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HEALTH-RELATED QUALITY OF LIFE AMONG HEMODIALYSIS PATIENTS AT HEMODIALYSIS DEPARTMENT, THAI BINH MEDICAL UNIVERSITY HOSPITAL IN 2025

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Health-related quality of life assessment has become an essential component of evaluating the treatment process among hemodialysis patients. This cross-sectional study aimed to assess the health-related quality of life among 72 patients undergoing maintenance hemodialysis at the Hemodialysis Department of Thai Binh Medical University Hospital, using the Kidney Disease Quality of Life-36 (KDQoL-36) instrument. Among the five KDQoL-36 subscales, the symptoms and problems subscale yielded the highest mean score (59.7 ± 21.6), indicating relatively better symptom management. The most commonly reported and bothersome symptoms were muscle soreness, cramps, and dry skin. Conversely, the burden of kidney disease subscale had the lowest mean score (22.0 ± 16.6), highlighting the significant perceived heavy impact of kidney disease on patients' daily life. The most prominent burdens were the interference of kidney disease in daily activities and the excessive time spent managing the condition. The physical component summary and mental component summary scores were 31.2 ± 7.9 and 39.0 ± 10.9, respectively, suggesting that mental health was better preserved than physical functioning. These findings underscore the importance of regular symptom monitoring and implementing targeted supportive interventions to enhance the overall well-being of this population.

Keywords: Maintenance hemodialysis patients, end-stage renal disease, health-related quality of life.

I. INTRODUCTION

Chronic kidney disease (CKD) is a growing global health challenge, with end-stage renal disease (ESRD) representing the most advanced stage of kidney dysfunction. In 2024, it was estimated that approximately 850 million people worldwide were affected by kidney disease, with the majority living in low- and middle-income countries.[1] Furthermore, CKD is projected to rise from the 16th leading cause of years of life lost in 2016 to the 5th position in 2024.[2]

Hemodialysis (HD) remains the most widely used renal replacement therapy for ESRD, accounting for approximately 69% of all renal replacement therapy.[3] HD prolongs survival but also introduces a wide range of physical, psychological, and social challenges. These burdens can significantly impair patients' health-related quality of life (HRQoL), making HRQoL assessment a critical focus in the management of long-term HD care.

HRQoL encompasses multiple dimensions, including physical health, emotional well-being, social relationships, and functional capacity. For patients undergoing regular hemodialysis, these domains are often impacted by treatment-related limitations such as fatigue, dietary and fluid restrictions, dependence on

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medical technology, and disruptions to personal and professional life. Consequently, HRQoL assessment has become a vital component of evaluating treatment outcomes, guiding clinical decisions, and designing patient-centered interventions.

In Vietnam, CKD was among the ten leading causes of mortality in the country in 2019.[4] Based on population-based studies, approximately 8.74 million people were estimated to have CKD, accounting for 12.8% of the population.[5] In October 2022, a total of 33,000 patients received HD as a form of renal replacement therapy.[6] One of the primary goals of treatment for patients with ESRD is not only to extend survival but also to enhance HRQoL.[5] Therefore, given the rising number of ESRD cases and the increasing demand for high-quality HD services, understanding the HRQoL of this population is essential. This study aims to assess the HRQoL among patients undergoing maintenance HD at the Hemodialysis Department of Thai Binh Medical University Hospital.

II. MATERIALS AND METHODS

1. Subjects

Inclusive criteria

- Patients aged 18 and above.
- Diagnosed with ESRD, defined as a glomerular filtration rate (GFR) of less than 15 mL/min/1.73m^2.[7,8]
- Receiving maintenance HD for at least three months at the study site.
- Provided written informed consent to participate in the study.

Exclusive criteria: Patients with documented cognitive impairment or experiencing acute complications during or immediately after the HD session.

Screening and recruitment: Potential participants were identified from the hospital's HD unit registry. Eligibility was confirmed by reviewing medical records and verifying diagnosis, dialysis duration, and cognitive status with the attending nephrologist. Patients meeting the inclusion criteria were approached in person, given an explanation of the study, and invited to participate. Written informed consent was obtained before enrollment.

2. Methods

Study design and sample size

A cross-sectional study was conducted at the Hemodialysis Department of Thai Binh Medical University Hospital between 03/2025 to 07/2025. All patients who met the eligibility criteria during the study period were invited to participate, and a total of 72 patients were enrolled.

