

Lived experiences of patients with chronic kidney diseases undergoing dialysis in Uniosun Teaching Hospital, Osogbo, Osun State, Nigeria

Winner Nmesoma OKWANMA, Christianah Oluwatobi OMOFOYE, Oluwadarasimi Ayomide FASEUN, Marvelous Mayomipo SEGUN-AGBOOLA, Opeyemi Olanike AFOLABI and Monisayo Olayemi KOMOLAFE *

Department of Nursing Science, Faculty of Basic Medical Sciences, Adeleke University, Ede, Osun State, Nigeria.

World Journal of Advanced Research and Reviews, 2025, 25(03), 411-419

Publication history: Received on 26 January 2025; revised on 01 March 2025; accepted on 04 March 2025

Article DOI: <https://doi.org/10.30574/wjarr.2025.25.3.0685>

Abstract

Chronic Kidney Disease (CKD) is a major global health issue that often leads to kidney failure, requiring long-term treatments like dialysis. While essential for survival, dialysis imposes significant physical, emotional, and social challenges on patients, affecting their overall quality of life and coping mechanisms. Understanding these experiences is crucial for improving patient care beyond medical management. Methodology: This qualitative study utilized a phenomenological approach to explore the lived experiences of 10 CKD patients undergoing dialysis at UNIOSUN Teaching Hospital. Data was gathered through semi-structured, in-depth interviews with purposively selected participants. Thematic analysis was applied to interpret the findings, using George Engel's Biopsychosocial Model (1977) as the guiding framework, which emphasized the interplay between biological, psychological, and social factors shaping the patients' experiences. Results: The findings highlighted the complex experiences of CKD patients, characterized by emotional distress, anxiety, and challenges in coping. Participants expressed the initial shock of diagnosis, physical exhaustion from dialysis, and a profound dependence on treatment, alongside prevalent themes of fear regarding the future, disrupted social relationships, and loss of autonomy. Despite these challenges, many displayed resilience through family support, faith, and self-care strategies. Conclusion: CKD patients on dialysis face significant challenges, which affect their overall quality of life. Holistic, patient-centered care that addresses these dimensions is essential to improving their treatment experience and well-being. Recommendation: Healthcare providers should incorporate various support into CKD care. Tailored interventions are needed to enhance coping strategies and improve the quality of life for dialysis patients.

Keywords: Chronic Kidney Disease (CKD); Dialysis; Lived experiences; Patient care.

1. Introduction

Chronic kidney disease (CKD) presents a significant health challenge globally, affecting millions of individuals and imposing substantial burdens on healthcare systems worldwide [1]. Among the therapeutic modalities available for CKD management, dialysis remains a crucial intervention for patients with end-stage renal disease (ESRD), providing life-sustaining renal replacement therapy [2].

Understanding the lived experiences of individuals grappling with CKD and undergoing dialysis is essential for optimizing patient-centered care and enhancing overall quality of life [3].

In Nigeria, CKD prevalence is alarmingly high, with estimates suggesting a prevalence of 14.2% among adults (2). According to recent estimates, CKD affects approximately 9-16% of the global population, with prevalence rates varying across regions and demographic groups [4].

* Corresponding author: Monisayo Olayemi Komolafe

Dialysis serves as a cornerstone in the management of end-stage renal disease (ESRD), providing a lifeline for patients whose kidneys have failed [5]. Despite its life-saving benefits, undergoing dialysis is often described as a challenging and burdensome experience, impacting various aspects of patients' lives [6]. The physical discomfort associated with dialysis sessions, coupled with the psychological stress of managing a chronic illness, can take a toll on patients' emotional well-being.

Despite the growing recognition of CKD as a major health concern, there remains a notable gap in understanding the specific factors influencing healthcare access, utilization, and satisfaction among CKD patients undergoing dialysis treatment, particularly in resource-limited settings such as UNIOSUN Teaching Hospital in Osogbo, Nigeria.

