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ORIGINAL ARTICLE

A Cross-sectional Study Examining the Factors that Influence Health-related Quality of Life in Patients with Chronic Kidney Disease

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ABSTRACT

Background: Chronic kidney disease (CKD) has a significant impact on a person's social, emotional, and physical health. Understanding the factors influencing the health-related quality life and lifestyle (HRQoL) of this demographic is crucial for providing comprehensive patient care.

Objectives: To investigate the main behavioral, psychological, clinical, and sociodemographic factors that affect HRQoL in CKD patients.

Methods: 280 CKD patients who visited nephrology clinics at three tertiary hospitals participated in a cross-sectional study. The Kidney Disease Quality of Life (KDQOL-36) questionnaire was used to measure HRQoL. Information was gathered on lifestyle factors, laboratory parameters, comorbidities, sociodemographics, and psychological distress (as measured by the Hospital Anxiety and Depression Scale). To find independent determinants of HRQoL, multiple linear regression was employed.

Results: Reduced HRQoL was significantly correlated with depression ($\beta = -0.42$, $p < 0.001$), unemployment ($\beta = -0.25$, $p = 0.02$), lower education level ($\beta = -0.21$, $p = 0.03$), diabetes ($\beta = -0.27$, $p = 0.01$), and physical inactivity ($\beta = -0.19$, $p = 0.04$). 61% of the variation in HRQoL was explained by the regression model (adjusted $R2 = 0.61$).

Conclusion: In CKD patients, comorbid conditions, socioeconomic position, and psychological well-being have a major influence on HRQoL. To improve quality of life, integrated care that addresses both clinical and psychosocial aspects is advised.

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KEYWORDS

• Chronic kidney disease • Health-related quality life and lifestyle (HRQoL) • Physical activity and quality life • HADS (hospital anxiety and depression scale).

INTRODUCTION

Background

A growing public health concern, chronic kidney disease (CKD) affects roughly 10–15% of people worldwide. Because of the systemic and lifestyle effects of the disease, patients frequently experience a decrease in their health-related quality of life (HRQoL), even while clinical care concentrates on controlling complications and halting the progression of the disease.

Rationale

The disease burden that CKD patients endure is not accurately reflected by conventional biological measures. HRQoL is a thorough outcome metric that helps direct more individualized, holistic care plans and captures the complex effects of CKD.

Objectives

- To evaluate the health-related quality life and lifestyle (HRQoL) of CKD patients.
- ToDeterminethebehavioral,psychological, clinical, and sociodemographic factors that are connected to health-related quality life and lifestyle (HRQoL).
- To find the independent factors that influence health-related quality life and lifestyle (HRQoL) by using multivariate regression analysis.

LITERATURE REVIEW

- **Hays RD** *et al***. (1994)** developed the Kidney Disease Quality of Life (KDQOL) tool, which remains a gold standard for measuring HRQoL in patients with kidney disease. Their work provided a foundation for quantifying physical, psychological, and social impacts of CKD, making it particularly relevant for studies like the present one that examine multifactorial determinants.
- **Abdel-Kader K, Unruh ML, Weisbord SD (2009)** found that symptom burden, especially fatigue and sleep disturbances, significantly lowers HRQoL among CKD patients. Their findings align with the current study's emphasis on psychological distress and comorbidities as major contributors to reduced well-being.
- **Finkelstein FO** *et al***. (2009)** reviewed the epidemiology of depression and anxiety in CKD and highlighted that untreated psychological disorders amplify the risk of poor HRQoL and mortality. This underscores the importance of the present study's inclusion of HADS scores in exploring predictors of HRQoL.
- **Lopes AA** *et al***. (2007)** demonstrated that poor HRQoL is not only a subjective health outcome but also a predictor of adverse clinical events, including hospitalization and death, in dialysis patients. Their study supports the idea that HRQoL assessment should be integrated into CKD management, as shown in the current research.
- **Tsai YC** *et al***. (2010)** reported that physical inactivity and comorbid diabetes independently predict poor HRQoL in CKD patients. This finding strongly parallels the results of the current study, which identified both diabetes and physical inactivity as significant predictors

METHODOLOGY

Study Design and Setting

A descriptive cross-sectional study was conducted between January and May 2025 in nephrology outpatient clinics of three tertiary care hospitals Greater Noida.

Participants

Inclusion criteria:

- Age ≥ 18 years.
- Diagnosed with CKD stages 3–5 (not on dialysis).
- Ability to provide informed consent.

Exclusion criteria:

- Psychiatric hospitalization or cognitive impairment.
- Acute renal damage or a recent hospital stay (less than a month).

A total of 280 participants were enrolled using purposive sampling.

Data Collection Instruments

HRQoL: The Kidney Disease Quality of Life-36 (KDQOL-36) tool, which measures both general and disease-specific quality of life dimensions that was used to measure outcome.