Variables:

- Demographic characteristics: age, sex, education level, etc.
- Clinical data: CKD duration, HD duration, comorbidities, etc.
- HRQoL for five subscales: symptoms/problems of kidney disease (SPKD), effects of kidney disease (EKD), burden of kidney disease (BKD), physical component summary (PCS), and mental component summary (MCS).

The scoring process for HRQoL was performed using a standardized Microsoft Excel template provided by the KDQoL working group, which automatically calculated each subscale score according to the standard algorithm.[9] All KDQoL-36 domains were scored on a 0 - 100 scale, with a higher score indicating better perceived HRQoL. In the case of the BKD score, a higher score reflects a lower perceived burden of kidney disease.

Data collection

The KDQoL-36 instrument was originally developed in English.[9] This instrument includes five scales (36 items) that are related to kidney disease, which are SPKD (12 items), EKD (8 items), BKD (4 items), PCS (6 items), and MCS (6 items). For this study, we translated the instrument into Vietnamese, ensuring accuracy through consensus discussion. The translated version was piloted with 10 HD patients to assess clarity, cultural appropriateness, and logical flow. Minor wording adjustments were made based on participant feedback.

Data on demographic characteristics and HRQoL were collected through structured face-to-face interviews using a structured questionnaire. Each interview lasted approximately 15 - 20 minutes and was administered by trained staff. Responses were recorded directly into a REDCap database to minimize transcription errors. Clinical information, including comorbidities and dialysis duration, was extracted from the patients' medical records on the same day as the interview. Anthropometric measurements were collected by trained staff. Height and weight were measured without shoes and heavy clothing. Patients' weights were recorded before and after the dialysis session.

Data processing and analysis

Data were coded and entered into REDCap, and statistical analysis was performed using STATA 18.0 software. Continuous variables were summarized using means and standard deviation (SD) or medians and interquartile ranges (IQR). Categorical variables were summarized using frequencies and percentages.

3. Research ethics

The study was approved by the Institutional Scientific Review Board of Thai Binh University of Medicine and Pharmacy, established under Decision No.209/QĐ-YDTB, dated February 4, 2025. All participants were provided with sufficient information about the study subject and informed about the study's contents.

III. RESULTS

Table 1. Socio-demographic characteristics among study participants (n = 72)

Characteristics		n	%
Age (mean ± SD)		54.8 ± 14.1	
Gender	Female	33	45.8
	Male	39	54.2
Education level	Secondary school or lower	44	61.1
	High school or higher	28	38.9
Current occupation	Unemployed	24	33.3
	Retired	21	29.2
	Others	27	37.5
Marriage status	Married	48	66.7
	Single/Divorced/Widowed	24	33.3
Living with	Family or caretaker	69	95.8
	Alone	3	4.2

Characteristics		n	%
Distance to hospital (km)	< 5	19	26.4
	5 - 10	10	13.9
	> 10	43	59.7
Health insurance	Yes	72	100.0
	No	0	0.0
Number of comorbidities	0	18	25.0
	1	30	41.7
	≥ 2	24	33.3
CKD duration (years)	< 5	16	22.2
	5 - 10	31	43.1
	> 10	25	34.7
Hemodialysis duration (years)	< 5	32	44.4
	5 - 10	25	34.7
	> 10	15	20.9

A total of 72 maintenance HD patients participated in the study. The mean age of participants was 54.8 years. Of the total participants, 54.2% were male and 45.8% were female. In terms of education level, the majority (61.1%) had attained secondary school or lower, while 38.9% had completed high school or higher education. Regarding occupation, 33.3% were unemployed, 29.2% were retired, and 37.5% reported other types of employment. Most participants were married (66.7%). In addition, a large majority (95.8%) lived with family members or a caretaker, and only 4.2% reported living alone. When asked about their distance to the hospital, 26.4% lived within 5km, 13.9% between 5 to 10km, and the majority (59.7%) lived more than 10km away. All participants (100.0%) had health insurance.

In terms of clinical characteristics, among the 72 participants, 41.7% had one comorbidity, while 25.0% had none, and 33.3% had two or more comorbidities. Regarding CKD duration, 43.1% of participants had lived with CKD for 5 - 10 years, 34.7% for more than 10 years, and slightly more than one-fifth had been on HD for more than 10 years.

