

The Relationship between Quality of Life, Self-efficacy, and Psychological Wellness among Women on Maintenance Haemodialysis: A Cross-sectional Study

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ABSTRACT

Introduction: Chronic Kidney Disease (CKD) is associated with physical, psychological, social, and functional problems. While Maintenance Haemodialysis (MHD) is therapeutically beneficial, patients continue to face multiple challenges. Together, the disease and its treatment contribute to a significant decline in quality of life. Self-efficacy and psychological wellness are two key factors influencing the quality of life of patients undergoing long-term treatment. Understanding these relationships is particularly important among female patients in culturally sensitive settings.

Aim: The present study aimed to assess the quality of life, self-efficacy, and psychological wellness among women undergoing Haemodialysis (HD), and to determine the correlation between these variables.

Materials and Methods: A cross-sectional study was conducted among 100 female participants undergoing MHD at two selected dialysis units in Northern Kerala, India: the Government Medical College, Kannur, and the CH dialysis centre, a nearby charitable facility from 24 March 2024 to 15 May 2024, enrolled using the consecutive sampling technique. The Kidney Disease Quality of Life-36 (KDQOL-36) was used to assess quality of life, the

Strategies Used by People to Promote Health (SUPPH) scale to measure self-efficacy, and Ryff's Psychological Well-Being (PWB) scale to evaluate psychological wellness. Data were analysed using descriptive statistics and Spearman's rank correlation coefficient.

Results: Among the quality-of-life subdomains, the burden of kidney disease had the lowest median score {18.75 (12.50-25.00)}, followed by the Physical Component Summary (PCS) {30.57 (24.91-35.29)}. Relatively higher median scores were obtained for self-efficacy {84.00 (77.00-93.75)} and psychological wellness {74.00 (70.00-78.75)}. A positive correlation was found between self-efficacy and quality of life ($\rho=0.358, p<0.001$), while self-efficacy showed a weak correlation with psychological wellness ($\rho=0.226, p=0.024$). No significant correlation was observed between quality of life and psychological wellness ($\rho=0.009, p=0.932$).

Conclusion: The above findings indicate that when patients feel more confident and capable, their quality of life tends to improve. However, self-efficacy may not be a standalone predictor of quality of life, which is likely influenced by a complex interplay of multiple factors. Tailored interventions that enhance confidence in managing the disease, while also addressing physical and psychological challenges, could positively influence quality of life.

Keywords: Chronic kidney disease, Correlation, Female, Kerala

INTRODUCTION

The CKD has emerged as a major global concern in both developed and developing countries. The increasing prevalence of diabetes, hypertension, dyslipidaemia, and obesity has contributed significantly to its growing burden. Due to its progressive nature and the need for long-term treatment, CKD places a substantial physical, emotional, and financial strain on patients and healthcare systems [1,2]. HD is a vital treatment modality for individuals with end-stage renal disease and advanced kidney dysfunction. With the rising prevalence of CKD, the number of patients requiring HD continues to grow. Although HD prolongs life expectancy, patients often report decreased quality of life. HD disrupts daily routines and limits physical and social activities, impacting overall well-being. Patients on HD experience a high symptom burden, find treatment challenging, and frequently compromise their family and social life [3].

The World Health Organisation (WHO) defines quality of life as an individual's perception of their position in life in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards, and concerns [4]. The prolonged course of CKD and long-term HD treatment impose significant physical and psychosocial burdens on patients. Quality of life has therefore become a key indicator of how the disease affects daily living [5,6]. Self-efficacy refers to an individual's belief

in their ability to execute behaviours necessary to achieve specific goals. It encompasses confidence in organising and regulating one's motivation, behaviour, and social environment [7-9]. Studies show that higher self-efficacy is associated with better symptom management, greater treatment adherence, and improved coping. It is a strong predictor of self-management behaviours and is closely linked to quality of life outcomes. When patients have greater confidence in their ability to manage their condition, they are more likely to engage in effective self-care practices, leading to improved overall well-being [10-12]. Psychological wellness refers to an individual's emotional health and sense of well-being, and it directly influences their perception of quality of life [13].

