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ANALYSIS OF FACTORS RELATED TO QUALITY OF LIFE IN CHRONIC KIDNEY DISEASE PATIENTS UNDERGOING HEMODIALYSIS: A CROSS-SECTIONAL STUDY

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Abstrak

Gagal ginjal kronis (GGK) dan terapi hemodialisis (HD) dapat menurunkan kualitas hidup akibat beban gejala, keterbatasan aktivitas, serta masalah psikologis dan sosial. Penelitian ini bertujuan menganalisis faktor-faktor yang berhubungan dengan kualitas hidup pasien GGK yang menjalani HD di RSUD Sekayu. Penelitian deskriptif analitik dengan desain cross-sectional dilakukan pada 44 responden yang dipilih menggunakan purposive sampling pada 1 Mei–1 Juni 2025. Kualitas hidup diukur menggunakan WHOQOL-BREF dan dikategorikan menjadi baik dan kurang baik berdasarkan median skor total. Analisis bivariat menggunakan uji chi-square, sedangkan analisis multivariat menggunakan regresi logistik berganda. Hasil menunjukkan mayoritas responden berusia >45 tahun (56,8%), laki-laki (52,3%), dan menjalani HD <2 tahun (77,3%). Terdapat hubungan bermakna antara usia (p=0,001), jenis kelamin (p=0,002), dan lama menjalani HD (p=0,004) dengan kualitas hidup. Pendidikan (p=0,523), status perkawinan (p=0,624), pekerjaan (p=0,510), dan pendapatan (p=0,319) tidak berhubungan. Regresi logistik menunjukkan usia >45 tahun merupakan faktor dominan yang menurunkan peluang kualitas hidup baik (p=0,024; OR=0,089). Diperlukan intervensi keperawatan komprehensif terutama pada pasien usia lanjut dan perempuan untuk meningkatkan kualitas hidup selama menjalani HD.

Kata Kunci: Kualitas Hidup, Hemodialisis, Gagal Ginjal Kronis, Faktor Determinan.

Abstract

Chronic kidney disease (CKD) and hemodialysis (HD) therapy can reduce quality of life due to the burden of symptoms, activity limitations, and psychological and social problems. This study aims to analyze factors associated with quality of life in CKD patients undergoing HD at Sekayu Regional Hospital. A descriptive-analytical survey with a cross-sectional design was conducted among 44 respondents purposively selected from May 1 to June 1, 2025. Quality of life was measured using the WHOQOL-BREF and categorized into good and poor based on the median total score. Bivariate analysis used the chi-square test, while multivariate analysis used multiple logistic regression. The results showed that the majority of respondents were aged >45 years (56.8%), male (52.3%), and on HD for <2 years (77.3%). There was a significant association between age (p=0.001), gender (p=0.002), and duration of HD (p=0.004) with quality of life. Education (p=0.523), marital status (p=0.624), employment (p=0.510), and income (p=0.319) were not associated. Logistic regression showed that age >45 years was the dominant factor associated with a lower odds of good quality of life (p=0.024; OR=0.089). Comprehensive nursing interventions are needed, especially for elderly and female patients, to improve the quality of life during HD.

Keywords: *Quality Of Life, Hemodialysis, Chronic Kidney Disease, Determinants*

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INTRODUCTION

Chronic kidney disease (CKD) is a condition of kidney damage that lasts for more than three months and is characterized by disturbances in kidney structure and function. This condition is indicated by increased urea and creatinine levels, abnormalities in urinary sediment, electrolyte imbalances, and structural and histological changes in the kidneys (Chen et al., 2019). Clinically, CKD is diagnosed when there is a decrease in the glomerular filtration rate <60 ml/minute/1.73 m² and/or albuminuria ≥30 mg/24 hours or indicators of kidney damage that persist for more than three months (Mesya & Permana, 2024). Globally, approximately 10% of the world's population is estimated to suffer from chronic kidney disease. Currently, approximately 2.6 million people undergo hemodialysis (HD), and this number is projected to increase to 5.4 million by 2030 (Campo et al., 2022).

In Indonesia, the 2018 Basic Health Research (Riskesdas) results showed an increase in the prevalence of chronic kidney disease from 2.0% in 2013 to 3.8% in 2018, with the number of sufferers reaching approximately 713,783 people. In South Sumatra Province, the prevalence of CKD was recorded at 0.27% or approximately 22,013 cases (Riskesdas, 2018). The increase in the number of CKD sufferers has resulted in an increased need for hemodialysis therapy in Indonesia. In 2018, 66,433 new patients began hemodialysis, while the number of active patients continuing therapy reached 132,142. In South Sumatra alone, the number of new patients undergoing hemodialysis that year reached 2,333 people (Indonesian Renal Registry, 2018). Based on medical records at Sekayu Regional Hospital, an average of 55 patients underwent hemodialysis each month in 2023. The number of hemodialysis procedures has fluctuated from year to year: 2,910 in 2020, 4,220 in 2021, and 3,573 in 2022. In the period from January to June 2023, 2,450 hemodialysis procedures were performed (Utama & Hayati, 2023). The latest data from Sekayu Regional Hospital in April 2025 showed that 63 patients with chronic kidney disease were undergoing hemodialysis therapy.

Hemodialysis is a technology-based renal replacement therapy that partially replaces the kidney's function in removing metabolic waste and toxic substances from the bloodstream, such as urea, creatinine, uric acid, sodium, potassium, excess fluid, and hydrogen ions through a semipermeable membrane (Situmurang et al., 2022). This blood-cleansing process occurs through diffusion, osmosis, and filtration mechanisms that mimic the physiological function of the kidneys (Siwi & Budiman, 2021). Generally, hemodialysis procedures last 3–4 hours per session. In developed countries, this therapy is typically performed three times a week, while in developing countries it is generally performed twice a week (Ali et al., 2021).

Hemodialysis therapy has a significant impact on patients' quality of life. During treatment, patients often experience various physical complaints such as sleep disturbances, pain, changes in blood pressure, muscle cramps, and gastrointestinal disorders. Furthermore, psychological problems such as anxiety and depression often arise and contribute to a decreased quality of life. Restricted fluid intake and strict dietary restrictions also reduce freedom of movement and increase patients' dependence on healthcare services and family support. This condition not only affects the physical aspects but also impacts the social and economic aspects of patients. Overall, these impacts affect all dimensions of quality of life, including physical health, psychological well-being, social relationships, and environmental conditions (Wahyudi & Rantung, 2024).

Quality of life is an individual's perception of their position in life, influenced by the culture and value systems of their environment, and related to goals, expectations, standard of living, and perceived level of satisfaction. This concept encompasses four main domains: physical health, psychological well-being, social relationships, and the environment (Nurjaman et al., 2023). In patients with chronic kidney disease (CKD) undergoing hemodialysis, quality of life is an indicator of therapy success because it reflects physical, psychological, social, and spiritual well-being and helps assess health status and treatment effectiveness. However, patients' quality of life can vary, ranging from good to poor across the physical, psychological, social, and environmental domains (Lolowang et al., 2021; Ludia Wally et al., 2022; Tannor et al., 2019).

Various studies have shown that chronic kidney disease patients undergoing hemodialysis have a lower quality of life compared to the general population (Galaresa, 2023). Research by Suwanti *et al.*, (2017) reported that most patients had a poor quality of life (61.0%), while only 39.0% had a good quality of life. Similar results were reported by Shakila et al., (2023) who found that the majority of patients were in the poor-quality-of-life category (55.2%), followed by fair (25.9%), good (17.2%), and perfect (1.7%). The quality of life of hemodialysis patients is influenced by various factors, including age, education level, length of hemodialysis, family support, gender, economic status, social and environmental conditions, and psychological factors such as anxiety and depression (Azira et al., 2023; Kuling et al., 2023; Yunita et al., 2024).

Similarly, Yunita et al., (2024) found a significant association between gender, education, duration, and frequency of hemodialysis with quality of life Priandini et al., (2023) also reported

that education level, income level, and frequency of hemodialysis were associated with quality of life among patients with chronic kidney disease. Furthermore, Adilla et al., (2025) showed that gender and disease perception were related to quality of life, but multivariate analysis identified perceptions of disease management as the most dominant predictor.

However, several studies have shown inconsistent results. Abdu and Satti, (2024) reported that gender and employment status were not significantly associated with quality of life in hemodialysis patients. Similarly, Abdillah *et al.*, (2025) also found that age, gender, employment status, duration of hemodialysis, anemia, hemodialysis adequacy, family support, and history of hypertension were not significantly associated with quality of life in chronic kidney disease patients undergoing hemodialysis.

