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A CROSS-SECTIONAL STUDY TO ASSESS THE HEALTH-RELATED QUALITY OF LIFE IN HEMODIALYSIS PATIENTS AT A TERTIARY CARE HOSPITAL IN KAKINADA.

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ABSTRACT

In our study, individuals undergoing hemodialysis with various comorbidities, including social, psychological, and physical health problems, were assessed. The study included 206 participants of both genders. Data were collected using the KDQOL-36 questionnaire through patient interviews based on the items in the tool. Patients were asked about their symptoms and health status in detail. This prospective observational study was conducted in October 2024 among chronic kidney disease (CKD) patients aged above 10 years undergoing maintenance hemodialysis (MHD). A total of 206 patients were selected using convenience sampling from the Nephrology Department of Trust Multi-Speciality Hospitals, covering surrounding villages of Kakinada District, Andhra Pradesh. Ethical clearance was obtained prior to the study. All age groups were included in the study population. Among the participants, males were more affected by end-stage renal disease (ESRD) compared to females, with 126 males and 80 females. The findings revealed that several variables were statistically significant, including muscle soreness, personal appearance concerns, nausea, lack of appetite, dry skin, itchy skin, and cramps. Some other variables were not statistically significant based on p-values. Overall, the results suggest that although patients experienced multiple physical and psychological symptoms, a considerable proportion of them reported a relatively acceptable quality of life.

Keywords: *End Stage Renal Disease, Hemodialysis, Quality of life, Chronic kidney disease, Hypertension, Diabetic Mellitus.*

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INTRODUCTION

Chronic kidney disease (CKD) is emerging as a serious chronic condition worldwide. The prevalence of diabetes and hypertension is increasing rapidly worldwide. With over 1 billion people residing there, developing CKD prevalence in India is likely to create severe problems for the nation's healthcare system as well as economy in the future. The incidence rate of end-stage renal disease (ESRD) in India has been approximated to be 229 per million population (PMP), and over 100,000 new patients join renal replacement programs annually in India. But around 10% of Indian ESRD patients undergo any type of renal replacement treatment (RRT) because of a lack of funding [1]. The remainder of nephrons begin a process of irreversible sclerosis, producing a declining GFR in a progressive manner regardless of etiology, until nephron loss and a reduction in functioning kidney mass accumulate to something [2]. When kidneys have been damaged over a period of time (at least three months) and cannot carry out all their essential functions, it is referred to as chronic kidney disease (CKD). CKD also increases the risk of heart disease, stroke, and other diseases.

Complications of CKD: Anaemia is more probable if you have end-stage renal disease (ESRD) or chronic kidney disease (CKD) on dialysis. If your kidneys fail to make enough erythropoietin (EPO), anaemia occurs. Bones can weaken due to hyperphosphatemia, which is induced by low calcium and elevated phosphorus levels triggered by CKD. Fractures of the bone are more probable as a consequence. Uric acid accumulation in the joints is the cause of gout, a kind of arthritis. Kidneys are not able to filter out waste from the blood effectively when they are not functioning well. If CDK causes a long-term imbalance of fluids in the body, it can increase the risk of heart failure [3]. Dialysis is a life-sustaining treatment for patients with kidney failure; however, it comes with significant physical and psychological challenges. Patients undergoing dialysis often experience fatigue, muscle loss,