Goal and Objectives of the study

The specific research objectives were to:

- To explore the subjective experiences and perceptions of patients diagnosed with chronic kidney disease (CKD) undergoing dialysis treatment at UNIOSUN Teaching Hospital in Osogbo, Nigeria.
- To identify the psychosocial challenges faced by CKD patients undergoing dialysis at UNIOSUN Teaching Hospital in Osogbo, Nigeria.
- To examine the effect of CKD and dialysis treatment on the quality of life and functional status of patients at UNIOSUN Teaching Hospital in Osogbo, Nigeria.
- To elucidate the factors influencing healthcare access, utilization, and satisfaction among CKD patients receiving dialysis at UNIOSUN Teaching Hospital in Osogbo, Nigeria.

1.1. Research questions

The following research questions were addressed:

- How do patients diagnosed with chronic kidney disease (CKD) perceive and experience undergoing dialysis treatment at UNIOSUN Teaching Hospital in Osogbo, Nigeria?
- What psychosocial challenges do CKD patients undergoing dialysis encounter at UNIOSUN Teaching Hospital in Osogbo, Nigeria?
- In what ways does chronic kidney disease (CKD) and dialysis treatment affect the quality of life and functional status of patients at UNIOSUN Teaching Hospital in Osogbo, Nigeria?
- What factors influence healthcare access, utilization, and satisfaction among CKD patients receiving dialysis at UNIOSUN Teaching Hospital in Osogbo, Nigeria?

2. Literature review

2.1. Psychosocial and Emotional Effect of CKD and Dialysis

Psychological distress and emotional responses to CKD diagnosis have been extensively documented in the literature [7]. Patients may experience feelings of shock and disbelief upon learning about their condition [8]. The uncertainty surrounding the prognosis and progression of CKD can further exacerbate psychological distress [9].

2.2. Healthcare Access and Utilization

Healthcare access and utilization are crucial aspects of managing chronic kidney disease (CKD) effectively [10]. Accessibility of healthcare services for CKD patients in Osogbo, Nigeria, is influenced by various factors, including geographical location, infrastructure, and healthcare system capacity. Limited access to specialized renal care facilities may pose challenges for patients residing in rural or underserved areas [11].

2.3. Quality of Life and Functional Status

Quality of life (QoL) was a critical aspect of patient well-being in the context of chronic kidney disease (CKD) and dialysis treatment [12]. Individuals with CKD often experience a significant deterioration in their quality of life due to the burdensome nature of the disease and its treatment modalities [13].

2.4. Theoretical framework

The Biopsychosocial Model was propounded by George L. Engel in the year 1977. This model emphasizes that health and illness are influenced by a combination of biological, psychological, and social factors.

2.4.1. Biological Factors

Biological factors play a significant role in the development and progression of CKD, including underlying conditions such as diabetes and hypertension. Dialysis treatment directly addresses the biological aspect of CKD by helping to remove waste products and excess fluids from the body, thereby improving physiological functioning.

2.4.2. Psychological Factors

CKD and dialysis can have profound psychological implications for patients, including feelings of anxiety, depression, and uncertainty about the future. The Biopsychosocial Model acknowledges the psychological effect of CKD and dialysis, emphasizing the importance of addressing patients' emotional well-being and providing psychological support services.

2.4.3. Social Factors

Social determinants such as socioeconomic status, family dynamics, and cultural beliefs can significantly influence patients' experiences of CKD and dialysis. Access to healthcare services, affordability of treatment, and social support networks all play crucial roles in shaping patients' experiences and outcomes.

The Biopsychosocial Model underscores the need for a holistic approach that considers the social context in which patients live and receive care, aiming to address social inequalities and barriers to healthcare access.

3. Material and methods

3.1. Research design

A Qualitative Phenomenological Design was used to conduct this study using a purposive sampling technique to assess the lived experiences of patients with chronic kidney diseases undergoing dialysis in UNIOSUN Teaching Hospital, Osogbo.

3.2. Population

The target population of this study were patients diagnosed with chronic kidney disease (CKD) who are currently undergoing dialysis treatment at UNIOSUN Teaching Hospital in Osogbo, Nigeria.

