Volume 4, Issue 3, 2026

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

ASSESSMENT OF QUALITY OF LIFE IN CHRONIC KIDNEY DISEASE PATIENTS: A CROSS-SECTIONAL STUDY AT A TERTIARY CARE HOSPITAL IN KARACHI.

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DOI:https://doi.org/10.5281/zenodo.23038804

Keywords
Chronic kidney disease, Quality of life, Hemodialysis, SF-36, Chronic illness, Nursing care, Pakistan.

Article History
Received: 30 January 2026
Accepted: 15 March 2026
Published: 31 March 2026

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Abstract

Chronic Kidney Disease (CKD) is a growing public health problem worldwide that greatly affects the social, emotional, and physical well-being of patients[1,2]. In Pakistan, restricted information is available on the quality of life of CKD sufferers. Using the SF-36 survey, this study sought to determine the health-related quality of life (HRQoL) of CKD patients visiting a tertiary care hospital in Karachi. Among 88 adult CKD-diagnosed patients, a cross-sectional survey was carried out. Participants were enlisted from nephrology departments using non-probability consecutive sampling[6]. Face-to-face interviews with a structured questionnaire combining socio-demographic information, clinical data, and the SF-36 instrument helped to gather the data. SPSS version 21 was used for statistical analysis, applying descriptive statistics, independent t-tests, one-way ANOVA, and correlation analysis.The results showed that CKD patients had a low to medium quality of life, most affected in physical functioning, vitality, pain, and overall health aspects. Significantly lower scores were reported by patients in late CKD stages, those with longer disease duration, and those undergoing hemodialysis. Reduced quality of life was caused in part by socioeconomic issues. This study points to the fact that individuals with chronic kidney disease can have a multitude of symptoms and difficulties which impair their ability to engage socially, psychologically recover from illness, and achieve the ability to function physically.CKD negatively impacts several aspects of patients' lives, including physical, psychological, and social functioning. To raise quality of life, the study stresses the great demand for patient-centered therapies, early diagnosis, regular monitoring, psychological support, and advanced nursing care.

1.INTRODUCTION:

Chronic Kidney Disease (CKD) is defined by an ongoing decline in functioning of renal systems with the result that both metabolic waste and fluid begin accumulating in the body. When renal function continues to decline to the point where patients develop end-stage renal disease, they are almost always dependent on either hemo- or peritoneal dialysis or renal transplantation. Beyond the clinical outcomes associated with CKD, the disease can also negatively affect an individual's social functioning, emotional resilience and physical ability, thus HRQoL serves

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ISSN: (e) 3007-1607 (p) 3007-1593

as an important indicator of an individual's overall burden of illness.[1,2]

Environmental and occupational exposures further accelerate the fall in HRQoL, which is consistently reported as being lower in dialysis patients around the world than in non-dialysis patients[3,4]. Additionally important are social-demographic and psychological aspects. According to research conducted in India and Sri Lanka, having comorbidities, depression, poor sleep quality, and unemployment all considerably deteriorate HRQoL[5,6]. Biochemical indicators including high creatinine and urea levels, anemia, and a reduced glomerular filtration rate (GFR) are strongly linked to poor physical and mental health ratings.[7,8] Results from Brazil and Ethiopia highlight poor education, income, and comorbidities as common global predictors of poor quality of life.[9,10]

Longitudinal evidence demonstrates that HRQoL steadily drops with the CKD stage. According to Italian research, a 10 ml/min decrease in GFR decreases both physical and mental component scores[11]. In contrast, U.S. cohorts found that HRQoL is a predictive marker for hospitalization and death[12]. Further data from the French CKD-REIN showed varied HRQoL pathways over five years[13], and comparisons of EQ-5D in China revealed cultural variations in the assessment of utility[14]. While conservative kidney management (CKM) and supportive care have demonstrated promise in maintaining stable QoL in Australian populations[15], risk factors such as younger age, female gender, diabetes, and low education continue to be associated with bad results in U.S. populations[16].

According to studies conducted in India and Australia, exhaustion, breathlessness, unemployment, comorbidities, and an advanced stage of CKD are significant indicators of a low HRQoL[17,18]. Regional data highlights context-specific problems. Pakistani hemodialysis patients showed regularly poor psychological outcomes but higher social domain ratings.[19] Even while Ethiopian KDQOL-36 data verified that comorbidities and anemia were major determinants[20], West African systematic reviews underline the necessity for indigenous synthesis[21], while Brazilian research emphasizes the impact of socioeconomic disadvantage[22].

CKD is categorized into five stages based on GFR. Often without symptoms, Stages I–II are defined by a modest reduction in kidney function. Stage III involves a moderate decline accompanied by hypertension and fatigue, at which point quality of life begins to worsen[11,23]. Stage IV is characterized by a severe reduction in GFR; anemia and comorbidities are very prevalent, leading to greater psychosocial discomfort.[15,27] At Stage V (End-Stage Renal Disease), patients will consistently have the lowest health-related quality-of-life scores, regardless of whether they are receiving dialysis or transplantation.[19,29]

2.Methodology:

2.1 Study Design and Setting

This study was conducted as a cross-sectional study in a large tertiary care facility in Karachi. One of the city's primary kidney patient centers, the institution provides care to individuals of various ages, educational levels, and income levels. The research was able to record the experiences of patients from diverse walks of life by selecting this scenario, which made the findings more relevant for the local population.

