

Assessment of knowledge regarding self-care management among Chronic Kidney Disease (CKD) clients undergoing Hemodialysis

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Abstract

Background: Chronic Kidney Disease (CKD) clients undergoing hemodialysis face significant challenges requiring lifelong treatment adherence and self-care practices. Adequate knowledge of self-care management is vital to prevent complications, improve quality of life, and reduce healthcare burden.

Objectives

1. To assess the knowledge regarding self-care management among CKD clients undergoing hemodialysis.
2. To find the association between knowledge levels and selected demographic variables among CKD clients.

Materials and Methods: A descriptive cross-sectional study was conducted among 50 CKD clients undergoing hemodialysis using purposive sampling. A structured knowledge questionnaire was administered to assess self-care knowledge. Data were analyzed using SPSS v25 with descriptive and inferential statistics.

Results: Out of 50 participants, 52% had moderate knowledge, 30% had inadequate knowledge, and only 18% had adequate knowledge of self-care practices. Significant associations were found between knowledge level and education ($p = 0.023$) and duration of hemodialysis ($p = 0.041$).

Conclusion: Many CKD clients have only moderate or inadequate knowledge regarding self-care, indicating the need for structured educational interventions in dialysis centers.

Keywords: Chronic Kidney Disease, Hemodialysis, Self-Care, Knowledge Assessment, Patient Education

Introduction

Chronic Kidney Disease (CKD) is a major global public health problem, affecting approximately 9.1% of the world's population—an estimated 700 million people—with prevalence increasing steadily due to rising rates of diabetes, hypertension, and aging populations (GBD Chronic Kidney Disease Collaboration, 2020). In India, CKD prevalence ranges from 8% to 16%, and the disease burden is exacerbated by late diagnosis, limited access to nephrology services, and inadequate patient education (Jha *et al*, 2016) [5].

Hemodialysis remains the most commonly used renal replacement therapy for End-Stage Renal Disease (ESRD) patients in India. While life-saving, it demands strict adherence to a complex regimen involving dietary and fluid restrictions, vascular access care, medication compliance, regular dialysis sessions, and infection prevention practices. Failure to follow these self-care measures can lead to serious complications such as fluid overload, electrolyte imbalances, infection, and hospitalization (Thomas *et al*, 2018) [3].

Self-care management refers to the set of activities and decisions patients undertake to maintain health, prevent complications, and manage the physical and emotional aspects of their illness. For CKD clients undergoing hemodialysis, self-care behaviors include appropriate diet and fluid control, proper arteriovenous fistula (AVF) care, timely medication intake, maintaining hygiene, and adhering to dialysis schedules. Adequate knowledge about these practices is crucial for improving treatment outcomes and enhancing quality of life (Patel *et al*, 2021) [2].

However, evidence from both Indian and international studies shows that many hemodialysis patients lack sufficient knowledge of self-care, often due to low literacy levels, inadequate counseling, and absence of structured education programs within dialysis units (Abdelkader *et al*, 2017). Knowledge deficits are particularly concerning in newly diagnosed patients or those with lower socioeconomic status, as these groups are at higher risk of preventable complications.

Given this context, assessing the knowledge levels of CKD clients about self-care management is essential to identify gaps and design targeted educational interventions. This study was undertaken to evaluate the level of self-care knowledge among CKD clients undergoing hemodialysis and to explore associations between knowledge scores and demographic variables such as education and duration of dialysis. The findings aim to inform the development of patient-centered educational strategies to improve long-term clinical outcomes in this population.

Objectives

1. To assess the knowledge regarding self-care management among CKD clients undergoing hemodialysis.
2. To find out the association between knowledge level and selected demographic variables.

Materials and Methods

Study Design

Descriptive cross-sectional study.

Setting

Tertiary care dialysis center in Maharashtra.

Sample & Sampling Technique

- **Sample size:** 50 CKD clients undergoing hemodialysis
- **Sampling method:** Non-probability purposive sampling

Inclusion Criteria

- Diagnosed with CKD and on hemodialysis for ≥3 months
- Able to understand and respond to the questionnaire
- Willing to participate

Exclusion Criteria

- Cognitive impairments
- Critically ill patients

Tool for Data Collection

1. Demographic proforma
2. Structured Knowledge Questionnaire (25 items; MCQ-type covering diet, medication, hygiene, dialysis procedure, fistula care)

Ethical Considerations

Institutional Ethical Committee approval obtained. Informed consent taken from all participants.