Women on MHD often report significant issues across all major dimensions of health. HD is frequently described as distressing and disruptive, negatively affecting their daily functioning and overall quality of life. The multiple physical and psychosocial burdens often compel women to make compromises in their family roles, responsibilities, and social participation [14]. Understanding the relationship between quality of life, self-efficacy, and psychological wellness among women undergoing HD can help in designing individualised, gender-sensitive interventions that address their unique needs and improve outcomes. However, this relationship has not been widely explored, particularly among women. Therefore, the present study aims to assess quality of life, self-efficacy, and psychological wellness, and to determine the relationships among

these variables in women on MHD in Northern Kerala, a state in Southern India.

MATERIALS AND METHODS

The present cross-sectional study with a correlational design was conducted among women undergoing HD at two selected dialysis units in Northern Kerala: the Government Medical College, Kannur, and the CH dialysis centre, a nearby charitable facility. Data collection took place from 24 March 2024 to 15 May 2024. Ethical approval was obtained from the Institutional Ethics Committee (NU/CEC/2021/194).

Inclusion and Exclusion criteria: One hundred female patients with CKD undergoing HD, aged above 18 years and able to comprehend Malayalam, were included. Patients with cognitive impairment, haemodynamic instability, acute illness, or recent hospitalisation within the past month were excluded.

Sample size calculation: Assuming a 95% confidence level, 80% power, and a correlation coefficient based on prior literature, the required sample size was estimated using standard sample size calculation formulas for correlation studies [15].

$$n = \frac{(Z_{1-\alpha/2} + Z_{1-\beta})^2}{0.5 \times \ln \frac{(1+\rho)}{(1-\rho)}} + 3, \text{ Where } Z_{1-\alpha/2} = 1.96, Z_{1-\beta} = 0.84 \text{ and } \rho = 0.309.15$$

The calculated sample size was 99 participants. However, to ensure adequate representation, 100 participants were recruited using a consecutive sampling technique. This non-probability sampling method involves including every individual who meets the inclusion criteria until the required sample size is obtained.

Study Procedure

Socio-demographic and clinical data were collected using a structured questionnaire developed by the researchers. The demographic proforma consisted of six items: age, marital status, type of family, education, occupation, and socio-economic status. The clinical data sheet included six clinical variables and four laboratory parameters, which comprised the duration of CKD, duration of HD, frequency of HD, presence of comorbid illnesses (hypertension, diabetes mellitus, cardiac diseases, stroke), interdialytic weight gain, blood pressure, and laboratory values such as haemoglobin, blood urea, serum creatinine, and serum albumin.

Quality of life assessment: Quality of life was assessed using the Kidney Disease Quality of Life-36 Item Short Form Survey (KDQOL™-36), a widely used, standardised, and validated instrument for evaluating quality of life in patients with CKD, including those on HD. It was developed by Ron D. Hays and colleagues at the RAND Corporation in 1994 and refined into the KDQOL-36™ in 2000. The validated Malayalam version of the tool was used. The overall reliability of the instrument was 0.81.

The KDQOL-36 consists of 36 items, including 24 kidney disease-specific items (Symptoms and Problems-12 items; Effects of Kidney Disease-8 items; Burden of Kidney Disease-4 items) and 12 items from the generic Short Form (SF)-12, which are used to derive the Physical Component Summary (PCS) and Mental Component Summary (MCS) scores. All domains are converted to a 0-100 scale, with higher scores indicating better quality of life [16,17].

Self-efficacy assessment: Self-efficacy was measured using the SUPPH scale. Developed by Barbara A. Lev and colleagues in 1992 and validated in 1996, the SUPPH assesses self-care self-efficacy in individuals with chronic illnesses, particularly HD patients. The scale contains 29 items rated on a 5-point Likert scale (1=very little confidence, 5=quite a lot of confidence).

The subscales include stress reduction (10 items), decision making (3 items), and positive attitude (16 items). Total scores range from

29 to 145, with higher scores indicating greater self-efficacy. The reliability of the scale was 0.93 [18,19].