2.2 Study Population

Patients over the age of 18 who had been diagnosed with chronic renal disease (CKD) were the subject of the investigation. The impact of CKD could be seen at various stages of the disease, thus we included both patients who were already on hemodialysis and those who were not yet getting dialysis. Patients who had acute renal damage or who were unable to take part in the interview were excluded.

2.3 Sampling and Sample Size

Research involved 88 people altogether. Every patient meeting the inclusion criteria who visited the nephrology unit during the study period was invited to participate in non-probability consecutive sampling. This method was effective and made sure the study mirrored the actual patient traffic at the hospital.

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2.4 Data Collection Tools

The study gathered data using a organized survey. Finally, the SF-36 survey was used to evaluate quality of life across physical, emotional, social, and overall health domains; the medical profile included CKD stage, length of sickness, dialysis status, and other health issues such hypertension or diabetes; and the background information including age, gender, marriage status, education, work, and income This mix provided a full view of the patients' personal and medical life.

2.5 Data Collection Procedure

Interviews run by qualified nursing students helped to compile data. Written permission was sought before participation first told to patients about the goals of the study. From hospital records, clinical data such as comorbidities and CKD stage was checked to guarantee correctness.

2.6 Ethical Considerations

The ethics committee of the hospital gave permission for the study. Every participant gave informed consent and their privacy was honored. Patient information was treated confidentially and only applied for research needs.

2.7 Statistical Analysis

SPSS version 21 helped to analyze all the data. Describing the sample were averages, percentages, and standard deviations—all fundamental statistics. T-tests were utilized between dialysis and non-dialysis patients to compare groups; ANOVA was applied to examine variations across CKD stages. A second study examined how disease length connected to quality of life. If the p-value was less than 0.05, results were regarded notable.

3 Result And Analysis:

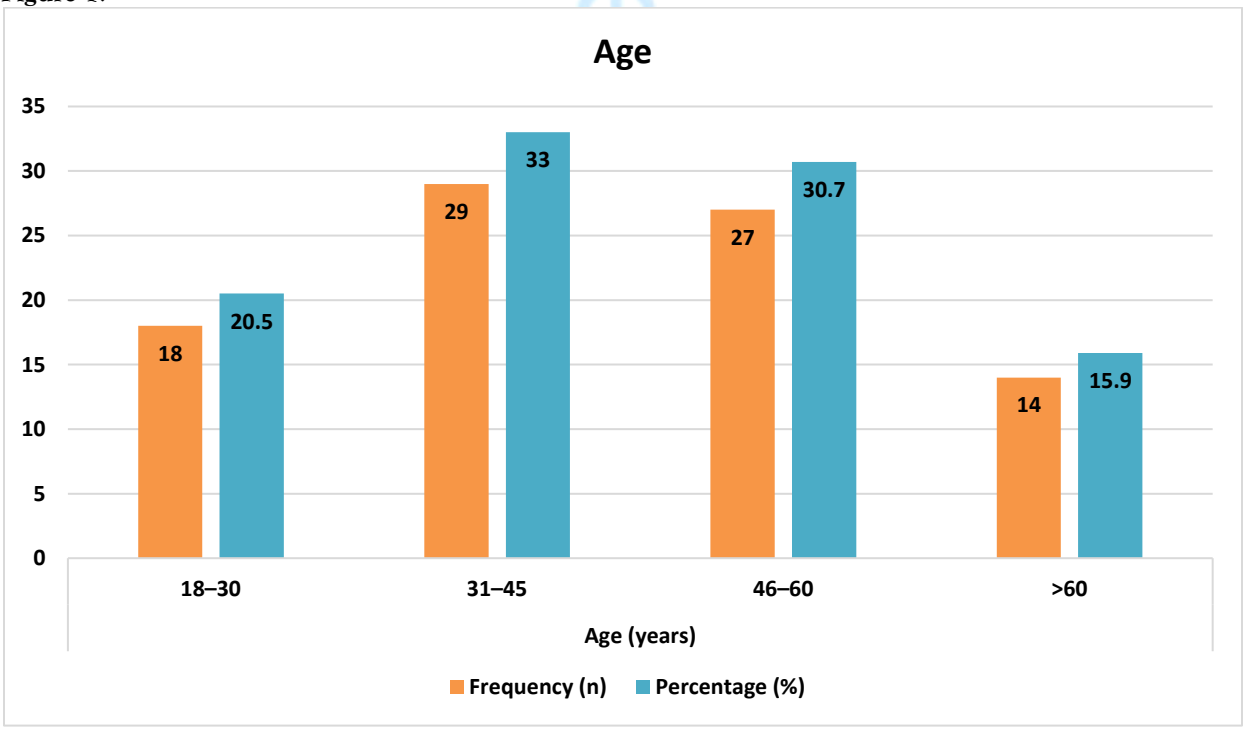
3.1 Demographic Characteristics of CKD Patients

Age of Participants

Mean age of participants: 44.7 ± 13.2 years.

