



## Related factors of quality of life among patients with chronic renal failure undergoing hemodialysis at Binh Dan hospital, Vietnam

Nguyen Van Canh<sup>1</sup>, Emerson Galang Aliswag<sup>2</sup>

<sup>1</sup>Binh Dan hospital, Ho Chi Minh city;

<sup>2</sup>Dean, Master of Science in Nursing, St. Dominic College of Asia, Philippines

### ABSTRACT

**Background:** Chronic Kidney Failure (CKF) represents a significant medical and socio-economic challenge, particularly in developing countries like Vietnam, where its prevalence is on the rise. CKF patients undergoing regular hemodialysis face considerable challenges across physical, mental, social, and environmental dimensions, necessitating a comprehensive understanding of their quality of life (QoL). **Objectives:** This study aims to assess the socio-economic, demographic, and clinical factors influencing the quality of life (QoL) among patients undergoing regular hemodialysis. **Methods:** Utilizing a cross-sectional descriptive design, data were collected from 330 hemodialysis patients at Binh Dan Hospital in Ho Chi Minh City, Vietnam between March and June 2024. QoL was assessed using the WHOQOL-BREF instrument, which evaluates four domains: physical health, mental health, social relationships, and the environment. **Results:** The findings revealed that patients experienced moderate QoL, with mean scores of 3.12 ( $\pm 0.87$ ) for physical health, 2.98 ( $\pm 0.83$ ) for mental health, 3.14 ( $\pm 0.82$ ) for social relationships, and 3.33 ( $\pm 0.77$ ) for the environment. Correlation analysis indicated a significant relationship between gender and mental health QoL, with female patients reporting lower scores. Furthermore, the frequency of dialysis sessions negatively impacted mental health outcomes, emphasizing the need for targeted interventions. **Conclusions:** By identifying key predictors of QoL among CKF patients, emphasizing the importance of integrating physical, psychological, and social dimensions into patient care. The findings advocate for context-specific, holistic interventions to enhance the health and well-being of hemodialysis patients in Vietnam.

**Keywords:** Chronic Kidney Failure, Hemodialysis, Quality of Life, predictive factors, mental health

### INTRODUCTION

Chronic Kidney Failure (CKF) presents a significant medical and socio-economic burden, particularly in developing countries like Vietnam, where its prevalence continues to rise steadily <sup>1</sup>. CKF is characterized

by a progressive decline in kidney function, resulting in the accumulation of waste products in the bloodstream and necessitating renal replacement therapies, such as hemodialysis, to sustain life. While hemodialysis effectively compensates for

kidney failure by filtering the blood, it introduces substantial financial, physical, and psychological challenges <sup>2</sup>.

In Vietnam, the average monthly cost of hemodialysis treatment is approximately 10 million VND, which imposes a heavy financial strain on patients and their families, despite partial health insurance coverage <sup>3</sup>. The high frequency of treatments also disrupts patients' ability to maintain regular employment, compounding the economic burden <sup>4</sup>. Beyond economic challenges, hemodialysis patients face severe physical and mental health difficulties. Regular treatment sessions often lead to fatigue, muscle cramps, and nausea, while dependence on machines and caregivers can exacerbate feelings of helplessness. Notably, nearly 50% of patients undergoing hemodialysis experience depression, indicating a high prevalence of mental health issues in this population <sup>5</sup>. Social isolation is also widespread, as the demanding treatment schedule and reliance on others weaken social networks and further compromise psychological resilience <sup>6</sup>.

Social support from family, friends, and healthcare providers is crucial for enhancing patients' quality of life (QoL), and improving psychological adaptation <sup>7</sup>. However, the chronic nature of CKF and the intensive demands of hemodialysis often strain these relationships, heightening patients' feelings of isolation <sup>8</sup>. In Vietnam, research focusing on the comprehensive QoL of hemodialysis patients remains limited, despite the unique challenges they face across physical, mental, financial, and social dimensions. These patients not only bear substantial financial burdens but also encounter significant constraints in social interactions. Moreover, the high prevalence of mental health problems in this group

underscores the urgent need for effective and sustainable psychological support interventions <sup>9</sup>.

