Original Article

Independence and Self-Dependence on the Quality of Life of Patients Receiving Hemodialysis in Medan, indonesia: A Cross-Sectional Analysis

Cholina Trisa Siregar[1,2], Azizah Nasution[3], Khairunnisa Khairunnisa[3], Riri Andri Muzasti[4]

[1]Doctor Program Student of Pharmaceutical Sciences Program, Faculty of Pharmacy, Universitas Sumatera Utara, Medan, Indonesia, [2]Department of Medical-Surgical Nursing, Faculty of Nursing, Universitas Sumatera Utara, Medan, Indonesia, [3]Department of Pharmacology and Clinical/ Community Pharmacy, Faculty of Pharmacy, Universitas Sumatera Utara, Medan, Indonesia, [4]Department Internal Medicine, Faculty of Medicine, Universitas Sumatera Utara, Medan, Indonesia

Abstract

Background: Long-term hemodialysis (HD) causes biological, psychological, social, and spiritual changes and decreases work capacity, resulting in loss of autonomy and increased dependence on daily activities. This study aimed to examine the relationships between independence, self-dependence, and the quality of life (QoL) in patients receiving HD. **Materials and Methods:** This cross-sectional study, with a descriptive analytical design, included 136 patients receiving HD. The study was conducted from June to October 2023 using demographic questionnaires, self-care assessments, and the Barthel and Kidney Disease Quality of Life 36-item Short Form survey (KDQoL SF-36) for patients aged 18–70 years receiving routine HD. Validity and reliability were evaluated using the Mann–Whitney U test and Cronbach's alpha, respectively. Data were analyzed using descriptive statistics and Spearman's correlation tests. **Results:** Most patients on HD had partial self-dependence (91%), were classified as dependent (65%), and reported a very good QoL (72%). The mean (SD) highest KDQoL-36 dimension scale in the symptom/problem list domain was 72.32 (13.06). There was no statistically significant correlation between independence and QoL ($r = -0.10$, $p = 0.124$). However, a weak but statistically significant negative correlation was found between self-dependence and QoL ($r = -0.16$, $p = 0.035$). **Conclusions:** The ability to perform self-care and achieve independence in meeting daily needs increased with acceptance of the changes that occurred. Proper self-acceptance can be fostered with the help of family members and healthcare teams.

Keywords: *Patient autonomy, quality of life, renal dialysis, self-care*

Introduction

Patients undergoing hemodialysis (HD) in Indonesia is increasing annually, with 4,854 and 5,763 patients in 2020 and 2022, respectively.[1] Patients with end-stage renal disease (ESRD) undergoing HD experience lifelong dependence on the dialysis machine, resulting in changes in the patient's life (e.g., biological, psychological, and spiritual changes), decreased ability to work, feelings of helplessness, disruption of social life, and decreased income if the household head is sick.[2] Changes in body condition negatively affect the well-being and quality of life (QoL) of patients receiving HD.[3] Physiological problems limit patients' ability to perform daily activities and decrease their QoL.[4] Other factors that contribute to patients' poor health with ESRD include the inability to perform activities, decreased social interaction, psychological disorders, weakness, anxiety, and fatigue.[5]

QoL is an essential indicator of the success of an action. Hence, improving QoL requires a fundamental change in the patient's perspective of their illness and health conditions.[3] Patients undergoing HD for >12 months have reported a moderate QoL. Suboptimal QoL occurs because of illness, symptoms experienced during the first HD, complications, and patients not yet accustomed to or accepting their condition. Patients who accept their condition tend to have a good QoL because it emphasizes the respondent's acceptance of every feeling.[6] Patients with ESRD undergoing dialysis report worse or even lower QoL scores than those without ESRD.[7,8] This result is attributable to decreased roles, emotional problems, disease effects, and decreased desire to live. Changes in health functions of patients undergoing HD affect their QoL, particularly physically and mentally.[9] The decline in this domain results in a loss of activity independence, leading to decreased work capacity and, ultimately, decreased productivity. Independence is

How to cite this article: Siregar CT, Nasution A, Khairunnisa K, Muzasti RA. Independence and self-dependence on the quality of life of patients receiving hemodialysis in Medan, Indonesia: A cross-sectional analysis. Iran J Nurs Midwifery Res 2026;31:466-70.