The majority of participants belonged to the age group of 31–45 years (33.0%), followed by 46–60 years (30.7%). This indicates that chronic kidney disease was more common among middle-aged adults in the study population.

Figure 1:

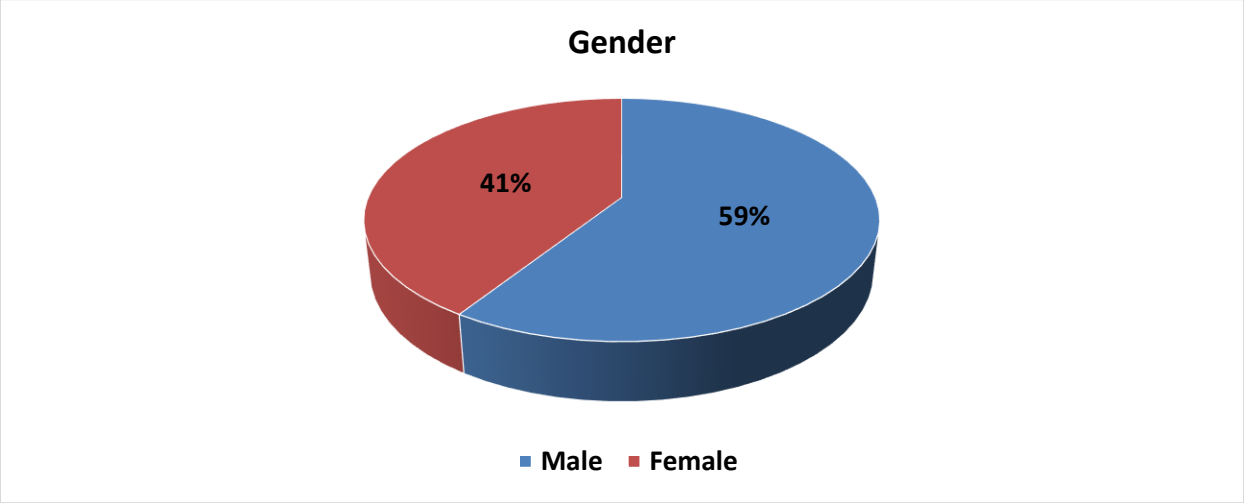


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3.2 Gender of Participants

Male participants constituted 59.1% of the sample, while females accounted for 40.9%. The findings suggest that CKD was more prevalent among males than females in the present study.

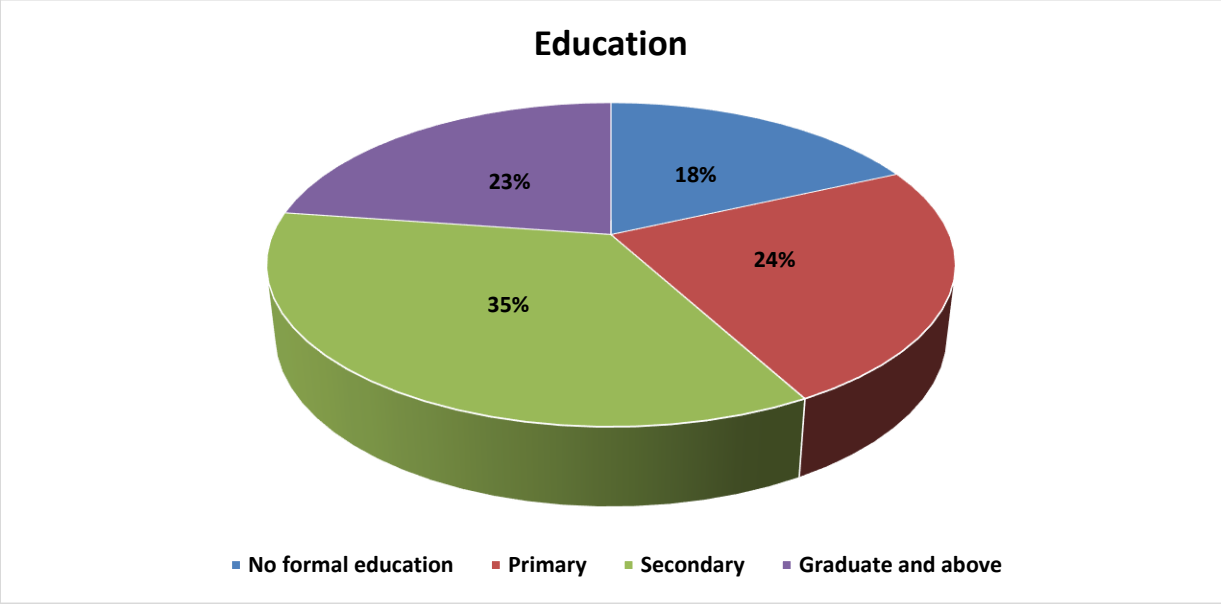
Figure 2:



3.3 Educational Level of Participants

A large proportion of participants had secondary-level education (35.2%), while 18.2% had no formal education. The findings demonstrate varied educational backgrounds among CKD patients, which may influence health awareness and disease management.