Table 2. Health-related quality of life scores among study participants (n = 72)

Scores	Mean ± SD
Physical component summary (PCS)	31.2 ± 7.9
Mental component summary (MCS)	39.0 ± 10.9
Burden of kidney disease (BKD)	22.0 ± 16.6
Symptoms/problems of kidney disease (SPKD)	59.7 ± 21.6
Effects of kidney disease (EKD)	52.6 ± 20.1

Table 2 summarizes the KDQoL-36 subscale scores. The SPKD domain had the highest mean score (59.7 ± 21.6), indicating relatively favorable symptom control. The EKD domain scored 52.6 ± 20.1, suggesting a moderate perceived impact on daily activities. In contrast, the BKD domain had the lowest score (22.0 ± 16.6), reflecting the substantial perceived interference of CKD in daily life. The PCS score was 31.2 ± 7.9, and the MCS score was 39.0 ± 10.9, both below optimal levels, indicating considerable physical and mental health limitations. PCS was markedly lower than MCS, highlighting greater physical impairment.

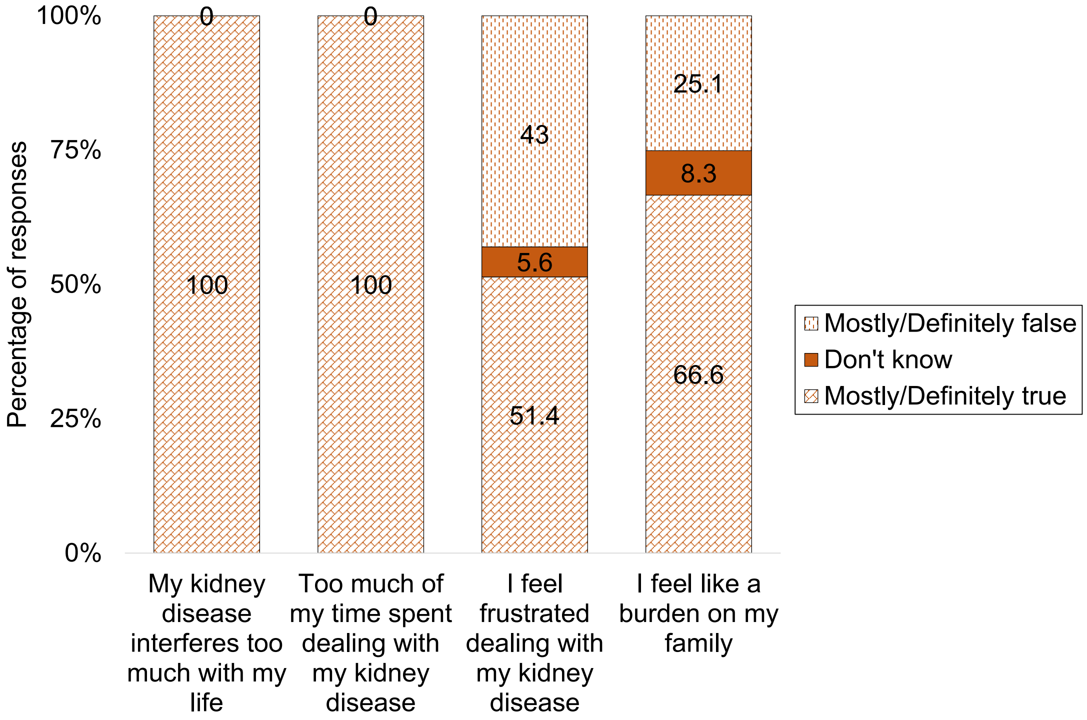

Chart 1. Responses to the burden of kidney disease on daily life among study participants (n = 72)

Chart 1 illustrates the participants' responses regarding the burden of kidney disease on their daily life. The majority of participants reported that their kidney disease significantly interferes with their life and that managing the condition consumes too much of their time, with 100.0% of responses falling into the "mostly true" and "definitely true" categories. In contrast, responses to emotional aspects of the disease, such as frustration and feeling like a burden on family, were more mixed. While a substantial proportion of participants acknowledged feelings of frustration (51.4%) and guilt (66.6%), others expressed uncertainty (5.6% and 8.3%, respectively) and disagreement (43.0% and 25.1%, respectively) with these feelings.