Statistical Analysis

Data analyzed using SPSS v25. Descriptive statistics summarized knowledge levels. Chi-square test used to find associations (p<0.05 considered significant).

Results

Table 1: Demographic Profile (N = 50)

Variable	Categories	Frequency (f)	Percentage (%)
Age (years)	18–27	5	10.0
	28–37	9	18.0
	38–47	13	26.0
	48–57	15	30.0
	Above 58	8	16.0
Gender	Male	29	58.0
	Female	21	42.0
Education	Illiterate	12	24.0
	Primary	14	28.0
	Secondary	13	26.0
	Graduate & above	11	22.0
Duration on Dialysis	<6 months	7	14.0
	6–12 months	18	36.0
	>1 year	25	50.0

Table 2: Knowledge Level of Participants

Knowledge Level	Frequency (f)	Percentage (%)
Inadequate	15	30.0
Moderate	26	52.0
Adequate	9	18.0

Table 3: Association between Knowledge and Demographic Variables

Variable	p-value	Significance
Age	0.084	NS
Gender	0.191	NS
Education	0.023	Significant
Duration on Dialysis	0.041	Significant

Interpretation

Education level and dialysis duration showed statistically significant associations with knowledge scores. Clients with higher education and longer dialysis history had better knowledge.

Discussion

The present study found that the majority (52%) of CKD clients undergoing hemodialysis had only moderate knowledge regarding self-care management, while 30% demonstrated inadequate knowledge. Only 18% had adequate understanding, indicating a substantial gap in patient education. These findings are comparable to Patel *et al.* (2021) [2], who reported that over half of their study population had insufficient knowledge of self-care, particularly in the areas of diet, fluid restriction, and vascular access care. Similarly, Abdelkader *et al.* (2017) highlighted that inadequate knowledge was associated with higher rates of complications and poorer quality of life among dialysis patients.

A significant association was observed between knowledge level and education (p = 0.023), with more educated patients having better self-care awareness. This aligns with Liu *et al.* (2018), who demonstrated that higher literacy levels positively influence understanding of disease management and adherence behaviors. The significant association with duration of dialysis (p = 0.041) suggests that over time, repeated exposure to healthcare environments, interactions with dialysis staff, and peer learning contribute to improved knowledge. However, this gradual improvement may be insufficient in the early months post-diagnosis, highlighting the importance of structured induction education programs for new patients.

The finding that nearly one-third of patients lacked basic self-care knowledge is clinically important. Lack of awareness regarding proper AVF care, for instance, can lead to thrombosis or infection, while ignorance about fluid restrictions can cause fluid overload and heart failure. Dietary mismanagement can result in hyperkalemia, which may be life-threatening. These complications not only worsen patient outcomes but also increase the economic burden on healthcare systems (Jha *et al.*, 2018).

The study’s results reinforce the need for regular, structured educational sessions within dialysis units. Educational interventions should be tailored to patient literacy levels, possibly using pictorial aids, videos, and practical demonstrations to enhance understanding. Involving family members or caregivers may also improve compliance, especially in patients with low health literacy.

From a policy perspective, integrating patient education into routine dialysis care is consistent with the World Health Organization’s (WHO) emphasis on patient empowerment as a cornerstone of chronic disease management. Nurse-led education programs have been shown to improve self-care behaviors, reduce hospitalization rates, and enhance quality of life (Karavetian *et al.*, 2019).

Future research could adopt a multicentric design, include larger sample sizes, and test the effectiveness of specific educational interventions on long-term outcomes such as hospitalization rates, biochemical parameters, and quality of life.

Conclusion

The study concludes that knowledge regarding self-care management among CKD clients undergoing hemodialysis is suboptimal. Education level and dialysis duration influence understanding. Structured teaching programs should be incorporated into routine dialysis care.

Limitations

- Single-center study
- Small sample size
- Self-reported questionnaire may introduce bias

Recommendations

- Implement regular educational sessions in dialysis units
- Develop pictorial and video-based educational tools
- Conduct multicentric studies to validate findings

Conflict of Interest

None declared.

Funding

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References

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