



Quality of life in patients with chronic kidney disease receiving maintenance hemodialysis at Military Hospital 105 in 2025

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ABSTRACT

Objective: This study aims to describe the quality of life in patients with chronic kidney disease undergoing maintenance hemodialysis at Military Hospital 105 in 2025. **Method:** A cross-sectional descriptive study was carried out using the KDQOL-36 instrument on 188 chronic kidney disease patients receiving maintenance hemodialysis at the Department of Nephrology – Hemodialysis, Military Hospital 105. **Results:** The overall quality of life among the participants was predominantly at a moderate to fair level, with a mean score of 51.2 ± 9.5 out of 100. Both physical and mental health component scores were relatively low, averaging 44.4 ± 19.2 and 43.5 ± 16.4 , respectively. **Conclusion:** Patients undergoing maintenance hemodialysis experience significant impairments in both physical and mental well-being. Comprehensive interventions in medical, psychosocial, and economic support are needed to improve the quality of life of chronic kidney disease patients undergoing maintenance hemodialysis.

Keywords: Quality of life, chronic kidney disease, hemodialysis.

INTRODUCTION

Chronic kidney disease (CKD) is characterized by a long-term decline in kidney function, which progresses silently and is often only detected when severe complications have already occurred. In the end-stage, when the glomerular filtration rate (GFR) drops significantly ($< 15 \text{ mL/min/1.73 m}^2$), patients require renal replacement therapy. Although kidney transplantation is the optimal treatment, hemodialysis remains the most prevalent modality globally ¹.

According to 2023 estimates, approximately 788 million adults (14.2%)

worldwide live with CKD, a significant increase from 378 million cases in 1990, indicating a sharp rise in both absolute numbers and disease burden over time ². In Vietnam, the Ministry of Health estimates that over 10 million individuals suffer from CKD, making it one of the leading causes of mortality.

While maintenance hemodialysis treatment prolongs life, it significantly impacts patients' physical, mental, and social well-being, consequently reducing their quality of life (QoL). Previous studies indicate that patients undergoing hemodialysis often experience a lower QoL compared to those with other chronic

diseases such as cancer, heart disease, and musculoskeletal disorders^{3, 4}. These patients commonly suffer from physical, psychological, and social issues, leading to exhaustion, loss of appetite, and sleep disturbances, all of which contribute to a reduced quality of life^{4, 5, 6}.

Military Hospital 105 currently serves a large cohort of hemodialysis patients amidst limited healthcare resources. However, there is a lack of research evaluating the QoL of this specific population at our institution. Therefore, this study aimed to describe the QoL of CKD patients undergoing maintenance hemodialysis at Military Hospital 105 in 2025. The findings will provide an empirical foundation for developing appropriate nursing care and intervention strategies.

METHODS

Subjects: Patients diagnosed with end-stage chronic kidney disease (ESRD) undergoing maintenance hemodialysis at Military Hospital 105.

Inclusion criteria: Adult patients (≥ 18 years old) diagnosed with ESRD receiving regular hemodialysis, capable of communicating and completing the questionnaire independently or via interview and providing written informed consent.

Exclusion criteria: Patients in acute medical emergencies or with severe acute comorbidities; those with a history of or current treatment for severe psychiatric disorders; individuals with severe sensory or cognitive impairments precluding survey completion.

Study setting and duration: The Department of Nephrology and Hemodialysis, Military Hospital 105, from January 2024 to June 2025.

Study design: A cross-sectional descriptive study.

Sample size: The sample size was calculated using the formula for estimating a population mean:

$$n = \frac{Z_{1-\frac{\alpha}{2}}^2 \sigma^2}{\varepsilon^2 \mu^2}$$

Where:

n: is the sample size of the study.

Z: is the confidence coefficient. $Z = 1.96$ corresponds to a confidence level $\alpha = 0.05$.

σ : is the standard deviation of QoL in patients with chronic kidney disease undergoing hemodialysis.

μ : the mean value of QoL in patients with chronic kidney disease undergoing hemodialysis.

ε : acceptable relative error; choose $\varepsilon = 0.079$.

Based on a study by Vo Ngoc Trang Dai et al⁶ (2024), utilizing $\mu = 48.43$, and $\sigma = 25.57$, the minimum required sample size was 171. To account for a potential 10% dropout or non-response rate, the final sample size was adjusted to 188 patients.

Sampling method: Non-probability consecutive convenience sampling.

Instruments: The instrument consists of two parts:

Part 1: Demographic and clinical characteristics (age, gender, occupation, education, residence, income, dialyzer reuse frequency, and comorbidities).

Part 2: The validated Vietnamese version of the KDQOL-36 questionnaire⁶. The 36-item tool is divided into three main dimensions: Physical Component Summary (PCS), Mental Component Summary

(MCS), and kidney disease-specific domains. Items are scored on a Likert scale and transformed to a 0–100 scale. QoL was categorized as poor (0–25), moderate (26–50), good (51–75), and very good (76–100).