3.3. Sampling Technique

The most appropriate sampling technique for this study was purposive sampling. Purposive sampling involves selecting participants who possess specific characteristics or experiences relevant to the research question.

3.4. Instrumentation

For this qualitative phenomenological study investigating the lived experiences of patients with chronic kidney disease (CKD) undergoing dialysis, the instrumentation primarily consisted of semi-structured interviews and field notes. Semi-structured interviews served as the primary data collection method, allowing for in-depth exploration of participants' perceptions, emotions, and coping strategies related to their experience with CKD and dialysis.

3.5. Procedure for data collection

The method of data collection for this qualitative phenomenological study primarily involved semi-structured interviews with participants who meet the inclusion criteria. Semi-structured interviews provide a flexible framework for exploring the lived experiences of individuals with chronic kidney disease (CKD) undergoing dialysis, allowing for in-depth probing and clarification of responses while also enabling participants to express themselves freely.

3.6. Method of data Analysis

The method of data analysis for this qualitative phenomenological study involved a rigorous and systematic process aimed at uncovering the underlying meanings, patterns, and themes within participants' narratives. The analysis was

guided by the principles of phenomenology, which emphasize the exploration of lived experiences and the interpretation of subjective realities.

4. Results

Table 1 Thematic Analysis Summary Linking Themes to Research Question

| Category | Themes | Quotes | Related Research Question | Explanation |
|---------------------------------|--|---|--|---|
| Health Awareness and Diagnosis | Lack of Awareness and Diagnosis Delays | "I didn't know I had kidney disease until August when I got partially blind." — Patient 1 | How do patients diagnosed with CKD perceive and experience undergoing dialysis treatment? | Patients' experiences reflect a lack of early detection, causing sudden awareness of the disease after severe symptoms manifest, impacting their perception of dialysis treatment and the abrupt lifestyle changes required. |
| | Impact on Daily Life | "It has affected my daily activities greatly; I have been unable to work." — Patient 2 | In what ways does CKD and Dialysis treatment affect the quality of life and functional status of patients? | CKD greatly reduces patients' ability to function, impacting their quality of life, limiting mobility, independence, and their capacity to engage in daily activities, including work. |
| Emotional And Mental Well-being | Emotional Responses | "I feel really sad about it because I didn't know I could have a disease as big as this." — Patient 2 | What psychosocial challenges do CKD patients undergoing dialysis encounter? | The diagnosis of CKD evokes sadness and shock, demonstrating the emotional distress patients face when confronting the reality of their disease, contributing to psychosocial challenges that influence their overall well-being. |
| | Emotional and Mental Health | "Emotionally, I feel like a burden to my family." — Patient 5 | What psychosocial challenges do CKD patients undergoing dialysis encounter? | Patients often feel like burdens to their families, intensifying feelings of helplessness, which contributes to their emotional and mental health struggles during dialysis treatment. |
| | Hope and Positivity | "I try not to think about it too much; I believe it's just a phase." — Patient 3 | What psychosocial challenges do CKD patients undergoing dialysis encounter? | Despite the emotional challenges, some patients maintain hope and positivity, which help them cope with the long-term nature of dialysis and its psychological toll, revealing resilience amidst challenges. |
| Coping and Support Mechanisms | Coping Mechanisms | "I just sleep and talk to my family; I don't have specific | What psychosocial challenges do CKD patients | Patients often rely on informal coping strategies like resting and talking to family, indicating the absence of structured |