Psychological distress: Employed the Hospital Anxiety and Depression Scale (HADS), which comprises anxiety and depression subscales.

Physical activity: Self-reported frequency and intensity, categorized based on WHO guidelines.

Clinical variables: eGFR, presence of diabetes/hypertension, haemoglobin, serum albumin.

Socio-demographics: Age, gender, education, income, employment, marital status.

Procedure

Interviews with participants took place during clinic visits. Clinical data was taken from medical records and administered by qualified healthcare personnel. All participants provided written informed consent, and the institutional review boards granted ethical approval.

Statistical Analysis

- Descriptive statistics summarized sample characteristics.
- Bivariate correlations explored associations between predictors and HRQoL.
- Multiple linear regression was used to determine independent predictors.
- Multicollinearity was assessed using VIF (threshold < 2.5).
- Statistical significance was set at $p < 0.05$.

RESULTS

Participant Characteristics

The study result show that maximum Mean ± SD / % was 63.5% and minimum was HADS Depression score 9.2 ± 3.5

Variable	Mean ± SD / %
Age (years)	59.8 ± 12.1
Male	63.5%
Unemployed	47.1%
Education ≤ primary school	42.9%
Comorbid diabetes	36.7%
HADS Depression score	9.2 ± 3.5
Moderate/high physical activity	39.2%

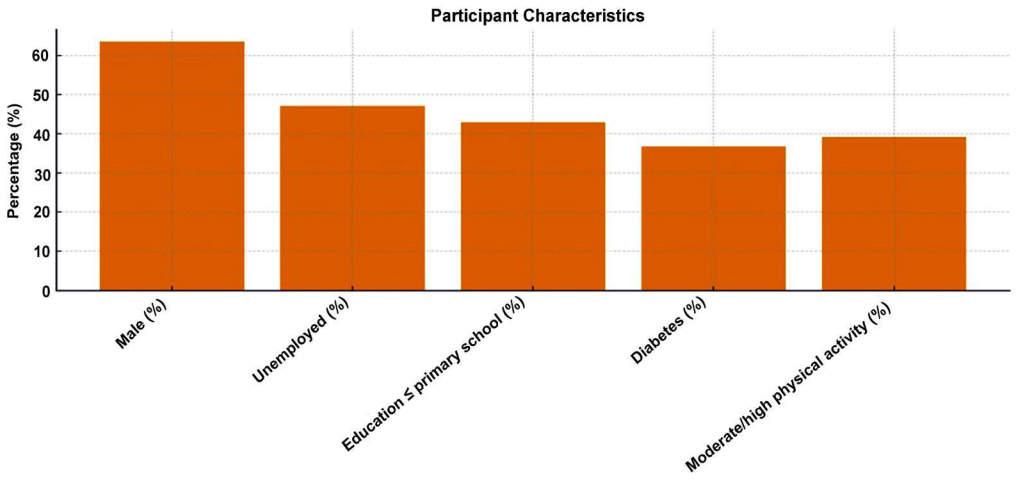


Figure 1: Participant Characteristics

HRQoL Scores (KDQOL-36)

- **Physical health composite:** 48.2 ± 15.7
- **Mental health composite:** 51.9 ± 14.6
- **Symptoms and problems list:** 60.1 ± 13.2
- **Burden of kidney disease:** 45.3 ± 14.4
- **Effects of kidney disease:** 50.7 ± 15.1

