



“Functional Status and Psychosocial Adjustment of Renal Failure Patients Undergoing Hemodialysis in a Selected Hospital of Kamrup (M), Assam.”

¹Nang Swapnali Chowsong, ²Dr. Baby Dutta, ³Merina Deka

¹M.Sc. Nursing Student, Medical Surgical Nursing,

²Assistant Professor, Medical Surgical Nursing

³Lecturer, Medical Surgical Nursing

¹Regional College of Nursing, Guwahati, Assam, India

Abstract: Renal failure, also referred to as kidney failure, is the incapacity of the kidney to remove waste materials and extra fluid from the blood. Hemodialysis (HD) is a treatment for kidney failure. This treatment has major drawback, as it needs to be performed frequently, often lasting several hours and requiring at least session per week. Hemodialysis poses a significant physical, mental, and social strain on the patients as it is very demanding, stressful, and challenging. To assess the functional status and psychosocial adjustment of renal failure patients undergoing hemodialysis a descriptive correlational research study was done. A total of 150 renal failure patients undergoing hemodialysis were selected by using a consecutive sampling technique from the Hemodialysis units of GMCH, Assam. Data were collected using a sociodemographic profile, structured functional status and psychosocial adjustment questionnaire through face-to-face interviews. The study found that out of 150 samples, 103 patients (69%) had an average functional status, 26 patients (17%) had good functional status and 21 patients (14%) had poor functional status. The majority of the subjects 106 (71%) had a moderately adequate psychosocial adjustment, followed by 23 (15%) with adequate psychosocial adjustment and 21(14%) with inadequate psychosocial adjustment. A moderate positive correlation was found between functional status and psychosocial adjustment of renal failure patients undergoing hemodialysis ($r=0.60$, $p<0.001$). Hemodialysis as a therapy option for renal failure has a significant impact on the patient's functional level and mental well-being in addition to their physical health. To enhance the general quality of life of hemodialysis patients, healthcare providers should take these factors into account.

Index Terms - Renal failure, hemodialysis, functional status, psychosocial adjustment

INTRODUCTION:

Chronic kidney disease is a type of non-communicable disease that is defined by a progressive decrease in the glomerular filtration rate and a variety of physiological abnormalities associated with abnormal kidney function. Chronic kidney disease progresses through five stages, ranging from mild dysfunction to complete renal failure ^[1]. Chronic kidney disease has approximately affected 850 million people worldwide and the majority of them belong to nations with poor and moderate income, and most of these individuals are deprived of proper kidney disease diagnosis, prevention, or treatment. By 2040, chronic kidney disease is expected to rise to the fifth position among the world's major causes of mortality ^[2]. Due to the increasing cases of hypertension and diabetes among people above 30 years of age in India, it is predicted that the number of chronic kidney disease cases will increase from 14.4% to 16.7% by 2030 ^[3].

Globally around 3.9 million individuals underwent kidney replacement therapy for renal failure with hemodialysis being the most widely used treatment, accounting for 69% of all kidney replacement therapy and 89% of all dialysis^[4]. Hemodialysis invented by Willem Kolff and Belding Scribner is a medical procedure that utilizes a specialized solution, called dialysate, to facilitate the removal of waste products and excess fluids from the blood. Patients with acute or chronic impaired renal function are treated with hemodialysis^[5]. This treatment has major setbacks as it needs to be performed frequently, often lasting several hours, and required at least three times a week. Additionally, patients undergoing hemodialysis must restrict their fluid intake^[6]. The adoption of hemodialysis varies significantly across South Asia, with India exhibiting a notably high and rapidly increasing demand, whereas Afghanistan and Bangladesh report relatively lower usage rates^[7].