| | | | | |
|---|--------------------------------|---|---|---|
| | | <p>coping mechanisms.” — Patient 2</p> | <p>undergoing dialysis encounter?</p> | <p>psychological or social support systems to help them manage the stress and strain of dialysis.</p> |
| | <p>Support Systems</p> | <p>“My family has been very supportive.” — Patient 3</p> | <p>What factors influence healthcare access, utilization, and satisfaction among CKD patients?</p> | <p>Family support plays a critical role in patients' emotional health and their ability to manage treatment, highlighting the importance of external support systems in healthcare satisfaction and adherence to treatment.</p> |
| | <p>Isolation and Burden</p> | <p>“I feel like a burden; I used to take care of my sick mom.” — Patient 10</p> | <p>What psychosocial challenges do CKD patients undergoing dialysis encounter?</p> | <p>The role reversal from caregiver to care recipient leads to feelings of isolation and guilt, further compounding the emotional burden that CKD patients experience, especially when they become dependent on others for daily care.</p> |
| <p>Quality of Life and Financial Implications</p> | <p>Quality of Life Decline</p> | <p>Life has changed drastically since my diagnosis; I feel like I have lost my independence.” — Patient 5</p> | <p>In what ways does CKD and dialysis treatment affect the quality of life and functional status of patients?</p> | <p>CKD and Dialysis significantly reduce patients' quality of life affecting their independence and autonomy. This shows the physical and emotional toll of CKD on functional status, with patients struggling to adjust to their new reality</p> |
| | <p>Financial Strain</p> | <p>“The treatment has consumed all my savings.” — Patient 2</p> | <p>What factors influence healthcare access, utilization, and satisfaction among CKD patients?</p> | <p>The financial burden of dialysis treatment is overwhelming for many patients, affecting not only their access to care but also their overall satisfaction with the healthcare system. Financial strain is a major barrier to continued treatment and well-being.</p> |

Table 1 above illustrates the connection between the themes identified in the data and the research questions. Each theme links directly to patient experiences and challenges, providing a detailed understanding of how CKD and dialysis affect patients at UNIOSUN Teaching Hospital. These findings indicate the critical need for interventions that address early diagnosis, emotional and mental support, as well as financial and logistical barriers to healthcare access.

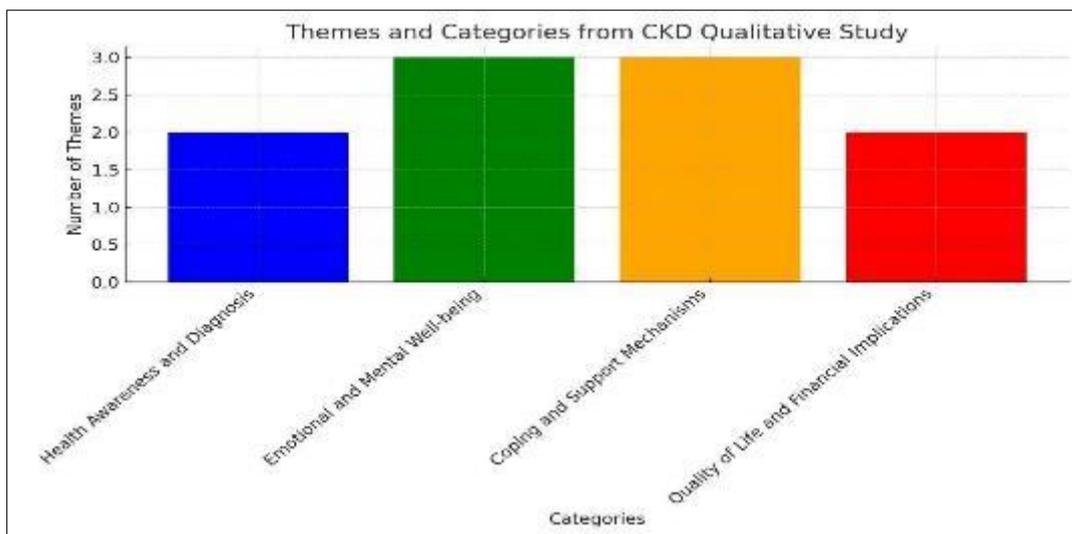


Figure 1 Themes and categories from CKD Qualitative Study.

In addition to the summary table, the bar graph above visually represents the themes and the frequency of specific sentiments expressed by the patients. Since we have qualitative data, we visually present the Categories and the number of corresponding quotes.

