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The Relationship Between Fatigue, Family Support, and Quality of Life in Patients Undergoing Hemodialysis

Almira Hulwani [1], Rima Berti Anggraini [2], Maryana [3]
[1]Department of Nursing, Citra International Institute. Bangka Belitung. Indonesia

Correspondence author: Almira Hulwani
Email: almirahulwani029@gmail.com
address : Jl. Pangkalpinang-Muntok, Cengkong Abang, Kec. Mendo Bar., Kabupaten Bangka, Kepulauan Bangka Belitung 085172200372
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ABSTRACT

Introduction : Patients with chronic kidney disease undergoing hemodialysis commonly experience a decline in physical and psychosocial functioning, which negatively impacts their quality of life. One of the main issues frequently encountered is chronic fatigue, as well as weak family support, which should serve as a key pillar in helping patients adapt to their chronic condition.
Objective: This study aimed to determine the relationship between fatigue and family support with the quality of life of chronic kidney disease patients undergoing hemodialysis at Bakti Timah Hospital Pangkalpinang in 2025.
Method: This research used a quantitative analytic design with a cross-sectional approach. The sample consisted of 36 respondents selected using total sampling. The instruments used in the study were fatigue, family support, and quality of life questionnaires. Data were analyzed using the Chi-Square statistical test with a significance level of $\alpha = 0.05$.
Result: The results showed a significant relationship between fatigue and quality of life ($p = 0.016$; POR = 4.094; 95% CI: 1.385–12.104), and also a significant relationship between family support and quality of life ($p = 0.033$; POR = 0.771; 95% CI: 0.269–2.208). These findings indicate that the lower the fatigue level and the stronger the family support, the better the patient's quality of life
Conclusion: The conclusion of this study is that both fatigue and family support play an important role in the quality of life of chronic kidney disease patients undergoing hemodialysis. Promotive and preventive efforts in fatigue management and increased family involvement are highly recommended in nursing practice

Keywords: Chronic Kidney Disease, Family Support, Fatigue, , Quality of Life

Introduction

Chronic kidney failure (CKD) is a medical condition characterized by a gradual and permanent decline in kidney function over a period of three months or more. The kidneys play a crucial role in filtering waste and excess fluid from the blood, as well as regulating electrolyte balance in the body (Ratnasari et al., 2022). In advanced stages, patients with CKD experience a decline in kidney function, resulting in the inability to remove toxins and waste from the blood, indicated by a Glomerular Filtration Rate (GFR) below 60 ml/minute/1.73 m2 (Anggraini & Fadila, 2022).

According to World Health Organization (WHO) data in 2021, the prevalence of chronic kidney failure has increased to 697.4 million people, with 86 million (12.3%) undergoing hemodialysis and 1.2 million deaths. In 2022, the prevalence of chronic kidney disease (CKD) reached 843.6 million people, with 115.2 million (13.6%) undergoing hemodialysis and 1.4 million deaths. In 2023, the prevalence of chronic kidney disease (CKD) increased to 895.6 million, with 129 million people undergoing hemodialysis, and 1.5 million deaths (WHO, 2023).Chronic kidney disease cases continue to rise in Indonesia. The Basic Health Research (Riskesdas)recorded 713,783 cases of chronic kidney disease in 2018. The 2023 Indonesian Health Survey (SKI) reported 638,178 cases of kidney disease in Indonesia, with 1,259 actively undergoing hemodialysis therapy (Ministry of Health, 2023).

According to data from the Bangka Belitung Islands Provincial Health Office, the prevalence of chronic kidney disease (CKD) in 2021 was 1,683 cases, with 232 people undergoing hemodialysis. In 2022, the prevalence of chronic kidney disease (CKD) was 1,822 cases, with 267 people undergoing hemodialysis. In 2023, the number of chronic kidney disease (CKD) cases increased to 2,029 cases, with 356 people undergoing hemodialysis (Bangka Belitung Provincial Health Office, 2023).

