ISSN. 2338-7475
E-ISSN. 2620-7869
Hearty
Jurnal Kesehatan Masyarakat
Beriman, Tulus, Sepenuh Hati,Berbesar Hati, Jujur, Sehat dan Kuat
Vol. 12 No. 1, Februari 2024, Hal. 113-121

FACTORS RELATED TO DEVELOPMENT OF SIDE EFFECTS IN HEMODIALYSIS PATIENTS AT DR. ADJIDARMO LEBAK HOSPITAL IN 2023

Irma Suryana [1], Achmad Fauzi [2]
[1] Registered Nurse, Department of Nursing, RSUD Adjidarmo
[2] Head of Research and Development, Department of Nursing, Sekolah Tinggi Ilmu Kesehatan Abdi Nusantara
Email : *fauzi.umay@gmail.com*

Abstract

Background: Chronic kidney failure is a kidney disorder characterized by abnormalities in kidney structure and function, patients with kidney failure are characterized by a decrease in glomerular filtration rate so that they require kidney function replacement therapy, such as Hemodialysis. This Hemodialysis therapy plays an important role in ensuring patient survival in addition to physical side effects, there are also often psychological side effects such as anxiety, quality of life and depression that can be felt by patients undergoing Hemodialysis therapy. **Research Objective**: Knowing the factors associated with the development of side effects in Hemodialysis patients at dr. Adjidarmo Lebak Hospital in 2023. **Research Methodology**: Descriptive with research design using cross sectional approach. **Research Findings**: Obtained from 85 respondents, half of the respondents 50,6% are older which is more than the same as 45 years with most respondents 65,9% being female and almost half of respondents 37,6% having an average high school education. The results also found that most respondents 56,5% with worker status. Most respondents 75,3% had comorbidities. And as much as 35,3% of hemodialysis is 7-12 months old. 34,1% of hemodialysis has been > 12 months, and 30,6% have been hemodialysis for 1-6 months. The results also showed the results of the relationship between the variables of education level and the variable duration of hemodialysis with the development of side effects in Hemodialysis patients, as well as the absence of the relationship of variables age, gender, occupation and comorbidities to the development of side effects in Hemodialysis patients. **Conclusion and Recommendations**: The results of this study are expected to be used as a basis for awareness of high incidence of anxiety, especially in patients who have just undergone hemodialysis. In addition, the results of this study can also be the basis for future researchers to develop management interventions to overcome anxiety in patients who have just undergone hemodialysis.

Keywords: Anxiety, Hemodialysis, Duration of Hemodialysis.

Introduction

Chronic kidney failure or chronic kidney disease is a kidney disorder characterized by abnormalities in kidney structure and function for more than 3 months (Riskal, F., Annisa, M., & Dewi, 2019). In chronic kidney disease, this results in the kidneys cannot produce metabolic waste, cannot maintain fluid balance and inadequate electrolytes (Lemone, Burke & Bauldoff, 2017 in Mandias R. et al, 2023). Based on data from the World Health Organization (WHO), in 2019 chronic kidney failure patients in the world amounted to 15% of the population and have caused 1,2 million cases of death. Data in 2020, the number of cases of death due to chronic kidney failure was 254,028 cases. As well as data in 2021 as many as more than 843,6 million, and it is estimated that the number of deaths due to chronic gynal failure will increase to 41,5% by 2040. This high figure shows that chronic kidney failure ranks 12th among all causes of death (WHO, 2021). In Indonesia, the incidence of chronic kidney failure

always increases every year. Based on data from Basic Health Research (Riskesdas) in 2007, the prevalence of chronic kidney failure was 1,885 cases (Riskesdas, 2007). This prevalence then increased in 2013, bringing the number of cases of chronic kidney failure to 11,689 cases (Riskesdas, 2013). The latest data from 2018 shows a significant increase of 713,783 cases of chronic kidney failure. The provinces of West Java, East Java, and Central Java are the places where the majority of kidney failure cases in Indonesia (Riskesdas, 2018). Data from Basic Health Research (Riskesdas) in 2013 stated that the prevalence of chronic kidney failure based on a doctor's diagnosis in Banten was 0,2%. The proportion of chronic kidney failure patients undergoing hemodialysis based on a doctor's diagnosis in Banten is 28,47% (Balitbangkes, 2018).