nutritional deficiencies, and stress, which can negatively impact their quality of life [4]. One of the big public health issues that poses a challenge to global health systems is chronic kidney disease (CKD). In India, 9% to 17% of individuals have chronic kidney disease (CKD). If kidney function is inadequate for long-term survival without kidney transplantation or dialysis, the term end-stage renal disease (ESRD) is used. The ESRD patient's as well as his or her family's lifestyle is altered and disturbed by Haemodialysis [5]. ESRD and its treatment greatly influence occupation, diet, self-concept, interpersonal relationships, and the ability to enjoy life. QoL refers to an individual's satisfaction or enjoyment in life regarding their experience and situation. It encompasses their physical, mental, social, and overall well-being. In chronic illnesses, health-related quality of life (HRQoL) has emerged as an increasingly important gauge of the effectiveness of treatment. It allows for measuring the effects of the disease from the patient's perspective, informing medical decisions based on their physical, emotional, and social needs, and improving treatment plan compliance, the quality of care, and the survival of patients [6]. There is a progressive loss of protein and/or energy stores that is also common in patients with Chronic Kidney Disease (CKD), especially those with End-Stage Renal Disease (ESRD, or CKD stage 5). This syndrome with high prevalence rates (up to 50–75% of patients with CKD stages IV–V) has been referred to as "Protein-Energy Wasting" (PEW), is immediately associated with increased risk of sickness and death as well as a compromised quality of life. In addition to muscular atrophy, inflammation often coincides and imparts a unique pattern to CKD-associated PEW that differentiates it from other forms of malnutrition. To implement personalized diet therapies against PEW in ESRD, two issues need to be solved: 1) a good knowledge about the aetiology, and 2) early diagnosis and constant monitoring of nutritional status. Finally, there are several factors involved in the aetiology of PEW. Loss of appetite, lowered nutritional intake, and alterations in lean body mass anabolism and catabolism are critical factors. Routine and careful assessment of nutritional status and early dietary advice should be the foundation of any nutritional strategy for PEW. Because it is safe, effective, and easy, nutritional supplementation by a particular oral formulation taken during Haemodialysis treatment could be the first line of treatment when protein and energy intakes are reduced. This is an acceptable nutritional measure in PEW prevention and treatment. Preparations for renal patients on sale nowadays include omega-3 fatty acids and fibres, which could bring considerable added value to macronutrient supplementation. Intradialytic parenteral nutrition can be employed in selected patients when oral supplementation fails [8]. Haemodialysis is an undeniable part of the lives of most patients and exerts stressful and restrictive effects on both the patient and family. Six, the contribution of family support has increasingly developed in the contemporary world due to shifts in the pattern of treating chronic patients and administering healthcare, especially from hospital to home-based care [7]. The persistent nature of the illness and its prolonged treatment, as well as these changes, impact on how efficiently patients and their families function [8]. Families that meet this role are referred to as "carers"[7].

METHODOLOGY

The study was carried out at the Department of Nephrology, Trust Multi-Speciality Hospitals, among 206 dialysis patients. Formal approval was obtained from the hospital authority, and the study was approved by the ethical committee. This observational, prospective study was conducted over a period of six months, from September 2024 to March 2025, in a tertiary care hospital setting. The study population consisted of patients with chronic kidney disease (CKD) undergoing maintenance hemodialysis (MHD) to assess and enhance their quality of life. The present exploratory study was conducted in October 2024 among CKD patients aged above 10 years who were undergoing MHD. A total of 206 patients were selected through convenience sampling from the Nephrology Department of Trust Multi-Speciality Hospitals, covering patients from the surrounding villages of Kakinada District in Andhra Pradesh. Ethical clearance for the study was obtained, and data were collected using the KDQOL-36 questionnaire.

RESULTS

The Chi-Square test results in the graph indicate that several quality of life (QoL) variables are significantly associated with hemodialysis in patients. Most symptoms and concerns-such as stress during dialysis, general health perception, soreness in muscles, chest pain, dry and itchy skin, dizziness, shortness of breath, lack of appetite, nausea, numbness in hands/feet, problems with access site, and personal appearance concerns-show high Chi-Square values well above the critical value (≈9.49 for df=4, p=0.05), indicating statistically significant associations. However, variables like dialysis frequency, stress level during dialysis, and time spent managing kidney disease (shown in blue) fall below the critical threshold, suggesting no significant association with QoL in those areas. This highlights that physical and psychological symptoms impact QoL more than treatment logistics.