Submitted: 08-Nov-2024. **Revised:** 18-Jul-2025. **Accepted:** 25-Jul-2025. **Published:** 16-Jun-2026.

Address for correspondence:
Prof. Azizah Nasution, Department of Pharmacology and Clinical/Community Pharmacy, Faculty of Pharmacy, Universitas Sumatera Utara, Medan, Indonesia.
E-mail: azizah@usu.ac.id

Access this article online

Website: https://journals.lww.com/jnmr

DOI: 10.4103/ijnmr.ijnmr_381_24

Quick Response Code:

a person's ability to act without relying on others in living life and solve problems on their own. Self-dependence emphasizes an individual's ability to be responsible for or rely on themselves to meet needs, complete tasks, and achieve goals without relying too much on the help of others (the ability to be practically independent in everyday life).[10]

Decreased productivity causes increased dependency levels, inability to perform responsibilities, inability to be active in social activities, and decreased ability to perform self-care, resulting in mental health disorders (e.g., depression, anxiety, and self-concept disorders).[11] Patients undergoing HD are highly dependent on health maintenance conditions during HD therapy. They experience decreased independence owing to dependence on treatment schedules and health teams, affecting their self-esteem, stress, and motivation. Several previous studies have focused on physical aspects (e.g., disease management and complications), whereas psychosocial aspects, including independence, have not been thoroughly investigated. Moreover, research assessing the relationship between independence, self-dependence, and QoL in patients receiving HD remains limited.

Patients primarily control their own diseases and must learn to shift from their initial dependence on the care provided by health workers. Increasing patients' ability to engage in proactive self-management and social support can improve their social relationships; increase their self-esteem; prevent pathological symptoms caused by stress; and positively affect their physical, mental, and social health.[12] The decline in patients' QoL requires attention from the government and healthcare workers. Improving patient health is supported by increasing self-acceptance of the disease condition, carrying out daily care, and providing support from those closest to them.[13] The data obtained in this pilot study will be used as primary data for further research to develop a nursing care model for patients undergoing HD at the institution.

Materials and Methods

This cross-sectional analytical study enrolled patients undergoing HD at a government hospital between June 2023 and October 2023. The levels of independence and self-dependence in patients' self-care were analyzed. The target population consisted of 190 patients undergoing routine HD at a government hospital. The minimum sample size was calculated using the Slovin formula with a significance level (α) of 0.05 and a margin of error (e) of 0.05. Based on these parameters, the required sample size was estimated to be 129 participants. To increase accuracy and compensate for possible dropouts, the sample size was rounded up to 136. Participants were selected using random sampling. The duration of routine HD ranged from 1 month to 18 years, and the frequency of HD was twice or thrice a week. HD was conducted in the morning and afternoon shifts, with morning hours starting at 07:00–15:00 and afternoon hours starting at 15:00–23:00. The inclusion criteria were age 17–70 years, informed consent (for age <20 years, accompanied by parents), HD duration <1 year, and compos mentis awareness.

Data were collected directly by providing information on the objectives, procedures, risks, benefits, expected results, participant volunteerism, compensation, and confidentiality of the research data. Respondents received an information sheet to clarify the questions and signed an informed consent form. They were approached based on their agreement times. We used a demographic questionnaire to assess the age, sex, education, marital status, occupation, income, medical expenses, HD duration, and cause of kidney damage.

Validity and reliability tests of the Kidney Disease Quality of Life 36-item short form survey (KDQoL-36) questionnaire, Barthel Index, and self-care were conducted on 30 participants not part of the research sample, with an *r*-table value of 0.36. The validity of the KDQoL-36 was assessed using the Pearson product-moment validity test, with a calculated *r*-value of 0.65–0.82 for all the questions (valid). The reliability of the KDQoL-36 was assessed using Cronbach's alpha (0.69). The validity test of the Barthel Index questionnaire used the Pearson product-moment validity test, which yielded an alpha coefficient of 0.47 (valid). The reliability test using Cronbach's alpha revealed an alpha coefficient of 0.88 (reliable). The validity of the self-care questionnaire was assessed using the Pearson product-moment validity test (valid at 0.58), and its reliability was evaluated using Cronbach's alpha test with an alpha coefficient of 0.71 (reliable). Data were analyzed using IBM SPSS Statistics for Windows, version 20.0 (IBM Corp., Armonk, NY, USA) to obtain frequency distributions. Spearman's correlation test was used to analyze the relationships between independence, self-dependence, and QoL.

