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# Determinants of Quality of Life of End-Stage Renal Disease Patients Undergoing Hemodialysis in Gaborone, Botswana

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## Abstract

ESRD and reliance on dialysis profoundly impact physical, mental, and social health. However, few studies in Botswana have examined how psychosocial, clinical, and demographic traits together shape QoL. This research focused on identifying key factors influencing QoL among dialysis patients in Gaborone. A cross-sectional study design was employed, and 165 participants from primary dialysis centres in Gaborone were selected. Research data were collected using a structured questionnaire that comprised demographic information, the WHOQOL-BREF, the Patient Health Questionnaire (PHQ-9), and the Multidimensional Scale of Perceived Social Support (MSPSS). Descriptive statistics and correlation analysis were used to analyze quantitative data. Findings showed that 64.9% of patients rated their QoL as poor, and 72.1% were dissatisfied with their health. Psychological distress ($r = –0.583$, $p < 0.01$). It was associated with lower QoL, whereas social support ($r = 0.555$, $p < 0.01$) was associated with higher QoL. The research indicates that ESRD patients in Botswana experience a significantly reduced QoL, which, in their view, is primarily attributable to the factors of emotional distress. The article proposes targeted policies to address QoL challenges and to incorporate routine screening by health workers to identify and refer vulnerable individuals early. Medical professionals in Botswana should integrate mental health support into hemodialysis programs as a standard component to improve mental health outcomes, treatment adherence, and overall quality of life.

**Keywords:** *Psychosocial Factors, Quality of Life, End-Stage Renal Disease Patients, Hemodialysis*

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## 1. Introduction

ESRD is a significant global public health concern, and Botswana is no exception. ESRD is the final stage of CKD, characterized by reduced kidney function and a GFR below 20 percent of the average (Kass et al., 2020). ESRD is a global health issue affecting more than 800 million individuals worldwide, as reported in a recent study by Florida et al. (2022). CKD prevalence

is on the rise, and it is a global problem where diabetes and hypertension are common causes. According to the 2023 ISN-GKHA Atlas of Africa, the prevalence of CKD in Africa is 4.2%. However, several unique features of CKD management in Sub-Saharan Africa increase the disease burden. This is explained by factors such as late diagnosis, limited availability of dialysis centres, and suboptimal healthcare infrastructure (Cockwell et al., 2020).

From the above premise, it can be deduced that most Sub-Saharan African nations have elevated CKD prevalence, including Botswana, which has a CKD incidence rate of 16.3% (Mosiko et al., 2021). Hypertension and diabetes lead to chronic kidney disease, raising renal failure cases needing replacement therapy in low- and middle-income nations like Botswana (Rwegerera et al., 2021).

People suffering from CKD commonly require hemodialysis to stay alive. Hemodialysis supports the kidney's functions, including the removal of excess fluids and wastes. Despite that, hemodialysis, owing to its serious challenges and the consequent physical, mental, and social problems, can seriously affect a patient's QoL in a negative way (Garcia-Martinez et al., 2020).

Prior studies highlight that physical issues, such as pain, fatigue, muscle weakness, and psychological distress, like anxiety, depression, and fear of death, reduce QoL in HD patients (Khaled et al., 2024; Bulbul et al., 2022; Tommel et al., 2021; Yuan et al., 2020). HD worsens symptoms and lowers QoL (Antoun et al., 2022). Social support and isolation strongly shape QoL outcomes (Alshraifeen et al., 2020; Kass et al., 2020). QoL remains central to the prognosis of patients with ESRD (Al-Nashri & Almutary, 2021).

### 1.1 Problem Statement

ESRD is a global health concern linked to reduced QoL in HD patients, as shown by Pretto et al. (2020). HD-related complications continue to drive mortality and morbidity (Floria et al., 2020; Cheng et al., 2022), with numerous side effects impacting overall health (Nashri & Almutary, 2021). These problems have several social, psychological, physical, and economic impacts. Patients frequently experience physical side effects of their condition and therapy, such as pain, fatigue, and other difficulties (Ceylan et al., 2021). According to the Princess Marina Nephrology Department's Facility records for the January-March 2024 quarter, there were approximately 2,000 CKD patients in Botswana, of whom 545 were on HD treatment. The number has now increased to around 600. Of the 600 patients, 317 (52.8%) are undergoing HD in Gaborone only. The WHO data published in 2020 indicated that kidney disease deaths in Botswana reached 506, or 2.61% of total deaths.