This study aims to analyze factors related to the quality of life of patients with chronic kidney disease undergoing hemodialysis at Sekayu Regional Hospital.

METHODS

This descriptive-analytical study used a cross-sectional design to identify factors associated with quality of life among patients with chronic kidney disease undergoing hemodialysis. The study was conducted in the Hemodialysis Unit of Sekayu Regional Hospital, Indonesia, from May 1 to June 1, 2025.

The study population included all CKD patients undergoing hemodialysis at Sekayu Regional Hospital. The study sample consisted of 44 respondents selected through purposive sampling, in accordance with the inclusion and exclusion criteria. Inclusion criteria included patients aged 18 years or older undergoing hemodialysis and willing to participate by signing an informed consent form. Exclusion criteria included patients with severe complications or life-threatening conditions, such as severe shortness of breath and/or decreased consciousness.

The dependent variable in this study was quality of life, while the independent variables included age, gender, education level, employment status, marital status, monthly income, and duration of hemodialysis.

Data collection was conducted using a questionnaire containing respondent characteristics and the WHOQOL-BREF instrument to measure quality of life. The WHOQOL-BREF instrument consists of 26 items covering four domains: physical health, psychological health, social relationships, and the environment. Assessments were conducted in accordance with WHO guidelines. The instrument's validity and reliability were tested according to Gustin (2024), with a Cronbach's alpha of 0.693. The total score was then categorized into good and poor quality of life based on the median value.

Data analysis was performed using SPSS version 22. Univariate analysis was used to describe respondent characteristics and the distribution of variables. Bivariate analysis used the chi-square test to assess the relationship between independent variables and quality of life. Variables with a p-value <0.25 were then analyzed using multiple logistic regression to identify the dominant factors influencing quality of life in hemodialysis patients.

RESULTS AND DISCUSSION

Univariate Analysis

Table 1. Characteristics of Hemodialysis Patient Respondents (n = 44)

Variable	Category	n	%
Age	18–45 years	19	43.2
	>45 years	25	56.8
Gender	Male	23	52.3
	Female	21	47.7
Education Level	Elementary–Junior High School	10	22.7
	Senior High School–College	34	77.3
Employment Status	Employed	26	59.1
	Unemployed	18	40.9
Marital Status	Married	40	90.9
	Unmarried/Widow/Widower	4	9.1
Monthly Income (IDR)	< 2,000,000	17	38.6
	≥ 2,000,000	27	61.4
Duration of HD	<2 years	34	77.3
	≥2 years	10	22.7

Based on Table 1, the majority of respondents were aged >45 years (56.8%) and male (52.3%). Most had a high school or college education (77.3%), Employed (59.1%), and were married (90.9%). The majority of respondents also had an income of ≥2 million rupiah per month (61.4%) and had undergone hemodialysis for <2 years (77.3%).

Bivariate Analysis

Table 2. Relationship between Age and Quality of Life in Hemodialysis Patients

Age	Quality of Life				Total	P value
	Good		Poor			
	n	%	n	%		
18-45 years	17	89.5	2	10.5	19	0.001
>45 years	10	40.0	15	60.0	25	

Based on Table 2, the analysis results show a significant relationship between age and quality of life in patients undergoing hemodialysis (p = 0.001). Respondents in the 18–45 age group mostly had a good quality of life (89.5%), whereas

in the>45 age group, the proportion was only 40.0%.

Table 3. Relationship between Gender and Quality of Life of Hemodialysis Patients

Gender	Quality of Life				Total	P value
	Good		Poor			
	n	%	n	%		
Male	19	82.6	4	17.4	23	0.002
Female	8	38.1	13	61.9	21	

Based on Table 3, the analysis shows a significant relationship between gender and quality of life among patients undergoing hemodialysis (p = 0.002). The proportion of male respondents with a good quality of life was 82.6%, while that of female respondents was only 38.1%.

Table 4. Relationship between Education Level and Quality of Life of Hemodialysis Patients

Education Level	Quality of Life				Total	P value
	Good		Poor			
	n	%	N	%		
Primary–Junior High School	7	70.0	3	30.0	10	0.523
Senior High School–College	20	58.8	14	41.2	34	

Based on Table 4, the analysis showed that education level was not significantly associated with patients' quality of life during hemodialysis (p = 0.523). The proportion of respondents with a good quality of life in the elementary–junior high school education group was 70.0%, while in the high school–university education group it was 58.8%.

Table 5. Relationship between Marital Status and Quality of Life of Hemodialysis Patients

Marital Status	Quality of Life				Total	P value
	Good		Poor			
	n	%	n	%		
Married	25	62.5	15	37.5	40	
Unmarried/Widowed/ Widower	2	50.0	2	50.0	4	0.624

Based on Table 5, the analysis shows that marital status is not significantly associated with the quality of life of patients undergoing hemodialysis (p = 0.624). The proportion of respondents with a good quality of life in the married group was 62.5%, while in the unmarried, widowed, or divorced group it was 50.0%.

Table 6. Relationship between Employment Status and Quality of Life of Hemodialysis Patients

Employment Status	Quality of Life				Total	P value
	Good		Poor			
	n	%	n	%		
Employed	17	65.4	9	34.6	26	0.510
Unemployed	10	55.6	8	44.4	18	

Based on Table 6, the analysis showed that employment status was not significantly associated with patients' quality of life during hemodialysis (p = 0.510). The proportion of respondents with a good quality of life in the employed group was 65.4%, while in the unemployed group it was 55.6%.

Table 7. Relationship between Monthly Income and Quality of Life of Hemodialysis Patients

Monthly Income (IDR)	Quality of Life				Total	P value
	Good		Poor			
	n	%	n	%		
< 2,000,000	12	70.6	5	29.4	17	0.319
≥ 2,000,000	15	55.6	12	44.4	27	

Based on Table 7, the analysis shows that monthly income is not significantly associated with patients' quality of life during hemodialysis (p = 0.319). The proportion of respondents with a good quality of life in the group with an income of <2 million rupiah was 70.6%, while in the group with an income of ≥2 million rupiah it was 55.6%.

Table 8. Relationship between Duration of Hemodialysis and Patient Quality of Life

Duration of Hemodialysis	Quality of Life				Total	P value
	Good		Poor			
	n	%	N	%		
< 2 years	25	73.5	9	26.5	34	0.004
≥ 2 years	2	20.0	8	80.0	10	

Based on Table 8, the analysis shows a significant relationship between hemodialysis duration and patient quality of life (p = 0.004). Respondents who underwent hemodialysis for <2 years had a good-quality-of-life proportion of 73.5%, whereas those who underwent hemodialysis for ≥2 years had a proportion of 20.0%.

Multivariate Analysis

Table 9. Factors Associated with Quality of Life among Hemodialysis Patients (N = 44)

Variable	B	S.E.	p value	Exp(B) (OR)
Age >45 years	-2.418	1.071	0.024	0.089
Female	-1.934	0.986	0.050	0.144
HD duration ≥2 years	-2.172	1.210	0.073	0.114

Based on Table 9, the results of the logistic regression analysis indicate that age and gender are associated with patients' quality of life during hemodialysis. Age >45 years is significantly related to quality of life (p = 0.024; OR = 0.089), indicating that patients in this age group have a lower likelihood of good quality of life than those aged ≤45 years. Female gender also showed a significant association with quality of

life (p = 0.050; OR = 0.144), indicating that women are less likely to have a good quality of life than men. Meanwhile, the variable for duration of hemodialysis ≥2 years did not show a significant relationship after adjustment for other variables (p = 0.073; OR = 0.114). Based on the smallest p-value and the most critical odds ratio, age is the most dominant factor influencing the quality of life of hemodialysis patients in this study.

