Original Research Article

QUALITY OF LIFE AND RISK FACTORS ASSESSMENT AMONG CHRONIC KIDNEY DISEASE PATIENTS ATTENDING DIALYSIS UNIT AT A TERTIARY CARE HOSPITAL: A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Chronic Kidney Disease (CKD) is a prevalent condition with significant morbidity, necessitating comprehensive understanding of its demographic distribution, risk factors, and impact on quality of life. This study assesses the demographics, risk factors, and quality of life among CKD patients attending a dialysis unit at a tertiary care hospital.
Materials and Methods: A cross-sectional study was conducted among 100 CKD patients. Data on demographics, education, occupation, economic status, and risk factors were collected. The quality of life was assessed using the SF-12 questionnaire, focusing on physical and mental health components.
Results: The majority of patients were male (78%) and aged 41-60 years (62%). A significant portion had no formal education (74%) and belonged to the lower socioeconomic class (59%). Hypertension was the most prevalent risk factor (76%), followed by alcohol consumption (41%), sedentary lifestyle (37%), and tobacco use (34%). The quality of life assessment revealed that physical functioning (28 ± 25.44) and general health (28 ± 23.37) were the worst affected domains in the Physical Health Component. In the Mental Health Component, social functioning (6.5 ± 19.33) and role limitation due to emotional problems (24.12 ± 12.34) were most impacted. The overall quality of life score was 31.33 ± 15.24, indicating significant impairment.
Conclusion: CKD patients exhibit a high prevalence of multiple risk factors, especially among lower socioeconomic classes, with substantial impairment in both physical and mental health-related quality of life. These findings highlight the need for targeted interventions to address the multifaceted challenges faced by CKD patients.
Keywords: Chronic Kidney Disease, CKD, Dialysis, Quality of Life, Risk Factors, Socioeconomic Status, SF-12, Hypertension.

INTRODUCTION

Chronic Kidney Disease (CKD) is a global health concern, affecting millions of individuals and contributing significantly to morbidity and mortality rates worldwide.[1] Characterized by a gradual loss of kidney function over time, CKD often leads to end-stage renal disease (ESRD), requiring dialysis or kidney transplantation for survival.[2,3] The burden of CKD is particularly high in developing countries, where limited access to healthcare resources exacerbates the challenges faced by affected individuals.[4.5]

Several factors contribute to the development and progression of CKD, including hypertension, diabetes, obesity, and lifestyle choices such as alcohol and tobacco consumption.[6] The interplay of these risk factors, along with socio-economic

determinants, can significantly influence the prevalence and severity of CKD.[7] Understanding the demographic distribution and risk factors associated with CKD is crucial for developing targeted prevention and management strategies.

Quality of life (QOL) is profoundly affected in CKD patients, impacting both physical and mental health domains.[8] The SF-12 questionnaire is a widely used tool to assess the health-related quality of life (HRQOL) in CKD patients, providing insights into the extent of functional impairment and the overall well-being of individuals undergoing dialysis.[9]

This cross-sectional study aims to assess the demographics, risk factors, and quality of life among CKD patients attending a dialysis unit at a tertiary care hospital. By identifying the key factors associated with CKD and evaluating their impact on patients' quality of life, this study seeks to inform healthcare providers and policymakers about the critical areas requiring intervention. The ultimate goal is to improve the management and support provided to CKD patients, enhancing their overall quality of life and health outcomes.

Aims and Objectives

To study Quality of life outcomes for CKD patients attending dialysis unit at Tertiary care hospital.

To assess the prevalence of risk factors for chronic kidney disease (CKD) Patients.

MATERIAL AND METHODS

Study Design
A descriptive cross-sectional study was conducted to evaluate the quality of life outcomes and the prevalence of risk factors among Chronic Kidney Disease (CKD) patients attending a dialysis unit.

Study Setting
The study was carried out in the dialysis unit of the Department of Community Medicine at Government Medical College, Srikakulam.

Study Duration
The study spanned two months, from September 2023 to October 2023.

Study Population
A total of 100 participants were selected for the study.

Inclusion Criteria
Adults aged 18 years and above.

Participants with a confirmed diagnosis of Chronic Kidney Disease (CKD) and currently undergoing dialysis treatment.

Exclusion Criteria
Patients with cognitive impairments that prevented them from completing the questionnaire.

Patients with acute medical conditions requiring intensive medical attention during the study period.[10]

Data Collection
Data was collected using a pretested semi-structured questionnaire, which included three main sections:

Socio-demographic Variables
Data on participants' age, gender, marital status, education, income, and duration of CKD were collected.

The Short Form,[12] Health Survey Questionnaire
This validated instrument measured the quality of life (QoL) of CKD patients undergoing dialysis.