This study, therefore, seeks to assess the socio-economic, demographic, and clinical factors affecting QoL among hemodialysis patients. By doing so, it aims to provide the scientific basis for developing comprehensive, context-specific care strategies in Vietnam to enhance the health and well-being of hemodialysis patients.

## RESEARCH METHODOLOGY

**Study design:** This study utilized a cross-sectional descriptive design with analytical components, including correlation analysis, and multivariate regression, to identify predictive factors influencing quality of life (QoL) among patients undergoing hemodialysis.

**Study location and duration:** The research was conducted at Binh Dan Hospital in Ho Chi Minh City, Vietnam, where patients with chronic kidney failure (CKF) regularly undergo hemodialysis. Data collection occurred between March 1 and June 1, 2024.

**Study population and sample:** The study population consisted of CKF patients receiving regular hemodialysis at the hospital. A sample size of 330 patients was determined, with a 10% allowance for potential sample loss.

*Inclusion Criteria:* Patients aged 18 years or older currently undergoing regular hemodialysis. Those who provided informed consent after a full explanation of the study.

*Exclusion Criteria:* Patients with other kidney-related conditions (e.g., kidney stones, cancer...). Patients with severe communication difficulties or those physically or mentally unfit for interviews.

**Sampling technique:** Convenient sampling was applied, enrolling patients who met the inclusion criteria until the target sample size was reached during the data collection period.

**Research instruments and data collection methods:** The WHOQOL-BREF, developed by the World Health Organization in 1996, is a validated instrument for assessing QoL across four domains: physical health (7 items), mental health (6 items), social relationships (3 items), and the environment (8 items). The instrument consists of 26 items, rated on a 5-point Likert scale, with higher scores indicating better QoL. Domain scores were calculated by averaging item responses within each domain, with adjustments for negatively phrased items. The original psychometric properties of the WHOQOL-BREF have been established in various populations, demonstrating good reliability and validity <sup>10</sup>.

For this study, the WHOQOL-BREF was adapted for Vietnamese healthcare contexts, including language and cultural adjustments. Reliability testing using Cronbach's alpha ensured internal consistency, yielding values above 0.7 for all domains. Content validity was reviewed by a panel of experts

in nephrology and nursing. Pilot testing was conducted with 30 patients to refine clarity and cultural relevance.

Additionally demographic and clinical variables were collected, including age, gender, marital status, income, dialysis duration, frequency, BMI, anemia status, serum albumin, and erythropoietin use. These were incorporated into multivariate analyses to identify predictive factors.

Data were collected through direct interviews, administered by trained nurses. The interviews took approximately 20 minutes per participant and were conducted before dialysis sessions in a private and comfortable setting.

**Data analysis:** Data analysis was performed in two stages: (i) Descriptive statistics: Summarized demographic and clinical characteristics.; (ii) Correlation and regression analysis: identified relationships between variables and significant predictors of QoL outcomes;

**Research ethics:** Ethical approval was obtained from the Institutional Review Board at Trinity University of Asia and the hospital's ethical committee. All participants provided informed consent, ensuring voluntary and ethical involvement in the study.

## RESULTS

**Table 1. Characteristics of the study subjects and clinical conditions (N = 330)**

Demographic Variable	Category	Number	Percent (%)
Age Group (years)	25 - 30	6	1.8
	30 - 35	12	3.6
	35 - 40	28	8.5
	40 - 45	29	8.8
	45 - 50	45	13.6
	50 - 55	94	28.5
	55 - 59	116	35.2

Demographic Variable	Category	Number	Percent (%)
Gender	Male	257	77.9
	Female	73	22.1
Marital Status	Spouse	253	76.7
	Divorced	17	5.2
	Single	60	18.2
Educational Background	Graduate	289	87.6
	High school	7	2.1
	Unlettered	5	1.5
	Intermediate college	21	6.4
	Primary school	8	2.4
Place of Residence	Ho Chi Minh City	56	17.0
	Other	274	83.0
Chronic Illness	Yes	187	56.7
	No	143	43.3
Nutritional	Malnutrition	40	12.1
	No Malnutrition	290	87.9
Anemia	Anemia	158	47.9
	No Anemia	172	52.1

Table 1 revealed that the largest age groups among participants were 55–59 years (35.2%), followed by 50–55 years (28.5%), indicating that the majority were middle-aged or older adults. The sample was predominantly male, comprising 77.9% of participants. A significant proportion of participants (87.6%) had achieved at least a university-level education, demonstrating a strong educational foundation. Most participants (83.0%) resided outside Ho Chi Minh City. Additionally, more than half of the patients (56.7%) reported chronic conditions, with 47.9% experiencing anemia and 12.1% suffering from malnutrition.