Figure 3:



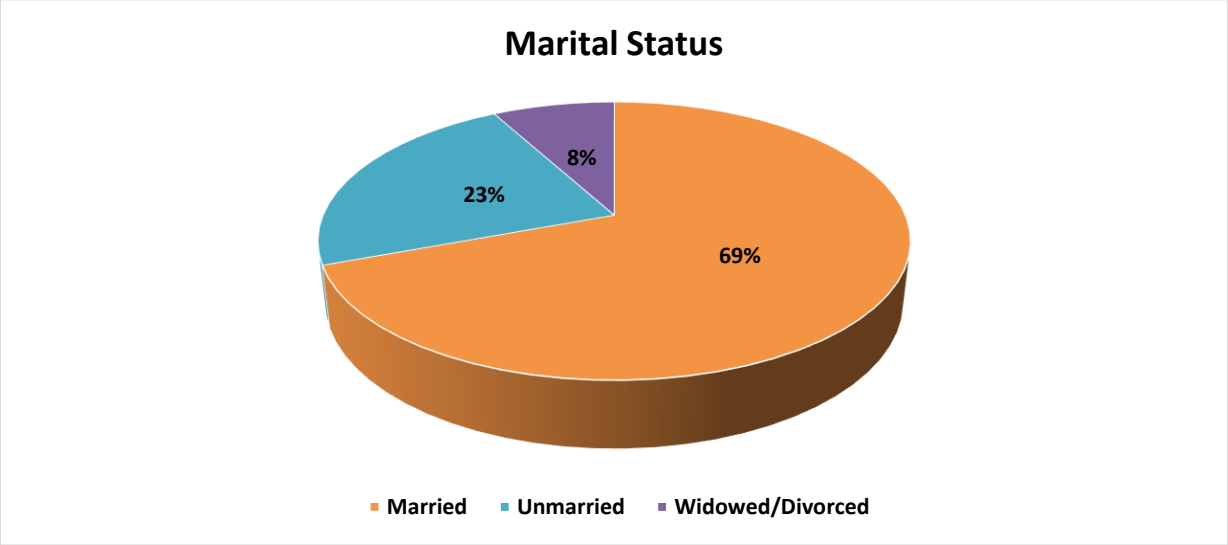
3.4 Marital Status

Most of the respondents were married (69.3%), whereas 22.7% were unmarried and 8.0% were widowed/divorced. This reflects that the majority of CKD patients had family support systems during illness and treatment.

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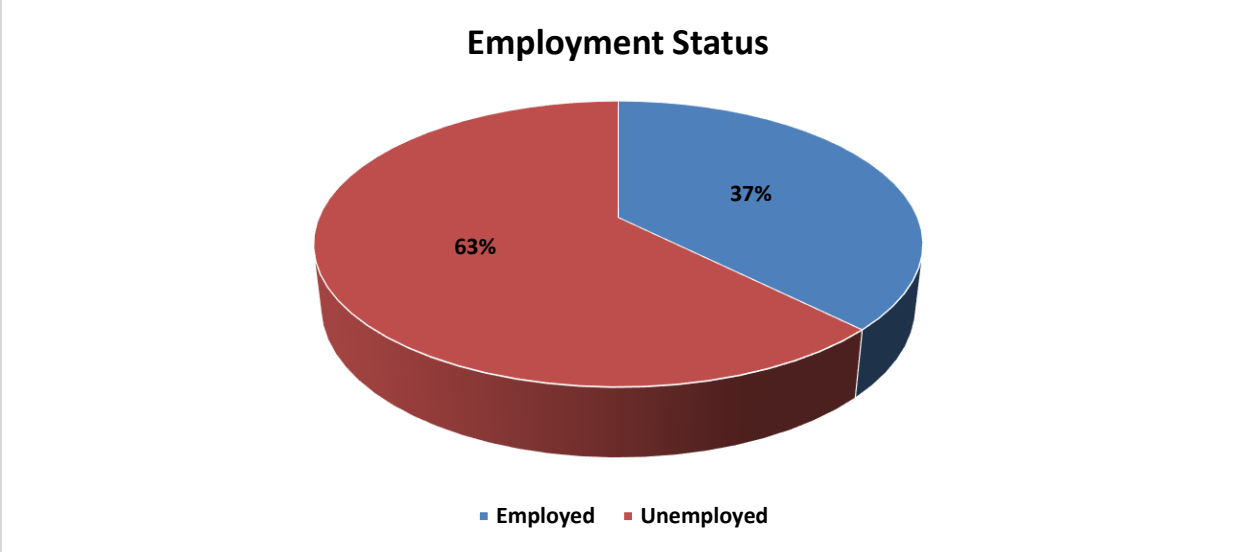
Figure 4:



3.5 Employment Status

More than half of the participants were unemployed (62.5%), while only 37.5% were employed. This may indicate that chronic illness and physical limitations affected patients' working capacity and employment status.

