International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 15s,2025
https://theaspd.com/index.php

Assessment of Fatigue and Associated Factors in Patients Undergoing Haemodialysis.

Shanmuga Priya[1]*, Dr. Jayabharathi.B[2]
[1*] Ph. D Research scholar in Nursing, MAHER, Chennai St.Philomena's College of Nursing, Bangalore-47.: shriyatejas8@gmail.com
[2]Professor and Vice principal Meenakshi college of Nursing, Mangadu, Chennai. vpmcon@gmail.com

ABSTRACT
Background: Chronic Kidney Disease (CKD) is a growing global health concern, with a prevalence rate of 8–10%, significantly impacting the lives of patients, particularly those undergoing hemodialysis (HD). Fatigue is a common and debilitating symptom in this population, influencing their physical, emotional, and social well-being.
Objectives: This study aimed to evaluate the extent and severity of fatigue among patients receiving hemodialysis and explore the relationship between fatigue levels and various demographic, treatment-related, and socio-economic factors. Methods: A descriptive survey design was employed in a selected Hospital, Bangalore. A total of 30 HD patients were selected using purposive sampling. Data were collected using a structured questionnaire and the Piper Fatigue Scale. Descriptive and inferential statistics, including chi-square tests, were used for analysis.
Results: Among the 30 participants, 47% experienced mild fatigue, 40% moderate fatigue, and 13% severe fatigue. The majority of participants were over 60 years (47%) and male (60%). Significant association were found between fatigue levels and personal habits ($p \leq 0.05$), while other variables such as age, educational qualification, marital status, co-morbid illness, income, and duration of dialysis showed no statistically significant relationship.
Conclusion: Fatigue is a prevalent and multi-dimensional issue among HD patients, with varying degrees of severity. While several demographic factors influence fatigue, lifestyle factors such as exercise habits demonstrated a significant impact. These findings underscore the importance of individualized fatigue management strategies to enhance the quality of life among hemodialysis patients.
Keywords: Assess, Chronic Kidney Disease, Fatigue, Hemodialysis, Quality of Life

INTRODUCTION

Background of the Study

Chronic Kidney Disease (CKD) is a progressive and irreversible condition marked by a decline in kidney function over time, ultimately leading to end-stage renal disease (ESRD) that necessitates renal replacement therapy, such as hemodialysis (1). CKD has emerged as a major global public health problem, affecting over 10% of the world's population, with higher prevalence reported in low- and middle-income countries, including India (2,3). In India, studies estimate the prevalence of CKD to range from 4% to 20%, driven by increasing incidences of diabetes mellitus, hypertension, and aging populations (4,5).

Hemodialysis (HD) is the most common modality used for renal replacement therapy in patients with ESRD. While it sustains life, it is also associated with numerous complications, including cardiovascular issues, anemia, infections, and debilitating symptoms such as fatigue (6,7). Fatigue is one of the most frequently reported symptoms in patients undergoing HD and significantly impairs the quality of life (QOL), limiting functional ability and contributing to psychological distress (8,9). It is defined as a subjective feeling of tiredness, weakness, and lack of energy, fatigue in HD patients is often multidimensional, involving physical, emotional, and cognitive components (10).

Several factors contribute to fatigue in this population, including anemia, uremia, fluid and electrolyte imbalances, inadequate dialysis, malnutrition, sleep disturbances, and comorbidities (11,12). Research has shown that fatigue is experienced by 60–97% of HD patients, with about 25% reporting severe fatigue (13,14). This symptom has been linked to poor treatment adherence, missed dialysis sessions, reduced social interaction,

increased dependency, depression, and greater healthcare utilization (15,16). Despite its prevalence and clinical importance, fatigue remains under-recognized and poorly managed in routine HD care (17).