Discussion

Respondent Characteristics

The majority of respondents were aged >45 years (56.8%), indicating that hemodialysis patients at Sekayu Regional Hospital are predominantly late adulthood to the elderly. This finding aligns with research by Umami & Rohayati, (2025) and Lusito et al., (2025) which reported that the majority of hemodialysis patients are aged ≥45 years. Pathophysiologically, increasing age is associated with a decrease in the number of nephrons, glomerular filtration rate (GFR), an increase in comorbidities such as hypertension and diabetes mellitus, and a reduction of physiological capacity that accelerates the progression of chronic kidney disease and reduces the ability to adapt to hemodialysis (Alqalah et al., 2025). The aging process also causes structural changes in the kidneys, such as decreased cortical thickness, thickening of the glomerular basement membrane, mesangial expansion, and glomerulosclerosis, which impact the kidney's ability to maintain fluid and electrolyte balance (Muhani & Sari, 2020; Ratnasari & Isnaini, 2020)

The majority of respondents were male (52.3%). This finding aligns with research by Yonata et al., (2022), Wardani et al., (2025), and Sari & Soleman, (2024) which showed that hemodialysis patients are predominantly male. The high proportion of men is thought to be related to biological and behavioral factors, such as a higher prevalence of hypertension and diabetes, smoking habits, and exposure to environmental risk factors. Furthermore, estrogen in women has renoprotective effects through anti-inflammatory and anti-fibrotic mechanisms, so lower estrogen levels in men may accelerate the progression of kidney damage compared to women (Kansil et al., 2025; Ma et al., 2021).

The majority of respondents had a high school or college education (77.3%). Education level is associated with health literacy, understanding of therapy, and self-management skills, including diet and fluid management, medication adherence, and regular hemodialysis. This finding aligns with research by Ramadani et al., (2024) and Putro et al., (2024), which showed that the majority of hemodialysis patients had a secondary education level. A higher level of education can improve patients' ability to obtain, understand, and utilize health information, including information related to disease management and efforts to maintain quality of life. However, higher education does not always correlate with optimal quality of life. The quality of life of hemodialysis patients is also significantly influenced by clinical conditions, such as fatigue, fluid and dietary restrictions, and complications from chronic diseases (Irawan & Saputra, 2026; Rahmah et al., 2021).

The majority of respondents were still working (59.1%). This finding aligns with Wardani et al., (2025) and Msilanga et al., (2025), who reported that some hemodialysis patients, particularly those of productive age, continued to work by adjusting their therapy schedules. However, work capacity is dynamic, as some patients may experience decreased work capacity or lose their jobs after starting hemodialysis (Motiei et al., 2024). Employment status is also related to economic conditions, where financial constraints can impact nutritional and daily needs. Although hemodialysis costs are covered by health insurance, patients still incur additional costs such as supportive medications (Sembiring et al., 2024).

The majority of respondents were married (90.9%). This finding aligns with Ramesh et al., (2024) and (Putro et al., 2024) , who reported that the majority of hemodialysis patients were married. Marital status is associated with social support from partners and family, which helps patients adapt to the disease, reduces psychological stress, and increases motivation to undergo therapy (Alqalah et al., 2025). Partner support also plays an emotional and instrumental role, including assisting with therapy, with daily activities, and with psychological support, which can ultimately improve the readiness and quality of life of hemodialysis patients (Hafidz et al., 2025).

The majority of respondents had an income of ≥2 million rupiah per month (61.4%), consistent with research by Yonata et al., (2022) , which showed that the majority of hemodialysis patients were in the middle to upper economic class. Economic conditions play a role in the ability to meet therapy support needs, such as transportation costs, special diets, and additional medications, thereby improving adherence and continuity of therapy. Conversely, financial constraints can hinder optimal treatment and impact health and quality of life (Winarni et al., 2025). Hemodialysis therapy also poses physical, psychological, and economic burdens that can potentially reduce adherence, which is reported to occur in approximately 50% of patients and is associated with a decreased quality of life (Triana et al., 2021). In general, higher income is associated with lower anxiety levels and a better quality of life in hemodialysis patients (Yuliawati et al., 2022).

Most respondents had undergone hemodialysis for <2 years (77.3%), consistent with

Yoga et al., (2024) , which reported a predominance of hemodialysis durations of < 2 years. The duration of therapy needs to be considered because longer durations increase the risk of complications, physical burden, and psychological stress, which can reduce quality of life (Putri et al., 2024; Shadrina et al., 2024). However, over time, patients can adapt to therapy, begin to understand the procedures, experience the benefits of treatment, and make necessary lifestyle changes (Siwi & Budiman, 2021).

Relationship of Variables with Quality of Life
Relationship of Age with Quality of Life

This study demonstrated a significant association between age and quality of life among hemodialysis patients (p = 0.001), with respondents aged 18–45 years reporting better quality of life than those aged >45 years. This finding suggests that increasing age is associated with a decline in quality of life due to reduced functional ability and adaptive capacity to chronic disease and long-term therapy, particularly in the physical and psychological domains.

These results align with those of Golang et al., (2024) , who reported that age is associated with quality of life in hemodialysis patients. In older age, there is a decline in kidney function, impaired tubular function, and an increased risk of complications that worsen clinical conditions. Furthermore, age is a non-modifiable risk factor for chronic kidney disease (Primasari & Dara, 2022). Biologically, aging reduces nephron number, renal perfusion, and glomerular filtration rate (GFR), thereby increasing the risk of disease progression and comorbidities such as hypertension and diabetes mellitus (Denic et al., 2022). Activity limitations and decreased adaptive abilities also contribute to a decreased quality of life.

However, these results are not entirely consistent with the study by Berek et al., (2025) , which found no significant relationship between age and quality of life. This difference suggests that quality of life is multidimensional and influenced by various factors, such as clinical condition, social support, therapy adherence, physical activity, psychological well-being, and access to healthcare services (Rustendi et al., 2022). Research in Indonesia also indicates that psychological factors, such as depression, illness perception, and social support, can be more dominant than age in influencing quality of life (Adilla et al., 2025).

Relationship between Gender and Quality of Life

The study results showed a significant association between gender and quality of life in hemodialysis patients (p = 0.002). The proportion of men (82.6%) reporting a good quality of life was higher than that of women (38.1%), indicating that women tend to have a lower quality of life.

This finding aligns with Miranti & Anita, (2022) and Lerma et al., (2021) , who reported that female hemodialysis patients had lower quality of life, particularly in terms of symptoms, physical function, pain, and health perception. Riehl-tonn et al., (2024) also found that women exhibited lower quality of life across various domains. This condition may be influenced by biological factors, such as body composition, which affect hemodialysis adequacy, as well as by social factors, such as domestic role burden and family responsibilities.

However, these results are not entirely consistent with the studies of Rahmah et al., (2021) and Berek et al., (2025), which found no significant association between gender and quality of life. These differences in findings suggest that the quality of life of hemodialysis patients is more influenced by clinical factors such as anemia, comorbidities, hemodialysis duration, and treatment burden than by demographic characteristics. Therefore, the influence of gender becomes less pronounced when clinical conditions between groups are relatively similar (Yonata et al., 2022).

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Relationship Between Education and Quality of Life

The results of this study showed no significant relationship between education level and quality of life in patients undergoing hemodialysis (p = 0.523). The proportion of respondents with a good quality of life in the elementary school–junior high school education group was 70.0%, while in the high school–college education group it was 58.8%. These findings indicate that education level is not a significant factor influencing the quality of life of patients with chronic kidney disease undergoing hemodialysis.

These results align with the findings of Rahmah et al., (2021) , who reported that education level was not associated with quality of life among hemodialysis patients. This can be explained by the fact that patients, after undergoing therapy for a specific period, generally undergo a process of adaptation to their disease and treatment regimen. This adaptation process includes accepting the disease, adjusting to dietary and fluid restrictions, and adhering to the therapy schedule. Therefore, differences in education level no longer significantly influence perceived quality of life.

However, several studies have shown conflicting results. Hao et al., (2024) reported that lower education levels were associated with poorer quality of life in patients with chronic kidney disease undergoing hemodialysis. Bakker et al., (2024) also found that, among dialysis patients in

Europe, higher education was associated with better emotional well-being than lower education. These findings suggest that the ability to understand health information, decision-making skills, and access to resources and support may influence differences in quality of life based on education level.

Relationship between Marital Status and Quality of Life

The results showed that marital status was not significantly associated with the quality of life of hemodialysis patients (p = 0.624). The proportion of married respondents with a good quality of life was 62.5%, while the proportion of unmarried, widowed, or divorced respondents was 50.0%. This indicates that marital status is not a significant factor determining the quality of life of chronic kidney disease patients.

This finding aligns with Gurung & Devkota, (2025) and Adiningrum et al., (2021) , who also reported no relationship between marital status and quality of life among hemodialysis patients. However, married patients tended to have a higher quality of life. This suggests that other factors, such as symptom burden, functional ability, psychological well-being, and social support, have a greater influence on the quality of life of hemodialysis patients.