Figure 5:



3.6 Monthly Income (PKR)

Most participants (42.0%) reported a monthly income between 30,000–60,000 PKR, while 33.0% earned less than 30,000 PKR. These findings highlight the moderate to low socioeconomic status of many CKD patients, which may contribute to treatment burden and reduced quality of life.

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Figure 6:

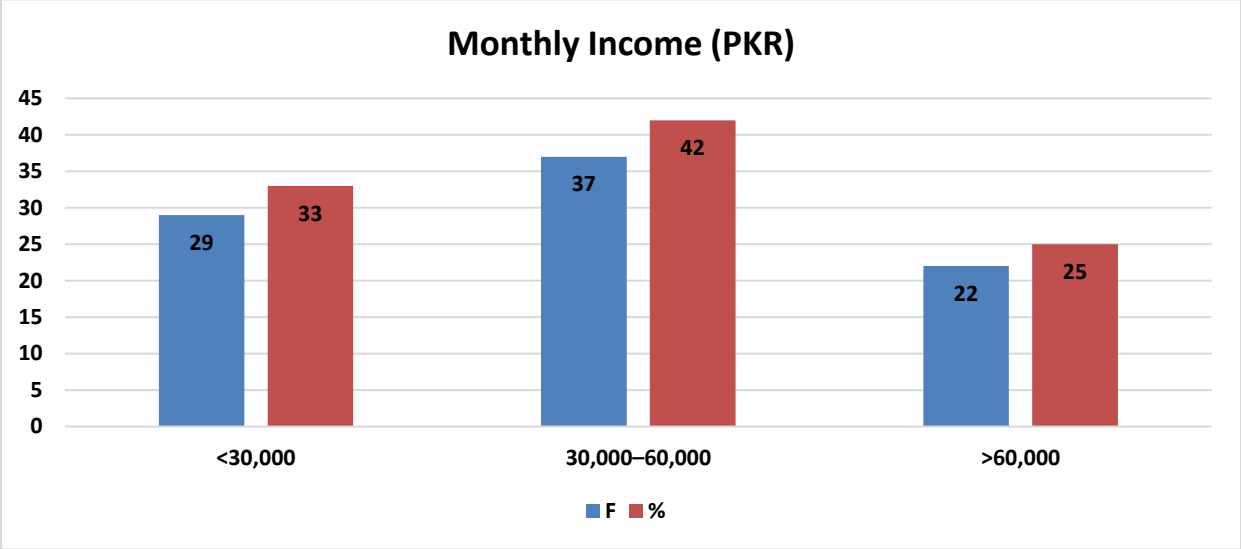


Table 1 provides the socio-demographic details of the study sample. The findings showed a higher proportion of the respondents were in the age range of 31-45 years (33.0%) followed by the age range of 46-60 years (30.7%), with a mean age of 44.7 ± 13.2 years. This shows that most of the respondents were middle aged. More male participants were in the study sample compared to females, with male participants being 59.1% and female participants being 40.9%. The majority (69.3%) of the respondents were married, implying that most of the participants had a family, and therefore, a level of family support in the care of the patient was evident and would cover the majority of the economic costs. As far as the most attained level of education is concerned, 35.2% had completed their secondary education, whereas 18.2% of the respondents had no education at all. The majority of the respondents (62.5%) were unemployed. In addition, 42.0% of the respondents reported a range of 30,000-60,000 PKR as their monthly income. This draws attention to the economic burden of chronic kidney disease.

Table 1: Socio-Demographic Characteristics of Participants (n = 88)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	18–30	18	20.5
	31–45	29	33.0
	46–60	27	30.7
	>60	14	15.9
Gender	Male	52	59.1
	Female	36	40.9
Marital Status	Married	61	69.3
	Unmarried	20	22.7
	Widowed/Divorced	7	8.0
Educational Status	No formal education	16	18.2
	Primary	21	23.9
	Secondary	31	35.2
	Graduate and above	20	22.7
Employment Status	Employed	33	37.5
	Unemployed	55	62.5

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Monthly Income (PKR)	<30,000	29	33.0
	30,000–60,000	37	42.0
	>60,000	22	25.0

Table 2 provides the clinical details of patients with chronic kidney disease. Almost half of the study participants (46.6%) were at Stage V CKD. This shows that a significant proportion of the patients were at the advanced stage of the disease. More than half of the respondents (52.3%) were living with CKD for a 1-5 years range, while the disease had been with 28.4% of the respondents for greater than five years. In addition, 55.7% of the population in the study sample was on hemodialysis and this shows that the patient population in this study had a severe illness. The most prominent comorbidity among the patients was hypertension (65.9%), followed by diabetes mellitus (48.9%) and anemia (40.9%). These findings demonstrate that CKD patients are frequently faced with multiple chronic conditions and this may adversely affect their quality of life.