Data collection

Trained researchers conducted interviews 30 minutes after the initiation of the hemodialysis session. Prior to the interview, the study's purpose and participants' rights were clearly explained. Each interview lasted approximately 15–20 minutes.

RESULTS

Table 1. Demographic and clinical characteristics of the participants (n = 188)

	Characteristic	n	%
Age (years)	< 40	19	10.1
	40-59	83	44.1
	≥ 60	86	45.8
	Mean age ± SD (min – max): 56.3 ± 13.6 (24 - 88)		
Gender	Male	110	58.5
	Female	78	41.5
Occupation	Office staff/workers/employees	10	5.3
	Farmers	109	58.0
	Traders/Freelancers/Homemakers	34	18.1
	Retirees	23	12.2
	Others	12	6.4
Dialyzer Reuse Frequency	3-4 times	15	8.0
	5-6 times	173	92.0
Co-morbidities	None	49	26.1
	One co-morbidity	123	65.4
	Two or more co-morbidities	16	8.5

Data analysis

Qualitative variables: Calculate frequencies and percentages (%) to describe the data distribution.

Quantitative variables: Represent the data using mean and standard deviation.

Research ethics: The study protocol was approved by the Institutional Review Board of Nam Dinh University of Nursing (Approval No. 570/GCN-HĐĐĐ, March 5, 2025). All collected data were kept strictly confidential and used solely for research purposes.

As presented in Table 1, the mean age of the participants was 56.3 ± 13.6 years (ranging from 24 to 88 years), with the largest age group being ≥ 60 years (45.8%). The cohort was predominantly male (58.5%). Regarding occupational status, the majority of patients were farmers (58.0%). Clinically, a significant proportion of the patients (92.0%) reported a dialyzer reuse frequency of 5–6 times. Furthermore, 73.9% of the study population had at least one underlying comorbidity.

Table 2. Overall quality of life scores (n = 188)

QoL domains	Mean \pm SD	Min	Max
Physical component score	44.4 ± 19.2	4.2	91.7
Mental component score	43.5 ± 16.4	13.3	83.3
Overall QoL Score	51.2 ± 9.5	25.5	71.6

The mean overall QoL score was 51.2 ± 9.5 . When evaluating the primary components, patients demonstrated comparable impairments in both physical and mental dimensions, with the Physical Component Summary (PCS) and Mental Component Summary (MCS) averaging 44.4 ± 19.2 and 43.5 ± 16.4 , respectively.

Table 3. Classification of quality of life levels of CKD patients undergoing hemodialysis (n = 188)

QoL domains	Poor n (%)	Moderate n (%)	Good n (%)	Very Good n (%)
Physical component score	49 (26.1)	70 (37.2)	67 (35.6)	2 (1.1)
Mental component score	27 (14.4)	97 (51.6)	60 (31.9)	4 (2.1)
Overall QoL	2 (1.1)	97 (51.6)	89 (47.3)	0 (0.0)

Based on the score categorization (Table 3), the overall QoL of the patients was predominantly distributed between the moderate (51.6%) and good (47.3%) levels. Notably, no patient achieved a “very good” overall QoL score. Regarding the physical and mental health dimensions, the majority of scores fell into the moderate category (37.2% and 51.6%, respectively), while “poor” QoL was more prevalent in physical health (26.1%) compared to mental health (14.4%).

Table 4. Physical component score of CKD patients undergoing hemodialysis (n = 188)

Domains	Mean \pm SD	Min	Max
Physical functioning	43.9 ± 39.1	0	100
Role-physical	40.2 ± 38.9	0	100
Bodily pain	57.9 ± 26.5	0	100
General health	67.2 ± 33.3	0	100

Within the physical health domains (Table 4), “General Health” recorded the highest mean score (67.2 ± 33.3), whereas “Role-Physical” was the most severely impacted dimension (40.2 ± 38.9).

Table 5. Mental component score (MCS) of CKD patients undergoing hemodialysis (n = 188)

Domains	Mean \pm SD	Min	Max
Social functioning	37.3 ± 26.4	0	80
Role-Emotional	40.4 ± 49.2	0	100
Mental Health	36.6 ± 27.4	0	80
Overall Health Satisfaction	46.8 ± 50.0	0	100

In terms of mental health (Table 5), patients experienced the most significant limitations in “Mental Health” (36.6 ± 27.4) and “Social Functioning” (37.3 ± 26.4).