Conceptually, marital status does not always directly influence quality of life, as perceived social support is a more significant determinant. Married patients generally receive better emotional and informational support, which plays a role in improving the quality of life of hemodialysis patients (Ramesh et al., 2024; Sułkowski et al., 2024).

However, the results of this study are not entirely consistent with those of Islam et al., (2025), who found a significant relationship between marital status and quality of life in hemodialysis patients. This relationship is stronger when accompanied by emotional and instrumental support in daily life, such as assistance with hemodialysis therapy and daily activities. On the other hand, under certain circumstances, married hemodialysis patients can also experience a decline in quality of life due to role burden, family conflict, or economic pressures, so the relationship between marital status and quality of life can vary (Ravindran et al., 2020).

Relationship Between Employment and Quality of Life

The results showed that employment status was not significantly associated with the quality of life of hemodialysis patients (p = 0.510). The proportion of employed respondents reporting a good quality of life was 65.4%, while the proportion of unemployed respondents was 55.6%. This indicates that employment status is not a significant factor determining the quality of life of patients with chronic kidney disease.

This finding aligns with research byAdilla et al., (2025), Bodra et al., (2025) and Khatri et al., (2025) , which also reported no relationship between employment status and quality of life in hemodialysis patients. This can be explained by the fact that hemodialysis patients often experience various physical complaints and limitations, such as fatigue, pain, decreased mobility, and sleep disturbances, which can reduce quality of life, thus diminishing the psychosocial benefits of work (Gurung & Devkota, 2025; Yoshida et al., 2025).

Furthermore, research by Motiei et al., (2024) showed that many patients experience decreased work capacity and even lose their jobs after starting hemodialysis. Poor work capacity is associated with older age, lower levels of education, physical limitations, and higher absenteeism. Routine hemodialysis schedules, declining physical condition, and disease burden are barriers to maintaining employment. Therefore, the sustainability of employment in dialysis patients is influenced not only by clinical conditions but also by systemic and environmental factors (Hallab & Wish, 2018).

However, the results of this study are not entirely consistent with several other studies. Kurniawan et al., (2025) reported that employment status is associated with quality of life, with employed hemodialysis patients tending to have greater social activity, financial independence, and a higher sense of productivity. Joshi et al., (2017) study also showed that employed hemodialysis patients had higher quality-of-life scores, particularly in environmental domains such as economic conditions and access to healthcare. Similarly, Ranabhat et al., (2020) found that employment status was associated with overall quality of life among patients with end-stage renal disease.

Relationship Between Income and Quality of Life

The results showed that monthly income was not significantly associated with the quality of life of hemodialysis patients (p = 0.319). The proportion of respondents with an income of <2 million rupiah was 70.6%, while the proportion of respondents with an income of ≥2 million rupiah was 55.6%. This indicates that income level is not a significant factor in determining the quality of life of patients with chronic kidney disease.

This finding aligns with research by Siswandi et al., (2024) and Silaban et al., (2024) , which also reported no relationship between income and quality of life for hemodialysis patients. In the context of healthcare services in Indonesia, this can be explained by the National Health Insurance (JKN) program administered by BPJS Kesehatan, which covers most hemodialysis

costs, so income differences do not directly affect access to therapy (Tania & Thabrany, 2016).

However, monthly income does not fully reflect the economic burden experienced by hemodialysis patients. Even though the procedure is covered, patients still have to bear non-medical costs, such as transportation, food during therapy, treatment for comorbidities, and lost income due to reduced productivity. Studies on out-of-pocket expenses indicate that this economic burden remains significant and can impact the financial well-being of hemodialysis patients (Saad et al., 2025).

When economic factors are measured more comprehensively, including socioeconomic status, funding sources, and financial stress, several studies have found relationships with the quality of life of hemodialysis patients. Gurung & Devkota, (2025) and Khatri et al., (2025) report that economic conditions and social welfare influence the quality of life of hemodialysis patients. Furthermore, economic limitations are also associated with psychological problems such as depression, which can reduce the quality of life of hemodialysis patients (Simorangkir et al., 2021).

Relationship between Length of Hemodialysis and Quality of Life

The results of this study showed a significant relationship between hemodialysis duration and patient quality of life ($p = 0.004$). Patients undergoing hemodialysis for less than 2 years had a higher proportion with good quality of life than those with 2 years or more. This finding suggests that the longer a patient undergoes hemodialysis, the greater the likelihood of a decline in quality of life.

Clinically, longer hemodialysis duration is associated with increased symptom burden and long-term complications, such as persistent fatigue, sleep disturbances, muscle pain or cramps, and musculoskeletal and neurological complaints. Longer dialysis duration has been reported to be associated with decreased physical quality-of-life components and increased symptom burden in hemodialysis patients (Ishiwatari et al., 2020; Yan et al., 2025). Fatigue and sleep disturbances are the most common complaints and significantly impact daily activities, while pain and cramps during dialysis also contribute to a decreased quality of life in hemodialysis patients (Bossola et al., 2023; Kot et al., 2024; Parvan et al., 2013).

These findings are supported by Hidayat et al., (2025) and Fadlilah, (2019), who stated that longer hemodialysis duration is associated with increased fatigue, boredom, and long-term therapy burden. Similar results were also reported by Saputra & Wiryansyah, (2023) and Abdillah et al., (2025) who showed an increase in physical and psychosocial burden as the disease progresses and clinical conditions change during hemodialysis treatment.

However, the duration of hemodialysis is not always negative, as patients can adapt over time. Several studies have shown that patients with longer hemodialysis therapy durations may report improvements in specific domains, influenced by psychological adaptation, increased understanding of the therapy regimen, medication adherence, and the ability to manage symptoms (D'Onofrio et al., 2017; Kusmiran et al., 2026; Sinaga & Siswandi, 2022; Yan et al., 2025). In fact, Amal et al., (2026) reported that patients with hemodialysis duration of more than 2 years had better quality of life than those in the initial phase of therapy.

The differences in results across studies indicate that the quality of life of hemodialysis patients is multidimensional and influenced by factors such as comorbidities, psychological conditions, social support, and coping skills. Several studies also found no significant relationship between hemodialysis duration and quality of life (Adilla et al., 2025; Simorangkir et al., 2021; Utami et al., 2025). Thus, the relationship between hemodialysis duration and quality of life likely reflects the balance between the accumulation of symptom burden and the patient's ability to adapt during therapy.

Dominant Factors Associated with Quality of Life in Hemodialysis Patients

Multivariate analysis indicates that age is a significant predictor of quality of life among patients undergoing hemodialysis. Respondents aged >45 years were less likely to have a good quality of life compared to respondents aged ≤45 years ($p = 0.024$; OR = 0.089). These findings suggest that increasing age is associated with a decline in quality of life influenced by decreased functional capacity, an increase in comorbidities, and limited ability to adapt to chronic illness and long-term hemodialysis therapy. These results align with research by Ishiwatari et al., (2020) which reported that elderly hemodialysis patients had lower physical quality-of-life scores than younger age groups. Research by Veerappan et al., (2012) also showed that younger age is an independent predictor of better quality of life in hemodialysis patients.

The female gender tended to be associated with quality of life ($p = 0.050$; OR = 0.144), indicating that women have a lower chance of having a good quality of life compared to men in hemodialysis patients. Several studies have reported that women undergoing hemodialysis tend to have a lower quality of life. This condition may be influenced by biological factors, such as differences in body composition that potentially affect dialysis adequacy, as well as psychosocial factors, including the burden of domestic roles and caregiving responsibilities (Riehl-tonn et al.,

2024). Furthermore, a study by Lerma et al., (2021) showed that female patients undergoing hemodialysis had lower quality-of-life scores across several domains, including symptoms, physical function, pain, and general health, and reported a higher prevalence and intensity of symptoms than men.

Meanwhile, duration of hemodialysis ≥2 years did not significantly impact quality of life when analyzed alongside other variables (p = 0.073; OR = 0.114). These results indicate that therapy duration is not an independent factor determining the quality of life of patients with chronic kidney disease undergoing hemodialysis, as its influence is moderated by other, more dominant factors, such as age, comorbidities, psychological conditions, social support, and patient coping skills. Previous studies have also yielded mixed results regarding the relationship between hemodialysis duration and quality of life. Ishiwatari et al., (2020) reported that in elderly patients, longer hemodialysis duration may be associated with decreased physical quality of life. However, Yan et al., (2025) found that longer hemodialysis therapy duration was associated with increased symptom burden, although changes in quality of life varied across domains, with some domains showing improvement and others deteriorating. This variation in findings confirms that the quality of life of hemodialysis patients is multidimensional and not determined by a single factor.