**Table 2. Quality of life in four domains**

Domains	Mean	SD	Interpretation
Physical	3.12	0.87	Moderate
Mental	2.98	0.83	Moderate
Social	3.14	0.82	Moderate
Environmental	3.33	0.77	Moderate
<b>Total QoL</b>			Moderate

*Note: Not at all 1.00-1.49 / A little 1.50-2.49 / A moderate amount 2.50-3.49 / Very much 3.50-4.49 / Extremely 4.50-5.00*

Table 2 presents the mean scores and standard deviations (SD) across four quality-of-life domains for patients undergoing hemodialysis, all of which are at a moderate level. Specifically, the physical domain had a mean score of 3.12 (SD = 0.87), the mental domain scored a mean of 2.98 (SD = 0.83), with the lowest score, the social domain recorded a mean score of 3.14 (SD = 0.82), the environmental domain, with the highest score among the four, achieved a mean of 3.33 (SD = 0.77)

**Table 3. Multivariate regression analysis of characteristics and clinical factors influencing quality of life in mental health**

$\chi^2$ Tests	Value	df	p
Gender	40.3	26	0.036
Religion	7.7	26	0.100
Place of Residence	11.0	26	0.996
Occupation	123.0	112	0.223
Marital status	56.0	56	0.475
Family economic status	57.5	56	0.420
Nutritional	14.9	26	0.960
Anemia	29.7	26	0.279

Table 3 shows the results of a correlation analysis examining the relationships between quality of life (QoL) in mental health and socio-economic characteristics of hemodialysis patients using the Chi-square test ( $\chi^2$ ). The analysis revealed a significant correlation between gender and QoL in mental health ( $\chi^2 = 40.3$ ,  $df = 26$ ,  $p = 0.036$ ), identifying gender as a key influencing factor. Conversely, other socio-economic variables, including religion ( $\chi^2 = 7.7$ ,  $df = 26$ ,  $p = 1.000$ ), place of residence ( $\chi^2 = 11.0$ ,  $df = 26$ ,  $p = 0.996$ ), occupation ( $\chi^2 = 123.0$ ,  $df = 112$ ,  $p = 0.223$ ), marital status ( $\chi^2 = 56.0$ ,  $df = 56$ ,  $p = 0.475$ ), and family economic status ( $\chi^2 = 57.5$ ,  $df = 56$ ,  $p = 0.420$ ), nutritional status ( $\chi^2 = 14.9$ ,  $df = 26$ ,  $p = 0.960$ ), anemia status ( $\chi^2 = 29.7$ ,  $df = 26$ ,  $p = 0.279$ ), did not demonstrate significant correlations ( $p > 0.05$ ).

**Table 4. Multivariate regression coefficients and predictor factors for quality of life in mental health among hemodialysis patients**

Predictor	Estimate	SE	t	p
Intercept <sup>a</sup>	1.702	1.671	1.018	0.309
Chronic disease	-0.006	0.052	-0.122	0.902
Weight	-0.005	0.013	-0.380	0.704
Height	0.008	0.010	0.847	0.398
BMI	0.007	0.033	0.216	0.829