Although prior research has linked QoL to physical, psychological, and social factors (Khaled et al., 2023; Bulbul et al., 2022), few studies have examined how sociodemographic, psychosocial, and disease-related factors affect QoL in patients with ESRD. Most studies focused on high-income nations, often overlooking the distinct cultural, social, and healthcare barriers hemodialysis patients face in middle-income regions (Alshraifeen et al., 2020). A survey done by Khame in 2021 in Botswana also revealed that many HD patients are satisfied with hemodialysis, but still face many challenges, including physical and psychosocial factors, and fear of death. It indicates that more studies and focus should be given to these factors in the future to enhance the well-being of this population. There remains a need for local research across regions, particularly in underrepresented areas, such as Botswana. Understanding of

factors affecting QoL in ESRD patients on HD in Gaborone remains limited. The study explores the main factors shaping QoL among patients with chronic kidney disease across three dialysis units in Gaborone, Botswana. Identifying the specific factors affecting QoL can significantly aid the development of programs to improve the lives of patients with HD in Botswana.

### 1.2 Research Objectives

1. To assess the overall Quality of Life of End-Stage Renal Disease Patients on hemodialysis in Gaborone, Botswana.
2. To determine the relationship between the psychosocial factors and Quality of life of End-Stage Renal Disease Patientson hemodialysis in Gaborone, Botswana.

## 2. Literature Review

Dialysis patients' QoL largely hinges on mental health, emotional stability, and coping strength. The patient's state of mind is a frequently identified factor associated with QoL (Pretto et al., 2020). Research consistently reports similar rates of anxiety and depression among ESRD patients, both linked to reduced QoL (Mosleh et al.,2023). According to Alshammari and Marthoenis (2021), these are the most common problems among patients with HD, with prevalence ranging from 21.7% to 46%. Mosleh et al. (2020) reported a prevalence range of 12% to 52%. The chronic prodrome and the heavy treatment regimen of the disease cause the psychological side that is even more difficult to bear. These mental health problems might lead the patients to be non-compliant with their treatment, which will result in their health deteriorating further.

Research on the psychological struggles of ESRD patients in Botswana is scarce, with most studies focused on Western nations. Cultural and social contexts remain underexplored, yet they are vital to the provision of adequate mental health support. Few studies have examined the relationship between psychological factors and QoL in local HD patients. Closing this gap can increase access to culturally sensitive therapies, thereby improving overall QoL and emotional health.

Support from loved ones remains a key driver of QoL in patients with ESRD. A firm social support network facilitates mental health, reduces anxiety, and enhances patients' treatment adherence (Shukri et al., 2020). Increased social support has been associated with good QoL and the dialysis process becoming less complicated (Alshraifeen et al., 2020). Salmi et al. (2020), Gebrie et al. (2023), and Pretto et al. (2020) identify social support as a means of reducing patients' struggles and improving their quality of life. Similarly, Qiu et al. (2021) reveal that perceived support, treatment adherence, and HRQOL are closely connected.

Family relationships can influence the supportive environment of a patient with end-stage renal disease. Good family relationships not only help patients adhere to their therapeutic regimens but also provide the emotional support essential for managing their diseases. The existence of conflicts in the family or lack of support is a condition that is often accompanied by depression and reduced life satisfaction in patients.

The role of social support in ESRD care is recognized, yet research on it remains limited in Botswana. A substantial number of studies are needed to determine how cultural norms and community support networks influence the provision of practical and emotional support. A comprehensive study is needed to assess how dialysis costs in resource-limited countries like

Botswana affect patient QoL and to address socioeconomic gaps in care. Hence, addressing these variables is necessary to create comprehensive care solutions that improve the overall well-being of hemodialysis patients.