Table 01: Variables, Chi-Square Value and P value

VARIABLE	Chi-Square Value	P Value
Dialysis frequency	65.54	0.5619
Stress level	555.31	1.38e-06
General health	219.66	7.29e-06
Social activities	159.87	0.0792
Time managing kidney disease	217.48	1.13e-05
Soreness in muscles	231.28	0.0012
Chest pain	301.92	1.18e-21
Cramps	143.84	0.0040
Itchy skin	236.50	0.00056
Dry skin	171.91	0.0202
Shortness of Breath	271.78	4.31e-11
Dizziness	257.80	1.59e-05
Lack of Appetite	184.85	0.0034
Numbness in Hands/Feet	348.19	1.48e-20
Nausea/Upset stomach	162.04	0.00014
Access site problems	214.86	1.89e-05
Personal Appearance Concern	200.52	0.00027

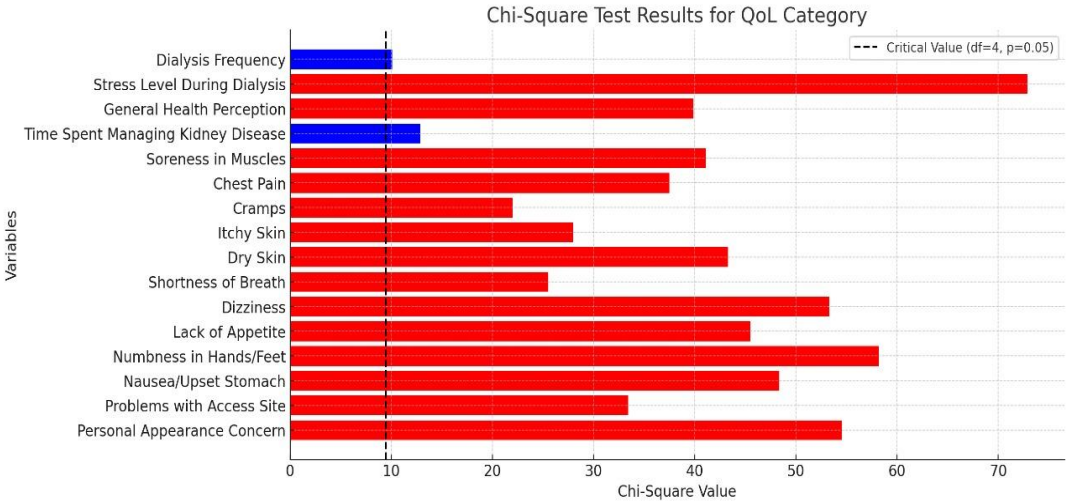

Figure 01: Graph about Variables and Chi-Square test results

The majority of dialysis patients fall within the 46 to 55 and 56 to 65 age groups, with males significantly outnumbering females in these ranges. The highest number is observed among males aged 46 to 55 (36 patients). Overall, males have higher counts across nearly all age groups, except for the 26 to 35 group, where females (13) exceed males (7). The lowest number of dialysis patients is seen in the below-18 group for both genders. This data indicates that dialysis is more common in middle-aged to older adults, particularly among males.

Table 02: Age and Gender

AGE	FEMALES	MALES
18-25	4	3
26-35	13	7
36-45	12	26
46-55	26	36
56-65	15	31
Above 65	9	21
Below 18	1	2
Grand total	80	126