In Bangka Regency, the prevalence of chronic kidney disease (CKD) in 2021 was 255 cases. In 2022, the prevalence of chronic kidney disease (CKD) was 264 cases. In 2023, the prevalence of chronic kidney disease (CKD) was 329 cases (Bangka Belitung Provincial Health Office, 2023). According to medical records at Pangkal Pinang Regional General Hospital (RSBT), the number of patients with chronic kidney failure undergoing hemodialysis decreased over the past two years, but increased again in the third year. In 2022, 278 patients with chronic kidney failure were undergoing hemodialysis therapy, with 138 patients undergoing hemodialysis. In 2023, 242 patients with chronic kidney failure were undergoing hemodialysis therapy, with 143 patients undergoing hemodialysis. In 2024, 272 patients with chronic kidney failure were undergoing hemodialysis, with 159 patients undergoing hemodialysis.

When chronic kidney failure reaches its end-stage, where the kidneys no longer function, alternative methods are needed to remove toxins from the body, such as dialysis (hemodialysis). Hemodialysis is a procedure in which blood is removed from the patient's body and circulated through a machine outside the body called a dialyzer. Problems faced by CKD patients undergoing hemodialysis include financial problems, difficulty maintaining employment, loss of sex drive, depression, and fear of death. Muscle cramps (fatigue). The planned lifestyle associated with hemodialysis therapy (for example, carrying out hemodialysis therapy 2-3 times a week for 3-4 hours) and limiting fluid intake often diminish

the patient's enthusiasm for life. This will affect the quality of life of CKD patients (Brunner, Suddarth, 2011).

Fatigue is a common symptom found in patients with chronic illnesses. Fatigue is a condition in which the patient feels physically and mentally exhausted (Davey et al., 2019). Fatigue affects an individual's physical, mental, and emotional state, which can result in reduced alertness, poor judgment, slow reactions to events, and decreased motor function (Nurfajri et al., 2022). Fatigue in patients undergoing hemodialysis can lead to decreased concentration, malaise, sleep disturbances, emotional disturbances, and a decreased ability to perform daily activities. This can ultimately reduce the patient's quality of life (Natashia et al., 2020). According to research conducted by Wahyudi & Rantung (2024), entitled "The Relationship Between Fatigue and Quality of Life in Chronic Kidney Failure Patients undergoing hemodialysis," a significant correlation was found between fatigue levels and quality of life in chronic kidney failure patients undergoing hemodialysis, with a p-value of 0.48 and a correlation coefficient of -0.314 using the Pearson correlation test.

Furthermore, family support is also related to quality of life in CKD patients. Providing support, assistance, and assistance to family members requiring hemodialysis therapy is crucial. Individuals lacking family support may feel burdened, increasing stress, while patients with family support may experience increased enthusiasm for undergoing hemodialysis (Inayati et al., 2020). Family support is crucial in the management of chronic kidney failure treatment. Family members are involved in many aspects of the healthcare needed by patients with chronic kidney failure. Family support has a positive impact on psychological health and quality of life (Novitasari and Wakhid, 2018).

According to previous research by Zulfan et al. (2021), entitled "The Relationship between Family Support and Quality of Life in Chronic Kidney Failure Patients Undergoing Hemodialysis," a relevant link exists between family support and quality of life in hemodialysis patients. Family support aims to provide encouragement, encouragement, and encouragement so that patients undergoing hemodialysis therapy do not feel pessimistic and have confidence in their ability to face the challenges they face. Based on a preliminary survey conducted by researchers on February 15, 2025, which involved brief interviews and questionnaires with four chronic kidney failure patients undergoing hemodialysis, four patients were found to be experiencing fatigue and requiring family support. The fourth patient was found to be experiencing fatigue and needing family support. They complained of fatigue during activities due to the lengthy hemodialysis process, which takes approximately 4-5 hours and is performed three times a week. This results in patients experiencing fatigue and a lack of enthusiasm for activities, which also leads to a decline in their quality of life. The four patients stated that family support is crucial in managing chronic kidney disease treatment, with family members involved in many aspects of the healthcare needs of chronic kidney disease patients. Family support has a positive impact on psychological health, physical well-being, and quality of life.