## 3. Methodology

A cross-sectional analytical study design was employed. Three (3) private healthcare facilities in Gaborone, Botswana that offer hemodialysis services were selected as the study sites. The hemodialysis units are Renal Care Institute, Sir Ketumile Masire Teahing Hospital, and Bokamoso Private Hospital. The mentioned facilities are well-established and are fully equipped with the necessary specialized resources to manage the ESRD patients. The study group comprised ESRD patients aged 18 years and above who were receiving hemodialysis at the three selected dialysis facilities in Gaborone. The sample was drawn from a target group of approximately 239 ESRD patients on HD across three centres, and 165 were selected. Research data were collected using a structured questionnaire that comprised demographic information, the WHOQOL-BREF, the Patient Health Questionnaire (PHQ-9), and the Multidimensional Scale of Perceived Social Support (MSPSS). Descriptive statistics and correlation analysis were used to analyze quantitative data.

## 4. Results and Discussion

### 4.1 The overall Quality of Life of ESRD patients on hemodialysis in Gaborone, Botswana.

#### 4.1.1 Overall Quality of Life

Most patients reported low QoL, with a few rating it positively and a minority rating it as neutral. Health satisfaction was poor: 72.1% were dissatisfied, 8.5% were satisfied, and a few were neutral (Table 1). The classification of overall quality of life among respondents indicates that the majority of ESRD patients undergoing hemodialysis in Gaborone experienced low well-being, with only a small fraction reporting good or excellent quality of life. Overall Quality of Life (QoL) classification was based on the mean scores of the WHOQOL-BREF items, which were transformed to a 0–100 scale, with higher scores indicating better quality of life. The scores were grouped into five bands for easy comparison to other studies: very poor (0-20), poor (21-40), moderate (41-60), good (61-80), very good (81-100), consistent with approaches used in previous research (Almarabheh et al., 2023; Tamene et al., 2024).

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**Table 1: Overall Quality of Life for ESRD patients undergoing hemodialysis using a 5-point scale**

| | Variables | Frequency | Percentage |
|---|---|---|---|
| **Quality of Life Rating** | Very Poor (1) | 76 | 46.1% |
| | Poor (2) | 31 | 18.8% |
| | Neither Poor nor Good (3) | 36 | 21.8% |
| | Good (4) | 19 | 11.5% |
| | Very Good (5) | 3 | 1.8% |
| **Health Satisfaction** | Very Dissatisfied (1) | 65 | 39.4% |
| | Dissatisfied (2) | 54 | 32.7% |
| | Neutral (3) | 32 | 19.4% |
| | Satisfied (4) | 13 | 7.9% |
| | Very Satisfied (5) | 1 | 0.6% |
| **Quality of Life Classification** | Very Poor Quality of Life | 38 | 23.0% |
| | Poor Quality of Life | 92 | 55.8% |
| | Moderate Quality of Life | 24 | 14.5% |
| | Good Quality of Life | 8 | 4.8% |
| | Very Good Quality of Life | 3 | 1.8% |

### 4.1.2 Quality of Life Across Various Domains

Table 2 presents a mean QoL score of 38.19 (SD = 27.75) across the physical, psychological, social, and environmental domains, on a 0–100 scale.

**Table 2: Quality of Life Across Domains**

| Domain | Mean | SD |
|---|---|---|
| Physical Wellbeing | 36.00 | 28.00 |
| Psychological Wellbeing | 32.25 | 27.00 |
| Environmental Wellbeing | 41.50 | 26.75 |
| Social Wellbeing | 43.00 | 29.25 |
| **Overall QoL** | **38.19** | **27.75** |

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### 4.2 The relationship between the Psychosocial factors and Quality of life of ESRD Patients Undergoing Hemodialysis in Botswana, Gaborone

#### 4.2.1 Prevalence and Severity of Depressive Symptoms among ESRD Patients

Sleep problems and fatigue were the most reported (Mean = 1.59, SD = 0.99), while suicidal thoughts had the lowest score (0.54), as shown in Table 3.