This study included ten respondents diagnosed with chronic kidney disease (CKD) undergoing dialysis treatment at UNIOSUN Teaching Hospital in Osogbo, Nigeria. Understanding the sociodemographic characteristics of these respondents is essential, as it provides context for their experiences and influences their perceptions regarding CKD management and treatment. The table below shows the sociodemographic characteristics of the respondents:

Table 2 Sociodemographic characteristics of the respondents

| Characteristic | Count | Percentage |
|------------------------|-------|------------|
| Gender | | |
| Male | 4 | 40% |
| Female | 6 | 60% |
| Age (years) | | |
| 20-29 | 2 | 20% |
| 30-39 | 2 | 20% |
| 40-49 | 3 | 30% |
| 50-59 | 1 | 10% |
| 60-69 | 2 | 20% |
| Educational Attainment | | |
| Secondary | 4 | 40% |
| Tertiary | 5 | 50% |
| Postgraduate | 1 | 10% |
| Employment Status | | |
| Employed | 5 | 50% |
| Self-employed | 3 | 30% |
| Unemployed/Retired | 2 | 20% |

| Monthly Household Income | | |
|--------------------------|---|-----|
| 20,000 – 30,000 Naira | 3 | 30% |
| 30,000 – 40,000 Naira | 2 | 20% |
| 40,000 – 50,000 Naira | 3 | 30% |
| Above 150,000 Naira | 1 | 10% |

Integrating socio-demographic data with the thematic analysis enriches the understanding of the participants' experiences. For example, younger respondents reported feeling isolated and burdened due to their condition, which may reflect their struggle to balance health challenges with educational or work commitments. In contrast, older respondents often expressed a sense of resignation to their diagnosis, highlighting generational differences in coping strategies. Furthermore, the educational backgrounds of participants influenced their responses regarding understanding treatment regimens and engaging with healthcare providers. Those with higher education levels reported feeling more empowered to ask questions and advocate for their care, whereas those with less education expressed confusion about medical terminology and treatment options. The financial strains experienced by respondents underscore the need for targeted support and interventions.

5. Discussion

The major findings of this study reveal several key insights into the experiences of CKD patients undergoing dialysis treatment at UNIOSUN Teaching Hospital, which align with and build upon existing literature.

Health Awareness and Diagnosis: One of the key findings is the lack of awareness and delayed diagnosis of CKD among patients. Many patients were unaware of their condition until they experienced severe symptoms, such as partial blindness or extreme fatigue. This supports previous research highlighting late detection as a critical issue in CKD management, particularly in resource-limited settings where regular screening is not common practice (Ameh et al., 2020). These delays in diagnosis lead to worsened patient outcomes, confirming the need for enhanced public health awareness and early screening initiatives.

Emotional and Mental Well-being: The emotional distress caused by CKD diagnosis and treatment emerged as a significant finding. Patients often reported feelings of sadness, hopelessness, and emotional burden, particularly due to their dependency on others. This mirrors the work of Legrand et al. (2020), who found that CKD patients are more likely to suffer from depression and anxiety due to the chronic nature of the disease and its impact on daily functioning. While some patients expressed hope and positivity, the overwhelming emotional toll points to the necessity for more structured mental health support as part of CKD management.

Coping and Support Mechanisms: The importance of family support and coping mechanisms was another critical finding. Most patients relied heavily on family members for emotional and practical support, which aligns with the literature on the role of social support in chronic disease management (Luo et al., 2024). However, patients lacked formal coping strategies or access to professional counselling services, indicating a gap in the provision of comprehensive care that integrates psychological and emotional support.

Quality of Life and Financial Strain: Lastly, the study found that CKD and dialysis treatments drastically reduced the quality of life and imposed significant financial strain on patients. The loss of independence and the high costs of treatment were consistent themes. These findings corroborate the work of Zubairu et al. (2024), who noted that CKD disproportionately affects the socioeconomic status of patients, especially in developing countries where out-of-pocket expenses are common. The financial burden highlights the urgent need for policy reforms to make dialysis more affordable and accessible.