<b>Predictor</b>	<b>Estimate</b>	<b>SE</b>	<b>t</b>	<b>p</b>
Hemoglobin	0.020	0.020	0.989	0.323
Albumin	0.001	0.006	0.227	0.820
<b>Nutritional status</b>				
No Malnutrition – Malnutrition	0.070	0.099	0.706	0.480
<b>Anemia status</b>				
Anemia – No Anemia	0.030	0.124	0.241	0.810
<b>Academic level</b>				
High school – graduate	-0.053	0.176	-0.300	0.764
Unlettered – graduate	-0.185	0.207	-0.893	0.372
Intermediate college – graduate	-0.004	0.104	-0.040	0.968
Primary school – graduate	0.033	0.164	0.206	0.836
<b>Marital status</b>				
Divorced – Spouse	0.141	0.118	1.196	0.232
Single – Spouse	-0.035	0.065	-0.535	0.593
<b>Home economics</b>				
Poor – Wealthier	0.011	0.101	0.116	0.907
Medium – Wealthier	-0.030	0.069	-0.442	0.659
<b>Dialysis time</b>				
1-2 year – $\geq$ 3 year	0.058	0.072	0.808	0.419
< 1 year – $\geq$ 3 year	0.092	0.090	1.022	0.308
2-3 year – $\geq$ 3 year	-0.096	0.091	-1.057	0.291
<b>Dialysis frequency</b>				
2 – 1	-0.240	0.085	-2.819	0.005
3 – 1	-0.389	0.128	-3.043	0.003

Table 4 details the estimated regression coefficients for factors influencing the mental health of hemodialysis patients. The analysis indicates that the intercept was not statistically significant, with a t-value of 1.018 and a p-value of 0.309. Similarly, predictor variables such as “chronic disease status,” “weight,” “height,” “BMI,” “hemoglobin,” and “albumin” did not exhibit a significant impact on quality of life in mental health ( $p > 0.05$ ). Other factors, including “nutritional status,” “anemia status,” “family economic status,” and “duration of dialysis,” also showed no significant associations with mental health outcome. A notable finding was the significant negative effect of “dialysis frequency” on quality of life in mental health. Patients undergoing dialysis twice or three times per week reported worse mental health outcomes compared to those receiving dialysis once per week, with t-values of -2.819 ( $p = 0.005$ ) and -3.043 ( $p = 0.003$ ), respectively.

**Table 5. Multivariate regression analysis of factors influencing quality of life in mental health***Model Fit Measures*

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	AIC	BIC	RMSE	Overall Model Test			
							F	df1	df2	p
1	0.303	0.092	0.028	410	497	0.428	1.44	21	298	0.099

Table 5 shows the results of the overall model test for predicting quality of life in mental health of hemodialysis patients. The analysis yielded an R value of 0.303, indicating a weak positive correlation between the predictor variables and the outcome variable. The R<sup>2</sup> value of 0.092 suggested that approximately 9.2% of the variance in mental health-related quality of life can be explained by the predictor variables in the model.

**DISCUSSION**

The study offers a comprehensive analysis of the demographic and clinical factors influencing the quality of life (QoL) among chronic kidney disease (CKD) patients undergoing hemodialysis in Vietnam. The results indicated that patients experience moderate QoL across physical, mental, social, and environmental domains, which highlights the multifaceted challenges associated with hemodialysis treatment. Specifically, the physical domain scored a mean of 3.12 (SD = 0.87), while the mental domain scored lower at 2.98 (SD = 0.83), reflecting significant burdens in these areas <sup>11</sup>.

The moderate QoL scores suggest that patients face considerable challenges. Physically, issues such as fatigue and limited mobility were prevalent, which are consistent with the known physical demands of hemodialysis <sup>12</sup>. These physical limitations adversely affect patients' daily activities and autonomy, echoing findings from other studies that emphasize the physical toll of chronic kidney disease and its treatment <sup>13</sup>. Mentally, anxiety and depression were notably high, particularly among those undergoing more frequent

dialysis sessions. Statistical analysis confirmed a significant negative impact of dialysis frequency on mental health, with patients receiving dialysis two or three times per week reporting worse outcomes than those on a once-weekly schedule. This aligns with global research indicating that increased dialysis frequency can exacerbate psychological distress due to lifestyle restrictions and heightened dependency on caregivers <sup>7, 14, 15, 16, 17</sup>.

Social relationships among patients were moderately satisfactory but were hindered by the time demands of dialysis and reliance on caregivers, leading to feelings of social isolation. The reduced mobility and limited participation in social activities further contributed to diminished social satisfaction <sup>11</sup>. The environmental domain revealed financial strain and limited recreational opportunities as significant barriers to QoL. However, the positive influence of Vietnam's national health insurance policies on patients' perceptions of healthcare accessibility offers a glimmer of hope in this context.