Data on patients diagnosed with chronic kidney failure at dr. Adjidarmo Lebak Hospital who entered the inpatient room during 2022 were 98 patients and for 2023 during January to September there were 108 patients while patients undergoing haemodialysis increased where in 2022 there were 99 patients and haemodialysis patients in 2023 from January to September as many as 108 patients. Patients with kidney failure, characterized by a decrease in glomerular filtration rate to less than 15ml/min/1.73m2 require renal function replacement therapy, such as hemodialysis. This therapy plays an important role in ensuring the survival of patients. Hemodialysis is one of the alternative kidney therapies for artificial kidneys with the aim of eliminating metabolic waste products, especially proteins and correcting fluid and electrolyte balance disorders between blood compartments and dialysate through a semi-permiable membrane that acts as an artificial kidney (Mandias R. et al, 2023). During hemodialysis, the patient undergoes a series of processes of removal of excess fluid, electrolytes, nitrogen and metabolic products. As a result, patients are prone to rapid hemodynamic changes, giving rise to various acute side effects during hemodialysis. These side effects include nausea, cramps, fatigue, pruritus, intra-dialysis hypotension, and headaches. During hemodialysis, patients need to take into account transportation time and follow a series of activities in the hemodialysis unit, this situation can cause them to feel tired and can further affect post-hemodialysis recovery. In addition to physical side effects, there are also often psychological side effects such as anxiety, quality of life and depression (Hotimah E.C. et al, 2022). The prevalence of psychological problems in patients undergoing hemodialysis is a matter of concern given their significant impact on well-being and overall treatment and care outcomes. Research consistently shows a high prevalence of psychological problems among hemodialysis patients. A study conducted (Marthoenis et al., 2021) in Aceh found that as many as 46% of hemodialysis patients experienced symptoms of depression, this figure is higher than the general population. In addition, anxiety levels among this population are also high where 30.5% of patients undergoing hemodialysis experience anxiety. Other studies have also shown similar things where almost 70-78% of patients have depression (Agrawaal et al., 2019; Ye et al., 2022).

It should be underlined where this indicates that a fairly high psychological problem is experienced by many people who undergo hemodialysis. These psychological problems not only impact the mental health of patients but can also lead to poor medication adherence, impaired physical health, as well as a decrease in overall quality of life. There are many factors that can contribute to the increased prevalence of psychological problems in hemodialysis patients. Among them are an increase in patient age, more physical complaints are felt, lack of social relationships, negative impacts on economic conditions, and longer undergoing hemodialysis can have an impact on increasing depressive symptoms (Hao et al., 2021; Khan et al., 2019; Muhammad Jawad Zaidi et al., 2021). Patients undergoing hemodialysis often struggle financially due to medical expenses, and social isolation due to treatment demands. In addition, fear of death and physiological changes due to kidney dysfunction can contribute to the onset of psychological problems (Hashemi et al., 2021; Norozi Firoz et al., 2019). The prevalence of psychological problems in patients undergoing hemodialysis is a critical issue that needs attention. The psychological impact of living with a chronic illness and undergoing rigorous treatment can lead to the development of depression, anxiety, and decreased quality of life. By paying attention to

psychological well-being, health care providers can help improve patients' mental health outcomes and improve their overall quality of life.

Methods

This research is analytical with a cross-sectional method, aimed at exploring the relationship between independent and dependent variables measured together. Conducted in the Haemodialysis Room of dr. Adjidarmo Lebak Hospital in December 2023, this study focused on kidney failure patients undergoing hemodialysis. The population is 108 patients registered in the hospital's hemodialysis installation. Using Purposive Sampling, 85 patients were obtained as samples. Inclusion criteria include patients with good mental awareness important in data collection because respondents must be able to answer questions in the questionnaire. Willingness to be a respondent in research is also crucial. When collecting data, researchers provided patients with informational consent sheets, giving them the freedom to determine whether or not they wanted to be respondents in the study.

Result

The results of data collection are processed using the SPSS computer program version 24.0 then in editing, coding, tabulating and analyzing. which is presented in the form of a table with explanations.