Need and Significance of the Study

In the Indian context, where the number of patients requiring maintenance haemodialysis is steadily increasing, the assessment and management of fatigue are critical for improving patient-centred outcomes (18). While international studies have explored fatigue in HD patients, there is limited research focused on Indian populations, particularly within hospital settings in urban areas like Bangalore. Cultural, socio-economic, and healthcare access factors may uniquely influence the fatigue experience in Indian patients, necessitating context-specific data (19).

The prevalence of Chronic Kidney Disease (CKD) in Bangalore is estimated at approximately **4**%, based on urban screening studies in South India (20). Among patients with End-Stage Renal Disease (ESRD), nearly **95**% **receive haemodialysis** as the primary mode of renal replacement therapy, consistent with national trends (21). Bangalore, a major urban centre, has over **30 active dialysis units**, serving a growing population of dialysis-dependent patients, driven by rising diabetes and hypertension cases (22). Parker Gregg et al. (2021) found that approximately 70% of CKD patients report experiencing some form of fatigue, with nearly 25% describing it as severe. (23)

This study aims to assess the level of fatigue among patients undergoing hemodialysis in a selected hospital in Bangalore. Understanding the prevalence and severity of fatigue, along with associated demographic and clinical variables, will help nurses and healthcare providers implement more personalized and holistic care plans. By identifying modifiable factors contributing to fatigue, targeted interventions—such as anemia management, sleep hygiene promotion, and psychosocial support—can be integrated into routine dialysis care (24,25).

Statement of the problem

Evaluation of Fatigue Severity in Patients Receiving Hemodialysis at a Selected Hospital in Bangalore."

Objectives:

1. To evaluate the extent and severity of fatigue in patients receiving hemodialysis at a selected hospital.
2, To explore the relationship between fatigue and dialysis-related factors, including the duration of sessions, timing, and frequency of treatment.

Hypothesis:

At 0.05 level of significance

H_1: To examine the relationships between fatigue levels and specific demographic, treatment-related, and socio-economic factors.

METHODS AND MATERIALS

A survey research approach, utilizing a descriptive research design, was adopted to meet the objectives of this study. The research was approved by the Administrator of St. Philomena's Hospital, Bangalore. The researcher selected a total of 30 participants through a non-probability purposive sampling technique. This sampling method was chosen to ensure the inclusion of individuals who were best suited to provide relevant insights for the research. The study participants were selected based on the inclusion criteria. After the researcher introduced herself and explained the purpose of the study, written informed consent was acquired from every participant. The data collection tool consisted of two sections: (1) sample characteristics and (2) Piper Fatigue Scale. Data collection took place in the dialysis unit of St. Philomena's Hospital. Each data collection session lasted approximately 10 minutes, with adequate privacy ensured for each participant. Baseline characteristics were gathered using a structured questionnaire, followed by an assessment of fatigue levels using the Piper Fatigue Scale. The collected data were coded and entered into Excel for subsequent analysis. Both descriptive and inferential statistical methods were used for data analysis.

RESULTS AND DISCUSSION

Table 1: Frequency distribution of participant's characteristics n=30

Demographic Variables	Frequency	Percentage {%}

Age in Years		
Less than 40 Years Old	2	7%
40 - 50 Years Old	6	20%
50 - 60 Years Old	8	27%
More than 60 Years Old	14	46%
Gender		
Male	18	60%
Female	12	40%
Educational Qualification		
No formal education	3	10%
Primary education	4	13%
Secondary education	15	50%
Undergraduate	6	20%
Postgraduate	2	7%
Marital Status		
Married	28	93%
Unmarried	2	7%
Grand Total	30	100%
Type of Family		
Joint	10	33%
Nuclear	20	67%
Grand Total	30	100%
History of co-morbid illness		
Yes	28	93%
No	2	7%
Grand Total	30	100%
Income (per month)		
Below Rs. 20,000	16	53%
Above Rs. 20,000	8	27%
None of the above	6	20%
Duration of diagnosis of chronic renal failure		