Chart 2 illustrates the distribution of responses to individual symptoms and problems related to kidney disease among participants. The most frequently reported symptoms that were "very much bothered" and "extremely bothered" included soreness in muscles, cramps, and dry skin, with percentages of responses of 43.0%, 43.0%, and 37.5%, respectively. In addition, over half of the participants reported moderate to high levels of bother due to symptoms such as lack of appetite, feeling washed-out or drained, and problems with access site. In contrast, shortness of breath, chest pain, and nausea or upset stomach were less frequently reported as highly bothersome. 58.3%, 63.9%, and 68.0% of study participants responded “somewhat bothered” and “not bothered at all” to those symptoms, respectively.

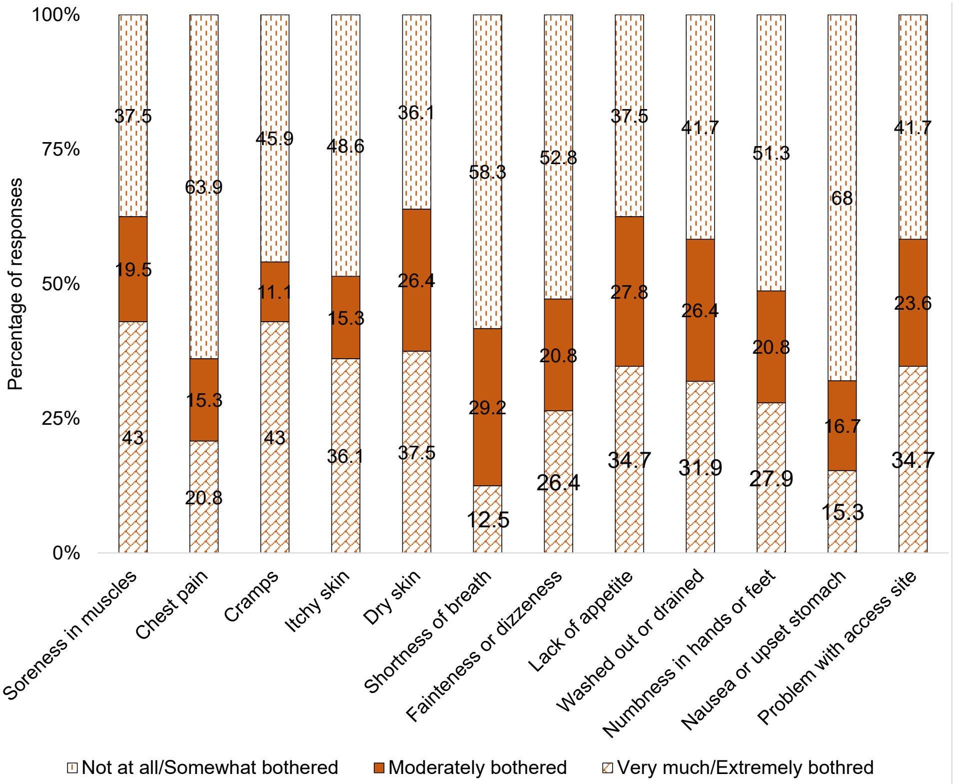

Chart 2. Responses to symptoms and problems of kidney disease among study participants (n = 72)

IV. DISCUSSION

This study collected data from 72 maintenance HD patients with a mean age of 54.8 years old. Slightly more than half were male (54.2%), and the majority had completed secondary school or lower (61.1%). In terms of employment, one-third were unemployed (33.3%), while others were retired (29.2%) or engaged in other types of work (37.5%). Most participants were married (66.7%) and lived with family members or a caretaker (95.8%). A significant proportion (59.7%) lived more than 10 kilometers from the hospital. All participants had health insurance, and the majority reported having at least one comorbidity. Most had been diagnosed with CKD for 5 years or more, and nearly half (44.4%) had undergone HD for less than 5 years.

This study provides insights into the HRQoL among patients undergoing maintenance HD, highlighting the considerable burden of CKD on multiple aspects of daily life.