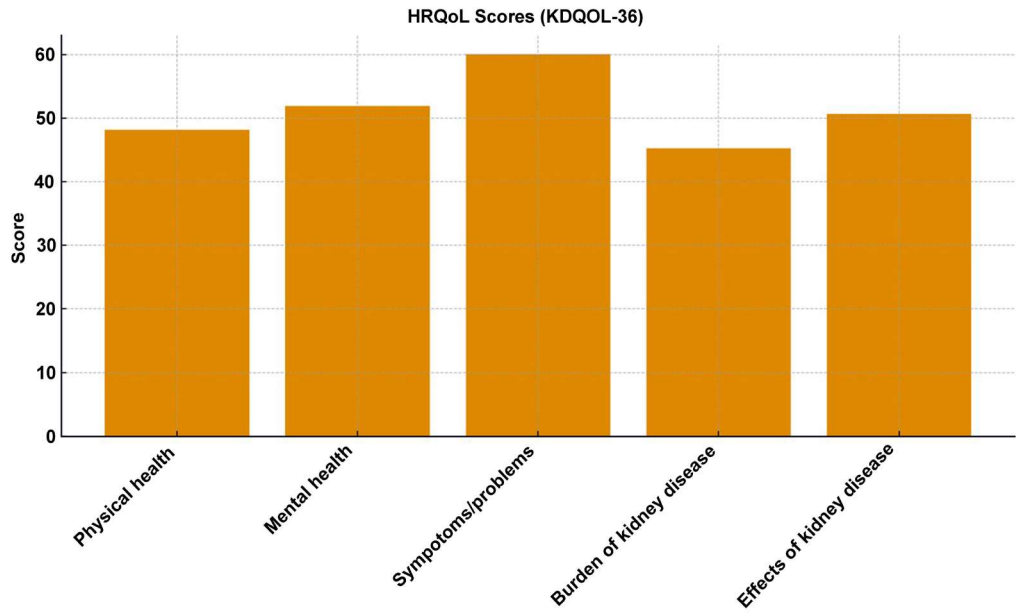
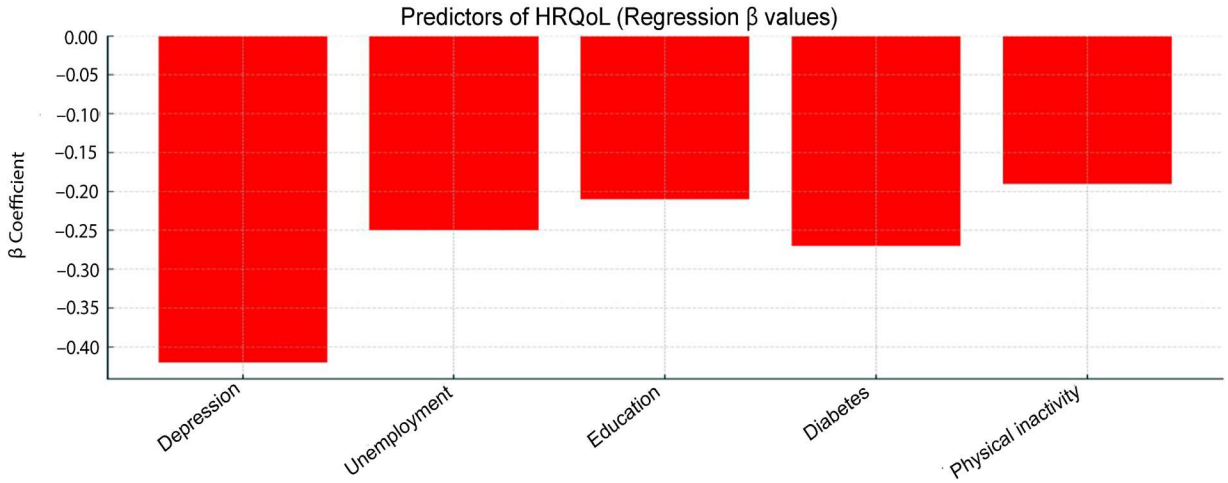


Figure 2: HRQoL Scores (KDQOL-36)

Predictors of HRQoL (Multivariate Regression)

The study result shows that study was highly significant p value is <0.001

Predictor	β Coefficient	p-value
Depression score (HADS)	-0.42	<0.001
Unemployment	-0.25	0.02
Education level	-0.21	0.03
Diabetes mellitus	-0.27	0.01
Physical inactivity	-0.19	0.04



Adjusted R^2: 0.61

Figure 3: Predictors of HRQoL

VIF range: 1.1–1.8 (no multicollinearity)

DISCUSSION

Principal Findings

The study emphasizes that major predictors of HRQoL in individuals with chronic kidney disease (CKD) include mental health, socioeconomic issues, and chronic comorbidities like diabetes. HRQoL values were significantly impacted negatively by depression in particular.

Interpretation and Comparison

These results are in line with other research showing that mental health issues including anxiety and depression are common and not adequately treated in CKD populations. The impact of work and educational attainment points to the necessity of social assistance initiatives.

Clinical Implications

- **Routine screening** for psychological distress should be integrated into nephrology care.
- **Rehabilitation and counselling programs** can support physical and mental well-being.
- **Patient education initiatives** may help mitigate the effects of low literacy on self-management.

Strengths and Limitations

Strengths:

- Use of a disease-specific HRQoL tool (KDQOL-36).
- Inclusion of diverse predictors: clinical, psychological, and socioeconomic.

Limitations:

- Cross-sectional nature limits causal inference.
- Reliance on self-reported data may introduce bias.
- Single-region sampling may limit generalizability.

Future Research

Longitudinal research studies and interventional trials are needed to evaluate the impact of psychosocial and lifestyle interventions on HRQoL outcomes in CKD.

CONCLUSION

Psychological well-being, socioeconomic circumstances, lifestyle, and comorbidities interact in a complex way to impact HRQoL in individuals with chronic kidney disease. To meet the various demands of this susceptible group and enhance their quality of life, specialized, multidisciplinary treatment techniques are crucial.

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