Psychological wellness assessment: The PWB Scale was used to assess psychological wellness. Developed by Dr. Carol D. Ryff in 1989, it measures multiple dimensions of positive functioning. The 18-item version of the PWB with six subscales was used in this study.

The subscales include Autonomy (3 items), Environmental Mastery (3 items), Personal Growth (3 items), Positive Relations with Others (3 items), Purpose in Life (3 items), and Self-Acceptance (3 items). Each item is rated on a 7-point Likert scale (1=strongly disagree to 7=strongly agree). Six items (4, 5, 6, 8, 9, and 13) are reverse-scored. Total scores range from 18 to 126, with higher scores indicating greater psychological wellness. The overall reliability was 0.7 [20].

Translation and reliability: Permission for translation of the SUPPH and PWB scales was obtained, and translation was carried out following the WHO Guidelines for the Translation and Adaptation of Instruments [21]. Content validity was established, and the calculated Content Validity Index (CVI) for all instruments was within acceptable limits. Cronbach's alpha indicated good internal consistency (KDQOL- 0.74, SUPPH- 0.718, PWB- 0.7).

Data collection: Data were collected during the participants' dialysis sessions using the consecutive sampling technique. All eligible patients meeting the inclusion criteria and present during the data collection period were invited to participate until the sample size was achieved. Of the 106 eligible participants, 100 consented to participate, while six declined due to unwillingness. After clarifying doubts, ensuring confidentiality, and providing the participant information sheet, written informed consent was obtained. The instruments were administered, and data collection required approximately 15-20 minutes per participant.

STATISTICAL ANALYSIS

Normality of data distribution was tested using the Kolmogorov-Smirnov test. Continuous variables were summarised as mean and Standard Deviation (SD) for normally distributed data, and as median and IQR for skewed data. Categorical variables were summarised using frequencies and percentages. Spearman's rank correlation coefficient was used to assess correlations. A p-value<0.05 was considered statistically significant. Statistical analyses were conducted using Statistical Package for Social Sciences (SPSS) version 24.

RESULTS

A total of 100 women participated in the study. Most participants, 42 (42%), were aged 51-60 years, with a mean age of 52.27 ± 9.42 years. The majority, 79 (79%), were married. A total of 61 (61%) belonged to nuclear families, and 38 (38%) had secondary education. Most participants, 83 (83%), were unemployed, and 62 (62%) belonged to the upper lower socio-economic class [Table/Fig-1].

Clinical characteristics showed that 51 (51%) had been diagnosed with CKD for more than six years, and 39 (39%) had been undergoing HD for more than six years. Most participants, 79 (79%), underwent HD three times per week. Interdialytic weight gain of 2-3 kg was reported by 40 (40%) of participants. Elevated systolic and diastolic blood pressure were observed in 71 (71%) and 42 (42%) of participants, respectively. Laboratory findings indicated that 47 (47%) had haemoglobin levels of 10-11.9 g/dL. Blood urea levels were elevated (>100 mg/dL) in 57 (57%) of participants, while serum creatinine ranged from 5-10 mg/dL in 88 (88%). Most participants, 63 (63%), had normal serum albumin levels (3.5-5 g/dL) [Table/Fig-2].

Median and IQR were computed as the data violated normality assumptions. In the present study, the median and IQR of the overall quality of life score were 39.07 (32.6, 42.5), indicating a low to moderate perceived quality of life. The most affected domain was

Variables	Category	Frequency (%)
Age (years)	<40	11
	41-50	23 (23)
	51-60	42 (42)
	61-70	24 (24)
Marital status	Married	79 (79)
	Unmarried	16 (16)
	Widow	5 (5)
Type of family	Nuclear	61 (61)
	Joint	17 (17)
	Extended	22 (22)
Patient education	Graduation	5 (5)
	Higher secondary	14 (14)
	Secondary	38 (38)
	Upper primary	28 (28)
	Primary	15 (15)
Patient occupation	Employed	17 (17)
	Unemployed	83 (83)
Socio Economic Status	Lower Middle Class	33 (33)
	Upper Lower Class	62 (62)
	Upper Middle Class	5 (5)

[Table/Fig-1]: Frequency and percentage distribution of demographic variables (N=100).