Correlation analysis revealed a significant association between gender and QoL, with female patients often

reporting lower QoL compared to their male counterparts. This findings is consistent with previous studies that highlight the additional physical and psychological burdens faced by women in the context of CKD and hemodialysis <sup>5</sup>. Other socio-economic factors, such as nutritional status and anemia, did not demonstrate significant correlations with QoL, suggesting that psychological and social factors may play a more dominant role in influencing patients' overall well-being <sup>13</sup>.

The study did not find significant correlations between quality of life in mental health and factors such as nutritional status or anemia. This suggests that the mental health challenges experienced by hemodialysis patients are influenced by a broader spectrum of physical, psychological, and social factors, emphasizing the need for a holistic approach to enhance their overall QoL <sup>13</sup>.

These findings underscore the necessity for a comprehensive approach to enhance QoL among CKD patients undergoing hemodialysis. Strategies should include personalized physical rehabilitation, mental health counseling, and robust social support systems. Enhancing financial assistance and promoting community-based support networks could further alleviate the burdens associated with hemodialysis. Such interventions are crucial not only for improving the physical health of patients but also for fostering psychological resilience and social well-being, ultimately enhancing QoL in this vulnerable population <sup>2,18</sup>.

### LIMITATION

This study has several limitations that should be considered when interpreting the findings and planning future research.

The use of convenient sampling, with participants recruited from a single hospital, may limit generalizability, as the sample may not fully represent CKF patients across Vietnam. Additionally, the regression model explained only 9.2% of the variance in mental health-related QoL, indicating that critical factors, such as coping mechanisms, family dynamics, or cultural influences, may not have been included. Moreover, the study did not explore key psychosocial aspects like coping strategies. To address these gaps, future research should expand the scope of predictors to provide a more comprehensive understanding of QoL determinants in this population.

### CONCLUSION AND RECOMMENDATIONS

The study highlights significant factors influencing the quality of life (QoL) of patients with chronic kidney disease (CKD) undergoing hemodialysis in Vietnam. Participants reported moderate satisfaction levels across various QoL domains, with physical and mental health scores notably lower than those for social and environmental domains. These findings highlight the adverse effects of frequent dialysis sessions on mental health, underscoring the necessity for comprehensive support that addresses the multifaceted challenges faced by these patients.

In nursing practice, it is imperative to develop personalized care plans that incorporate regular mental health assessments and interventions. Nurses should prioritize enhancing patient education regarding the interrelationship between physical and mental health, thereby equipping patients with effective self-management strategies. Furthermore, improving healthcare accessibility through



culturally sensitive, patient-centered care models is essential for addressing the diverse needs of CKD patients undergoing hemodialysis, ultimately aiming to enhance their overall quality of life.