Less than 1 Year	7	23%
1 - 4 Years	6	20%
4 - 8 Years	13	44%
More than 8 Years	4	13%
Duration of undergoing Hemodialysis		
Less than 1 Year	7	23%
1 - 4 Years	6	20%
4 - 8 Years	13	43%
More than 8 Years	4	14 %
Personal habits		
No exercise	2	7%
Exercise	6	20%
Walking	18	60%
Yoga	4	13%
Level of Fatigue (PFS)		
Mild fatigue	14	47%
Moderate fatigue	12	40%
Severe fatigue	4	13%

Table 1 revealed that majority of the participants (47%) were in the age group of over 60 years. Most of the participants 60% were males and 40% were females. 50% of participants had secondary education, majority of the participants 93% were married. 67% of the participants live in a nuclear family and 33% lives in joint family. 93% of participants had history of co- morbid illness. Most of the participants 43% had 4-8 years of duration of chronic renal failure. 60% of them have habit of walking. Majority of the participants 47% experienced mild fatigue, 40% had moderate fatigue, and 13% suffered from severe fatigue.

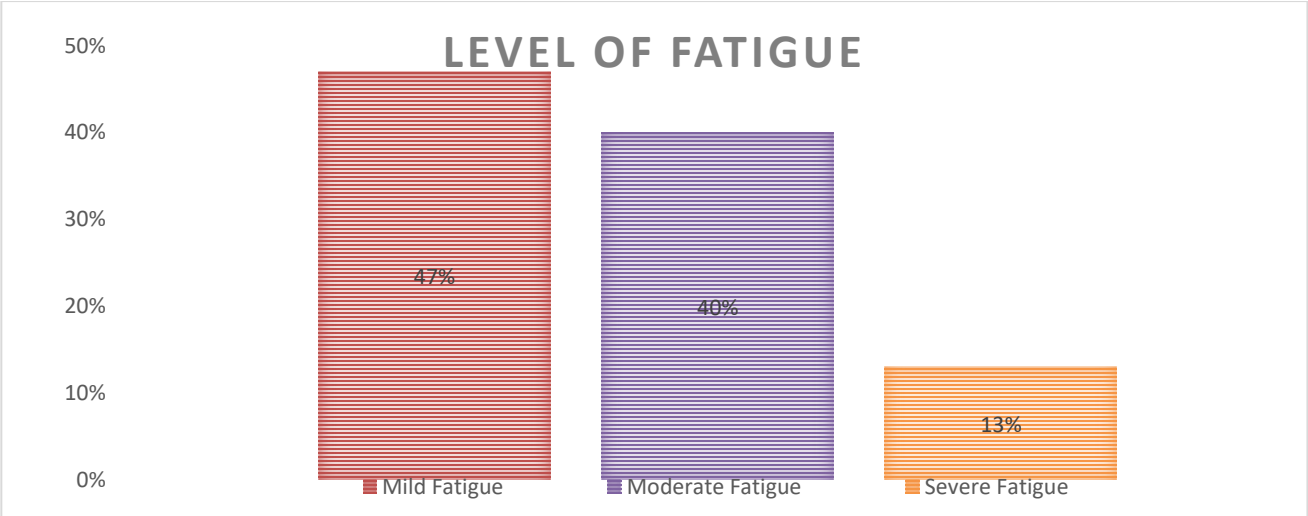

Fig 1: Level of fatigue among hemodialysis patients

Table 2: Relationship between fatigue score levels with selected sample characteristics among patients undergoing hemodialysis

Piper Fatigue Score on Hemodialysis Patients with selected demographic variables	Mild fatigue	Moderate fatigue	Severe fatigue	Chi-Square Value	df	Sig. (p-value)
Age in years						
Below 40 years	1	0	1	8.426	6	0.208
40 – 49 Years	3	1	2			
50 – 59 years	4	3	1			
Above 60 years	6	8	0			
Gender						
Male	8	7	3	0.436	2	0.803
Female	6	5	1			
Educational Qualification						
No formal education	2	0	1	9.565	8	0.296
Primary level education	1	3	0			
Secondary level education	7	5	3			
Undergraduate studies	2	4	0			
Postgraduate studies	2	0	0			
Marital Status						
Married	13	12	3	3.022	2	0.221
Unmarried	1	0	1			