A. Univariate Analysis

1. Characteristics of Respondents

Table 1.1 Frequency Distribution of Respondent Characteristics

Age	**Amount**	**Percentage**
Young Age	42	49,4%
Old Age	43	50,6%
Total	85	100%
Gender	**Amount**	**Percentage**
Male	29	34,1%
Female	56	65,9%
Total	85	100%
Education	**Amount**	**Percentage**
Primary School	14	16,5%
Junior High School	16	18,8%
High School	32	37,6%
College	23	27,1%
Total	85	100%
Occupation	**Amount**	**Percentage**
Work	37	43,5%
Unemployment	48	56,5%
Total	85	100%

Based on table 1.1 it was found that half of the respondents (50,6%) were older than 45 years with most respondents (65,9%) being female and almost half of the respondents (37,6%) having an average high school education. The results also found that most respondents (56,5%) with worker status.

2. Concomitant Diseases

Table 1.2 Frequency Distribution of Comorbidities

No	Comorbidities	Amount	Percentage
1	Exist	64	75,3%
2	None	21	24,7%
Total		85	100%

Based on table 1.2 it was found that most respondents (75,3%) had comorbidities.

3. Duration of Hemodialysis

Table 1.3 Frequency Distribution of Hemodialysis's Duration

No	Duration of Hemodialysis	Amount	Percentage
1	1-6 Months	26	30,6%
2	7-12 Months	30	35,3%
3	>12 Months	29	34,1%
Total		85	100%

Based on table 1.3 about the duration of hemodialysis, it can be seen that as many as 35.3% of respondents for 7-12 months, as many as 34.1% of respondents for >12 months, and 30.6% of respondents for 1-6 months.

4. Psychological Development

Table 1.4 Frequency Distribution of Psychological Development

No	Psychological Development	Amount	Percentage
1	Not Anxious	28	32,9%
2	Mild Anxiety	34	40,0%
3	Moderate Anxiety	21	24,7%
4	Severe Anxiety	2	2,4%
Total		85	100%

Based on table 1.4, the most research respondents experienced mild anxiety, namely 34 people (40,0%), did not experience anxiety as many as 28 people (32,9%), moderate anxiety 21 people (24,7%), and those who experienced severe anxiety were 2 people (2,4%).

B. Bivariate Analysis

1. The Relationship of Respondent Characteristics with The Development of Psychological Side Effects

Table 1.5 The Relationship of Respondent Characteristics with the Development of Psychological Side Effects

Characteristic	Psychological Development (Anxiety)				Total	*p-value*
	None	Mild	Moderate	Severe		
Age						
Young Age	15	17	9	1	42	0,906
Old Age	13	17	12	1	43	
Total	28	34	21	2	85	
Gender						
Male	7	17	5	0	29	0,076
Female	21	17	16	2	56	
Total	28	34	21	2	85	
Education						
Primary School	0	6	7	1	14	0,040
Junior High School	5	6	5	0	16	
High School	10	14	7	1	32	
College	13	8	2	0	23	
Total	28	34	21	2	85	
Occupation						
Work	9	16	11	1	37	0,671
Unemployment	19	18	10	1	48	
Total	28	34	21	2	85	

Based on table 1.5 it can be explained that there is no relationship between age and the development of psychological side effects, there is no relationship between gender and the development of psychological side effects, there is a relationship between education and the development of psychological side effects, and there is no relationship between occupation and the development of psychological side effects.

2. The Relationship of Comorbidities With The Development of Psychological Side Effects

Tabel 1.6 The Relationship of Comorbidities with The Development of Psychological Side Effects

Concomitant Diseases	Psychological Development (Anxiety)				Total	*p-value*
	None	Mild	Moderate	Severe		
Exist	18	29	16	1	64	0,226
None	10	5	5	1	21	
Total	28	34	21	2	85	

Based on table 1.6, it can be explained that of the 64 respondents who had comorbidities, as many as 18 respondents did not experience anxiety, 29 respondents experienced mild anxiety, 16 respondents experienced moderate anxiety, and 1 respondent experienced severe anxiety. While of the 21 respondents who did not have comorbidities, as many as 10 respondents did not experience anxiety, 5 respondents experienced mild anxiety, 5 respondents experienced moderate anxiety, and 1 respondent experienced severe anxiety. The result of p value is 0,226. It can be concluded that Ho failed to be rejected, so it can be stated that there is no relationship between comorbidities and the development of psychological side effects.