Table 2: Clinical Characteristics of CKD Patients

Variable	Category	Frequency (n)	Percentage (%)
Stage of CKD	Stage III	19	21.6
	Stage IV	28	31.8
	Stage V	41	46.6
Duration of CKD	<1 year	17	19.3
	1–5 years	46	52.3
	>5 years	25	28.4
Hemodialysis Status	Yes	49	55.7
	No	39	44.3
Comorbidities	Hypertension	58	65.9
	Diabetes Mellitus	43	48.9
	Cardiovascular Disease	19	21.6
	Anemia	36	40.9

Table 3 presents the quality of life of CKD patients across the eight domains of the SF-36. Results showed that CKD patients had low mean scores for the domains concerning poor quality of life (i.e., physical functioning = 48.6 ± 18.4; role limitation due to physical health = 42.3 ± 20.7; vitality = 45.2 ± 16.9; bodily pain = 49.5 ± 21.2; general health = 44.1 ± 15.8). Means in the domains of emotional well-being (56.8 ± 17.3) and social functioning (53.4 ± 18.1) were in the middle range, indicating that CKD patients are better able to emotionally and socially adapt to their situation. The mean overall score for the SF-36 was 48.9 ± 12.6, suggesting that CKD patients admitted to the tertiary care hospital had a poor overall quality of life.

Table 3: Overall Quality of Life Scores among CKD Patients Using SF-36

SF-36 Domains	Mean ± SD	Interpretation
Physical Functioning	48.6 ± 18.4	Poor
Role Limitation due to Physical Health	42.3 ± 20.7	Poor
Role Limitation due to Emotional Problems	51.7 ± 19.5	Moderate
Energy/Fatigue (Vitality)	45.2 ± 16.9	Poor
Emotional Well-Being	56.8 ± 17.3	Moderate
Social Functioning	53.4 ± 18.1	Moderate
Bodily Pain	49.5 ± 21.2	Poor

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General Health Perception		44.1 ± 15.8	Poor
Overall Quality of Life Score	**Mean ± SD**		
Total SF-36 Score	48.9 ± 12.6		

Table 4 shows the distribution of participants across the quality of life categories. Of the patients surveyed, 44.3% had a quality of life classified as poor and 38.6% had a quality of life classified as moderate. Only 17.0% of participants had a quality of life classified as good. The findings indicate that the majority of CKD patients had poor physical, emotional, and social well-being. There is evidence to suggest that the poor quality of life is due to disease progression, treatment burden (i.e., the cumulative effect of having multiple comorbidities and the effect of chronic kidney disease) and the physical effects of chronic kidney disease.

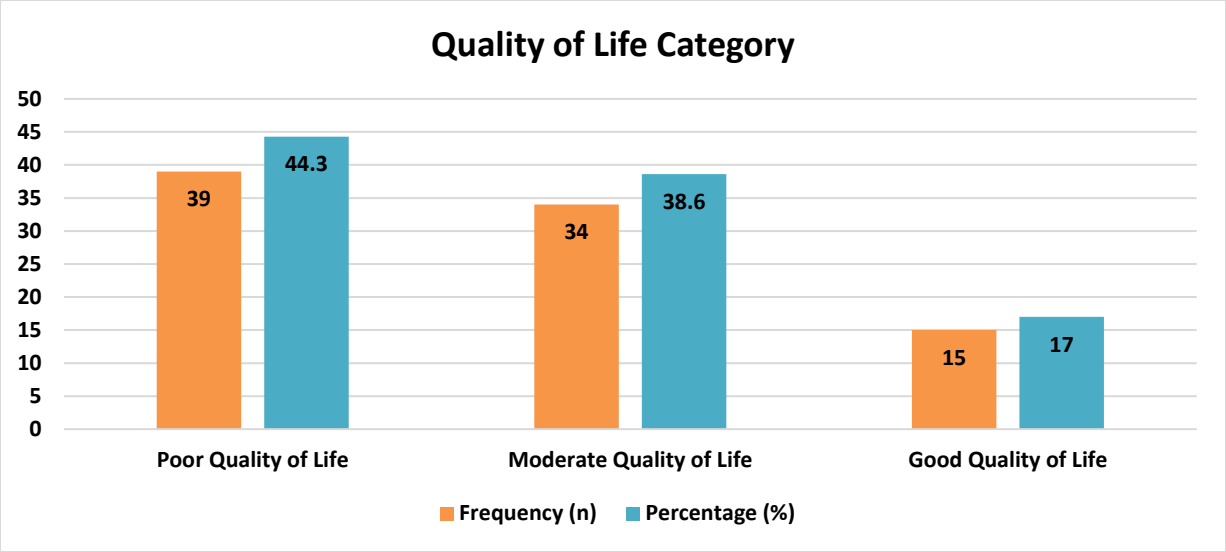


Table 4: Distribution of Quality of Life Categories among CKD Patients

Table 5 shows the relationship between patients' hemodialysis status and hemodialysis patient's quality of life. It is shown that patients on hemodialysis have a lower mean SF-36 score (44.3 ± 11.8) compared to those not receiving hemodialysis (54.7 ± 10.5). With the independent t-test, it is shown that there is a statistically significant difference between the two groups (t = 3.12, p = 0.002). This finding shows that quality of life is poor in patients who are on hemodialysis. This is likely due to increased hemodialysis patients' hospital visits, complications from hemodialysis, increased dietary restrictions, and increased physical exhaustion caused by the hemodialysis therapy.