Piper Fatigue Score on Hemodialysis Patients with selected demographic variables	Mild fatigue	Moderate fatigue	Severe fatigue	Chi-Square Value	df	Sig. (p-value)
Type of Family						
Joint	4	4	2	0.642	2	0.725
Nuclear	10	8	2			
History of co-morbid illness						
Yes	12	12	4	2.448	2	0.293
No	2	0	0			
Income (per month)						
Below Rs. 20,000	6	7	3	2.544	4	0.636
Above Rs. 20,000	5	2	1			
None of the above	3	3	0			

Duration of diagnosis of chronic renal failure						
Less than 1 Year	3	3	1	4.648	6	0.589
1 - 4 Years	5	1	0			
4 - 8 Years	5	6	2			
More than 8 Years	1	2	1			
Duration of undergoing hemodialysis						
Under 1 year	3	3	1	4.648	6	0.589
1 to 4 Years	5	1	0			
4 to 8 Years	5	6	2			
Over 8 Years	1	2	1			
Personal Habits						
No exercise	1	1	0	11.894	6	0.05*
Exercise	0	3	3			
Walking	10	7	1			
Yoga	3	1	0			

Note:* Indicates Significant at 95% CI (p<=0.05 level)

The data presented in the above table depicts the association between Fatigue scores among hemodialysis patients with selected sample characteristics. The computed Chi-square values for the Fatigue scores and sample characteristics such as age in years ((X2=8.426), ,educational qualification (x2 =9.565), marital status(X2 = 3.022) history of co- morbid illness(X2 =2.4480) income per month(X2=2.544) and Duration of diagnosis of chronic renal failure(X2=4.648), duration of undergoing hemodialysis (X2 =4.648 and personal habits(X2=11.894) were found to be higher than the corresponding table values 0.208, 0.296. 0.221, 0.293, 0.636,0.589, 0.05 Hence, H_1 is accepted stating that there is a strong association between the selected sample characteristics and fatigue scores.The author have reviewed the final version of the manuscript and have taken responsibility for all aspects of the work, ensuring its accuracy and integrity.

CONCLUSION

The study concluded that most participants experienced moderate to severe fatigue. Fatigue was found to impact patients' physical, emotional, and social well-being. Factors such as dialysis duration, comorbidities, and lifestyle influenced fatigue levels. The study emphasizes the importance of routine fatigue assessment in clinical settings. Nurses play a vital role in recognizing and managing fatigue through patient education and support. Personalized care interventions can help reduce fatigue and improve the quality of life. Integrating fatigue management strategies into dialysis care is essential. Further research is recommended to explore effective interventions. Addressing fatigue can lead to better treatment adherence and patient outcomes.

REFERENCE:

1. Levey AS, Coresh J. Chronic kidney disease. *Lancet*. 2012;379(9811):165–80.
2. Bikbov B, Purcell CA, Levey AS, et al. Global burden of chronic kidney disease: GBD 2017. *Lancet*. 2020;395(10225):709–33.
3. Jha V, Garcia-Garcia G, Iseki K, et al. Chronic kidney disease: global dimension and perspectives. *Lancet*. 2013;382(9888):260–72.
4. Singh AK, Farag YM, Mittal BV, et al. Epidemiology and risk factors of chronic kidney disease in India. *BMC Nephrol*. 2013;14:114.
5. Varma PP. Prevalence of chronic kidney disease in India – Where are we heading? *Indian J Nephrol*. 2015;25(3):133–5.
6. Thomas R, Kanso A, Sedor JR. Chronic kidney disease and its complications. *Prim Care*. 2008;35(2):329–44.
7. Saran R, Robinson B, Abbott KC, et al. US Renal Data System 2019 Annual Data Report. *Am J Kidney Dis*. 2020;75(1 Suppl 1):A6–A7.
8. Horigan AE. Fatigue in hemodialysis patients: a review of current knowledge. *J Pain Symptom Manage*. 2012;44(5):715–24.