Data Collection: Responses from the SF-12 questionnaire were collected, encompassing a range of queries pertaining to both physical and mental health.

Scoring: The Physical Component Summary (PCS) and Mental Component Summary (MCS) scores were calculated by applying weights to each question as outlined in the SF-12 user manual and summing the weighted scores.

Interpretation: The summary scores were interpreted in relation to the population's norms, with a score of 50 denoting average health status. Scores surpassing or falling below 50 indicated superior or inferior health, respectively.

Comparisons: Comparative analyses were conducted on the PCS and MCS scores to gain insights into the respondents' physical and mental health status. These scores were juxtaposed across various groups and time periods to facilitate conclusions in the research.

Risk Factors for CKD
This section assessed the prevalence of key risk factors such as hypertension, diabetes, obesity, alcohol consumption, tobacco use, sedentary lifestyle, and cardiovascular diseases.

Data Analysis
Data entry and compilation were performed using Microsoft Excel and SPSS-16 software. The data were presented through graphical representations such as bar charts and tables. Tests of statistical significance, including T-tests and Chi-square tests, were applied where appropriate. A significance level of $p < 0.05$ was utilized to determine statistical significance.

Ethical Considerations
The study adhered to all relevant ethical guidelines and obtained approval from the Ethics Committee, Government Medical College, Srikakulam (IEC 23/GMC&GGH/SKLM/180823/16) before the commencement of data collection. Informed consent was obtained from all participants, and the confidentiality of all data was maintained.
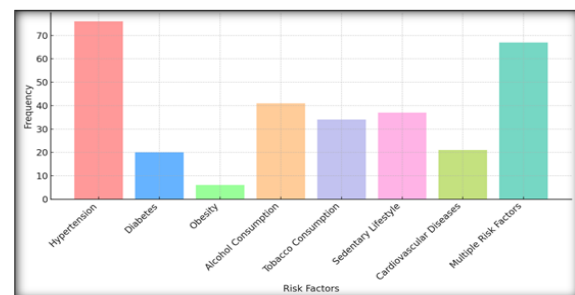
RESULTS

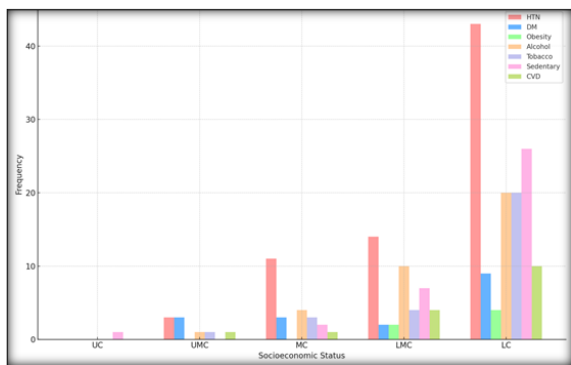**Figure 1: Distribution of CKD Patients According to Risk Factors**

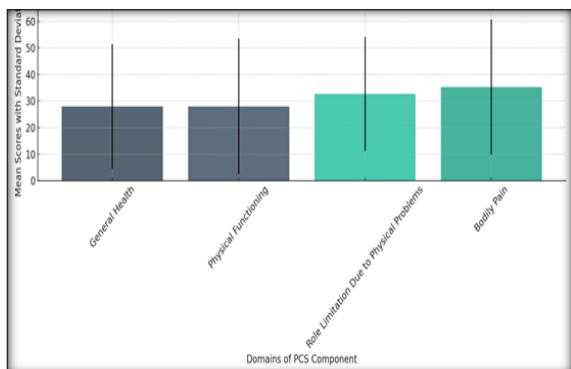**Figure 2: Risk Factors of CKD Patients According to Socioeconomic Status**

Figure 3 Quality of Life Assessment (PCS Component)
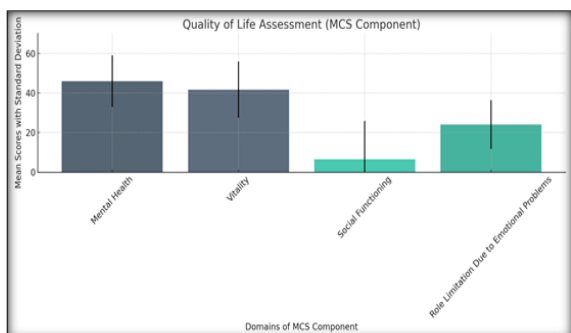

Figure 4: Quality of Life Assessment (MCS Component)

Demographics

The age distribution of the study population indicates a progressive increase in the incidence of Chronic Kidney Disease (CKD) with advancing age (Table 1). The youngest age group (≤30 years) comprises only one individual, while the age group with the highest prevalence is 41-50 years, accounting for 32 patients. Patients aged 51-60 years follow closely with 30 individuals. There is a noticeable decrease in CKD prevalence in the older age groups, with the least number of patients (n=7) being over 70 years old.