Serum Creatinine (mg/dL)	<5	8 (8)
	5-10	88 (88)
	>10	4 (4)
Serum Albumin (gm)	<3.5	37 (37)
	3.5-5	63 (63)

[Table/Fig-2]: Frequency and percentage distribution of participants according to clinical and laboratory variables.

HTN: Hypertension; DM: Diabetes mellitus; SBP: Systolic blood pressure; DBP: Diastolic blood pressure

the burden of kidney disease, which showed a low median score of 18.75 (12.50, 25.00), followed by the PCS. The MCS and the effects of kidney disease demonstrated comparatively better scores, while the highest-scoring subscale was the symptom/problem list {62.50 (48.44, 72.39)}.

For self-efficacy, the median total score was 84.00 (77.00, 93.75), with the highest score observed in the positive attitude subscale {48.00 (43.00, 52.00)}. With a median total psychological wellness score of 74.00 (70.00, 78.75), participants demonstrated a moderate level of PWB. The highest subscale scores were noted for positive relations with others and self-acceptance [Table/Fig-3].

Variables	Median	IQR (Q1, Q3)
Quality of Life - Overall score	39.07	32.6, 42.5
Subscales		
Symptom/problem list	62.50	48.44, 72.39
Physical Component Summary	30.57	24.91, 35.29
Mental Component Summary	37.76	34.13, 40.91
Effects of kidney disease	43.75	28.13, 53.13
Burden of kidney disease	18.75	12.50, 25.00
Self-efficacy-Total score	84.00	77.00, 93.75
Subscales		
Stress reduction	29.00	25.00, 33.75
Decision making	8.00	7.00, 10.00
Positive attitude	48.00	43.00, 52.00
Psychological wellbeing-total score	74.00	70.00, 78.75
Subscales		
Autonomy	12.00	11.00, 14.00
Environmental mastery	12.00	10.00, 14.00
Personal growth	12.00	11.00, 14.00
Positive relation with others	13.00	10.25, 14.00
Purpose in life	12.00	10.00, 14.00
Self-acceptance	13.00	11.00, 15.00