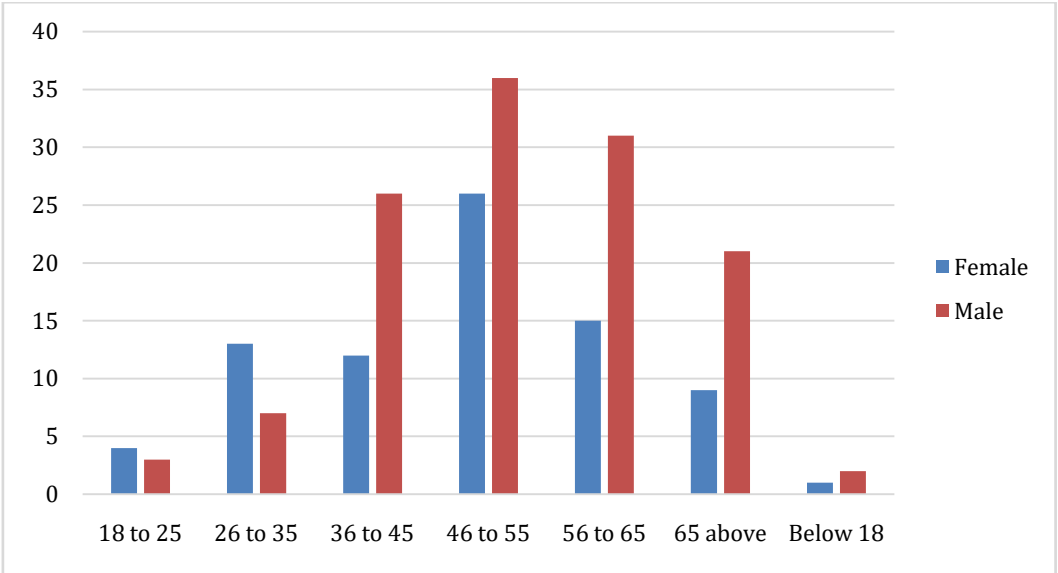

Figure 02: Graph about age and Gender

In all other areas, except for illiteracy, where the two sexes are roughly equal, the statistics indicate a gender disparity in education whereby men outnumber women at all levels. Men are much more likely than women to be educated in higher education (postgraduate and graduate levels), where the greatest disparity is revealed.Women may not have as many choices for pursuing higher studies as men,

as per the study. However, the illiteracy percentages of the sexes are almost equal, indicating that as education levels increase, the gap in education broadens.

Table 03: Gender and educational Level

Education level	Male	Female
Illiterate	33	32
Primary	31	21
Secondary	29	21
Graduate	22	4
Post graduate	11	2