Based on the above background, the researchers were interested in conducting a study on "The Relationship Between Fatigue and Family Support in Chronic Kidney Disease Patients Undergoing Hemodelization Therapy in the Hemodelization Room at Bakti Timah Hospital, Pangkalpinang, in 2025.

Objective

This study aimed to determine the relationship between fatigue and family support with the quality of life of chronic kidney disease patients undergoing hemodialysis at Bakti Timah Hospital Pangkalpinang in 2025.

Method

This research used a quantitative analytic design with a cross-sectional approach. The sample consisted of 36 respondents selected using total sampling. The instruments used in the study were fatigue, family support, and quality of life questionnaires. Data were analyzed using the Chi-Square statistical test with a significance level of $\alpha = 0.05$

Results

Frequency Distribution of Quality of Life in CHF Patients at Sejiran Setason Regional Hospital in 2025

Gender	**Total**	**Percentage** %
Male	16	44,4
Female	20	55,6
Ages		
20-30 Years	4	11,1
31-40 Years	13	36,1
>40 Years	19	52,8
Education		
Junior High school	5	13,9
Junior High school	25	69,4
University	6	16,7
Total	**36**	**100**

It is known that 20 respondents (55.6%) were female, more than the male respondents. It is known that 19 respondents (52.8%) were in the age range >40 years, more than the 20-30 and 31-40 year olds. It is known that 25 respondents (69.4%) had a high school education or equivalent, more than those with junior high school or equivalent and diploma/bachelor's degrees.

Quality of Life of Pangkalpinang RSBT Patients in 2025

Quality of Life	**Total**	**(%)**
Medium	26	72,2
High	10	27,8
Total	**36**	**100**

Based on Table it can be seen that respondents have a high quality of life, namely 26 people (72.2%), more than those with a moderate quality of life.

Fatique Patient RSBT Pangkalpinang in 2025

Fatigue	Total	(%)
Heavy Fatigue	4	11,1
Mild Fatigue	32	88,9
Total	**36**	**100**

Based on Table, it can be seen that respondents experienced mild fatigue, namely 32 people (88.9%), more than severe fatigue.

Support for Pangkalpinang RSBT Patient Families in 2025

Family Support	Total	(%)
Never	14	38,9
Sometime	22	61,1
Total	**36**	**100**

Based on Table it can be seen that respondents came from families who sometimes provided support, namely 22 people (61.1%), more than families who never provided support.

The Relationship Between Fatigue and Quality of Life in Chronic Kidney Disease Patients Undergoing Hemodialysis at Bakti Timah Hospital, Pangkal Pinang, in 2025

Fatigue	Quality of Life				Total		***P value***	**CI (95%)**
	Medium		**High**					
	n	**%**	**n**	**%**	**N**	**%**		
Heavy Fatigue	3	75	1	25	4	100	0,000	10,714 (0,959-119,696)
Mild Fatigue	7	21,9	25	78,9	32	100		
Total	**10**	**27,8**	**26**	**72,2**	**36**			

Table shows that 3 respondents (75%) reported a moderate quality of life with fatigue categorized as severe fatigue, compared to those with mild fatigue. Meanwhile, 25 respondents (78.9%) reported a high quality of life with fatigue categorized as mild fatigue, compared to those with severe fatigue.

The chi-square statistical test between fatigue levels and quality of life showed a p-value of 0.000 < α (0.05), indicating a significant relationship between fatigue and quality of life. The prevalence odds ratio (POR) was 10.714, with a 95% confidence interval (CI) of 0.959-119.696.