Table 6. Kidney disease-specific domains (n = 188)

Domains	Mean \pm SD	Min	Max
Symptoms of kidney disease	59.8 ± 18.0	25.0	100.0
Burden of kidney disease	54.5 ± 17.9	6.25	81.25
Effects of kidney disease	53.7 ± 10.5	21.9	75.0

Regarding the kidney disease-specific parameters (Table 6), the “Symptoms of kidney disease” dimension yielded the highest score (59.8 ± 18.0) among the disease-specific domains, while the “Effects of kidney disease” score was 53.7 ± 10.5 .

DISCUSSION

The findings of the present study demonstrate that the overall quality of life (QoL) of end-stage renal disease (ESRD) patients undergoing maintenance hemodialysis is predominantly at a moderate level (51.2 ± 9.5). This aligns closely with previous researches, specifically the study by Nguyen et al ⁷ which reported a mean score of 51.8 at the Central Transport Hospital, and Vo et al ⁵ which documented a score of 54.3 at Thong Nhat Hospital. These consistencies indicate that hemodialysis patients across various localities in Vietnam face similar challenges, reflecting the

profound burden of kidney disease and prevalent socio-economic constraints. Internationally, a study by Ramatillah et al ⁸ in Malaysia also highlighted a significant decline in QoL across multiple domains for hemodialysis patients, emphasizing that individuals in developing nations often struggle with limited healthcare resources and social support systems.

In our study, both the Physical Component Score (PCS) and Mental Component Score (MCS) were substantially impaired, averaging 44.4 ± 19.2 and 43.5 ± 16.4 , respectively. Consistent with the findings of Vo et al ⁶, although differing

in absolute scores, both confirming that physical health and disease burden are the most affected areas. This result is somewhat similar to the study by Vo Ngoc Trang Dai et al ⁶ physical health and the burden of kidney disease emerged as the most severely affected areas. Notably, within the physical health dimension, “Role-Physical” recorded the lowest score (40.2 ± 38.9), reflecting a severe disruption in patients’ daily activities and occupational capacities. Only 1.1% of patients achieved a “Very Good” physical QoL, while the moderate and poor categories accounted for the vast majority. This pronounced physical vulnerability is corroborated by Tran et al ⁹ and Nguyen et al ⁷ as well as a recent meta-analysis by Raofi et al ¹⁰ which concluded that hemodialysis patients consistently exhibit lower physical QoL compared to those receiving peritoneal dialysis. These evidences underscore the global impact of ESRD on patients’ physical well-being.

Regarding mental health, the mean MCS score indicates significant psychosocial distress. The “Mental Health” sub-domain was notably low (36.6 ± 27.4), emphasizing the profound psychological burden imposed by strict dietary regimens, machinery dependence, and chronic health anxiety. Interestingly, our MCS results are lower than those reported by Nguyen et al ⁷ (59.3 ± 24.1) and Vo et al ⁵ (60.29 ± 18.13). This discrepancy may be attributed to socio-economic disparities; our study population predominantly comprised farmers (58.0%) from suburban and rural areas, who generally possess fewer resources for mental health support and healthcare access compared to urban cohorts. Nevertheless, our findings parallel international evidence, such as the study by Alencar et al ¹¹ in Brazil, which demonstrated a strong correlation between

depressive symptoms and diminished mental QoL in hemodialysis patients.

When assessing disease-specific parameters, the “burden of kidney disease” score in our study (54.5 ± 17.9) was notably higher than those reported by Tran et al ⁹ in Nghe An (36.96 ± 17.32), Nguyen ¹² (26.76 ± 16.57), and Nguyen et al ¹³ at E Hospital (22.83 ± 14.78). This exacerbated burden further highlights the amplified economic and social challenges faced by patients residing in rural areas. In summary, our study reiterates that the QoL of hemodialysis patients remains low, necessitating holistic intervention programs that combine comorbidity management, psychosocial support, and financial assistance policies.

Regarding limitations, the cross-sectional design and the use of convenience sampling at a single dialysis unit restrict the generalizability of the findings. Additionally, the self-reported nature of the KDQOL-36 questionnaire may introduce subjective and temporal biases. Future multi-center, longitudinal studies employing randomized sampling are recommended to validate these findings and to explore the temporal dynamics of QoL in this vulnerable patient population.

CONCLUSION

The overall quality of life (QoL) among chronic kidney disease patients undergoing maintenance hemodialysis at Military Hospital 105 is moderate to good, reflecting many limitations in long-term treatment. Therefore, comprehensive intervention solutions are needed to improve the QoL for hemodialysis patients. Specifically, the healthcare system needs to develop effective chronic disease management programs, focusing on treatment and control

of comorbidities such as cardiovascular disease and diabetes. Simultaneously, health education programs should be designed to suit the patients' level of understanding, helping them improve self-care skills and treatment adherence. Furthermore, increased psychosocial support, mobilization of community resources, and financial assistance policies are needed to reduce the economic burden, improve access to healthcare services, and sustainably enhance quality of life.

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