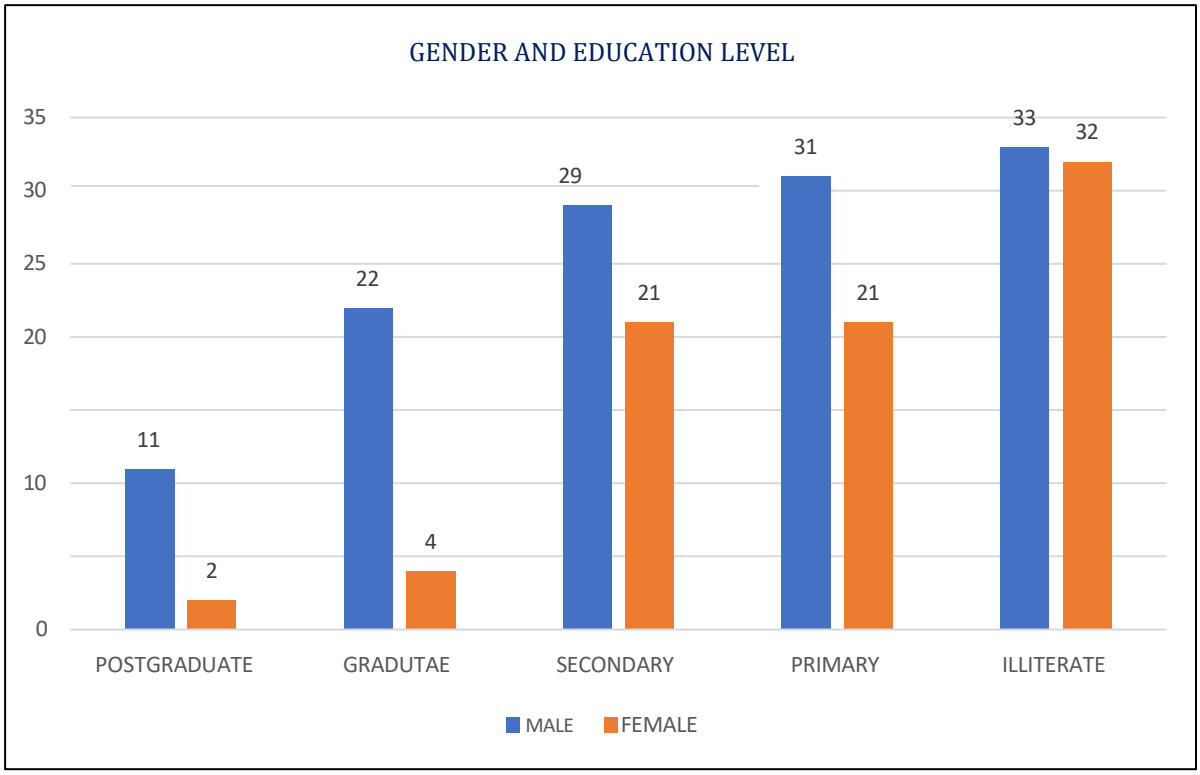

Figure 03: Graph about Gender and Education Level

Marriage Discrepancy: The number of married men is significantly higher than that of married women, indicating that men may marry more frequently, possibly due to polygamous unions, migration, or classification issues in the data.

Divorce Patterns: The absence of divorced men in the dataset, while women are listed as divorced, may reflect gender-specific reporting differences or social factors influencing divorce rates.

Widowhood Equality: The nearly equal number of widowed men and women indicates that widowhood is distributed similarly between both genders.

Table 04: Gender and Marital Status

Marital status	Male	Female
Single	10	12
Married	113	65
Divorced	0	3
Widowed	3	0

Gender and marital status of the dialysis patients.