In summary, the findings from this study both confirm and extend the existing literature on CKD, particularly in the context of Nigeria, where healthcare access and affordability are significant barriers. The emotional, financial, and practical challenges faced by CKD patients point to a need for more integrated, patient-centered care approaches that address not just the physical aspects of the disease but also the psychological and economic dimensions.

6. Conclusion

The study underscored the urgent need for improved patient education on CKD symptoms and the importance of integrating mental health support into routine care. Strong support systems and community engagement were also highlighted as crucial for helping patients cope with the emotional and social challenges of CKD. Additionally, the financial burden many patients face was emphasized, signaling the need for policies that reduce treatment costs and improve healthcare access for vulnerable populations.

Recommendations

The findings from these study highlight key areas for improvement in the care of chronic kidney disease (CKD) patients undergoing dialysis treatment at UNIOSUN Teaching Hospital. Access to healthcare services emerged as a significant challenge, particularly in rural and underserved areas. Policymakers should focus on establishing satellite clinics, expanding telehealth services, and increasing the availability of dialysis centers, possibly through partnerships with non-governmental organizations (NGOs) to provide mobile dialysis units. Financial strain on CKD patients was another critical issue identified. Policymakers should work to reduce treatment costs by negotiating bulk purchasing agreements for dialysis supplies and medications, and implementing a tiered payment system that adjusts to patients' income levels. Incorporating CKD treatments into national health insurance schemes is also essential to alleviate the financial burden and ensure comprehensive coverage for all necessary services, including medications and follow-up care.

Study limitations

Sample Size: One of the primary limitations of this study is the relatively small sample size of only ten patients. While qualitative research often focuses on depth rather than breadth, a larger sample size could provide a more comprehensive understanding of the diverse experiences of CKD patients.

Geographical Focus: The research was conducted at a single healthcare facility, UNIOSUN Teaching Hospital, which may limit the diversity of responses.

Response Bias: There is a possibility of response bias in qualitative research, where participants may provide socially desirable answers or withhold negative experiences due to fear of stigma or judgment. This can lead to an incomplete understanding of the challenges faced by patients.

Contextual Factors: The context in which this study was conducted also presents limitations. The experiences of CKD patients can be significantly influenced by their socio-economic status, educational background, and support systems. While the study captures a range of emotions and perceptions, it may not fully account for the intersectionality of these factors, which could affect how patients cope with their diagnosis and treatment. Furthermore, the timing of the interviews, which may have coincided with different phases of patients' treatment, could also impact their emotional states and perspectives during data collection.

Lack of Longitudinal Data: The cross-sectional nature of the study does not allow for the examination of changes in patients' perceptions and experiences over time. Chronic kidney disease is a progressive condition, and patients' experiences may evolve with the progression of the disease or changes in their treatment regimen

Compliance with ethical standards

Disclosure of conflict of interest

All authors contributed positively to the writing of this manuscript and there is no conflict interest as agreed to the content of this research

Statement of ethical approval

Ethical approval was sought for and gotten from the Uniosun Teaching Hospital Research Ethics Committee with protocol number: **UTH/REC/2024/10/1009**.

Statement of informed consent

Informed consent was obtained from all respondents included in the study before collecting data.