Table 5: Association between Hemodialysis Status and Overall Quality of Life

Hemodialysis Status	Mean SF-36 Score ± SD	t-value	p-value
On Hemodialysis (n = 49)	44.3 ± 11.8	3.12	0.002
Not on Hemodialysis (n = 39)	54.7 ± 10.5		

Table 6 shows the relationship between stage of CKD and patients' quality of life score. Patients with Stage III CKD have the highest mean quality of life scores (58.9 ± 10.3) while patients with Stage V CKD have the lowest scores (42.1 ± 12.4). The one-way ANOVA test shows that there is a statistically significant difference between the stages of CKD and quality of life (F = 6.84, p =

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0.001). This shows that the worsening of CKD further deteriorates the patients' quality of life and this is likely due to the increased physical symptoms of the illness, the increased dependency on medical treatment, and the psychological travails of living with the advanced stages of kidney disease.

Table 6: Association between CKD Stage and Overall Quality of Life

CKD Stage	Mean SF-36 Score ± SD	F-value	p-value
Stage III	58.9 ± 10.3	6.84	0.001
Stage IV	49.6 ± 11.5		
Stage V	42.1 ± 12.4		

Table 7 shows that there is an inverse relationship between duration of chronic kidney disease and the quality of life score. The findings indicated a moderate negative correlation ($r = -0.41$, $p < 0.001$) between the overall SF-36 score and the duration of the disease. This implies that individuals who have been diagnosed with CKD for a long time have a lower quality of life. Long-term chronic illnesses can have a negative effect on an individual's physical health, mental health, financial health, and social health and can decrease the overall well-being of patients with CKD.

Table 7: Correlation between Duration of Disease and Quality of Life Score (n = 88)

Variable	Mean ± SD	Correlation (r)	p-value
Duration of CKD (years)	4.2 ± 2.8	-0.41	<0.001
Overall SF-36 Score	48.9 ± 12.6		

4. Discussion:

The RAND-36 questionnaire indicates that CKD patients in Karachi have a decline in their overall quality of life across many domains. Domains with the most impairment included physical functioning, vitality, bodily pain, and general health. Domains with somewhat preserved functioning included emotional and social functioning. This dual pattern is consistent with the combined biological burden associated with CKD disease processes and the protective cultural factors provided through family and community support systems found within Pakistan.

Dialyzing patients had significantly lower scores than non-dialysis patients in Karachi, which is consistent with what was reported by both the PaCE CKD and the Sri Lanka CKD cohorts in their findings.[1],[2] These findings confirm that dialysis and environmental exposures both lead to faster declines in QoL for patients on dialysis than those off dialysis

Social and demographic factors are very important predictors. Our study found that low educational attainment, and unemployment had a strong association with the lower quality of life for people with chronic kidney disease. Similar findings have been documented by other researchers in India who found comorbidities and unemployment increased the severity of the disease, and in Sri Lanka, where depression and poor sleep quality were also highly prevalent.[3],[4] The data suggests that chronic kidney disease (CKD) has a significant psychosocial component.

Also involved were life satisfaction & the biochemical relationship of people. The emotional & social score of those people who more moderately suffered from life satisfaction, emotionally & socially in accordance with the Saudi study, despite significant reductions in their activities of daily living reported a much more satisfying life.[5] On the other hand, the study of Indian cohorts showed very clearly a biochemical component, whereby PCS/MCS was associated with GFR, hemoglobin, creatinine, & urea.[6] Our observation that advanced stage & being anemic correlate to poor QoL, is consistent with the aforementioned biochemical predictors of QoL.

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In addition to lifestyle and laboratory predictors, other factors influence the outcomes of the research conducted in Ethiopia and Brazil. Karachi's low level of education and high level of unemployment are comparable to those in Ethiopia, where those with lower educational attainment experienced lower QOL, and the levels of anemia and income were associated with physical functioning in Brazil.[7],[8] This provides evidence that socioeconomic disadvantage is a global predictor of poor QoL.

Longitudinal evidence strengthens these observations. Decline in QoL across CKD stages in Karachi mirrors Italian longitudinal evidence showing each 10 ml/min decline in GFR reduced PCS and MCS.[9] U.S. reviews further established HRQoL as a predictor of hospitalization and mortality.[10] This underscores the prognostic importance of QoL assessment.

Measurement methods and trajectory play a role. Our cross-sectional data are in line with the CKD-REIN evidence from France that show different HRQoL trajectory patterns over the last five-years as well as with the EQ-5D utility outcome comparisons from China that showcase the potential for differences in utility measurements between cultures.[11],[12] Further evidenced need for culture- and country-specific instruments in Pakistan.

Conservative management is enlightening. The difference between the literature states - Australian CKM cohort's patients did not have altered QoL through supportive care while the US data concluded that patients with poor baseline HRQoL had higher rates of negative cardiovascular events and mortality.[13],[14]

Determinants versus symptom burden were evident. The evidence from India, where female gender, older age, and comorbidities predicted worse QoL, and Australian studies, where fatigue and breathlessness strongly correlated with lower QoL, are consistent with Karachi's poor physical functioning and vitality. .[15],[16] Both confirm the importance of symptom burden as a determining factor.