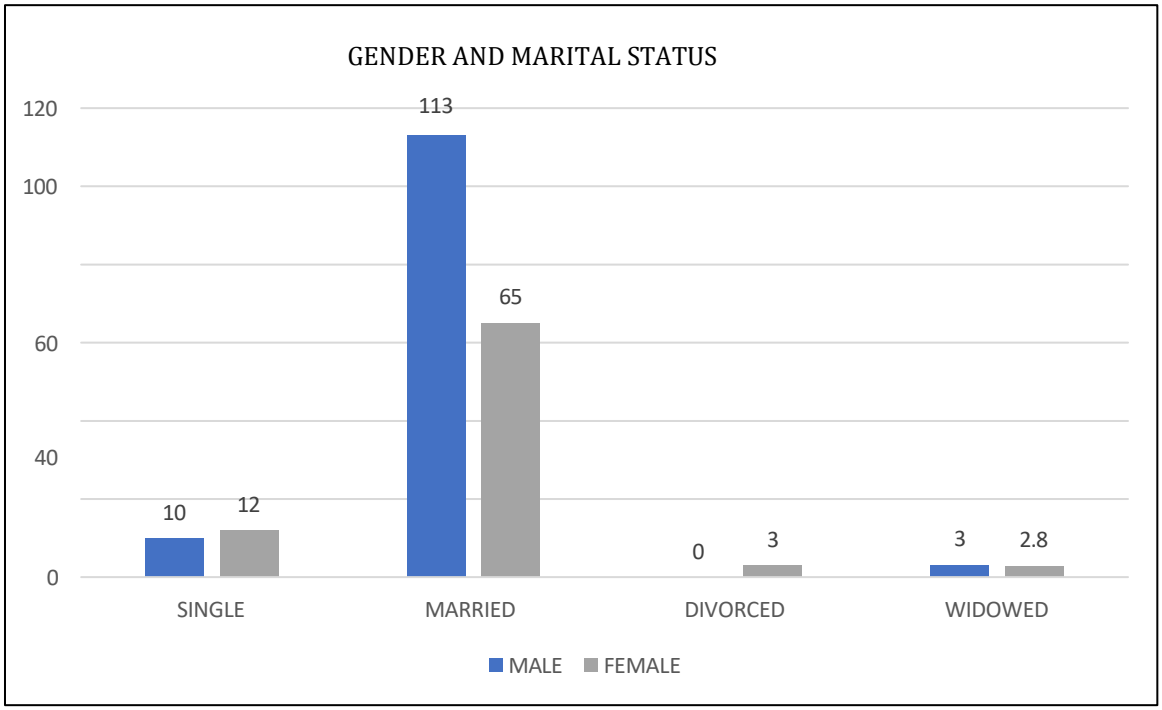

Fig. 4: Graph about Gender and Marital Status

Strong Correlation between Older Adults and Co-morbidities: Hypertension and diabetes are much more prevalent among older adults and often occur simultaneously. Early Onset of Hypertension: Unlike diabetes, hypertension commonly appears in earlier age groups, particularly between 26 and 35 years. Most Prevalent Co-morbid Conditions: Hypertension and diabetes are the most frequently occurring co-morbidities among middle-aged and elderly individuals.

Age-Related Increase in Heart Disease: The incidence of heart disease and hypertension increases significantly after the age of 55.

Table 05: Age in Years and Co-morbidities

Age in years / Co-morbidities	**Below18**	**18-25**	**26-35**	**36-45**	**46-55**	**56-65**	**65 above**
Diabetes			2	7	5	4	3
Hypertension	3	5	15	16	20	9	8
Hypothyroid				1			
Hyperthyroid					1		
Diabetes & Hypertension		2	1	14	29	27	16
Hypertension & Heart disease			1		3		1
Hypertension & hypothyroid			1		1	1	
Diabetes, hypertension & Heart disease					3	5	2

Age and co-morbidities of the dialysis patients.