End-stage kidney disease and its treatment modality, dialysis pose a significant physical, mental, and social strain on the patients as it is very demanding, stressful, and challenging^[8]. Hemodialysis presents various physical and psychosocial stressors, potentially limiting daily activities and causing issues with treatment and cognitive function, which may worsen the patient's functional status^[9]. Dialysis treatments, particularly hemodialysis, may come with restrictions on everyday tasks and may result in complications and cognitive issues that could exacerbate the patient's overall functional well-being^[10]. Psychosocial adaptation pertains to the psychological and social modifications individuals undergo when faced with significant life changes. In the realm of health psychology, it refers to individuals' capacity to manage and deal with the psychological and social effects of enduring illnesses and medical treatments. Dialysis significantly affects patients' lives, influencing their emotional health, cognition, and social interactions^[11]. The transition from long-term kidney care to hemodialysis treatment brings forth a set of new hurdles that affect all aspects of patients' lives. Dialysis patients face a range of psychosocial stressors, including the impact of the illness and treatment, dietary constraints, functional limitations, and concerns about the future. Furthermore, adjustments in family and social dynamics, such as role and responsibility changes, add to the psychosocial strain experienced by individuals undergoing dialysis. These stressors can lead to changes in marital and employment status, leading to social isolation and a decline in overall quality of life. It is common for hemodialysis patients to grapple with psychosocial challenges like depression, anxiety, confusion, and disengagement from treatment^[12]. Hemodialysis patients have been found to have a prevalence of anxiety and depression of 17–40% and 18–33%, respectively. Depression in patients with end-stage renal illness has been associated with higher rates of hospitalization, discontinuation from renal treatment, and unfavorable outcomes, such as suicide and death^[4].

METHODS

Study design:

A quantitative descriptive research approach with cross-sectional research design was adopted to assess the functional status and psychosocial adjustment of renal failure patients undergoing hemodialysis.

Setting and participants:

The study was conducted among 150 renal failure patients undergoing hemodialysis in the Hemodialysis units of Gauhati Medical College & Hospital, Guwahati, Assam. Samples were selected using non-probability consecutive sampling technique and the inclusion criteria were hemodialysis patients who were available at the time of data collection, willing to participate in the study, understood Assamese and English language and who had completed at least three cycles of hemodialysis.

A self-structured questionnaire was developed and the questionnaire was divided into three sections. The first section was a socio-demographic proforma consisting of 12 items about the patients' socio-demographic characteristics. The second section was a questionnaire to assess functional status, consisting of a structured interview schedule with 16 items. The third section was a questionnaire to assess psychosocial adjustment, consisting of a structured interview schedule with 21 items.

To calculate the sample size a standard statistical formula using mean and standard deviation of a previous study was used. A previous study on Functional status in hemodialysis - A comparative study with FIM, ADLQ, and 7D5L instruments was conducted by Viswanath N, Kumar K, Satish Haridasan, Parameswaran S, Priyamvada PS (2019) was referred as a baseline to calculate the sample size in this study in which, the calculated mean and SD was 5.51 ± 1.19 . The minimum sample size was found to be 146. For the convenience of the researcher, 150 sample size was selected for the study for unexpected events.

The study was carried out after obtaining ethical consideration approval from Institutional Ethics Committee of Regional College of Nursing and Institutional Ethics Committee of Gauhati Medical College and Hospital. A formal written administrative permission was taken from the Principal -cum - Chief Superintendent, of Gauhati Medical College and Hospital. Informed consent was taken from each participant who was willing to participate in the study

Statistical Analysis:

Data were coded and entered into a master spreadsheet for analysis. Subject characteristics, functional status, and psychosocial adjustment scores were summarized using frequency, percentage, mean, and standard deviation. To determine associations between demographic variables and baseline scores, Chi-square and Fisher's exact tests were employed. The relationship between functional status and psychosocial adjustment was assessed using the Karl Pearson correlation coefficient.

RESULTS

In this study, total of 150 samples were collected from Hemodialysis units of Gauhati Medical College & Hospital, Guwahati. The demographic characteristics of renal failure patients undergoing hemodialysis are shown in table 1.

Findings related to demographic variables of renal failure patients undergoing hemodialysis:

Table 1: Frequency and percentage distribution of demographic variables of renal failure patients undergoing hemodialysis .