3. The Relationship Duration of Hemodialysis with The Development of Psychological Side Effects

Tabel 1.6 The Relationship Duration of Hemodialysis with The Development of Psychological Side Effects

Duration of Hemodialysis	Psychological Development (Anxiety)				Total	*p-value*
	None	Mild	Moderate	Severe		
1-6 Months	3	9	13	1	26	0,000
7-12 Months	6	16	7	1	30	
>12 Months	19	9	1	0	29	
Total	28	34	21	2	85	

Based on table 1.6, it can be explained that of 26 respondents with hemodialysis duration of 1-6 months, as many as 3 respondents did not experience anxiety, 9 respondents experienced mild anxiety, 13 respondents experienced moderate anxiety, and 1 respondent experienced severe anxiety. While of the 30 respondents with hemodialysis duration of 7-12 months, as many as 6 respondents did not experience anxiety, 16 respondents experienced mild anxiety, 7 respondents experienced moderate anxiety, and 1 respondent experienced severe anxiety. While of the 29 respondents with hemodialysis duration of >12 months, as many as 19 respondents did not experience anxiety, 9 respondents experienced mild anxiety, 1 respondent experienced moderate anxiety, and none of the respondents experienced severe anxiety. The result of p value is 0,000. It can be concluded that Ho was rejected, so it can be stated that there is a relationship between the duration of hemodialysis and the development of psychological side effects at dr. Adjidarmo Lebak Hospital in 2023.

Discussion

1. The Relationship of Respondent Characteristics with The Development of Psychological Side Effects

Based on the results of the study with the number of respondents as many as 85 people undergoing hemodialysis at dr. Adjidarmo Lebak Hospital in 2023 showed that there was no relationship between age and the development of psychological side effects in hemodialysis patients studied using the hospitaly anxiety and distress scale (HADS) questionnaire with a p value of 0,906. From these results it can be seen that the age of respondents has no relationship with their anxiety levels. Chronic kidney failure in adulthood can be caused by many factors such as lifestyle, consuming energy supplement drinks too often, drinking less water and smoking (Lilia & Supadmi, 2019). Physical and mental maturity and experience with age can suppress anxiety that occurs due to physical and environmental changes. This is in line with the results of research by (Agustyowati, et al., 2023) which shows no relationship between age and anxiety (p value > 0.05). Based on another study by (Astutik, 2021) stated that there was no relationship between age and anxiety in hemodialysis patients with a p-value of 0,452. This is in accordance with a study (Sipayung, 2021) entitled factors affecting anxiety levels in hemodialysis patients at Santa Elisabeth Medan Hospital in 2019 which said there was no significant influence between gender on anxiety levels in hemodialysis patients. Based on the level of education, it is known that the results of the study showed a relationship between sex and the development of psychological side effects in hemodialysis patients with a p value of 0,040 with a level of education mostly at the high school level. The level of education affects a person's thought process, the higher level of education will be easier in capturing and analyzing and managing new sources of information that are thought rationally and logically (Kamiel et al, 2018). Patients with upper secondary education can think rationally and can cope with the stress and anxiety they experience. In addition to age, gender, and education level, occupation is also one factor of psychological side effects in hemodialysis patients. Respondents who do not work are at risk of experiencing anxiety. The theoretical basis according to (Susanti et al., 2017) Work is related to a person's economic status. According to (Priyanti, 2016) Someone who has a lower socioeconomic position has a higher risk than someone who has a higher status. This is because someone with a lower socioeconomic class will have fewer nutritional needs, so they are more prone to worry. Research shows that there is a difference between kidney failure patients undergoing hemodialysis who work and do not work. Where patients who work on average have a better quality of life. The results of this study state that patients who choose to keep working have a very important impact, namely work can be one of great social support and having a working status will add to contribute to higher quality and confidence.