The validated KDQoL-36 questionnaire was used to assess patients' QoL. The questionnaire included 36 questions comprising the following five scales: Symptom or problem list, effects of kidney disease, burden of kidney disease, physical composite, and mental composite. The maximum score on the instrument was 100. Independence was measured using the validated Barthel Index questionnaire, which contains ten activity items on controlling bowel movements, cleaning oneself, using the toilet, eating, transferring from chair to bed, mobilizing, dressing, climbing and descending stairs, and bathing. This index produces a maximum score of 100, with each question scoring from 0 to 10. The total score was calculated by adding the scores for each question. Each item was scored on a Likert scale and categorized as unable, assisted, or independent. Dependence was grouped into four categories: Complete dependence (0–20), severe dependence (21–60), moderate dependence (61–90), and mild dependence/independence (91–100). Self-care was measured using the validated Self-Care of Chronic Kidney Disease index questionnaire with 25 items on self-care maintenance, management, and confidence. Each item has a value

of 1–4, with the lowest value being 25 and the highest being 100. Patients' self-care was grouped using a Likert scale into wholly compensatory system (25–50), partly compensatory system (51–76), and supportive (77–100).

Ethical considerations

This study complied with the research ethics standards and respondents' rights. This study was part of a doctoral dissertation and was approved by the ethics committee of the institution Universitas Sumatera Utara, November 17, 2023 (no: 333/UN5.2.3.1/PPM/2023). All respondents provided written informed consent. Confidentiality of the data and information provided was maintained.

Results

The characteristics of the 136 participants are presented in Table 1. As shown in Table 2, most patients undergoing HD had a partially dependent self-care rate of 91%, an independent dependent rate of 65%, and a very good QoL rate of 72%. The average value of the KDQoL-36 dimension scale most experienced by patients was a list of symptoms/problems (72.32). The highest score on the KDQoL-36 dimension scale was the symptom/problem list dimension, with a mean (SD) of 72.32 (13.06), as presented in Table 3. Table 4 presents the cross-tabulation results. Regarding age, 26 (19%) respondents aged 46–55 presented a very good QoL, 40 (29%) aged 46–55 presented partial self-care, and 23 (17%) aged 36–45 presented independence. Regarding sex, 55 (41%) males reported a very good QoL, 82 (60%) males reported partial self-care, and 62 (46%) males reported independence. In terms of marriage, 66 (43%) presented a very good QoL, 102 (81%) presented partial self-care, and 78 (58%) presented independence. For HD duration, 26 (19%) with >3 years reported very good QoL, very good category, and 34 (25%) reported independence.

The Spearman's correlation test [Table 5] indicated no relationship between independence and QoL of the patients (P = 0.124). The correlation coefficient value (r = −0.10) obtained for QoL suggests a very weak negative relationship. Thus, the lower the patient's independence, the lower their QoL. The results of the Spearman's correlation test showed a relationship between self-dependence and QoL (p = 0.035). The correlation coefficient value (r = −0.16) obtained for QoL indicates a very weak negative direction. Thus, the lower a patient's self-dependence, the lower their QoL.

Table 1: Frequency distribution of demographic data (n=136)

Respondent characteristics	Categories	*n* (%)
Age (in years)	17–25	2 (2)
	26–35	16 (12)
	36–45	29 (21)
	46–55	40 (30)
	56–65	35 (25)
	>65	14 (10)
Gender	Male	90 (66)
	Female	46 (34)
Marital status	Married	108 (80)
	Unmarried/others	28 (20)
Duration of hemodialysis	<6 months	23 (17)
	6 months–1 year	20 (15)
	1–3 years	45 (33)
	>3 years	48 (35)

Table 2: Self-dependence, independence, and quality of life of the patients receiving hemodialysis

