A Comprehensive Study on the Quality of Life of End-Stage Renal Disease Patients Undergoing Hemodialysis at a Malaysian Teaching Hospital

Azmi Ab Manan*, Alias Mahmud, Abdul Raimi Abd Kadir** Mohd Hafizul Hisyam Che Hassim ** Zaimatul Ruhaizah Kamarazaman****
Faculty of Technology and Applied Sciences (FTAS)

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Abstract- End-Stage Renal Disease (ESRD) is a debilitating chronic condition that requires lifelong hemodialysis (HD), which, while essential for maintaining physiological stability, significantly influences patients' overall Quality of Life (QOL). This study aimed to assess the multidimensional QOL of ESRD patients undergoing HD at the Universiti Sains Malaysia Hospital (HUSM). A cross-sectional study involving 25 randomly selected patients was conducted using a validated questionnaire adapted from the KDQoL-SF24, covering four domains: Physical Self-Functioning, Emotional Well-being, Disease Burden on Daily Life, and Satisfaction with Staff Care. Data were analyzed using descriptive statistics and reliability testing via SPSS Version 27. A response rate of 96% (n=24) was recorded, with participants predominantly female (54.2%), aged above 51 years (41.7%), and receiving dialysis for more than three years (70.8%). The overall reliability of the instrument was excellent (Cronbach's $\alpha = 0.869$). Findings indicated moderate physical functioning (Mean = 3.46), moderate emotional disturbance (Mean = 2.83), and a notable burden of disease on daily living (Score = 28; "Affected"), while satisfaction with staff care remained high (Mean = 4.41). Overall, QOL among ESRD patients at HUSM was suboptimal, particularly affected by physical limitations and emotional distress. The study highlights the need for integrative, patient-centered approaches incorporating psychological support, education, and lifestyle interventions to enhance well-being and treatment outcomes.

Index Terms- Quality of Life, Hemodialysis, End-Stage Renal Disease, ESRD, Emotional Well-being, Depression, Chronic Kidney Disease, Malaysia.

I. INTRODUCTION

End-Stage Renal Disease (ESRD) represents the irreversible, final stage of chronic kidney disease (CKD), characterized by a catastrophic decline in glomerular filtration rate (GFR < 15 mL/min/1.73m²), necessitating renal replacement therapy (RRT) for survival [1]. The global prevalence of CKD and its progression to ESRD constitutes a major public health crisis, with millions of patients worldwide dependent on dialysis or transplantation [2]. In Malaysia, the burden is substantial and growing, driven by a high prevalence of its primary aetiologias, namely diabetes mellitus and hypertension, leading to one of the highest incidences of dialysis treatment in the world [3].

Hemodialysis, the most common form of RRT, performs the vital functions of the failed kidneys by removing uremic toxins and managing fluid and electrolyte balance. While it is a life-prolonging intervention, it is not a cure. The regimen itself typically involving three sessions per week, each lasting four hours imposes a rigorous and unrelenting schedule on patients. This, coupled with stringent dietary and fluid restrictions, frequent comorbidities, and medication regimens, transforms the patient's life, often leading to a state of "dialytic dependence" that permeates every aspect of their existence [4].

The concept of Health-Related Quality of Life (HRQOL) has thus become a paramount outcome measure in nephrology. The World Health Organization (WHO) defines QOL as "individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" [5]. HRQOL narrows this focus to the impact of health and disease on well-being. For ESRD patients, a poor HRQOL is not merely about feeling unwell; it is a powerful, independent predictor of clinical outcomes, including higher hospitalization rates, increased morbidity, and elevated mortality [5].

Despite technological advancements in dialysis efficiency, studies consistently report that the HRQOL of dialysis patients remains significantly lower than that of the general population and even other chronic illness groups [6].

II. METHODOLOGY

A descriptive cross-sectional study design was employed to assess the quality of life (QOL) of hemodialysis patients, as this approach provides a snapshot of QOL levels at a single point in time and is suitable for identifying patterns and areas requiring intervention [7]. The study was conducted at the Hemodialysis Unit of Hospital Universiti Sains Malaysia (HUSM), a tertiary-care teaching hospital in Kelantan, involving a source population of 50 adult end-stage renal disease (ESRD) patients actively receiving hemodialysis between 2021 and 2022. Simple random sampling was used to minimize selection bias, and although the [8] table recommends a sample size of 44 for a population of 50, logistical constraints during the COVID-19 pandemic resulted in a final sample of 25 patients who provided informed consent. Eligible participants were adults aged 18 years and above, diagnosed with ESRD for more than three months, undergoing maintenance hemodialysis at HUSM for more than three months, mentally competent, and able to communicate in Malay, while those with acute kidney injury, severe cognitive impairment or psychotic disorders, or those who were hospitalized or critically ill were excluded. Data collection was conducted using a structured, self-administered questionnaire consisting of socio-demographic items and the validated Malay version of the KDQoL-SF24, which assessed four domains: physical self-functioning, emotional well-being, disease burden on daily life, and satisfaction with staff care, using a 5-point Likert scale. Content validity was established through expert review, and a pilot test with five patients confirmed clarity and usability of the instrument, which demonstrated excellent internal consistency (Cronbach's alpha = .869). Ethical approval was obtained from the Research Ethics Committee (Human) of Universiti Sains Malaysia (Reference No.: USM/JEPeM/YYYY/XXXX), and permission was granted by relevant departmental authorities, with confidentiality and anonymity of participants strictly maintained. Data were analyzed using SPSS Version 27, where categorical variables were summarized using frequencies and percentages, while continuous variables, including QOL scores, were reported as means and standard deviations, and domain scores were interpreted using predefined cut-off points indicating low (1.00–2.33), moderate (2.34–3.66), and high (3.67–5.00) levels.