Comparisons between regions add depth. Pakistani hemodialysis patients reported social domains highest and psychological lowest, similar to our finding of moderate emotional and social scores.[17] Poor PCS and MCS were found in the Ethiopian KDQOL-36 study, with comorbidities and anemia causing worse outcomes.[18] Despite consistent physical impairment, both emphasize regional differences.

Evidence from Africa and Brazil bolstered social and economic disadvantage. Ghana/Nigeria systematic reviews emphasized social determinants, while Brazilian patients showed anemia and income as key predictors. [19],[20] Both emphasize the need for socioeconomic interventions.

Italian and U.S. longitudinal studies further confirm decline in QoL with disease progression.[19],[20] These findings are consistent with our Karachi findings, confirming HRQoL as a clinical and prognostic indicator.

Cohorts from China and France highlight cultural differences.[23],[24] Our findings of moderate emotional/social domains but poor physical functioning fall into this heterogeneity.

Australian CKM and American outcomes emphasize supportive care once more.[25],[26] This suggests supportive care models could mitigate decline in Pakistani patients.

Indian determinants and Australian fatigue studies reinforce our findings of unemployment and anemia worsening QoL.[27],[28]Pakistani tertiary hospital studies showed poor QoL, especially in physical domains, similar to our Karachi cohort, while Sri Lankan CKDu patients highlighted occupational/environmental risks.[29],[30] Both emphasize context-specific interventions.

Saudi Arabia and Indian biochemical correlations combine cultural adaptation with clinical progression.[31],[32] Our findings reflect both patterns.

Ethiopian and Brazilian evidence again highlight anemia and income as determinants.[33],[34] Our Karachi cohort, with high unemployment and anemia, reflects both.

Health-related quality of life (HRQoL) predicts hospitalization and mortality, according to longitudinal studies in Italy and the United States.[35],[36] These global findings are consistent with our findings regarding stage-wise decline and dialysis burden.

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5. Conclusion:

This study analyzed quality of life for chronic kidney disease (CKD) patients using SF-36 at a Karachi tertiary care facility. Results showed poor to moderate quality of life with emphasis on physical functioning and vitality, pain and general health. More advanced stages of chronic kidney disease, longer disease duration, and hemodialysis contributed to poorer quality of life. More so, the study noted that the low socioeconomic conditions attributed to more disease burden and less well-being. The study found that CKD adversely affected the patients' physical, emotional, social and functional well-being. It also noted that there was the most need for comprehensive, patient-centric and well-coordinated interventions to ease pain and to help CKD patients improve their quality of life through early diagnosis, regular monitoring, psychosocial support, and advanced nursing care. These findings are consistent with global evidence but highlight Pakistan-specific challenges such as unemployment, limited access to dialysis facilities, and the need to address psychosocial aspects like coping strategies and family support.

6. Recommendations:

I. Quality of life for patients with chronic conditions should be routinely monitored to catch physical, emotional, social challenges and problems early on.

II. Nurses should improve health and medication adherence knowledge, and manage diet and fluid intake to empower patients and improve self and overall care.

III. To reduce anxiety, depression, and emotional distress of CKD patients, psychological services and counseling can be incorporated into nephrology services.

IV. Awareness and educational services for detection and control of Hypertension, Diabetes Mellitus, and CKD should be part of community and primary health care to control and prevent progression of these diseases.

V. As part of a multidisciplinary effort involving nephrologists, nurses, dietitians, psychologists, and social workers, care should be tailored for patients with CKD for assessment of their complete and holistic care needs.

VI. Health services and the Government need to create funding, support, and rehabilitation programs for impoverished patients with CKD, especially for patients who need to undergo hemodialysis.

VII. Dialysis facilities should seek to improve the comfort and quality of life of patients by providing better counseling, infection control, and supportive care services.

VIII. Research based on a longitudinal, multi-centered approach with larger participant numbers should be undertaken to identify causative factors and improve the generalizability of the findings.

IX. Future studies should also explore patient-reported outcomes and psychosocial aspects such as coping strategies and family support.

7. Strengths of the Study:

I. The use of the SF-36 quality of life tool, which is recognized internationally and validated, ensured reliable measurement of participants' quality of life.

II. The study addressed an important yet under-researched aspect concerning the quality of life of CKD patients in Pakistan.

III. Inclusion of patients across different stages of CKD provided a better understanding of the range of impacts the disease places on patients.

IV. The study incorporated numerous aspects of quality of life, including emotional, physical, social, and general health domains.

V. The results will help nurses, health professionals, policy makers, and researchers in nephrology.

8. Limitations of the Study:

I. The cross-sectional design limited the ability to infer causation.

II. The study was restricted to a single tertiary care centre in Karachi, which affects generalizability.

III. The sample size of 88 participants impacted external validity.

IV. Consecutive non-probability sampling may have introduced selection bias.

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V. Data collection relied on self-administered surveys, which may be affected by recall bias and social desirability bias.

VI. Some psychological aspects such as depression, anxiety, coping strategies, and family support were not assessed in detail.

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ISSN: (e) 3007-1607 (p) 3007-1593

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