Category of outcomes	Categories	*n* (%)
Self-dependence	Total dependence	3 (2)
Independence	Partial dependence	124 (91)
Quality of life	Independent	9 (7)
	Total dependence	3 (2)
	Heavy dependence	8 (6)
	Mild dependence	37 (27)
	Independent	88 (65)
	Good quality of life	18 (13)
	Very good quality of life	97 (72)
	Perfect quality of life	21 (15)

Table 3: Descriptive statistics of the kidney disease quality of life 36-item short form survey dimension scale

Scale (number of items in scale)	Mean (SD)*
Symptom/problem list (12)	72.32 (13.06)
Effects of kidney disease (8)	69.60 (13.21)
Burden of kidney disease (4)	68.06 (24.47)
Physical health composite	46.30 (6.00)
Mental health composite	38.09 (9.44)
Average QoL of patients HD	58.87 (7.57)

HD=Hemodialysis, QoL=Quality of life; *Standart deviation

Discussion

In this study, patients aged 46–55 years or older reported a very good QoL (19%), partial self-care (29%), and independence (16%). Patients aged over 55 years undergoing HD demonstrated a lower QoL than younger patients, especially in terms of self-care and mobility.[14] Most older patients reported low scores for personal care, general activities, and pain management. Older patients, including those aged >45 years, experienced more obstacles in self-care and dialysis modality transition than younger patients. This is related to reduced adaptability owing to complications arising from chronic diseases.[15] The results of a very good QoL, partial self-care, and independence in this study can be attributed to the majority of respondents being male (66%) or

Table 4: Cross-tabulation analysis

Demography	KDQoL* *n* (%)			Self-dependence *n* (%)			Independence *n* (%)			
	Good	Very good	Perfect	Total	Partials	Independent	Total	Heavy	Mild	Independent
Age										
17–25 Y	1 (0.70%)	1 (0.70%)	0	0	2 (2%)	0	0	0	0	2 (2%)
26–35 Y	6 (4%)	10 (7%)	0	0	14 (10%)	2 (2%)	1 (0.70%)	0	3 (2%)	12 (9%)
36–45 Y	12 (9%)	11 (8%)	6 (4%)	0	26 (19%)	2 (2%)	0	0	6 (4%)	23 (17%)
46–55 Y	8 (6%)	26 (19%)	6 (4%)	0	40 (29%)	0	1 (0.70%)	3 (2%)	14 (10%)	22 (16%)
56–65 Y	11 (9%)	18 (13%)	6 (4%)	3 (2%)	30 (22%)	2 (2%)	0	3 (2%)	10 (7%)	22 (16%)
>65 Y	4 (3%)	7 (5%)	3 (2%)	0	12 (9%)	2 (2%)	1 (0.70%)	2 (2%)	4 (3%)	7 (5%)
Gender										
Male	23 (17%)	55 (41%)	12 (9%)	3 (2%)	82 (60%)	5 (4%)	3 (2%)	5 (4%)	20 (15%)	62 (46%)
Female	19 (14%)	18 (13%)	9 (7%)	0	42 (31%)	4 (3%)	0	3 (2%)	17 (13%)	26 (12%)
Married	36 (22%)	66 (43%)	19 (15%)	3 (2%)	102 (81%)	8 (5%)	2 (2%)	5 (4%)	34 (24%)	78 (58%)
Not married	6 (5%)	7 (5%)	2 (1%)	0	13 (10%)	2 (1%)	1 (0.7%)	3 (2%)	3 (2%)	10 (7%)
Duration of HD**										
<6 M	8 (6%)	10 (7%)	5 (4%)	1 (0.70%)	20 (15%)	2 (2%)	1 (0.70%)	1 (0.70%)	9 (7%)	12 (9%)
6 M–1Y	5 (4%)	12 (9%)	3 (2%)	0	20 (14%)	0	1 (0.70%)	1 (0.70%)	5 (4%)	13 (10%)
1Y–3 Y	11 (8%)	25 (18%)	9 (7%)	1 (0.70%)	44 (32%)	4 (3%)	1 (0.70%)	2 (2%)	13 (10%)	29 (21%)
>3 Y	18 (13%)	26 (19%)	4 (3%)	1 (0.70%)	44 (32%)	3 (2%)	0	4 (3%)	10 (7%)	34 (25%)