Overall, the multivariate analysis indicates that multiple factors influence the quality of life of hemodialysis patients. Age is the most dominant factor related to quality of life, as evidenced by the most minor OR and statistical significance: patients aged >45 years have a greater risk of poor quality of life than younger patients.

CONCLUSION

The study results showed that factors significantly associated with quality of life in hemodialysis patients were age, gender, and duration of hemodialysis. Younger patients, male patients, and patients undergoing hemodialysis for a shorter duration tended to have a better quality of life. Meanwhile, education level, marital status, employment status, and income did not show a significant association with patient quality of life.

Multivariate analysis showed that age was the most dominant factor influencing quality of life. Patients aged >45 years had a lower likelihood of a good quality of life than those aged ≤45 years.

These findings suggest that nursing interventions need to be focused on at-risk groups, particularly elderly and female patients. The approach provided should be comprehensive, encompassing physical symptom management, psychological support, self-care education, and strengthening family support, to improve the quality of life of patients undergoing hemodialysis therapy.

REFERENCES

Abdillah, N., Asiani, G., Murni, N. S., & Wahyudi, A. (2025). ANALISIS KUALITAS HIDUP PASIEN PENYAKIT GINJAL KRONIS YANG MENJALANI HEMODIALISIS. *Jurnal 'Aisyiyah Medika*, *10*(1), 235–253. https://jurnal.unisa-palembang.ac.id/index.php/JAM/article/view/1316/1037

Abdu, S., & Satti, Y. C. (2024). Analysis of Determinants of Quality of Life in Chronic Kidney Failure Patients Undergoing Hemodialysis Therapy. *Jurnal Keperawatan Florence Nightingale (JKFN)*, *7*(1), 236–245. https://doi.org/10.52774/jkfn.v7i1.178

Adilla, F., Nursal, D. G. A., & Triana, V. (2025). DETERMINANTS OF QUALITY OF LIFE IN PATIENTS WITH CHRONIC KIDNEY DISEASE UNDERGOING HEMODIALYSIS AT DR. M. DJAMIL HOSPITAL PADANG. *Jurnal Kesmas Jambi*, *9*(3), 281–292. https://doi.org/10.22437/jkmj.v9i3.50877

Adiningrum, N., Andayani, T. M., & Kristina, S. A. (2021). Analisis Faktor Klinik terhadap Kualitas Hidup Pasien Hemodialisis di RSUD dr. Loekmono Hadi Kudus. *Jurnal Farmasi Dan Ilmu Kefarmasian Indonesia*, *8*(1), 29–37. efaidnbmnnnibpcajpcglclefindmkaj/https://repository.unar.ac.id/jspui/bitstream/123456789/7193/1/29-37.pdf

Ali, M., Ejaz, A., Iram, H., Solangi, S. A., Junejo, A. M., & Solangi, S. A. (2021). Frequency of Intradialytic Complications in Patients of End-Stage Renal Disease on Maintenance Hemodialysis. *Cureus*, *13*(1), e12641. https://doi.org/10.7759/cureus.12641

Alqalah, T. A. H., Alrubaiee, G. G., & Alkubati, S. A. (2025). Factors Associated with the Quality of Life and Needs of Hemodialysis Patients in Saudi Arabia: A Basis for Improved Care. *Medicina*, *61*(2), 180. https://doi.org/https://doi.org/10.3390/medicina61020180

Amal, A. I., Melastuti, E., & Putri, M. P. (2026). Lama Menjalani Hemodialisis dan Kualitas Hidup Pasien Gagal Ginjal Kronik : Korelasi Keduanya. *Jurnal Medika Nusantara*, *4*(1), 74–83. https://doi.org/10.59680/medika.v4i1.2185

Azira, N., Mutmainna, A., & Irmayani. (2023). Pengaruh Hemodialisa Terhadap Quality Of Life Pada Pasien Gagal Ginjal Kronik. *Jurnal Ilmiah Mahasiswa & Penelitian Keperawatan*, *3*(2), 16–22. https://doi.org/10.35892/jimpk.v3i2.1257

Bakker, W. M., Theunissen, M., Öztürk, E.,

Litjens, E., Courtens, A., Everdingen, M. H. J. van den B.- van, & Hemmelder, M. H. (2024). Educational level and gender are associated with emotional well-being in a cohort of Dutch dialysis patients. *BMC Nephrology*, *25*, 179. https://doi.org/10.1186/s12882-024-03617-8

Berek, P. A. L., Dales, Y. L. U. F., & Fouk, M. F. W. A. (2025). Hubungan Antara Umur dan Jenis Kelamin dengan Kualitas Hidup Pasien Gagal Ginjal Kronik yang Menjalani Hemodialisis. *Jurnal Riset Rumpun Ilmu Kedokteran*, *4*(1), 230–242. https://doi.org/10.55606/jurrike.v4i1.4419

Bodra, D., Munda, P., Bhojaraju, B., & Khan, M. M. E. H. (2025). A Study of the Quality of Life in Patients on Hemodialysis Therapy. *Cureus*, *17*(10), e94864. https://doi.org/10.7759/cureus.94864

Bossola, M., Hedayati, S. S., Brys, A. D. H., & Gregg, L. P. (2023). Fatigue in Patients Receiving Maintenance Hemodialysis: A Review. *American Journal of Kidney Diseases*, *82*(4), 464–480. https://doi.org/10.1053/j.ajkd.2023.02.008

Campo, S., Lacquaniti, A., Trombetta, D., Smeriglio, A., & Monardo, P. (2022). Immune System Dysfunction and Inflammation in Hemodialysis Patients: Two Sides of the Same Coin. *Journal of Clinical Medicine*, *11*(13), 1–14. https://doi.org/10.3390/jcm11133759

Chen, T. K., Knicely, D. H., & Grams, M. E. (2019). Chronic Kidney Disease Diagnosis and Management: A Review. *JAMA*, *322*(13), 1294–1304. https://doi.org/10.1001/jama.2019.14745

D'Onofrio, G., Simeoni, M., Rizza, P., Caroleo, M., Capria, M., Mazzitello, G., Sacco, T., Mazzuca, E., Panzino, M. T., Cerantonio, A., Segura-Garcia, C., Andreucci, M., De Fazio, P., Fuiano, G., Simeoni, M., Rizza, P., Caroleo, M., Capria, M., … Fuiano, G. (2017). Quality of life, clinical outcome, personality and coping in chronic hemodialysis patients. *Renal Failure*, *39*(1), 45–53. https://doi.org/10.1080/0886022X.2016.1244077

Denic, A., Glassock, R. J., & Rule, A. D. (2022). The Kidney in Normal Aging A Comparison with Chronic Kidney Disease. *CJASN*, *17*(1), 137–139. https://doi.org/10.2215/CJN.10580821 The

Fadlilah, S. (2019). Faktor-Faktor yang Berhubungan Dengan Kualitas Hidup Pasien Hemodialisis. *Kesehatan*, *10*(2), 284–290. https://doi.org/10.26630/jk.v10i2.1454

Galaresa, A. V. (2023). Faktor-Faktor Yang Mempengaruhi Kualitas Hidup Pasien Gagal Ginjal Kronik Yang Mendapatkan Hemodialisis Di Rumah Sakit Pekanbaru Medical Center. *Jurnal Penelitian Sekolah Tinggi Ilmu Kesehatan Nahdlatul Ulama Tuban*, *5*(1), 14–19. https://doi.org/10.47710/jp.v5i1.207

Golang, H., Muhafilah, I., & Wulan, Q. A. (2024). Hubungan Antara Karakteristik Individu dengan Kualitas Hidup Pasien Gagal Ginjal di Ruang Hemodialisa RS Bhayangkara Tk I Raden Said Sukanto. *Jurnal Kesehatan Masyarakat Perkotaan*, *4*(1), 1–12. https://doi.org/10.37012/jkmp.v4i1.2123

Gurung, S., & Devkota, N. (2025). Quality of life among hemodialysis patients in a referral center in Kathmandu : A mixed method study. *PLoS One*, *20*(11), e0335990. https://doi.org/10.1371/journal.pone.0335990