III. FINDINGS AND DISCUSSION

This study explored the multidimensional Quality of Life (QOL) among End-Stage Renal Disease (ESRD) patients undergoing hemodialysis at Hospital Universiti Sains Malaysia (HUSM). A total of 25 participants were selected through simple random sampling, with a response rate of 96% (n = 24). The demographic profile of the participants showed that the majority were female, representing 54.2% of the total respondents, and most were aged above 51 years. The chronicity of illness was evident as 70.8% had undergone hemodialysis treatment for more than three years. These characteristics mirror global ESRD trends, in which prolonged dialysis is common among older populations who present with multimorbidity and progressive decline in functional capacity [9]; [10].

The overall reliability of the KDQoL-SF24–adapted instrument demonstrated strong internal consistency with a Cronbach's alpha of 0.869, confirming that the instrument effectively captured the psychosocial and clinical dimensions of QOL in this context. Across the physical domain, the findings revealed a moderate level of physical functioning (Mean = 3.46). Many participants described limitations in daily mobility, fatigue, and reduced endurance, which are well-documented consequences of long-term hemodialysis and the catabolic effect of ESRD [11]. These physical restrictions frequently impair the ability to perform routine tasks and are closely associated with lower overall QOL.

Emotional well-being emerged as one of the most affected domains, reflected by a mean score of 2.83, indicating moderate emotional disturbances among respondents. Participants commonly reported feelings of anxiety, low mood, and concerns regarding disease progression findings consistent with previous studies that highlight the psychological vulnerability of hemodialysis patients [11]. The chronic nature of ESRD, coupled with the rigid dialysis schedule and financial burden, can intensify emotional stress and significantly impair psychological resilience.

The disease burden on daily life was also markedly high, with an overall score of 28, categorized as "Affected." Respondents described profound disruptions in their social roles, family responsibilities, employment opportunities, and leisure participation. The time-consuming nature of hemodialysis often requiring three to four sessions weekly leads to lifestyle restrictions, diminished autonomy, and social isolation, as supported by previous findings from [12]. These cumulative burdens reinforce the multidimensional challenges faced by ESRD patients beyond physiological symptoms alone.

Despite these limitations, satisfaction with staff care was notably high, with a mean score of 4.41. Patients consistently expressed trust, gratitude, and a sense of security with the healthcare professionals managing their treatment. This aligns with the literature indicating that strong patient–provider relationships significantly improve treatment adherence, emotional coping, and overall QOL (Feroze et al., 2010). The compassionate, empathetic, and competent care provided by dialysis nurses and physicians at HUSM appears to serve as a critical protective factor against the psychosocial strain experienced by patients.

Taken together, the findings illustrate that QOL among ESRD patients in this setting remains suboptimal particularly in physical and emotional domains despite the high level of satisfaction with staff care. Emotional well-being emerged as a distinctly vulnerable area, highlighting the interconnectedness between psychological distress and perceived disease burden. These results reinforce the need for holistic, patient-centered nephrology care that extends beyond routine clinical monitoring. Incorporating psychological interventions, counselling, patient education, and self-management training may provide substantial improvements in patient outcomes, as strongly advocated by nephrology guidelines [13]. Furthermore, lifestyle support interventions such as structured exercise programs, dietary counselling, and social support groups could mitigate disease burden and promote adaptive coping.

In conclusion, the study underscores that while hemodialysis successfully sustains physiological stability, it falls short in addressing the broader psychosocial and emotional needs of ESRD patients. Comprehensive integrative care models are urgently required to enhance QOL, strengthen emotional resilience, and support long-term adaptation to the chronic demands of dialysis therapy.

IV. CONCLUSION

In conclusion, this study confirms that ESRD patients on hemodialysis at HUSM experience a substantially compromised quality of life. While they are highly satisfied with the interpersonal and supportive care from staff, their lives are significantly impaired by physical limitations and, most critically, by severe emotional and psychological distress. The disease imposes a heavy burden on their daily activities and sense of self. The findings highlight that excellent technical and interpersonal care, while vital, is insufficient to address the profound psychosocial sequelae of this chronic, life-altering condition

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AUTHORS

First Author – Azmi Ab Manan, Msc.educational, Faculty of Technology and Applied Sciences (FTAS) azmi_manan@oum.edu.my
Second Author – Alias Mahmud, PhD, Faculty of Technology and Applied Sciences (FTAS) aliasmahmud@oum.edu.my
Third Author – Abdul Raimi Abd Kadir, Msc.educational, Faculty of Technology and Applied Sciences (FTAS) abdulraimi@oum.edu.my
Fourth Author - Mohd Hafizul Hisyam Che Hassim, Bach medical health sciences, of Hospital Universiti Sains Malaysia (HUSM) hafizulhisyam@usm.my
Fifth Author - Zaimatul Ruhaizah Kamarazaman, Msc.educational, Faculty of Technology and Applied Sciences (FTAS) zaimatul_ruhaizah@oum.edu.my

Correspondence Author – Azmi Ab Manan, Msc, educational, Faculty of Technology and Applied Sciences (FTAS) azmi_manan@oum.edu.my 0199807662.