**Table 3: Descriptive findings for Prevalence and Severity of Depressive Symptoms among ESRD Patients**

| Item | 0 (%) | 1 (%) | 2 (%) | 3 (%) | Mean | Std. Dev |
|---|---|---|---|---|---|---|
| Little interest or pleasure in doing things | 28.5 | 37.6 | 22.4 | 11.5 | 1.17 | 0.94 |
| Feeling down, depressed, or hopeless | 31.5 | 34.5 | 21.2 | 12.7 | 1.16 | 0.97 |
| Trouble falling or staying asleep, or sleeping too much | 24.8 | 28.5 | 27.9 | 18.8 | 1.41 | 1.04 |
| Feeling tired or having little energy | 17.0 | 29.1 | 32.1 | 21.8 | 1.59 | 0.99 |
| Poor appetite or overeating | 39.4 | 31.5 | 20.0 | 9.1 | 0.99 | 0.94 |
| Feeling bad about yourself, or feeling like a failure | 45.5 | 27.9 | 17.0 | 9.7 | 0.91 | 0.97 |
| Trouble concentrating on things (e.g., reading, TV) | 30.3 | 33.3 | 22.4 | 14.0 | 1.20 | 1.00 |
| Moving or speaking slowly / being fidgety or restless | 41.8 | 29.7 | 17.6 | 10.9 | 0.98 | 0.99 |
| Thoughts that you would be better off dead or hurting yourself | 68.5 | 15.2 | 10.3 | 6.1 | 0.54 | 0.89 |

**Key: 0**-not at all, **1**-several days, **2**-more than half a day, **3**-Nearly every day.

#### 4.2.2 Descriptive findings for Perceived Social Support among ESRD Patients on Hemodialysis

The data in Table 4 show that patients received the strongest support from a significant person (mean: 5.53–5.66), moderate support from family (4.65, 4.45), and the least from friends (3.727, 3.503).

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**Table 4: Descriptive findings for Perceived Social Support from Special People, Family, and Friends among ESRD Patients on Hemodialysis**

| Statement | Mean | Std |
|---|---|---|
| There is a special person who is around when I need help | 5.655 | 1.724 |
| There is a special person with whom I can share joy and sorrow | 5.533 | 1.769 |
| My family really tries to help me | 4.648 | 1.956 |
| I can talk about my problems freely with my family | 4.445 | 2.025 |
| My friends really try to help me | 3.727 | 2.019 |
| I can count on my friends when things go wrong | 3.503 | 2.068 |
| There is a special person in my life who cares about my feelings | 5.636 | 1.778 |

### 4.2.3 Relationship between Psychosocial Factors and QoL of ESRD patients undergoing hemodialysis in Botswana, Gaborone.

The correlation results presented in Table 5 indicate strong, statistically significant associations between QoL and psychosocial factors. Psychological distress was negatively correlated with QoL ($r = –0.583$, $p < 0.01$), whereas social support was positively correlated ($r = 0.555$, $p < 0.01$). These two factors were also inversely related ($r = –0.299$, $p < 0.01$).

**Table 5: Relationship between Psychosocial Factors and QoL**

| | | Quality of Life | Psychological Factors | Social Factors |
|---|---|---|---|---|
| Quality of Life | Correlation Coefficient | 1 | -.583** | .555** |
| | Sig. (2-tailed) | . | <0.0001 | <0.0001 |
| Depression | Correlation Coefficient | -.583** | 1 | -.299** |
| | Sig. (2-tailed) | <0.0001 | . | <0.0001 |
| Social Factors | Correlation Coefficient | .555** | -.299** | 1 |
| | Sig. (2-tailed) | <0.0001 | <0.0001 | . |

**Key: *:** $p < 0.05$ level, ****:** $p < 0.01$ level,*****:** $p < 0.001$ level.

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### 4.3 Discussion

#### 4.3.1 Assessment of the Overall Quality of Life of ESRD Patients

The favorable study found that 64.9% of patients rated their QoL as low, and only 13.3% rated it positively. Moreover, 72.1% of respondents reported being dissatisfied with their health. These figures show that a significant number of ESRD patients undergoing hemodialysis have a negative perspective about their QoL, due to emotional distress, physical, and social challenges of the ESRD and its treatment. While dialysis sustains life, it alone does not improve well-being without added support. These results align with the biopsychosocial view of health. Despite hemodialysis addressing the physical side of kidney failure, ongoing emotional strain and social fragility still lower perceived QoL.

Multiple studies support this, including Bello et al. (2022), who reported low QoL in 60.8% of dialysis patients. García-Martínez et al. (2020) and Hussien et al. (2020) likewise linked poor QoL to fatigue, illness burden, and money stress. Nevertheless, the outcome contradicts the findings of Yonata et al. (2022), who reported that the majority of patients (67.7%) reported good QoL, whereas only 32.3% reported poor QoL.