The gender distribution reveals a significant disparity, with males constituting 78% and females 22% of the CKD patient population. [Table 2] This highlights a higher prevalence of CKD among male patients.

A substantial proportion of CKD patients (74%) have no formal education, suggesting a strong correlation between lower educational attainment and the prevalence of CKD. [Table 3]

Among the CKD patients, 56% have a history of being farmers, 39% are engaged in various other occupations, and 5% are unemployed. This distribution underscores the potential influence of occupational factors on CKD prevalence. [Table 4]

The socioeconomic distribution reveals that 59% of CKD patients belong to the lower class, 20% to the lower-middle class, 17% to the middle class, 3% to the upper-middle class, and 1% to the upper class. [Table 5] This indicates a higher prevalence of CKD among individuals from lower socioeconomic backgrounds.

Risk Factors

The most prevalent risk factor among CKD patients is hypertension, affecting 76% of the patients. Other significant risk factors include alcohol consumption (41%), sedentary lifestyle (37%), tobacco consumption (34%), and cardiovascular diseases (21%). Diabetes affects 20% of the patients, and obesity is present in 6% of the patients, predominantly among those with a history of farming. [Table 6]

The distribution of these risk factors suggests that multiple factors contribute to the development and progression of CKD, with hypertension being the most significant.

Socioeconomic Status and Risk Factors

The prevalence of various risk factors varies across different socioeconomic classes. Patients from lower socioeconomic backgrounds exhibit higher rates of hypertension, diabetes, obesity, alcohol consumption, tobacco use, sedentary lifestyle, and cardiovascular diseases. This correlation underscores the need for targeted health interventions in lower-income groups. [Table 7]

Quality of Life Assessment
Physical Health Component (PCS)

The quality of life (QOL) assessment for the PCS component reveals that the worst affected domains are physical functioning (28 ± 25.44) and general health (28 ± 23.37), followed by role limitation due to physical problems (32.62 ± 21.45) and bodily pain (35.25 ± 25.39). [Table 8]

Mental Health Component (MCS)

For the MCS component, the worst affected domain is social functioning (6.5 ± 19.33), followed by role limitation due to emotional problems (24.12 ± 12.34), vitality (41.75 ± 14.23), and mental health (46 ± 13.04). [Table 9]

Overall Quality of Life

The overall QOL score for CKD patients undergoing hemodialysis is 31.33 ± 15.24. The QOL related to the mental health component is the most affected (29.59 ± 10.8), followed by the physical health component (30.96 ± 15.03). [Table 10] This indicates that CKD significantly impacts both the physical and mental well-being of patients.

Table 1: Age-wise Distribution of the Study Population

Age Groups	Frequency
<= 30	1
31 to 40	16
41 to 50	32
51 to 60	30
61 to 70	14
> 70	7
Total	**100**

Table 2: Gender Distribution of CKD Patients

Gender	Frequency	Percentage
Male	78	78%
Female	22	22%
Total	100	100%

Table 3: Distribution of CKD Patients According to Education

Education Level	Frequency	Percentage
No Formal Education	74	74%
Formal Education	26	26%
Total	100	100%

Table 4: Distribution of CKD Patients According to Occupation

Occupation	Frequency	Percentage
Farmers	56	56%
Other Occupations	39	39%
Unemployed	5	5%
Total	100	100%

Table 5: Distribution of CKD Patients According to Economic Status

Economic Status	Frequency	Percentage
Lower Class	59	59%
Lower-Middle Class	20	20%
Middle Class	17	17%
Upper-Middle Class	3	3%
Upper Class	1	1%
Total	100	100%

Table 6: Distribution of CKD Patients According to Risk Factors

Risk Factor	Frequency
Hypertension	76
Diabetes	20
Obesity	6
Alcohol Consumption	41
Tobacco Consumption	34
Sedentary Lifestyle	37
Cardiovascular Diseases	21
Multiple Risk Factors	67

Table 7: Risk Factors of CKD Patients According to Socioeconomic Status

Class	HTN	DM	Obesity	Alcohol	Tobacco	Sedentary	CVD
UC	0	0	0	0	0	1	0
UMC	3	3	0	1	1	0	1
MC	11	3	0	4	3	2	1
LMC	14	2	2	10	4	7	4
LC	43	9	4	20	20	26	10

Table 8: Quality of Life Assessment (PCS Component)