The Relationship Between Family Support and Quality of Life of Chronic Kidney Failure Patients Undergoing Hemodialysis at Bakti Timah Hospital, Pangkal Pinang, in 2025

Family Support	Quality of Life				Total		*P Value*	POR CI (95%)
	Medium		**HIgh**					
	n	**%**	**N**	**%**	**n**	**%**		
Never	5	35,7	9	64,3	14	100	0,041	0,529 (0,121-2,325)
Sometime	5	22,7	17	77,3	22	100		
Total	**10**	**27,8**	**26**	**72,2**	**36**			

Table above shows that 9 respondents (64.3%) reported a high quality of life with family support, with "never" (never) compared to those with "moderate" quality of life. Meanwhile, 17 respondents (77.3%) reported a moderate quality of life with family support, compared to those with "moderate" quality of life.

The chi-square statistical test between family support and quality of life showed a p-value of 0.041 < α (0.05), indicating a significant relationship between family support and quality of life. The prevalence odds ratio (POR) was 0.529 with a confidence interval of 0.121-2.325**.**

Discussion

Fatigue is a subjective condition characterized by physical, emotional, and mental exhaustion that persists despite rest. In patients with chronic kidney disease undergoing hemodialysis, fatigue is a very common and chronic symptom, primarily due to metabolic changes, decreased kidney function, anemia, and psychological stress resulting from the burden of the disease. Prolonged fatigue can affect a patient's ability to carry out daily activities, increase the risk of depression, and significantly reduce quality of life.

The results of the Chi-Square statistical test showed a p-value of 0.000, which is less than α = 0.05, indicating a significant relationship between fatigue levels and patient quality of life. These results align with research by Hegazi et al. (2021) in Egypt, which found that fatigue is a major factor in reducing quality of life in patients with chronic kidney disease undergoing hemodialysis. In that study, the higher the fatigue score, the lower the patient's quality of life index scores for the physical and emotional dimensions. Another study by Rahmatika and Suryanegara (2022) also showed that fatigue is significantly associated with a decreased quality of life in hemodialysis patients, particularly in aspects of daily activities and life satisfaction. Furthermore, a study by Widiasih and Yamin (2020) in Bandung stated that chronic fatigue can hinder social functioning, reduce patient productivity, and lead to social withdrawal, negatively impacting overall perceived quality of life.

Based on the results of this study, the researchers developed three main assumptions that can explain the relationship between fatigue levels and quality of life in chronic kidney failure patients undergoing hemodialysis. First, patients experiencing severe fatigue tend to experience significant obstacles in carrying out daily life activities, such as work, worship, and

socializing. Severe fatigue is physically and mentally debilitating, causing patients to lose motivation and the ability to perform routine activities. Essential activities like walking, communicating, or even eating alone can feel extremely tiring and draining. In a spiritual context, extreme fatigue can also prevent patients from practicing their religious beliefs, impacting the psychological and spiritual aspects of quality of life. Furthermore, decreased social interaction due to fatigue can exacerbate feelings of isolation and lead to emotional stress, ultimately lowering social and psychological quality of life scores. This condition is exacerbated if the patient also has other comorbidities such as anemia or hypertension, which exacerbate fatigue symptoms.

Second, patients with mild fatigue have better energy capacity, making them more likely to actively participate in treatment and social activities. Sufficient energy enables patients to attend hemodialysis appointments on time, follow dietary and therapy recommendations, and maintain healthy social interactions with family and the community. This active participation contributes to increased self-confidence and self-control, which are important in fostering a positive perception of their chronic illness. Furthermore, patients who are more physically and socially active are also less likely to experience psychological disorders such as depression and anxiety, which are important factors in the psychological dimension of quality of life according to the WHOQOL-BREF instrument.

Third, fatigue management plays a crucial role in maintaining and improving patients' quality of life and must be implemented through an integrated pharmacological and non-pharmacological approach. Pharmacologically, treating causes of fatigue, such as anemia, using erythropoiesis-stimulating agents (ESAs) or iron supplements, has been shown to improve fatigue symptoms and increase vitality. Meanwhile, non-pharmacological approaches such as light physical exercise (e.g., walking 10–15 minutes a day), physiotherapy, sleep patterns, relaxation techniques, and psychological counseling have also been clinically proven to reduce fatigue levels and improve patient coping. Health education focused on energy management, balanced nutrition, and stress management can also help patients adopt a lifestyle that supports an improved quality of life. In other words, interventions for fatigue should not be overlooked, as fatigue is not merely a symptom of the disease but also a determining factor in the long-term success of therapy and the patient's holistic well-being.