DEMOGRAPHIC VARIABLES	FREQUENCY(F)	PERCENTAGE (%)
AGE IN YEARS		
19-29	4	2.7
30-39	22	14.7
40-49	30	20
50-59	66	44
≥60	28	18.6
GENDER		
Male	102	68
Female	48	32
RELIGION		
Hinduism	85	56.6
Islam	63	42
Christianity	1	0.7
Sikh	1	0.7

AREA OF RESIDENCE		
Urban	88	58.7
Rural	62	41.3
EDUCATION		
No formal Education	7	4.7
Primary education	29	19.3
Upto class 10 th / matriculation	42	28
Higher secondary	59	39.3
Graduate and above	13	8.7
OCCUPATION		
Student	4	2.7
Unemployed	18	12
Daily wager	11	7.3
Home maker	28	18.7
Business/self-employed	41	27.3
Private job	31	20.7
Government job	12	8
Retired	5	3.3
MARITAL STATUS		
Unmarried	16	10.7
Married	121	80.7
Widow/widower	13	8.6
NUMBER OF FAMILY MEMBERS		
≤4	76	50.7

5-7	74	49.3
MONTHLY FAMILY INCOME(Rs.)		
62273-93380	1	0.7
37325-62272	40	26.7
12445-37324	100	66.6
≤12444	9	6
PRESENCE OF CO-MORBIDITIES		
Yes	52	34.7
No	98	65.3
CO-MORBIDITIES		
Hypertension	11	21.2
Diabetes	22	42.3
Hypertension and Diabetes	15	25
CAD	4	7.7
DURATION OF HEMODIALYSIS/ STARTING DIALYSIS VINTAGE		
<3 months	63	42
3-6 months	36	24
7-12 months	30	20
>12 months	21	14

The table 1 portrays that out of 150 renal failure patients undergoing hemodialysis the majority i.e., 66 (44%) belonged to the age group of 50-59 years, 102 (68%) undergoing hemodialysis for renal failure in the study were males, 85 (56.6%) belong to the Hinduism religion, 88 (58.7%) resided in urban areas, 59 (39.3%) had completed higher secondary education, 41 (27.3%) were self-employed or had a business, 121(80.7%) were married, 76 (50.7%) had less than 4 family members, 100 (66.6%) had an income of 12445-37324, 98 out of 150 renal failure patients undergoing hemodialysis (65.3%) did not have any co-morbidities, 63 (42%) started hemodialysis for less than 3 months, 132(88%) had 2 sessions per week.

Findings related to functional status and psychosocial adjustment of renal failure patients undergoing hemodialysis:

This result shows that 103(69%) of the subjects had average functional status, followed by 26 (17%) with good functional status and 21 (14%) with poor functional status. The overall mean score was 39.31, the Standard Deviation (SD) was ± 5.94 and the median was 42. It also depicts that 106 (71%) of the subjects had a moderately adequate psychosocial adjustment, followed by 23(15%) with adequate psychosocial adjustment and 21(14%) with inadequate psychosocial adjustment. The overall mean score was 77.9, the Standard Deviation (SD) was ± 7.43 and the median was 80.

Findings related to association between the functional status of renal failure patients undergoing hemodialysis and selected socio-demographic variables

In association, the results showed the association between the functional status of renal failure patients undergoing hemodialysis with selected socio-demographic variables where age in years ($p=0.001$), education ($p=0.000$), occupation ($p=0.000$), presence of co-morbidities($p=0.004$), number of family members ($p=0.001$), duration of starting hemodialysis ($p=0.000$) were associated with the functional status of renal failure patients undergoing hemodialysis while there was no significant association between the functional status of renal failure patients undergoing hemodialysis and selected socio-demographic variables such as gender, religion, area of residence, marital status, monthly family income, and number of hemodialysis sessions per week at 0.05 level of significance.

Findings related to association between the psychosocial adjustment of renal failure patients undergoing hemodialysis and selected socio-demographic variables

In association, the results showed the association between the psychosocial adjustment of renal failure patients undergoing hemodialysis with selected socio-demographic variables where area of residence ($p=0.030$), education ($p=0.000$), occupation ($p=0.028$), monthly family income ($p=0.006$) were found to be associated with the psychosocial adjustment of renal failure patients undergoing hemodialysis while the other tested variables such as gender, religion, marital status, months of family income, and number of hemodialysis sessions per week were statistically non-significant with the psychosocial adjustment of renal failure patients undergoing hemodialysis.