The analysis of the domains further illustrated that the average scores for physical (M=36, SD=28.00), psychological (M=32.25, SD=27.00), environmental (M=41.50, SD=26.75), and social well-being (M=43.00, SD=29.25) on a 0-100 scale were low, as well as the overall QoL mean of 38.19 (SD=27.75), which indicates that the patients' well-being was at a low level. The comparison with real-life studies further supports this claim. Antoun et al. (2022) report that patients undergoing dialysis are in a constant state of diminished well-being. García-Martínez et al. (2020) likewise observed that prolonged hemodialysis is associated with reduced physical, mental, and social health.

#### 4.3.2 Relationship between the Psychosocial Factors and Quality of Life

Many participants showed signs of persistent distress, with depression scores between 0.54 and 1.59, indicating mild to moderate symptoms. Psychological distress was the primary problem in most cases. Fatigue (M = 1.59) and sleep disturbances (M = 1.41) were the most frequent symptoms; however, 16.4% of respondents reported that they had suicidal thoughts, even though the occurrence of such thoughts was rare. Interpretatively, these findings can be considered as patients with ESRD are not only physically burdened by dialysis, but they have to deal with the psychological challenges, which make their distress even more profound.

Psychological distress showed a clear negative link to QoL ($r = –0.583$, $p < 0.01$), echoing Alshraifeen (2020), who found anxiety and depression widespread among dialysis patients and tied to poorer well-being. Correspondingly, Al-Nashri and Almutary (2021) reported that, among psychological factors, distress was the strongest predictor of QoL among renal patients, and its effect was typically greater than that of clinical variables such as dialysis adequacy. The present study affirms these statements and, by implication, that mental health care, alongside medical treatment, contributes most to patients' outcomes.

Descriptive findings indicated that 63.8% of patients named one "special person" as their emotional support; however, only 41.5% of patients felt supported by friends, and 46.7% were dissatisfied with family support. The difference in social support networks is important, as the inadequacy of the support from the family and friends may lead to an increased susceptibility to psychosocial stress due to neglect.

Social support was strongly positively associated with QoL ($r = 0.555$, $p < 0.01$), indicating that patients with supportive social networks cope better than those experiencing isolation. Several studies before, such as the research by Shukri et al. (2020) in Malaysia, have found that the quality of life (QoL) of patients is positively influenced by the provision of emotional and instrumental support, which is part of the help given by the closest relations, through the decrease of loneliness and the encouragement of treatment adherence. Hara et al. (2021) observed that patients with strong peer connections and support from healthcare providers, despite severe symptoms, reported high levels of life satisfaction. This is consistent with stress and coping theory, which posits that a person's perception of illness and use of coping strategies determine their emotional and general well-being. In Botswana, findings indicate that support exists but is limited to a few individuals rather than broader networks, which may contribute to low QoL scores.

## 5. Conclusion

Conclusively, the study findings revealed that ESRD patients undergoing hemodialysis in Gaborone, Botswana, generally have a poor quality of life. Assessments across the mental, physical, social, and environmental domains revealed significant constraints on daily functioning and life satisfaction. The research found that among the determinants of QoL, psychological distress is the most significant factor contributing to patients' decline in well-being. Social support was found to be a decisive factor in enhancing patients' coping and adjustment, acting as a key protective factor. Patients receiving support from significant others, family members, and close social networks experienced a sense of belonging, were hopeful, and were resilient in the face of chronic illness. This emphasizes the importance of integrating psychosocial support into the management of chronic kidney disease.

## 6. Recommendations

Findings showed poor overall well-being among patients. This calls for targeted policies to address QoL challenges and for routine screening by health workers to identify and refer vulnerable individuals early.

Psychosocial distress was significantly associated with quality of life. Hence, medical professionals in Botswana should integrate mental health support as a standard component of hemodialysis programs to improve mental health outcomes, treatment adherence, and overall quality of life. Additionally, strengthening social and family support systems is another important recommendation. The research findings revealed that the presence of a significant supportive individual yielded the greatest benefit.

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