Family support is a crucial form of social support for patients with chronic illnesses. This support includes emotional support, information, practical assistance, and moral encouragement, all of which can assist patients in their treatment. Adaptation theory suggests that support from the social environment, particularly family, can enhance an individual's ability to cope with stress and the burden of illness, and plays a crucial role in improving quality of life, particularly in chronic conditions such as kidney failure.

The results of the Chi-Square statistical test showed a p-value of $0.041 < 0.05$, indicating a significant relationship between family support and patient quality of life. These results are consistent with research by Sari and Fauziah (2020), which found that kidney failure patients with strong family support had a higher quality of life compared to those with less support. Research by Putra and Harahap (2023) showed that families actively involved in treatment provided motivation, medication reminders, and assistance with daily activities, significantly improving patients' quality of life scores. Furthermore, Yuliana et al. (2021) confirmed that well-functioning families can reduce patients' anxiety and depression levels, which are closely related to improved perceived quality of life.

Based on the study's findings, which showed a significant relationship between the level of family support and the quality of life of patients with chronic kidney failure, the researchers proposed three main assumptions that form the basis for interpreting these findings. First, a well-functioning family is believed to create a supportive, stable, and motivating environment, which is essential for patients coping with chronic conditions such as kidney failure. In this context, the family acts as a primary support system, providing for the patient's emotional, social, and even logistical needs. When family members are actively involved—such as by reminding them of hemodialysis schedules, helping with special dietary requirements, or simply accompanying them during therapy—the patient feels valued and less alone in their health struggles. This sense of being cared for increases the patient's internal motivation to maintain adherence to treatment, live a more positive life, and develop hope for a better recovery. This reflects the crucial role of family support as a psychological support that enhances the patient's resilience, a key factor in determining quality of life.

Second, family dysfunction, such as poor communication, internal conflict, denial of the patient's condition, or lack of involvement in the treatment process, can negatively impact the patient's emotional health. Patients who do not receive adequate family support tend to feel isolated, neglected, and even psychologically burdened. Emotional exhaustion caused by family conflict or the lack of support figures can exacerbate depression and anxiety, and lower the patient's self-confidence during long-term treatment. Family dysfunction often leads to patients feeling resigned or unmotivated to adhere to treatment. This directly impacts the quality of life, particularly the psychological and social aspects. In other words, a dysfunctional family not only worsens the patient's mental health but can also interfere with the healing process and the success of therapy.

Third, researchers assume that the quality of life of kidney failure patients is not solely determined by the sophistication of medical interventions but is highly dependent on the psychosocial support provided by their immediate environment, especially their family. Although hemodialysis is the primary therapy for maintaining artificial kidney function, the long-term outcome of this therapy is greatly influenced by the patient's emotional balance, adherence to treatment, and the quality of interpersonal relationships. Good family support can strengthen these aspects. Patients with strong family support are more likely to develop healthy coping mechanisms, feel more optimistic about the future, and demonstrate a better quality of life across physical, psychological, social, and spiritual dimensions. Therefore, medical interventions must be balanced with a holistic approach that actively involves the family in the healing process, such as family counseling, family-based health education, and strengthening family function within the chronic patient care system.

Conclusion

This study demonstrated that fatigue level and family support were significantly associated with the quality of life of patients with chronic kidney disease undergoing hemodialysis at Bakti Timah Hospital, Pangkalpinang. Higher levels of fatigue were associated with poorer quality of life ($p < 0.001$), while greater family support was associated with better quality of life ($p = 0.041$). These findings highlight the importance of comprehensive nursing interventions that address fatigue management and strengthen family support to improve the quality of life of patients undergoing hemodialysis.

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