HD=Hemodialysis; *Kidney disease quality of life, **Hemodialysis

Table 5: Relationship between independence and self-dependence with quality of life of the patients receiving hemodialysis

Variable	Quality of life		
	n	*r*	*p*
Independence	136	–0.10	0.124
Self-dependence	136	–0.16	0.035

married (80%). Men tended to have a better QoL than women. This is associated with stronger social roles and support in men, which affects the psychological and social aspects of patients receiving HD.[16] Women tend to report a lower QoL than men, even though they show better survival rates. In addition, marital status is associated with a better QoL because of the emotional and practical support provided by partners to help patients better manage HD therapy.[17] Worse QoL is experienced by female patients who are older, less educated, have poor medication compliance, undergo HD three times a week, have a lower body mass index, have undergone HD treatment for 1 year, and have poor social support.[18] Patients with chronic kidney disease undergoing self-care HD reached the moderate category. Based on this, patients undergoing HD experience obstacles in daily self-care owing to the impact of impaired kidney function and routine HD.[19] This difference may have been influenced by the data collection tools used to assess the different QoL and cultural backgrounds.

The value of a very good QoL in patients undergoing HD was influenced by HD duration, which was >50%. QoL was moderate because the longer the patient undergoes HD, the more they would adapt and accept the changes that occur owing to the disease, symptoms, and complications. Patients who can accept their condition tend to have a good QoL because it emphasizes the respondent's acceptance of the conditions they feel. Patients on HD scored higher in the self-confidence domain than in other domains. High self-confidence is a patient's strength, as they believe that the illness is not the end of everything. Patients believe that they can perform self-care as a mediator to achieve self-management. Self-care confidence refers to an individual's ability to perform tasks.[14]

This study has several limitations. First, it was conducted in a single government hospital, which may limit the generalizability of the findings to other healthcare settings with different service standards and patient populations. Second, the QoL was assessed using self-reported questionnaires, which may be subject to response bias influenced by the patients' physical, emotional, or psychological conditions at the time of data collection. Third, the cross-sectional design restricts the ability to infer causal relationships between QoL, self-care, independence, and demographic variables.

Additionally, the relatively small sample size from a single center limits the representativeness of the findings. Some patients were unable to complete the questionnaire due to fatigue or declining health during HD sessions, potentially affecting data accuracy. To address this, data collection was performed prior to dialysis initiation. Future studies are recommended to include larger, more diverse samples across multiple healthcare institutions, including private hospitals, to explore variations in independence, self-care capacity, and QoL in HD patients more comprehensively.

Conclusion

A holistic approach is required to improve the independence of patients receiving HD. Many factors can affect a patient's QoL, including age, sex, marital status, and duration of HD therapy. Therefore, emotional and social support should be provided through family and community empowerment to improve therapy outcomes and patient well-being. Improving patient adaptation to therapy requires changes in care policies, such as developing rehabilitation programs that emphasize increasing patient independence, psychosocial support, and family training as the main supporters of patient care. Changes in policies for routinely evaluating patients' QoL can help identify specific needs and design personalized interventions. Further research is required to explore certain aspects of independence and QoL in patients undergoing HD, particularly in more demographically and culturally diverse populations.

Acknowledgments

This research was part of a doctoral dissertation funded by the TALENTA Universitas Sumatera Utara, 2023 (no: 333/UN5.2.3.1/PPM/2023). The researchers would like to thank the Rector of Universitas Sumatera Utara and the supervisor who approved this project. The authors would also like to thank all the parties at the hospital and the respondents who provided specific information.

Financial support and sponsorship

Research Institute Universitas Sumatera Utara

Conflicts of interest

Nothing to declare.