2. The Relationship of Respondents' Comorbidities with The Development of Psychological Side Effects

Based on the results of the study, it can be explained that of the 64 respondents who had comorbidities, as many as 18 respondents did not experience anxiety, 29 respondents experienced mild anxiety, 16 respondents experienced moderate anxiety, and 1 respondent experienced severe anxiety. While of the 21 respondents who did not have comorbidities, as many as 10 respondents did not experience anxiety, 5 respondents experienced mild anxiety, 5 respondents experienced moderate anxiety, and 1 respondent experienced severe anxiety. The result of p value is 0,226. So it can be concluded that Ho failed to be rejected, so it can be stated that there is no relationship between comorbidities and the development of psychological side effects at dr. Adjidarmo Lebak Hospital in 2023. The characteristics of patient comorbidities show that most of the Chronic Kidney Disease patients who were on hemodialysis at RSUD Ulin Banjarmasin had a history of comorbidities in the form of hypertension totaling 43 patients. This is in line with research from Saftia Aryzki et al (2019) that CKD patients undergoing hemodialysis mostly have a history of comorbidities in the form of hypertension as

many as 57 patients. The results of this study are also in line with Arianti et al's research (2020) that CKD patients undergoing hemodialysis mostly have a history of comorbidities in the form of hypertension. The mechanism of kidney damage due to hypertension is due to thickening of tunica intima cells in the renal glomerulus, thickening of tunica intima cells causes vasoconstriction, which is reduced blood vessel flow to the glomerulus which causes the activeness of the reninangiotensin-aldosterone system which further increases blood pressure which causes permanent kidney damage. Initially, the mechanism of activation of the renin-angiotensin-aldosterone system can compensate for the lack of renal blood flow, but over time it leads to necrosis of kidney cells. Kidney glomerular damage can lead to global sclerosis with permanent damage to the glomerulus or focal segmental necrosis, which is the renal compensation system in which the glomerulus enlarges in one area due to nephron damage in another area of the kidney. Chronic changes in the renal glomerulus lead to nephron death, leading to a slow decrease in GFR (Vania, et al 2019). Hypertension is basically a disease that can damage blood vessels, if these blood vessels are in the kidneys, then of course the kidneys are damaged. A person who does not have 75 kidney diseases but has untreated high blood pressure will develop complications of kidney damage, and the resulting kidney damage makes high blood pressure worse. This case increases the level of hemodialysis treatment, and the mortality rate of this disease is also quite high (Vania, 2019).

3. The Relationship of Hemodialysis' Duration with the Development of Psychological Side Effects

Based on the results of the study, it is known that of 26 respondents with hemodialysis duration of 1-6 months, as many as 3 respondents did not experience anxiety, 9 respondents experienced mild anxiety, 13 respondents experienced moderate anxiety, and 1 respondent experienced severe anxiety. While of the 30 respondents with hemodialysis duration of 7-12 months, as many as 6 respondents did not experience anxiety, 16 respondents experienced mild anxiety, 7 respondents experienced moderate anxiety, and 1 respondent experienced severe anxiety. While of the 29 respondents with hemodialysis duration of >12 months, as many as 19 respondents did not experience anxiety, 9 respondents experienced mild anxiety, 1 respondent experienced moderate anxiety, and none of the respondents experienced severe anxiety. The result of p value is 0.000. So it can be concluded that Ho was rejected, so it can be stated that there is a relationship between the duration of hemodialysis and the development of psychological side effects at Dr. Adjidarmo Hospital in 2023. Patients who have been on hemodialysis for a long time have reached the accepted stage. The longer the hemodialysis process, the respondents themselves are more accustomed to using all the tools and processes carried out during hemodialysis. This can happen because hemodialysis therapy is carried out for a long time and even throughout his life, causing anxiety about uncertainty about his living conditions (Cohen et al., 2016). Anxiety that is not immediately addressed in the long term can cause depression in both patients and caring families, and can affect the quality of life of hemodialysis patients. This condition can be a psychological pressure because patients undergoing hemodialysis are very dependent on the device, if CKD patients do not undergo therapy, it will be a threat of death (Rahman & Pradido, 2020). Anxiety of hemodialysis patients can arise due to complications that can arise in patients. Complications can be chronic or acute complications (intra hemodialysis) where intra hemodialysis complications usually appear in patients who have just undergone hemodialysis (Al Husna et al., 2019).

4. Implication and Limitations

In conducting this research, the authors encountered several obstacles, including the limitations of controlling activities that could affect the level of anxiety.