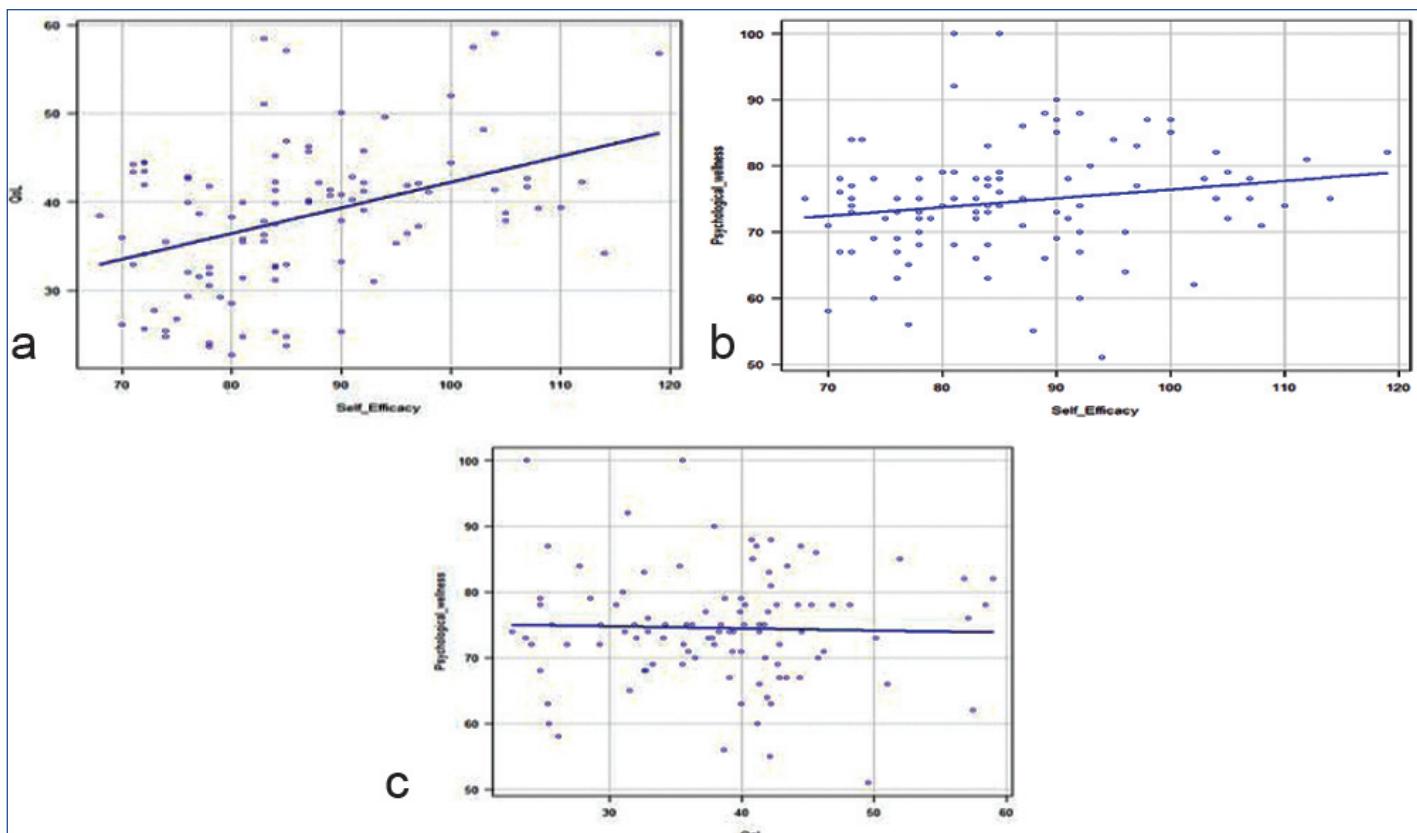
[Table/Fig-3]: Median and IQR of quality of life scores (N=100).

A positive correlation was found between self-efficacy and quality of life ($p=0.358$, $p<0.001$). A weak positive correlation was observed between self-efficacy and psychological wellness ($p=0.226$, $p=0.024$). However, no significant correlation existed between quality of life and psychological wellness ($p=0.009$, $p=0.932$) [Table/Fig-4].

Variables	Spearman's correlation - ρ	p-value
Self-efficacy and Quality of life	0.358	<0.001
self-efficacy and psychological wellness	0.226	0.024
Quality of life and psychological wellness	0.009	0.932

[Table/Fig-4]: Correlation between quality of life, self-efficacy, and psychological wellness (N=100).

The [Table/Fig-5] indicates scatter plots showing the correlation between: (a) self-efficacy and quality of life (moderate positive correlation); (b) psychological wellness and self-efficacy (weak positive correlation); and (c) psychological wellness and quality of life (no correlation).



[Table/Fig-5]: a) Quality of life vs Self-efficacy; b) Psychological Wellness vs Self-efficacy; c) Psychological Wellness vs Quality of life.
QoL: Quality of life

DISCUSSION

The present study assessed the quality of life, self-efficacy, and PWB among female patients undergoing HD and examined the interrelationships between these variables. The findings indicated a low level of quality of life, with a median score of 39.07 (32.6, 42.5), while moderate levels of self-efficacy {84.00 (77.00, 93.75)} and PWB {74.00 (70.00, 78.75)} were observed. A positive correlation was identified between self-efficacy and quality of life.