References

1. Indonesian Renal Registry (IRR), 2022. Available from https://www.indonesianrenalregistry.org/. [Last accessed on 2024 Sep 20].
2. Izadi AFS, Masoudi AN, Akbari H, Saroladan S. Self-care and its predictive factors in hemodialysis patients. J Caring Sci 2021;10:153–9.
3. Kukihara H, Yamawaki N, Ando M, Nishio M, Kimura H, Tamura Y. The mediating effect of resilience between family functioning and mental well-being in hemodialysis patients in Japan: A cross-sectional design. Health Qual Life Outcomes 2020;18:1-8.
4. Stanisławska J, Talarska D, Niewiadomski T, Ptaszyński T, Kalfoss M, Strugała M. The functioning of patients on hemodialysis. Age is the main determinant of functional condition. Med Rese J 2020;5:231-7.
5. Ng MSN, Wong CL, Choi KC, Hui YH, Ho EHS, Miaskowski C, *et al*. A mixed methods study of symptom experience in patients with end-stage renal disease. Nurs Res 2021;70:34–43.
6. Ishiwatari A, Yamamoto S, Fukuma S, Hasegawa T, Wakai S, Nangaku M. Changes in quality of life in older hemodialysis patients: A cohort study on dialysis outcomes and practice patterns. Am J Nephrol 2020;51:650-8.
7. Chuasuwan A, Pooripussarakul S, Thakkinstian A, Ingsathit A, Pattanap-rateep O. Comparisons of quality of life between patients underwent per-itoneal dialysis and hemodialysis: A systematic review and meta-analysis. Health Qual Life Outcomes 2020;18:191.
8. Wirkner J, Scheuch M, Dabers T, Rheinbaben SFV, Fiene B, Aymanns, *et al*. Comorbid depression and diabetes are associated with impaired health-related quality of life in chronic kidney disease patients. J Clin Med 2019;11:4671.
9. Brown EA, Zhao J, McCullough K, Fuller DS, Figueiredo AE, Bieber B, *et al*. Burden of kidney disease, health-related quality of life, and employment among patients receiving peritoneal dialysis and in-center hemodialysis: Findings from the DOPPS program. Am J Kidney Dis 2021;78:489-500.
10. Gosak L, Vrbnjak D, Pajnkihar M. Self-management of chronic diseases: a concept analysis. Nursing in the 21st Century, 2022;21:115-21.
11. Abebe A, Arba A, Paulos K, Abera W, Sidamo T, Shiferaw S, *et al*. The lived experience of primary family caregivers of patients on hemodialysis treatment in Southern Ethiopia: A phenomenological study. Int J Nephrol Renovasc Dis 2022;15:41-52.
12. Stevenson J, Tong A, Campbell KL, Craig JC, Lee VW. Perspectives of healthcare providers on the nutritional management of patients on hemodialysis in Australia: An interview study. BMJ Open 2018;8:e020023.
13. Huang HL, Ya-Hui HSU, Chung-Wei Y, Min-Fang HSU, Chung Y. Effects of a health literacy education program on mental health and renal function in patients with chronic kidney disease: A randomized controlled trial. J Nurs Res 2024;32:310.
14. Elezi B, Rumano M, Abazaj E, Topi S. Health-related quality-of-life measures used in hemodialysis patients in Albania. Egypt J Int Med 2023;35:3.
15. Dumaine CS, Fox DE, Ravani P, Santana MJ, MacRae JM. Health related quality of life during dialysis modality transitions: A qualitative study. BMC Nephrolog 2023;24:282.
16. Sinaga, P. The relationship between self-efficacy and duration of hemodialysis on the quality of life of patients undergoing hemodialysis at the Royal Progress Hospital hemodialysis unit, North Jakarta (Doctoral dissertation, Binawan University). 2022.
17. Peng YS, Huang JW, Hung KY, Lin BS, Lin CY, Yang CS, *et al.* Women on hemodialysis have lower self-reported health-related quality of life scores but better survival than men. J Nephrol 2012;26:366-74.
18. Gebrie MH, Asfaw HM, Bilchut WH, Lindgren H, Wettergren L. Health-related quality of life among patients with end-stage renal disease undergoing hemodialysis in Ethiopia: A cross-sectional survey. Health Qual Life Outcomes 2023;21:36.
19. Kim H, Cho MK. Factors influencing self-care behavior and treatment adherence in hemodialysis patients. Int J Environ Res Public Health 2021;18:12934.