Conclusion

To describe the relationship between respondent characteristics and the development of psychological side effects in hemodialysis patients at dr. Adjidarmo Lebak Hospital can be seen that older respondents experience a lot of anxiety compared to respondents at a young age. In Gender, it is known that Female Respondents experience more anxiety than male respondents, in Education Status it can be known that Respondents with Elementary School education experience more anxiety compared to respondents in the status of Junior High School, High School and College Education. In Employment Status it is known that working respondents experience more anxiety compared to respondents who do not work. For an overview of the relationship between respondents' comorbidities and the development of psychological side effects in hemodialysis patients at dr. Adjidarmo Lebak Hospital, it can be seen that respondents who have comorbidities experience more anxiety than respondents who do not have comorbidities. For an overview of the relationship between the duration of hemodialysis and the development of psychological side effects in hemodialysis patients at Dr. Adjidarmo Hospital, it can be seen that respondents with a duration of hemodialysis of 7-12 months experience more anxiety than respondents with a duration of hemodialysis of 1-6 months and >12 months. There is a relationship between the level of education and the duration of hemodialysis on the development of psychological side effects in hemodialysis patients at dr. Adjidarmo Lebak Hospital. Where the level of education is lower and the duration of hemodialysis, the level of anxiety is higher.

References

[1] Agustyowati, T.H.R., Khofifah, N., & Putri Kusuma, T.A.R., (2023). *Factors that affect the anxiety level of hemodialysis patients*. Medical-Surgical Journal of Nursing Research. Vol. 1 No. 2.

[2] Al Husna, C. H., Yetti, K., & Sukmarini, L. (2019). *Determinant of fluid adherence among hemodialysis patients in Malang, Indonesia*. Enfermeria Clinica, 29, 117–122.

[3] Angga Bagja, Aminah Nina, W. A. (2020). *Relationship of duration of haemodialysis treatment with anxiety levels in chronic renal failure patients*. 13(243), 337–343.

[4] Arianti A, Rachmawati A, Marfianti E. *Characteristics of risk factors for chronic kidney disease (CKD) patients undergoing hemodialysis at RS X Madiun*. Biomedicine. 2020 Mar 9; 12(1):36-43.

[5] Arifa S, Azam M, and Handayani O. 2017. *Factors associated with the incidence of chronic kidney disease in hypertensive patients in Indonesia*. MKMI Journal. 13(4) : 319-328.

[6] Aryzki S, Wanda MN, Susanto Y, Saputera MM, Putra AM, Karani K. *Measurement of Quality of Life of Chronic Renal Failure Hemodialysis Patients at RSUD Ulin Banjarmasin Using EQ5D Instrument.* Scientific Journal of Ibn Sina. 2019 Mar 31; 4(1):210-24.

[7] Astutik, U. N. (2021). *Factors related to anxiety levels in hemodialysis patients at RSUD Sekayu in 2021*.

[8] Brunner & Suddart. (2001). *Textbook of Medical Surgical Nursing*. Jakarta : EGC.

[9] Cohen, S. D., Cukor, D., & Kimmel, P. L. (2016). *Anxiety in patients treated with hemodialysis*. Clinical Journal of the American Society of Nephrology, 11(12), 2250–2255.

[10] Kamil I, Agustina R, Wahid A. (2018). *Description of the anxiety level of chronic kidney failure patients undergoing hemodialysis at RSUD Ulin Banjarmasin*. Health Dynamics, Vol 9 No. 2 December 2018.

[11] Lilia, I. H., & Supadmi, W. (2019). *Risk Factors for Chronic Kidney Failure in the Hemodialysis Unit of a Private Hospital in Yogyakarta.* 4(Suppl 1), 60–65.

[12] Priyanti, D. (2016). *Differences in quality of life of working and non-working kidney failure patients undergoing hemodialysis at Yayasan Kidney Diatrans Indonesia*. Inquiry, 7(1), 231155.

[13] Sipayung, S. A. (2021). *Factors affecting anxiety levels in hemodialysis patients at Santa Elisabeth Medan Hospital in 2019 thesis*. University of North Sumatra.

[14] Vania, L. H., et al. (2019*). Response: Chronic Kidney Disease*. Bali: Journal of Udayana University.