Hafidz, M. Y. H. Al, Kusumawati, M. W., Faradisa, E., Agustin, W. R., & Rahmad, M. N. (2025). HUBUNGAN TINGKAT KECEMASAN DENGAN KUALITAS HIDUP PASIEN CHRONIC KIDNEY DISEASE YANG MENJALANI TERAPI HEMODIALISA. *Jurnal Ilmiah Pamenang*, *7*(2), 232–240. https://doi.org/10.53599/jip.v7i2.420

Hallab, A., & Wish, J. B. (2018). Employment among Patients on Dialysis: An Unfulfilled Promise. *Clin J Am Soc Nephrol*, *7*(13), 203–204. https://doi.org/10.2215/CJN.13491217

Hao, J., Wang, Y., Wang, Y., Zhang, J., Gao, J., Kang, L., Wang, X., Yang, J., Zhang, L., & Liu, J. (2024). Analysis of influencing factors on quality of life in patients with chronic kidney disease undergoing maintenance haemodialysis. *Heliyon*, *10*(4), e25817. https://doi.org/https://doi.org/10.1016/j.heliyon.2024.e25817

Hidayat, A., Andrianur, F., Era, D. P., & Widiastuti, H. P. (2025). Hemodialysis (HD) Duration is Associated with The Quality of Life of Patients with Kidney Failure Undergoing Hemodialysis. *Jurnal Kesehatan*, *16*(1), 48–54. https://doi.org/10.26630/jk.v16i1.4839

Indonesian Renal Registry. (2018). 11th Report Of Indonesian Renal Registry 2018. In *Indonesian Renal Registry (IRR)*. https://www.indonesianrenalregistry.org/data/IRR 2018.pdf

Irawan, A. G., & Saputra, E. (2026). HUBUNGAN TINGKAT STRES DAN KELELAHAN PADA PASIEN GAGAL GINJAL KRONIK YANG MENJALANI HEMODIALISIS. *Jurnal Ners Volume*, *10*(2), 3068–3075. https://doi.org/10.31004/jn.v10i1.54662

Ishiwatari, A., Yamamoto, S., Fukuma, S., Hasegawa, T., Wakai, S., & Nangaku, M. (2020). Quality of Life in Older Hemodialysis Patients : A Cohort Study on

Dialysis Outcomes and Practice Patterns. *American Journal of N*, *51*(8), 650–658. https://doi.org/10.1159/000509309

Islam, G., Shah, G. H., Saeed, N., Jones, J. A., & Karibayeva, I. (2025). A Cross-Sectional Multivariable Analysis of the Quality of Hemodialysis Patients' Life in Lahore City, Pakistan. *Healthcare*, *13*(2), 186. https://doi.org/https://doi.org/10.3390/healthcare13020186

Joshi, U., Subedi, R., Poudel, P., Ghimire, P. R., Panta, S., & Sigdel, M. R. (2017). Assessment of quality of life in patients undergoing hemodialysis using WHOQOL-BREF questionnaire : a multicenter study. *International Journal of Nephrology and Renovascular Disease*, *19*(10), 195–203. https://doi.org/10.2147/IJNRD.S136522

Kansil, W. H. A., Yenny, Yemina, L., & Siregar, H. K. (2025). Gambaran Kualitas Hidup Pasien Hemodialisis Di Klinik NU Cipta Husada. *Jurnal Keperawatan Cikini*, *6*(1), 86–97. https://doi.org/10.55644/jkc.v6i01.217

Khatri, D., Gahatraj, N. R., Chhetri, Y., KC, B. B., & Paudel, S. (2025). Quality of Life Among Hemodialysis Patients Attending Dialysis Centers in Pokhara Metropolitan , Nepal : A Cross - Sectional Study. *Health Science Reports*, *8*(8), e71132. https://doi.org/10.1002/hsr2.71132

Kot, G., Wr, A., Kuna, K., Mak, A., & Nowicki, M. (2024). The Effect of Muscle Cramps During Hemodialysis on Quality of Life and Habitual Physical Activity. *Medicina*, *60*(12), 2075. https://doi.org/10.3390/medicina60122075

Kuling, S., Widyawati, I. Y., & Makhfudli. (2023). Pengaruh Terapi Spiritual terhadap Asek Psikologis pada Pasie Hemodialisis: Literatur Review. *Jurnal Keperawatan*, *15*(4), 1617–1628. https://doi.org/10.32583/keperawatan.v15i4.1143

Kurniawan, E. U., Ma'rifah, A. R., & Haniyah, S. (2025). FAKTOR-FAKTOR YANG BERHUBUNGAN DENGAN KUALITAS HIDUP PASIEN PENYAKIT GINJAL KRONIS YANG MENJALANI HEMODIALISA DI RSU WIRADADI HUSADA BANYUMAS. *Jurnal Riset Ilmiah*, *2*(10), 4820–4836. https://doi.org/10.62335/sinergi.v2i10.1904

Kusmiran, E., Purwanti, T. F., & Hanafiah, H. (2026). Analysis of Hemodialysis Duration as a Determining Factor of Quality of Life in Patients with Chronic Kidney Disease : A Cross-Sectional Study at Regional General Hospital , Bandung Regency , 2024. *Journal Of Nursing Practice*, *9*(2), 289–297. https://doi.org/10.30994/jnp.v9i2.953

Lerma, C., Lima-zapata, L. I., Amaya-aguilar, J. A., Leonardo-cruz, I., Lazo-s, M., Berm, L. A., Perez-Grovas, H., Lerma, A., & Cadena-estrada, J. C. (2021). Gender-Specific Differences in Self-Care , Treatment-Related Symptoms , and Quality of Life in Hemodialysis Patients. *International Journal of Environmental Research and Public Health*, *18*(24), 13022. https://doi.org/10.3390/ijerph182413022

Lolowang, N. lisa, Lumi, W. M. ., & Rattoe, A. A. (2021). Kualitas Hidup Pasien Gagal Ginjal Kronis Dengan Terapi Hemodialisa. *Jurnal Ilmiah Perawat Manado (Juiperdo)*, *8*(02), 21–32. https://doi.org/10.47718/jpd.v8i01.1183

Ludia Wally, M., Haskas, Y., Kadrianti, E., Nani Hasanuddin Makassar, S., & Kemerdekaan, J. P. (2022). Pengaruh Self Instructional Training Terhadap Quality of Life Penderita Diabetes Melitus. *JIMPK : Jurnal Ilmiah Mahasiswa & Penelitian Keperawatan*, *90245*(3), 90245. https://doi.org/10.35892/jimpk.v2i3.940

Lusito, L., Utami, K. D., Yuliyanti, S., Nurmalita, A., & Amaliyah, L. R. (2025). Factors affecting quality of life in patients undergoing hemodialysis in Semarang , Indonesia. *Sains Medika: Jurnal Kedokteran Dan Kesehatan*, *16*(1), 1–9. https://doi.org/10.30659/sainsmed.v16i1.39560

Ma, H., Chen, S., & Du, Y. (2021). Estrogen and estrogen receptors in kidney diseases. *Renal Failure*, *43*(1), 619–642. https://doi.org/10.1080/0886022X.2021.1901739

Mesya, & Permana, I. (2024). COMPLEMENTARY THERAPY IN IMPROVING THE SLEEP QUALITY OF HEMODIALYSIS PATIENTS : A SCOPING REVIEW. *Jurnal Aisyah : Jurnal Ilmu Kesehatan*, *9*(1), 275–287. https://doi.org/10.30604/jika.v9i1.2603

Miranti, D. R., & Anita, D. C. (2022). Faktor demografi dan komorbiditas yang berhubungan dengan kualitas hidup pasien hemodialisa. *Jurnal Kebidanan Dan Keperawatan 'Aisyiyah*, *18*(1), 10–19. https://doi.org/10.31101/jkk.1087

Motiei, M., Attarchi, M., & Ramezanzadeh, E. (2024). The effect of workability - related factors in patients with end - stage kidney disease undergoing hemodialysis. *BMC Nephrology*, *25*(460), 1–9. https://doi.org/10.1186/s12882-024-03904-4

Msilanga, D., Nkwera, U., Punatar, P., Mngumi, J., Msangi, E., Valentine, G., Mushi, H., & Shoo, J. (2025). Work and Dialysis : Navigating Employment Challenges Among Young Adults on Maintenance Hemodialysis

in Tanzania. *International Journal of Nephrology*, *2025*, 9980961. https://doi.org/10.1155/ijne/9980961