The mean age of the participants was 52.27 ± 9.42 years, which is comparable to a study conducted in Kerala that reported a mean age of 56 ± 13.9 years [15]. It is also consistent with findings from another Indian study in which the mean age of women undergoing HD was 55.14 ± 13.32 [22]. Compared to the European HD population (63.4 ± 13.1 years), the present sample represents a relatively younger cohort [23]. The high unemployment rate and lower socioeconomic status observed in this study align with previous reports from Kerala, which suggest that unemployment frequently increases after initiation of HD, regardless of gender [24].

A decline in overall quality of life was noted, with the greatest impairment seen in the burden of kidney disease, followed by the PCS score. The present study also demonstrated relatively higher scores in the effects of kidney disease and symptom/problem list subscales. These findings are consistent with a study from Southern India, which reported the lowest scores in the burden of kidney disease (23.5 ± 17.33) and PCS (36.8 ± 14.2), with MCS being comparatively better [5]. A study from Kerala evaluating Health-Related Quality of Life (HRQOL) found similar trends, reporting the lowest mean score in the physical component (38.11 ± 20.87) and the highest in the kidney disease summary component (61.73 ± 9.42) [24]. Although the patterns remain consistent, the present study shows a further decline in all dimensions of quality of life compared to similar Indian studies, suggesting possible unique socio-cultural or treatment-related challenges faced by women in this region [22,24,25].

Study participants demonstrated a moderate level of self-efficacy, with higher scores in the positive attitude subscale, followed by

stress reduction, and the lowest score in decision-making. Similar findings were observed in a study conducted among HD patients in Vietnam, which reported moderate self-efficacy, the highest scores in positive attitude, and the lowest in stress reduction [26]. The lower decision-making scores in the present study may reflect gender and cultural norms prevalent in the region, where major health decisions for women are frequently made by family members.

A moderate level of PWB was also observed, with relatively balanced scores across all subdomains. The highest scores were noted in positive relations with others and self-acceptance. This suggests strong interpersonal relationships and acceptance of their health condition, but continued challenges in autonomy and environmental mastery. These limitations may be associated with dependency, reduced control, and lifestyle restrictions imposed by the chronic nature of HD. Qualitative studies have similarly documented disruptions in social roles and daily functioning among HD patients, which correspond with the observed lower self-efficacy in decision-making and reduced autonomy [14,27]. Studies on PWB and its associations with self-efficacy or quality of life among female HD patients in India remain scarce, highlighting the need for further research.

The present study demonstrated a positive correlation ($r=0.358$) between self-efficacy and quality of life, supporting findings from earlier research that reported a significant positive association ($p<0.001$; $r=0.491$) [28]. Additionally, a weak positive correlation ($r=0.226$) was found between self-efficacy and psychological wellness, while no significant correlation ($r=0.009$) was observed between psychological wellness and quality of life. A thorough literature review revealed no previous studies examining the relationship between PWB and either quality of life or self-efficacy. This gap underscores the need for future studies exploring PWB in this population.

These findings suggest that individuals who feel more capable and confident in managing their illness tend to experience better quality of life. However, self-efficacy alone may not be sufficient to enhance quality of life, especially as many women undergoing HD

face multiple challenges such as caregiving responsibilities, limited autonomy, and financial dependency. Despite reporting low quality of life, many women appear to cope with their illness, possibly due to the chronic nature of HD and limited social support networks.

Limitation(s)

The present cross-sectional study relied on self-reported instruments, which may have introduced reporting bias or social desirability bias. Some participants may have hesitated to disclose difficulties or personal challenges.

CONCLUSION(S)

Women undergoing HD in this study reported significantly lower quality of life despite demonstrating relatively higher levels of self-efficacy and PWB. A positive correlation was found between self-efficacy and quality of life, suggesting that confidence in managing one's illness contributes to better quality of life. However, no significant association was found between PWB and quality of life. These findings highlight the need for interventions that enhance self-efficacy while also addressing the physical, emotional, and functional challenges experienced by female HD patients. Improving quality of life in this population requires a holistic approach that integrates physical, psychosocial, and behavioural support. Future research should focus on identifying factors influencing self-efficacy, quality of life, and psychological wellness, and on developing targeted interventions to improve them. A multi-centre study with a larger and more diverse sample is recommended.

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