References

- [1] Levin A, Tonelli M, Bonventre J, Coresh J, Donner JA, Fogo AB, Fox CS, Gansevoort RT, Heerspink HJ, Jardine M, Kasiske B. Global kidney health 2017 and beyond: a roadmap for closing gaps in care, research, and policy. *The Lancet*. 2017 Oct 21;390(10105):1888-917.
- [2] Bello AK, Levin A, Lunney M, Osman MA, Ye F, Ashuntantang GE, Bellorin-Font E, Gharbi MB, Davison SN, Ghnaimat M, Harden P. Status of care for end stage kidney disease in countries and regions worldwide: international cross sectional survey. *bmj*. 2019 Oct 31;367.
- [3] Wee LX, Tan PST, Chen HC. Experiences and Needs of Families Caring for Children and Adolescents With Chronic Kidney Disease: A meta-Synthesis. *Journal of Pediatric Nursing*. 2022 Mar;63:52–63.
- [4] Levey AS, Eckardt KU, Dorman NM, Christiansen SL, Cheung M, Jadoul M, et al. Nomenclature for kidney function and disease: executive summary from a KDIGO consensus conference. *Nature Reviews Nephrology*. 2020 May 14;16(8):427–8.
- [5] Jha V, Garcia-Garcia G, Iseki K, Li Z, Naicker S, Plattner B, et al. Chronic Kidney disease: Global Dimension and Perspectives. *The Lancet* [Internet]. 2013 Jul;382(9888):260–72. Available from: <https://pubmed.ncbi.nlm.nih.gov/23727169/>
- [6] 1.Zhang Y, Huang Y, Qiu Y, Hu Y, Tao J, Xu Q, et al. Trajectories and influencing factors of psychological resilience among Chinese patients with maintenance hemodialysis. *Heliyon* [Internet]. 2024 Aug 31 [cited 2024 Dec 26];10(17):e37200–0. Available from: [https://www.cell.com/heliyon/fulltext/S2405-8440\(24\)13231-8](https://www.cell.com/heliyon/fulltext/S2405-8440(24)13231-8)
- [7] 1.Cardol CK, Meuleman Y, Henriët van Middendorp, J.M P, Hilbrands LB, Navis G, et al. Psychological Distress and Self-Management in CKD: A Cross-Sectional Study. *Kidney Medicine*. 2023 Aug 1;5(10):100712–2.
- [8] Guerra F, Di Giacomo D, Ranieri J, Tunno M, Piscitani L, Ferri C. Chronic Kidney Disease and Its Relationship with Mental Health: Allostatic Load Perspective for Integrated Care. *Journal of Personalized Medicine* [Internet]. 2021 Dec 14;11(12):1367. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8705378/>
- [9] Hall RK, Cary MP, Washington TR, Colón-Emeric CS. Quality of life in older adults receiving hemodialysis: a qualitative study. *Quality of Life Research*. 2019 Nov 5;29(3):655–63.
- [10] Coombs NC, Campbell DG, Caringi J. A qualitative study of rural healthcare providers' views of social, cultural, and programmatic barriers to healthcare access. *BMC Health Services Research* [Internet]. 2022;22(1). Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8976509/>
- [11] Liamputtong P, Rice ZS. Stigma, Discrimination, and Social Exclusion. *Handbook of Social Inclusion*. 2021;1–17.
- [12] So S, Li K, Hoffman AT, Josland E, Brown MA. Quality of Life in Patients with Chronic Kidney Disease Managed With or Without Dialysis: An Observational Study. *Kidney360*. 2022 Jul 13;10.34067/KID.0001602022.
- [13] Kalantar-Zadeh K, Unruh M. Health related quality of life in patients with chronic kidney disease. *International urology and nephrology*. 2005 Jun;37:367-78.
- [14] Ameh OI, Ekrikpo U, Bello A, Okpechi I. Current Management Strategies of Chronic Kidney Disease in Resource-Limited Countries. *International Journal of Nephrology and Renovascular Disease*. 2020 Oct;Volume 13:239–51.
- [15] Legrand K, Speyer E, Stengel B, Frimat L, Ngueyon Sime W, Massy ZA, et al. Perceived Health and Quality of Life in Patients With CKD, Including Those With Kidney Failure: Findings From National Surveys in France. *American Journal of Kidney Diseases*. 2020 Jun;75(6):868–78.
- [16] Luo Z, Li K, Chen A, Qiu Y, Yang X, Lin Z, et al. The influence of family health on self-efficacy in patients with chronic diseases: the mediating role of perceived social support and the moderating role of health literacy. *BMC Public Health*. 2024 Dec 13;24(1).
- [17] Zubairu Z, Badar SM, Ibrahim UM. An overview of the risk factors and socio-economic impact of end-stage renal disease management. *Dutse Journal of Pure and Applied Sciences*. 2024 Nov 1;10(3b):309–25.