## REFERENCES

1. Ito J, Dung DTK, Vuong MT, et al. Impact and perspective on chronic kidney disease in an Asian developing country: a large-scale survey in North Vietnam. *Nephron Clinical Practice*. 2008, 109(1):c25-c32. doi: 10.1159/000134379.
2. Moradi M, Amiri M, Daneshi S, Heydarian SMT, Saghari S, Raesi R. Investigating the Effectiveness of a Virtual Family-centered Support Intervention on the Mental Health of Hemodialysis Patients and their Family Caregivers During the COVID-19 Pandemic. *The Open Public Health Journal*. 2024, 17(1). DOI: 10.2174/0118749445271736231123110235.
3. Nguyen-Thi H-Y, Le-Phuoc T-N, Tri Phat N, et al. The economic burden of chronic kidney disease in Vietnam. *Health Services Insights*. 2021, 14:11786329211036011. doi: 10.1177/11786329211036011.
4. Ahmed A, Fajer Alhamdan AA, Mangrio FA, Samiullah Shaikh AA. Socio-Economic Burden of Hemodialysis on Patients' Families. *Pakistan Journal of Medical & Health Sciences*. 2023, 17(04):648-648. DOI: <https://doi.org/10.53350/pjmhs2023174648>.
5. Al Salmi I, Kamble P, Lazarus ER, D'Souza MS, Al Maimani Y, Hannawi S. Kidney Disease-Specific Quality of Life among Patients on Hemodialysis. *International journal of nephrology*. 2021, 2021(1):8876559. doi: 10.1155/2021/8876559.
6. Sluiter A, Cazzolli R, Jaure A, et al. Experiences of social isolation and loneliness in chronic kidney disease: a secondary qualitative analysis. *Clinical Journal of the American Society of Nephrology*. 2024:10.2215. doi: 10.2215/CJN.0000000000000529.
7. Dembowska E, Jaroń A, Gabrysz-Trybek E, Bladowska J, Gacek S, Trybek G. Quality of life in patients with end-stage renal disease undergoing hemodialysis. *Journal of clinical medicine*. 2022, 11(6):1584. doi: 10.3390/jcm11061584.
8. Gerogianni S, Babatsikou F, Gerogianni G, Koutis C, Panagiotou M, Psimenou E. Social life of patients undergoing haemodialysis. *Int J Caring Sci*. 2016, 9(1):122-134.
9. Yatham S, Sivathasan S, Yoon R, da Silva TL, Ravindran AV. Depression, anxiety, and post-traumatic stress disorder among youth in low and middle income countries: a review of prevalence and treatment interventions. *Asian journal of psychiatry*. 2018, 38:78-91. doi: 10.1016/j.ajp.2017.10.029.
10. Md. Yusop NB, Yoke Mun C, Shariff ZM, Beng Huat C. Factors associated with quality of life among hemodialysis patients in Malaysia. *PLoS One*. 2013, 8(12):e84152. doi: 10.1371/journal.pone.0084152.
11. Notobroto HB, Afiyah RK, Cahyono EA, Aryani HP, Rahman FS. Quality of life of hemodialysis patients during COVID-19 pandemic in Gatoel Hospital, Mojokerto City. *Open Access Macedonian Journal of Medical Sciences*. 2022, 28(10):293-302. DOI: <https://doi.org/10.3889/oamjms.2022.7583>.
12. Zhang Q-L, Wang S, Zhang Y, Meng F. The effect of refined nursing intervention

on patients undergoing maintenance hemodialysis in the hemodialysis center during the COVID-19 epidemic. *BMC nursing*. 2021, 20(1):66. doi: 10.1186/s12912-021-00584-5.

13. López MTM, Rodríguez-Rey R, Montesinos F, de Galvis SR, Ágreda-Ladrón MR, Mayo EH. Factors associated with quality of life and its prediction in kidney patients on haemodialysis. *Nefrología (English Edition)*. 2022, 42(3):318-326. doi: 10.1016/j.nefro.2022.07.007.

14. Unruh ML, Larive B, Chertow GM, et al. Effects of 6-times-weekly versus 3-times-weekly hemodialysis on depressive symptoms and self-reported mental health: Frequent Hemodialysis Network (FHN) Trials. *American journal of kidney diseases*. 2013, 61(5):748-758. doi: 10.1053/j.ajkd.2012.11.047.

15. Weiner S, Kutner NG, Bowles T, Johnstone S. Improving psychosocial health in hemodialysis patients after a disaster.

*Social Work in Health Care*. 2010, 49(6):513-525. doi: 10.1080/00981380903212107.

16. Goh ZS, Griva K. Anxiety and depression in patients with end-stage renal disease: impact and management challenges—a narrative review. *International journal of nephrology and renovascular disease*. 2018:93-102. doi: 10.2147/IJNRD.S126615.

17. Floria I, Kontele I, Grammatikopoulou MG, Sergentanis TN, Vassilakou T. Quality of life of hemodialysis patients in Greece: Associations with socio-economic, anthropometric and nutritional factors. *International Journal of Environmental Research and Public Health*. 2022, 19(22):15389. doi: 10.3390/ijerph192215389.

18. Chen P, Lin D. Solution-Focused Group Counseling on Mental States in Hemodialysis Patients with Anxiety. *Actas Españolas de Psiquiatría*. 2024, 52(2):122. doi: 10.62641/aep.v52i2.1562.