Findings related to correlation between the functional status and psychosocial adjustment of renal failure patients undergoing hemodialysis

Table 2: Correlation between functional status and psychosocial adjustment among renal failure patients undergoing hemodialysis

Variables	Mean	SD	r value	p-value
Functional status	39.31	5.94	0.6	0.000**
Psychosocial adjustment	77.9	7.43		

The Karl Pearson's correlation coefficient was used to compute the coefficient of correlation and the calculated value of coefficient correlation 'r' is found to be 0.6 and p value is found to be less than 0.001, which is significant at 0.05 level of significance. The calculated value of $r=0.6$ signifies that there is a moderate positive correlation between functional status and psychosocial adjustment of renal failure patients undergoing hemodialysis. Thus, it can be inferred that when there is an increased level of functional status there is an increased level of psychosocial adjustment.

DISCUSSION

The present study was conducted to assess the functional status and psychosocial adjustment of renal failure patients undergoing hemodialysis and the results revealed that maximum renal failure patients undergoing hemodialysis i.e., 103 (69%) had average functional status. The overall mean score was 39.31, the Standard Deviation (SD) was ± 5.94 and the median was 42. The findings of the current study are consistent with the study carried out by **Viswanath N, Kumar K, Satish Haridasan, Parameswaran S, Priyamvada PS (2019)** assessed the functional status using the 7D5L instrument. The results revealed that most participants experienced mild to moderate limitations in their daily activities but did not require assistance.

With regard to the psychosocial adjustment according to the findings of the present study, it was observed that the majority of the subjects 106(71%) had a moderately adequate psychosocial adjustment. The overall mean score was 77.9, the Standard Deviation (SD) was ± 7.43 and the median was 80. In agreement with the findings of the current investigation, a similar study conducted by **Lee KS, Kim HY, Lee MH (2019)** in Korea found that the psychosocial adaptation score of the subjects was 402.92 points. Specifically, the study's participants' total psychosocial adaptation score is translated into a T-score of 62 points (396-406 points), with a value of 62 points or greater signifying clinical psychosocial maladaptation. Therefore, it is evident that the hemodialysis patients in this study have moderate difficulties in psychosocial adaptation in response to their disease.

The current study's findings revealed a significant association between the functional status of renal failure patients undergoing hemodialysis and age in years, education, occupation, number of family members, presence of co-morbidities, and duration of starting hemodialysis while there was no significant association between the functional status of renal failure patients undergoing hemodialysis and selected socio-demographic variables such as gender, religion, area of residence, marital status, monthly family income, and number of hemodialysis sessions per week at 0.05 level of significance.

Regarding psychosocial adjustment it was revealed that there was a significant association between the psychosocial adjustment of renal failure patients undergoing hemodialysis and area of residence, education, occupation, and monthly family income in rupees. However, the other tested variables such as gender, religion, marital status, months of family income, and number of hemodialysis sessions per week were statistically non-significant with the psychosocial adjustment of renal failure patients undergoing hemodialysis.

The current study findings showed that the correlation between functional status and psychosocial adjustment is 0.6 which is statistically significant at 0.01 level of significance. A moderate positive correlation was highlighted between functional status and psychosocial adjustment of renal failure patients undergoing hemodialysis.

CONCLUSION

The study investigated the functional status and psychosocial adjustment of renal failure patients undergoing hemodialysis. The majority of the patients had average functional status and moderately adequate psychosocial adjustment. This suggests a need for targeted interventions to support patients' mental health and social integration. By prioritizing both functional preservation and psychosocial support, healthcare providers can improve the quality of life, independence, and overall well-being of hemodialysis patients. Further research could provide us with a better understanding and insight into the functional status and psychosocial adjustment of renal failure patients undergoing hemodialysis.

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