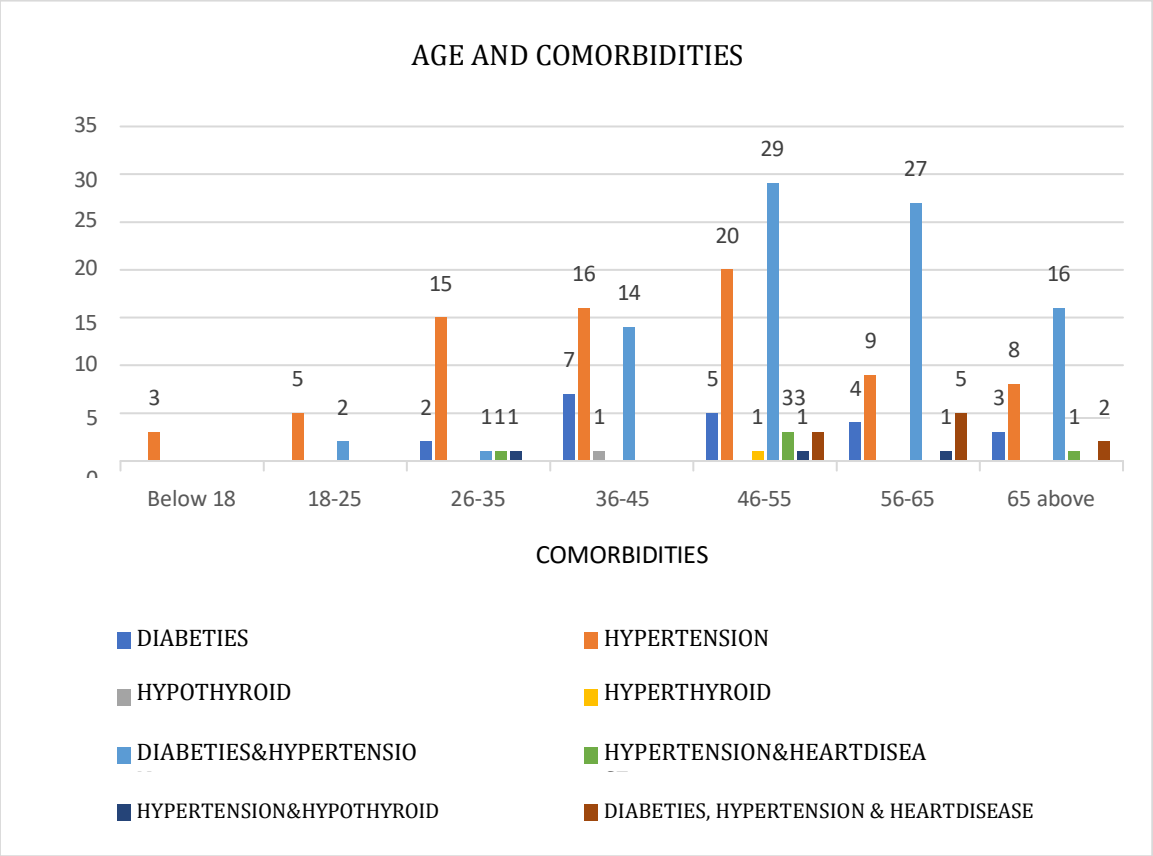

Figure 05: Graph bout Age and Co-morbidities

DISCUSSION

In our research on the quality of life (QoL) among patients undergoing hemodialysis, we studied a sample of 206 patients and evaluated various parameters such as dialysis frequency, stress level, general health, social activities, time spent managing kidney disease, muscle soreness, chest pain, cramps, itchy skin, dry skin, shortness of breath, dizziness, lack of appetite, numbness in the hands and feet, nausea or upset stomach, access-site problems, and concerns about personal appearance. These factors were assessed to determine their impact on the patients' quality of life. To evaluate muscle mass, pre- and post-dialysis body weights were compared to identify any variations. Stress management was assessed by asking patients about their coping practices and whether they experienced depression, fear, or financial difficulties as a result of dialysis treatment.

A study published in the *Indian Journal of Nephrology* on February 2, 2025, involving 107 adult hemodialysis patients, primarily evaluated the nutritional status of these patients, as undernutrition significantly contributes to poor health-related quality of life, morbidity, and mortality. Chronic kidney disease (CKD) patients undergoing hemodialysis often suffer from malnutrition due to dietary restrictions, metabolic alterations, and Co-morbid conditions associated with the disease. Similarly, our study evaluated patients' protein intake to determine whether they were consuming adequate amounts of protein required for their condition [8].

Another article published in the *Indian Journal of Nephrology* on February 25, 2025, studied 107 adult CKD patients undergoing maintenance hemodialysis (MHD) across dialysis centers in India. The study focused on the nutritional profile and quality of life of CKD patients and identified a high prevalence of protein-energy malnutrition, with more than 75% of patients failing to meet the recommended energy and protein intake levels. Many patients also experienced reduced quality of life, particularly in areas related to pain, mobility, and daily activities. Poor dietary intake, Co-morbid conditions, financial constraints, and limited access to trained renal dietitians were identified as major challenges. Our study further emphasizes the importance of individualized dietary counseling, continuous nutritional monitoring, and multidisciplinary support to improve both nutritional status and quality of life in this vulnerable population [9]. An article published in the *European Journal of Medical Research* in December 2017 analyzed 1,166 hemodialysis patients and identified age, type of kidney disease, and duration of treatment as key factors affecting functional status. Similarly, our study found that older age increased the risk of poor outcomes, whereas better nutrition and longer treatment duration improved patient outcomes [10]. An observational study published in the *Asian Journal of Pharmaceutical and Clinical Research* on August 23, 2014, assessed the quality of life in 50 Indian patients with end-stage renal disease (ESRD) undergoing hemodialysis and peritoneal dialysis. Using the

