowledge of patients at the hemodialysis center at Omdurman Teaching Hospital regarding home self-care. The findings revealed that approximately 58% of patients were over 45 years old, aligning with previous studies that reported similar age distributions, particularly with half of the patients in the 51-60 age group. Additionally, more than half of the participants (64%) were male, consistent with a study conducted in Egypt by Sabah et al. (2019), which found that the majority of hemodialysis

clients were male and aged between 40 and 60 years. Regarding educational levels, most participants had education ranging from secondary to university, with only 6% identified as illiterate. This contrasts with Sabah et al. (2019), which reported that over half of hemodialysis clients were illiterate.

The present data indicate that a significant majority of participants (66%) consume fluids freely, despite having a good understanding of fluid overload. In terms of fluid management, a recent study conducted in Egypt by Alsolami and Alobaidi (2024) on "Hemodialysis Nurses' Knowledge, Attitude, and Practices in Managing Vascular Access" reported that many clients arrive at dialysis sessions with increased body weight. This finding suggests that most clients do not adhere to nursing and medical instructions regarding fluid and salt restrictions.

Regarding dietary practices, the study revealed that 75% of patients occasionally consume protein sources such as eggs, chicken, red meat, and fish. This aligns with a study conducted in Egypt by Sabah et al. (2019), which evaluated home self-care among hemodialysis clients. Their study indicated that the majority of clients exhibited unsatisfactory practices related to weight monitoring at home, fluid intake control, types of fluids consumed, meal frequency, dietary methods, post-session follow-up, and cooking methods for foods containing potassium.

The study revealed that 96% of participants adhered to the prescribed times and doses for their medications. In contrast, a recent study conducted in New York by Aggarwal, Jalali, et al. (2024) found that more than half of patients reported non-adherence to their medications. The most common barriers to adherence included forgetting to take medications due to distractions in daily life, being away from home, managing multiple medications, and feeling well enough to skip doses. Additionally, about two-thirds of patients (72%) were able to perform their daily activities independently, which is associated with effective renal rehabilitation. Furthermore, 65% of clients reported collaborating with family and the community, positively impacting their self-esteem and communication skills.

In the researcher's opinion, continuous education provided by the healthcare team is crucial for equipping clients and their families with knowledge about managing diseases, diet, fluid intake, medication, and daily living activities. This ongoing education helps ensure that patients are well-informed and empowered to take charge of their health. Additionally, the evaluation and display of educational posters in various hemodialysis units are essential for enhancing clients' understanding of chronic kidney disease and hemodialysis. Such visual aids serve as important resources that can reinforce learning and awareness, which are vital components of effective patient care.

CONCLUSION AND RECOMMENDATIONS

The study concluded that approximately half of the patients were over 45 years old, with a majority being male. Most patients underwent regular hemodialysis twice a week for four hours. More than half of the patients demonstrated good dietary management; however, the fact that many took their daily fluids freely indicates poor self-care practices. The majority of participants adhered to the prescribed doses and timings for their medications and provided

good care for their dialysis access. Furthermore, most patients were able to perform daily activities independently, which is related to effective renal rehabilitation. They also reported cooperating with family and the community, fostering good communication. The results of this study could inform the development and implementation of continuous health education programs for patients on hemodialysis, aiming to improve their quality of life and overall.

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