Domains of PCS Component	Mean	Standard Deviation
General Health	28	23.37
Physical Functioning	28	25.44
Role Limitation Due to Physical Problems	32.62	21.45
Bodily Pain	35.25	25.39

Table 9: Quality of Life Assessment (MCS Component)

Domains of MCS Component	Mean	Standard Deviation
Mental Health	46	13.04
Vitality	41.75	14.23
Social Functioning	6.5	19.33
Role Limitation Due to Emotional Problems	24.12	12.34

Table 10: Overall Quality of Life of CKD Patients on Hemodialysis

Components of QOL	Mean	Standard Deviation
Overall QOL	31.33	15.24
Physical Health Component Summary (PCS) Score	30.96	15.03
Mental Health Component Summary (MCS) Score	29.59	10.8

DISCUSSION

Socio-demographic Factors

Our study reveals a predominance of male patients (78%), consistent with observations made by Osthus et al6. and Mahato et al,[7] where a higher percentage of males was also reported. This gender disparity might be attributed to various biological, social, and healthcare access factors that make males more susceptible or more likely to seek treatment for CKD. The high prevalence of CKD among farmers (56%) in our study echoes the findings of M.K. Farag et al,[8] highlighting the significant impact of occupational exposure to environmental toxins, manual labor, and possibly limited access to healthcare in rural areas. The higher prevalence of CKD in older individuals and those with a sedentary lifestyle is in line with the observations from Gummidi et al,[9] underscoring the need for targeted interventions for older adults and those leading sedentary lifestyles to mitigate CKD risks.

Risk Factors

Hypertension was identified as the most prevalent risk factor among CKD patients, with 76% of the study population being hypertensive. This finding aligns with Degena Bahrey et al,[12] and underscores the critical role of hypertension in the pathogenesis and progression of CKD. Effective blood pressure management should, therefore, be a cornerstone of CKD prevention and treatment strategies. The association between CKD and diabetes was evident, with 20% of our patients being diabetic, corroborating the findings of Shewaneh Damtie et al.[11] This significant overlap between diabetes and CKD suggests that integrated management approaches targeting both conditions could potentially reduce the burden of CKD. Additionally, lifestyle factors such as alcohol consumption (41%), sedentary lifestyle (37%), and tobacco use (34%) were prevalent among the patients, indicating the multifactorial nature of CKD and the need for comprehensive lifestyle modification programs.

Quality of Life

The quality of life (QOL) scores in our study, with a mean overall QOL of 31.33 ± 15.24, corroborate with the literature reviewed. Studies by Teshome Berhe et al,[13] and Modi et al,[14] have similarly reported diminished physical and mental component summary scores among CKD patients. The significant impairment in physical functioning (28 ± 25.44) and general health (28 ± 23.37) highlights the substantial burden of CKD on patients' daily lives. Furthermore, the correlation between lower income and lower education with reduced quality of life, as seen in our study, resonates with Modi et al,[14]'s observations. This finding emphasizes the need for socio-economic support and educational interventions to improve the quality of life for CKD patients.

Socio-economic Implications

The socio-economic disparities observed in our study indicate that lower income and educational levels are associated with higher CKD prevalence and poorer quality of life outcomes. This correlation suggests that socio-economic factors play a significant role in CKD management and outcomes. Healthcare policies should, therefore, focus on addressing these disparities by ensuring equitable access to healthcare services, providing financial support, and enhancing education and awareness about CKD and its risk factors.[15]

Recommendations for Practice

The findings of this study underscore the importance of early detection and comprehensive management of CKD risk factors, particularly hypertension and diabetes. Regular screening and monitoring of these risk factors, especially in high-risk groups such as older adults and individuals with a sedentary lifestyle, are crucial. Interventions aimed at improving the quality of life for CKD patients should address both physical and mental health aspects, including providing psychological support, pain management, and promoting physical activity tailored to the patients' capabilities.

Limitations: The study's limitations include a small sample size, short duration, and reliance on self-reported data, which may introduce bias. Additionally, the study was conducted in a single tertiary care hospital, limiting the generalizability of the findings to a broader population.

CONCLUSION

The study highlights the urgent need for a holistic, patient-centered approach in managing CKD. The high prevalence of depression and physical limitations among patients underscores the importance of integrating mental health support and rehabilitation programs into CKD care. Addressing lifestyle risk factors like alcohol consumption and sedentary behavior through targeted interventions is crucial. The findings also emphasize the need for genetic counseling and cardiovascular risk management for patients with a family history of cardiovascular diseases. Disparities in education and income highlight the importance of tailored healthcare services. This research provides a foundation for future studies and healthcare policy development, aiming to improve the quality of life for CKD patients.

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