Among the five subscales measured using the KDQoL-36, the SPKD domain had the highest score (59.7 ± 21.6), suggesting relatively effective symptom control in this population. This may reflect regular medical follow-up, symptom management during routine dialysis care, and familiarity with chronic symptom patterns. Similar findings were reported in other Vietnamese studies, such as Ngo Hoang Anh and colleagues, who conducted a study on 78 hemodialysis patients in Binh Phuoc Hoan My Hospital in 2023. Using the KDQoL-SF instrument, they reported a symptom/problem list score of 57.4 ± 20.3.[10] Despite the relatively higher score in this subscale, several symptoms such as dry and itchy skin, muscle soreness, and cramps were frequently reported as highly bothersome. These symptoms are well-recognized consequences of CKD and maintenance HD. For instance, dry skin may result from electrolyte imbalances and accumulation of uremic toxins, leading to persistent itching and discomfort. Muscle soreness and cramps are often related to rapid fluid and electrolyte shifts during dialysis, as well as intradialytic hypotension and muscle deconditioning over time. Additionally, symptoms like lack of appetite, feeling washed-out or drained, and problems at the access site were found to significantly affect patients' daily life. These findings are aligned with previous studies. For example, a study on 50 HD patients in the United States reported muscle cramping, fatigue, and dermatologic issues as the most common complaints.[11] Another large-scale study involving 413,964 dialysis patients also identified soreness, cramps, dermatologic problems, and fatigue as symptoms with a substantial impact on HRQoL.[12] These symptoms can disrupt sleep, reduce physical activity, and further impair nutritional status, exacerbating HRQoL decline. The persistence of these symptoms despite regular treatment underscores the need for multidimensional symptom management strategies, including careful dialysis prescription adjustment, routine skin care, tailored exercise programs, and targeted nutritional counseling.

In contrast, the BKD domain scored the lowest, highlighting the heavy subjective burden of ESRD. This finding is also supported by the study of Vo Ngoc Trang Dai et al. and Pham Minh Khue et al., where the burden subscale had the lowest score (29.71 ± 22.65) and (29.55 ± 26.79) among the five measured domains, respectively.[13,14] Chart 1 in our study illustrates that many participants strongly agreed with statements such as "My kidney disease interferes too much with my life" and "Too much of my time is spent dealing with my kidney disease". These results highlight the extensive time and lifestyle constraints associated with dialysis, which are known to adversely affect patients' personal, social, and occupational roles. To be more specific, findings from previous studies indicate that many patients expressed that dialysis schedules limited their ability to work, attend family events, or maintain an active social life. The frequent hospital visits, dependence on others for transportation, and fatigue associated with treatment further restricted their autonomy and contributed to a sense of lost independence.[15-18]

The PCS and MCS scores were both below 50 as the average HRQoL score, reflecting impairments in both physical and mental health. The lower PCS score points to significant physical limitations, likely influenced by disease progression, treatment side effects, and comorbidities. In addition, MCS scores were slightly higher than PCS, a pattern also reported in other studies.[12,13,19] This maybe due to coping mechanisms developed over years of living with CKD, combined with strong familial support in Vietnamese culture. In our study, most participants were married (66.7%) and lived with family members or a caretaker (95.8%), which may buffer psychological distress. Nonetheless, emotional strain persisted, as evidenced by 51.4% and 66.6% patients reporting feelings of frustration and guilt, respectively.

These findings emphasize the multidimensional nature of HRQoL in maintenance HD patients, showing that while physical health is significantly compromised, familial support and adaptation may help maintain relatively better mental health. Interventions should therefore address not only symptom relief but also strategies to reduce perceived disease burden and enhance physical functioning.

This study adds context-specific evidence on the HRQoL of maintenance HD patients in Vietnam, particularly in a provincial hospital setting. The domain-level analysis revealed both the areas where patients fare relatively well (symptom management) and the aspects most severely impacted (perceived disease burden), offering clear priorities for targeted interventions. However, this study has several limitations. It was conducted at a single center with a modest sample size, which may limit generalizability. The cross-sectional design precludes causal inference. Finally, detailed patient-level data on concomitant treatments and certain psychological factors were not collected, which may have influenced the HRQoL score.

V. CONCLUSION

This study highlights the complex HRQoL profile of maintenance HD patients in a provincial Vietnamese hospital. While symptoms were relatively well managed, patients experienced a high perceived burden of disease and notable physical limitations. Mental health scores exceeded physical health scores, possibly reflecting cultural resilience and strong family support. Future interventions should prioritize reducing disease burden, managing persistent symptoms such as muscle soreness, and dermatological issues, and expanding psychological support.

Acknowledgements and conflict of interest

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