9. Bossola M, Vulpio C, Tazza L. Fatigue in chronic dialysis patients. *Semin Dial*. 2011;24(5):550–5.
10. Piper BF, Lindsey AM, Dodd MJ. Fatigue mechanisms in cancer patients: developing nursing theory. *Oncol Nurs Forum*. 1987;14(6):17–23.
11. Jhamb M, Weisbord SD, Steel JL, Unruh M. Fatigue in patients receiving maintenance dialysis: a review. *Am J Kidney Dis*. 2008;52(2):353–65.
12. Kutner NG, Zhang R, McClellan WM. Patient-reported quality of life early in dialysis treatment: effects associated with usual exercise activity. *Nephrol Nurs J*. 2000;27(4):357–67.
13. Weisbord SD, Fried LF, Arnold RM, et al. Physical and emotional symptom burden in chronic hemodialysis patients. *J Am Soc Nephrol*. 2005;16(8):2487–94.
14. Almutary H, Bonner A, Douglas C. Multidimensional symptom clusters in advanced chronic kidney disease. *J Adv Nurs*. 2017;73(11):2450–61.
15. Lee SY, Chien CY, Tai CJ. Predictors of fatigue among hemodialysis patients. *Int J Environ Res Public Health*. 2021;18(4):2062.
16. Albadr FB, Ahmad MM. Fatigue and its association with physical activity and depression in CKD patients. *Saudi J Kidney Dis Transpl*. 2020;31(3):542–8.
17. Koyama H, Fukuda S, Shoji T, et al. Fatigue is a predictor for cardiovascular events in hemodialysis patients. *Clin J Am Soc Nephrol*. 2010;5(2):243–9.
18. Rajapurkar MM, John GT, Kirpalani AL, et al. First report of the Indian CKD registry. *BMC Nephrol*. 2012;13:10.
19. Joshi U, Kumar R, Abraham G. Fatigue and quality of life in Indian patients on maintenance hemodialysis. *Indian J Nephrol*. 2018;28(1):48–52.
20. Singh AK, Farag YM, Mittal BV, Subramanian KK, Reddy SR, Acharya VN, et al. Epidemiology and risk factors of chronic kidney disease in India – results from the SEEK study. *BMC Nephrol*. 2013;14:114.
21. Rajapurkar MM, John GT, Kirpalani AL, Abraham G, Agarwal SK, Almeida AF, et al. What do we know about chronic kidney disease in India: first report of the Indian CKD registry. *BMC Nephrol*. 2012;13:10.
22. Rao M, Juneja R, Sharma RK, Jha V, Bhalla V, Aggarwal V, et al. A practical approach to hemodialysis in India. *Indian J Nephrol*. 2021;31(1):1–10.
23. Gregg LP, Jain N, Carmody T, Minhajuddin AT, Rush AJ, Trivedi MH, Hedayati SS. Fatigue in Nondialysis Chronic Kidney Disease: Correlates and Association with Kidney Outcomes. Am J Nephrol. 2019;50(1):37-47. doi: 10.1159/000500668. Epub 2019 Jun 5. PMID: 31167183; PMCID: PMC6620124
24. Song MK, Lin FC, Gilet CA, Arnold RM, Bridgman JC, Ward SE. Patient perspectives on informed decision-making surrounding dialysis initiation. *Nephrol Dial Transplant*. 2013;28(11):2815–23.
25. Birmelé B, Le Gall A, Sautenet B, et al. Quality of life in chronic hemodialysis patients: impact of a fatigue-reduction nursing program. *Nephrol Ther*. 2012;8(6):394–401.