Muhani, N., & Sari, N. (2020). Analisis Survival pada Penderita Gagal Ginjal Kronik dengan Komorbiditas Diabetes Melitus. *Media Kesehatan Masyarakat Indonesia*, *12*(2), 216–224. https://doi.org/10.30597/mkmi.v16i2.9047

Nurjaman, M. F., Susilaningsih, F. S., & Permana, R. H. (2023). Kualitas Hidup (Quality Of Life) Pada Mahasiswa Profesi Fakultas Keperawatan Universitas Padjadjaran. *Medika Respati : Jurnal Ilmiah Kesehatan Vol.*, *18*(1), 51–62. https://doi.org/10.35842/mr.v18i1.845

Parvan, K., Roshangar, F., & Mostofi, M. (2013). Quality of Sleep and its Relationship to Quality of Life in Hemodialysis Patients. *Journal of Caring Sciences*, *2*(4), 295–304. https://doi.org/10.5681/jcs.2013.035

Priandini, R. P., Handayani, L., & Rosyidah. (2023). Faktor - Faktor yang Berhubungan dengan Kualitas Hidup (Quality Of Life) Pasien Gagal Ginjal Kronik yang Menjalani Hemodialisa. *Jurnal Pendidikan Tambusa*, *7*(1), 3332–3338. https://jptam.org/index.php/jptam/article/view/5724/4807

Primasari, N. A., & Dara, S. (2022). HUBUNGAN DUKUNGAN KELUARGA DENGAN KUALITAS HIDUP PASIEN GAGAL GINJAL KRONIK YANG MENJALANI HEMODIALISA : LITERATURE REVIEW. *Prosiding Seminar Informasi Kesehatan Nasional*, 82–90. https://doi.org/10.47701/sikenas.vi.1661

Putri, I., Jamiatun, Indriyani, I., & Susanti, F. (2024). HUBUNGAN LAMA MENJALANI HEMODIALISIS DENGAN KUALITAS HIDUP PADA PASIEN GAGAL GINJAL KRONIK Ira. *Jurnal Keperawatan Muhammadiyah Bengkulu*, *12*(2), 72–81. https://doi.org/10.36085/jkmb.v12i2.6809

Putro, W., Barlia, G., & Yuniar, L. (2024). HUBUNGAN KEPATUHAN PEMBATASAN CAIRAN PASIEN GAGAL GINJAL KRONIK YANG MENJALANI TERAPI HEMODIALISA DENGAN KUALITAS HIDUP DI RSUD PEMANGKAT. *JURNAL KESEHATAN TAMBUSAI*, *5*(4), 13750–13763. https://doi.org/10.31004/jkt.v5i4.36693

Rahmah, S., Maryunis, & Ernasari. (2021). Faktor yang Berhubungan dengan Kualitas Hidup Pasien Penyakit Ginjal Kronik yang Menjalani Hemodialisis. *Window of Nursing Journal*, *02*(02), 165–177. 10.33096/won.v2i2.935

Ramadani, P., Suminar, M., & Ernawilis. (2024). GAMBARAN KUALITAS HIDUP PASIEN CHRONIC KIDNEYDISEASE (CKD) YANG MENJALANI HEMODIALISA DI RS GRHA KEDOYA JAKARTA BARAT TAHUN 2024. *Jurnal Kesehatan STIKes IMC Bintaro*, *7*(2). https://doi.org/10.63448/3g0bsy18

Ramesh, S., Tomy, C., Nair, R. R., Jose, J., & Joseph, J. K. (2024). Correlation of self-management and social support with quality of life in patients with chronic kidney disease undergoing hemodialysis : A cross-sectional study from Kerala , India. *Clinical Epidemiology and Global Health*, *29*(July), 101731. https://doi.org/10.1016/j.cegh.2024.101731

Ranabhat, K., Khanal, P., Mishra, S. R., Khanal, A., Tripathi, S., & Sigdel, M. R. (2020). Health related quality of life among haemodialysis and kidney transplant recipients from Nepal: a cross sectional study using WHOQOL-BREF. *BMC Nephrology*, *21*(433), 1–8. https://doi.org/10.1186/s12882-020-02085-0

Ratnasari, D., & Isnaini, N. (2020). HUBUNGAN LAMA HEMODIALISA DENGAN STATUS NUTRISI PADA PASIEN GAGAL GINJAL KRONIK DI RUANG HEMODIALISA. *JURNAL SKOLASTIK KEPERAWATAN*, *6*(1), 16–23. https://doi.org/10.35974/jsk.v6i1.2321

Ravindran, A., Sunny, A., Kunnath, R., & Divakaran, B. (2020). Assessment of quality of life among end-stage renal disease patients undergoing maintenance hemodialysis. *Indian Journal of Palliative Care*, *26*(1), 47–53. https://doi.org/10.4103/IJPC.IJPC_141_19

Riehl-tonn, V. J., Macrae, J. M., Dumanski, S. M., Elliott, M. J., Pannu, N., Schick-makaroff, K., Drall, K., Norris, C., Nerenberg, K. A., Pilote, L., Behlouli, H., Gantar, T., & Ahmed, S. B. (2024). Sex and gender differences in health-related quality of life in individuals treated with incremental and conventional hemodialysis. *Clinical Kidney Journal*, *17*(10), 1–10. https://doi.org/10.1093/ckj/sfae273

Riskesdas. (2018). Hasil Utama Riset Kesehatan Dasar Tahun 2018. In *Kementrian Kesehatan Republik Indonesia* (pp. 1–200). https://kesmas.kemkes.go.id/assets/upload/dir_519d41d8cd98f00/files/Hasil-riskesdas-2018_1274.pdf

Rustendi, T., Murtiningsih, & Inayah, I. (2022). Kualitas Hidup Pasien Gagal Ginjal Kronis yang Menjalani Hemodialisa. *Mando Care Jurnal*, *1*(3), 98–104. https://doi.org/10.55110/mcj.v1i3.88 Kualitas

Saad, S., Satar, N. M., & Zakaria, R. H. (2025). Comparative Assessment of Out-of-Pocket Health Expenditure in Haemodialysis and

Peritoneal Dialysis Patients. *Healthcare*, *13*(24), 3325. https://doi.org/10.3390/healthcare13243325

Saputra, A., & Wiryansyah, O. A. (2023). HUBUNGAN LAMA MASA HEMODIALISIS DENGAN KUALITAS HIDUP PASIEN GAGAL GINJAL KRONIK. *Babul Ilmi_Jurnal Ilmiah Multi Science Kesehatan*, *15*(1), 112–123. https://jurnal.unisa-palembang.ac.id/index.php/Kep/article/view/1067/791

Sari, R. P., & Soleman, S. R. (2024). Gambaran Kualitas Hidup pada Pasien Gagal Ginjal Kronis yang Menjalani Hemodialisa di RSUD Ibu Fatmawati Soekarno Surakarta. *Protein: Jurnal Ilmu Keperawatan Dan Kebidanan*, *2*(4), 123–132. https://doi.org/10.61132/protein.v2i4.683

Sembiring, F. B., Pakpahan, R. E., Tumanggor, L. S., & Laiya, E. K. G. (2024). HUBUNGAN LAMA MENJALANI HEMODIALISA DENGAN KUALITAS HIDUP PASIEN GAGAL GINJAL KRONIS DI RSUP H. ADAM MALIK MEDAN. *Indonesian Trust Health Journal*, *7*(1), 1–11. https://doi.org/doi.org/10.37104/ithj.v7i1.193

Shadrina, D., Susanto, A. D., & Sartika, I. (2024). Gudang Jurnal Ilmu Kesehatan Hubungan Lama Menjalani Hemodialisis Dengan Kualitas Hidup Pasien Gagal Ginjal Kronik Di Unit Hemodialisa RSUD Balaraja Tahun 2024. *Gudang Jurnal Ilmu Kesehatan*, *2*(2), 404–410. https://doi.org/10.59435/gjik.v2i2.910

Shakila, S. N., Saida, S. A., & Elmiyati. (2023). Gambaran Kualitas Hidup Pada Pasien Gagal Ginjal Kronik Yang Menjalani Hemodialisis Di RSUD Meuraxa Kota Banda Aceh. *Jurnal Cahaya Madndalika*, *4*(3), 380–387. https://doi.org/10.36312/jcm.v4i3.1765

Silaban, J., Hasianna, V., & Silaban, V. F. (2024). Quality of Life of Hemodialysis Patients in the Sidikalang Regional General Hospital. *Jurnal Keperawatan Priority*, *7*(2), 78–86. https://doi.org/10.34012/jukep.v7i2.5273