KDQOL-SF™ questionnaire, the study reported that the physical health domain was the most adversely affected, followed by mental health. Diabetes mellitus was identified as the leading Co-morbidity (78%). Hemodialysis showed a positive correlation with improved quality of life. Our study similarly highlights the need for patient-centered care that focuses on both physical and psychological well-being in CKD management [11]. Another article published in the *Renal Failure Journal* in January 2012 conducted a cross-sectional study involving 49 Indian hemodialysis patients and their spouses to assess depression, marital stress, and quality of life. More than half of the patients (57.1%) and 42.8% of spouses showed signs of depression. Strong correlations were observed between patient and spousal depression and marital dissatisfaction. Patients living in joint families had significantly lower depression levels and better marital relationships, highlighting the importance of social support. Male spouses reported higher marital stress than female spouses. Our study further emphasizes the importance of evaluating both partners in the marital relationship and suggests that psychosocial interventions and conjoint therapy may improve outcomes in ESRD care [12]. A prospective cohort study published in the *Clinical Journal of the American Society of Nephrology (CJASN)* in March 2010 assessed 591 Canadian dialysis patients to examine the relationship between symptom burden and health-related quality of life (HRQL). Commonly reported symptoms included tiredness, pain, poor well-being, and anorexia. Symptom burden was strongly associated with both physical and mental components of HRQL, accounting for up to 48.7% of the variation. In contrast, traditional biochemical and dialysis-related markers such as hemoglobin had minimal predictive value. Our study also emphasizes the importance of routine symptom assessment and suggests that multidisciplinary care, including palliative approaches, may significantly improve the quality of life of ESRD patients [13]. Another article published in the *American Journal of Kidney Diseases* in March 2003 analyzed SF-36 data from 10,525 Australians to assess quality of life based on kidney function. The study identified significant declines in both physical and emotional health among individuals with renal insufficiency, particularly reduced physical functioning in older adults and poorer mental health in younger adults. Similarly, our study underscores the importance of addressing quality of life issues in patients with chronic kidney disease [14].

CONCLUSION

This study highlights the significant impact of physical symptoms, stress levels, and general health perceptions on the quality of life (QoL) of dialysis patients. The findings revealed that muscle soreness was one of the most influential factors, with a substantial chi-square value indicating a strong association with reduced QoL. Muscle weight loss, stress, and low protein intake or protein loss were identified as major contributors to muscle soreness. The pronounced effect of muscle soreness emphasizes the need for targeted interventions such as resistance training, adequate protein supplementation, and muscle maintenance programs to reduce discomfort and improve patient well-being. Cramps were also identified as an important factor affecting QoL, although to a lesser extent than muscle soreness. Patients experiencing frequent cramps reported moderate reductions in their overall quality of life. These findings suggest that proactive management through proper hydration, nutritional modifications, and appropriate medical interventions may help reduce the severity and frequency of cramps, thereby improving patient outcomes. Stress levels were significantly associated with decreased quality of life. In addition, general health perception emerged as a strong predictor of QoL. Patients with a negative perception of their health status demonstrated lower QoL scores.

Comprehensive patient education programs focusing on self-care, treatment adherence, and healthy lifestyle modifications can empower patients to manage their condition effectively and improve their perception of health. Interestingly, factors such as dialysis frequency and time spent managing kidney disease did not show a significant association with QoL. This suggests that although physical and psychological symptoms directly affect patient well-being, the procedural aspects of dialysis treatment may have a lesser impact when effectively managed. A multifaceted approach that combines personalized exercise programs, nutritional support, stress management, and continuous patient education can substantially improve the quality of life of dialysis patients. Collaborative efforts among healthcare professionals, including nephrologists, physiotherapists, dietitians, and mental health specialists, are essential for the successful implementation of these interventions.

CONFLICT OF INTEREST

We have decided to discontinue the study at this stage. Additionally, the authors have indicated no further intent to pursue this line of research.

FUNDING

Nil

CONFLICT OF INTEREST

Authors declared that no conflict of Interest.

INFORM CONSENT

Taken from the study participants

ACKNOWLEDGEMENT

Not Declared

AUTHOR CONTRIBUTION

All authors contributed equally.

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