Simorangkir, R., Andayani, T. M., & Wiedyaningsih, C. (2021). Faktor-Faktor yang Berhubungan dengan Kualitas Hidup Pasien Penyakit Ginjal Kronis yang Menjalani Hemodialisis. *Jurnal Farmasi Dan Ilmu Kefarmasian Indonesia Vol.*, *8*(1), 83–90. https://doi.org/10.20473/jfiki.v8i12021.83-90

Sinaga, P., & Siswandi, I. (2022). Hubungan self-efficacy dan lama hemodialisis terhadap kualitas hidup pasien gagal ginjal kronik yang menjalani hemodialisis. *Indonesian Journal of Nursing Sciences and Practice*, *5*(2), 51–56. https://doi.org/10.24853/ijnsp.v5i2.51-56

Siswandi, Perwitasari, D. A., Simanjuntak, L. B., Suhendra, G., Wulandari, D., Dania, H., Faridah, I. N., & Adnan. (2024). The quality of life of hemodialysis patients in Yogyakarta , Indonesia. *Pharmaciana*, *14*(1), 46–56. https://doi.org/10.12928/pharmaciana.v14i1.28449

Situmurang, P. R., Ambarita, S., & Bangun, S. R. (2022). Analysis of Blood Glucose Levels Before and After Hemodialization in Santa's Hospital Elisabeth Medan. *International Journal Of Biomedical Herbal Medicine*, *1*(2), 19–28. https://doi.org/10.46880/ijbhm.v1i2.1304

Siwi, A. S., & Budiman, A. A. (2021). Kualitas Hidup Pasien Gagal Ginjal Kronik Yang Menjalani Terapi Hemodialisa. *Jurnal Keperawatan Muhammadiyah Bengkulu*, *9*(2), 1–9. https://doi.org/10.36085/jkmb.v9i2.1711 JURNAL

Sułkowski, L., Matyja, A., & Matyja, M. (2024). Social Support and Quality of Life in Hemodialysis Patients : A Comparative Study with Healthy Controls. *Medicina*, *60*(11), 1732. https://doi.org/10.3390/medicina60111732

Suwanti, Taufikurrahman, Rosyidi, M. I., & Wakhid, A. (2017). Kualitas Hidup Pasien Gagal Ginjal Kronis yang Menjalani Terapi Hemodialisa. *Mando Care Jurnal*, *15*(2), 107–114. https://doi.org/10.26714/jkj.5.2.2017.107-114

Tania, F., & Thabrany, H. (2016). Biaya dan Outcome Hemodialisis di Rumah Sakit Kelas B dan C. *Jurnal Ekonomi Kesehatan Indonesia*, *1*(1), 54–64. https://doi.org/10.7454/eki.v1i1.1763

Tannor, E. K., Norman, B. R., Adusei, K. K., Sarfo, F. S., Davids, M. R., & Bedu-Addo, G. (2019). Quality Of Life Among Patients With Moderate To Advanced Chronic Kidney Disease In Ghana - A Single Centre Study. *BMC Nephrology*, *20*(1), 122. https://doi.org/10.1186/s12882-019-1316-z

Triana, N., Rahmawati, I., Maydinar, D. D., & Alamsyah, R. (2021). HUBUNGAN KEPATUHAN MENJALANI TERAPI HEMODIALISA DENGAN KUALITAS HIDUP PASIEN GAGAL GINJAL KRONIK DI RSUD BESEMAH KOTA PAGAR ALAM. *Jurnal Ilmu Keperawatan Indonesia*, *2*(2), 35–48. https://jurnal.umitra.ac.id/index.php/jikpi/article/view/796/649

Umami, I., & Rohayati. (2025). RELATIONSHIP OF FAMILY SUPPORT AND SELF-EFFICACY WITH FLUID RESTRICTION COMPLIANCE IN PATIENTS UNDERGOING HAEMODIALYSIS AT ANANDA BEKASI HOSPITAL. *STIKes*

Mitra Keluarga, *07*(02), 226–238. https://doi.org/10.47522/jmk. v7i2.390

Utama, Y. A., & Hayati, I. (2023). Hubungan Lamanya Menjalankan Hemodialisa Terhadap Kualitas Hidup Pasien Chronic Kidney Disease Di Rsud Sekayu. *Proceeding Seminar Nasional Keperawatan*, *9*(1), 24–29. https://conference.unsri.ac.id/index.php/SNK/article/view/2876/1602

Utami, P. J. K., Harun, S., & Anita, D. C. (2025). The Relationship Between Length of Hemodialysis Therapy and age With Quality of Life in Chronic Kidney Failure Patients at PKU Muhammadiyah Gamping Hospital. *International Journal of Health and Medicine*, *2*(1), 299–316. https://doi.org/10.62951/ijhm.v2i1.254

Veerappan, I., Arvind, R. M., & Ilayabharthi, V. (2012). Predictors of quality of life of hemodialysis patients in India. *Indian Journal of Nephrology*, *22*(1), 18–25. https://doi.org/10.4103/0971-4065.91185

Wahyudi, F. F. N., & Rantung, J. (2024). Hubungan Fatigue Dengan Kualitas Hidup Pasien Gagal Ginjal Kronik Yang Menjalani Terapi Hemodialisa Di Rumah Sakit Swasta Bandar Lampung. *Klabat Journal of Nursing*, *6*(1), 50–59. https://doi.org/10.37771/kjn.v6i1.1067

Wardani, N. S., Heriyanto, N., Cahya, M. R. F., Manurung, T. H., & Parulian, I. (2025). RELATIONSHIP BETWEEN HEMODIALYSIS FREQUENCY AND UREA REDUCTION RATIO (URR) RESULTS IN CKD PATIENTS. *Indonesian Journal of Global Health Research*, *7*(3), 729–740. https://doi.org/10.37287/ijghr.v7i3.5999.

Winarni, S., Engkartini, & Sarwa. (2025). Karakteristik dan kualitas hidup pasien gagal ginjal kronik (GGK) yang menjalani terapi hemodialisa di unit hemodialisa. *Cendekia Sehat: Jurnal Penelitian Keperawatan Vol.2*, *2*(1), 86–92. https://journal.ycsn.org/index.php/csjpk/article/view/117/52

Yan, S., Wang, Y., Li, Z., Wang, D., & Yao, D. (2025). Dialysis Vintage and Symptom Burden in Hemodialysis : A Comprehensive Analysis. *Nurs Health Sciences*, *27*(3), e70226. https://doi.org/10.1111/nhs.70226

Yoga, M. A. P. A., Susmalini, Zuraida, R., Indriani, Y., & Sayekti, W. D. (2024). THE RELATIONSHIP BETWEEN ENERGY AND MACRONUTRIENT INTAKE AND NUTRITIONAL STATUS IN CHRONIC RENAL FAILURE PATIENTS WITH HAEMODIALYSIS. *Indonesian Journal of Global Health Research*, *6*(5), 2833–2842. https://doi.org/10.37287/ijghr.v6i5.3653.

Yonata, A., Islamy, N., Taruna, A., & Pura, L. (2022). Factors Affecting Quality of Life in Hemodialysis Patients. *International Journal of General Medicine*, *15*(7), 7173–7178. https://doi.org/10.2147/IJGM.S375994

Yoshida, N., Tanaka, T., Suzuki, Y., Takahashi, S., Hitaka, M., Ishii, S., Yamazaki, K., & Ohashi, Y. (2025). Association of Ankle–Brachial Index with Quality of Life and Survival Outcomes in Hemodialysis Patients. *Journal of Clinical Medicine*, *14*(5), 1625. https://doi.org/https://doi.org/10.3390/jcm14051625

Yuliawati, A. N., Ratnasari, P. M. D., & Pratiwi, I. G. A. S. (2022). Hubungan Kepatuhan Pengobatan Dengan Kualitas Hidup Pasien Gagal Ginjal Kronik Disertai Hipertensi dan Menjalani Hemodialisis. *JMPF*, *12*(1), 28–39. https://doi.org/10.22146/jmpf.69974

Yunita, Najihah, Wijayanti, D., & Lesmana, H. (2024). Analisis Faktor Yang Mempengaruhi Kualitas Hidup Pasien Gagal Ginjal Kronik Yang Menjalani Hemodialisa. *MAHESA: MALAHAYATI HEALTH STUDENT JOURNAL*, *4*(11), 4835–4845. https://doi.org/10.33024/mahesa.v4i11.15072