The Relationship Of Long Time Undergoing Hemodialisa And Functional Status In Chronic Kidney Failure Patients At Imelda Hospital For Indonesian Workers Medan

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ARTICLE INFO	ABSTRACT
Keywords: Kidney Failure, Hemodialysis, Functional Status Email : satrianigultom01@gmail.com, deddyspsagala@gmail.com, candradamanik77@gmail.com khoirotunnasaninasution@gmail.com	Hemodialysis is a kidney function replacement therapy that is most often used to treat cases of chronic kidney disease. Most hemodialysis therapy procedures require 12-15 hours each week or on average the procedure is carried out 3 times a week where the implementation lasts 3-4 hours, so The length of hemodialysis therapy in patients with chronic kidney disease can cause limitations for the patient. The aim of this study was to determine the relationship between the length of time undergoing hemodialysis and the functional status of chronic kidney disease patients at the Imelda Workers Indonesia Hospital, Medan. This type of research is quantitative research with correlational methods and a cross-sectional approach design. This research was conducted in July-August 2023 in the Hemodialysis Room at the Imelda Workers Indonesia General Hospital, Medan. This research uses a probability sampling technique using the Multistage Sampling method, namely the stratified sampling method in the first stage then the simple random sampling method in the second stage, so that the total research sample is 60 respondents. The instrument used in this research is a questionnaire that refers to the Barthel Index to determine functional status. Data analysis used univariate and bivariate analysis with statistical tests (Chi Square Test) in the SPSS application. The research results in this study showed the results of the Chi-Square statistical test with a significant (p) value of 0.02 or $p<0.05$. The conclusion of this study is that there is a relationship between the length of time undergoing hemodialysis and the functional status of chronic kidney disease patients at the Imelda Workers Indonesia General Hospital, Medan

INTRODUCTION

Non-Communicable Diseases (NCDs) are the highest cause of death that must be faced in health development efforts in the world. Indonesia is experiencing an increase in non-communicable diseases consisting of stroke, cancer, chronic kidney disease, diabetes mellitus and hypertension (Ridlo, 2019). Chronic kidney disease (CKD) is one of the NCDs that requires attention because it has become an important health problem, where apart from the incidence rate continuing to increase, and mandatory therapy for kidney failure patients is an expensive therapy that requires time and patience. Chronic kidney disease is often caused by other diseases such as anemia, edema, shortness of breath, blood pressure and others. For chronic kidney disease patients who are dependent on dialysis machines or require lifelong dialysis, this creates tension that can disrupt functional status (Suhron, 2017). Chronic renal failure is a clinical syndrome due to a permanent decrease in kidney function caused by nerve or nephron damage. (Assidiq, 2018).

According to world data, the prevalence of chronic kidney disease shows 9.1%–13.4% of the population(Sundström et al., 2022). Saudi Arabia and Belgium are the countries with the highest

incidence rate with an estimate of 24%, followed by Poland with an estimate of 18%, Germany 17%, and England and Singapore 16%. Meanwhile, the countries with the lowest incidence rates are Norway and the Netherlands with an estimate of 5% (Healio, 2017). According to 2018 Indonesian Renal Registry data, there are 132,142 registered patients undergoing hemodialysis. The number of patients undergoing hemodialysis continues to increase from year to year (IRR, 2018).Based on Basic Health Research data, people with chronic kidney disease who have had or are currently undergoing dialysis among residents aged > 15 years who have been diagnosed with chronic kidney disease, DKI Jakarta is the province with the highest prevalence of 38.7% and in second place is Bali with The value is 38.1%, while North Sulawesi has a prevalence value of 17.4% and the lowest province for this disease is Southeast Sulawesi with a prevalence value of 2% (Riskesdas 2018).In North Sumatra, the prevalence of chronic kidney disease in 2018 has reached 0.33% of the population of around 36,410 people (Infodatin, 2017). Based on preliminary survey data at the Imelda Workers Indonesia General Hospital in Medan, the number of chronic kidney disease sufferers undergoing hemodialysis from January to June 2023 is 256 people or an average of 43 patients per month, including 106 regular patients (an average of 35 regular patients per day).SIRS Imelda Indonesian Worker of 2023.

One way to diagnose kidney failure is to assess serum urea and creatinine levels, because these two compounds can only be excreted by the kidneys. High and low levels of creatinine are used as an important indicator in determining whether someone with impaired kidney function requires further action or not (Nursiyah, 2020). Chronic kidney disease can develop into end-stage kidney failure if not treated properly, and can even cause various complications and even death. Therefore, action or therapy is needed that can prevent and treat this. The therapy that can be done is Hemodialysis (HD) therapy.

Hemodialysis is a kidney function replacement therapy that is most often used to reduce levels of creatinine and other toxins in the blood. A dialysis machine works like a human kidney, namely pumping blood to remove water or metabolic waste from the body. In the hemadialysis process, the filter on the dialysis machine will clean metabolic waste in the blood. The clean blood then flows back into the body so that the levels of dangerous substances that can poison the body are reduced (Harismi and Lestari, 2020). Most hemodialysis therapy procedures require 12-15 hours each week or on average the procedure is carried out 3 times a week where the implementation lasts 3-4 hours. Patients undergoing hemodialysis therapy often convey several complaints according to the body's responses, such as physical, psychological, social and spiritual responses. The psychological impact that occurs in patients is caused by the long course of the disease where they have to undergo lifelong therapy(Jundiah et al., 2020)

The duration of hemodialysis therapy in patients with chronic kidney disease can cause complications and requires patient compliance. This will provide physiological and psychological stressors to the patient. Physiological status is a concept regarding an individual's ability to carry out self-care, fulfill life's needs, self-care and physical activity (Wahyuni et al, 2018). According to research by Kavanah (2015), of 148 patients who underwent HD for an average duration of more than 3 years, it was found that more than half of the patients had dependency in functional status. However, on the other hand, according to research by Sakamato (2015), at Keito University Hospital, patients with HD duration of more than 25 years had their functional status measured and 91% of patients were found to be in the independent category. The longer the patient undergoes HD therapy, the more obedient the patient will be to undergoing HD because the patient is used to and accepts it and the patient has also received a lot of health education from nurses or doctors about the disease and the importance of undergoing HD regularly. Management to improve functional status is not yet biopsychosocialspiritual. The nurse's role is critical to the implementation of optimal

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nursing interventions because nurses spend 10-12 hours a week with patients. Nurses stay with the patient longer. This gives nurses many opportunities to provide nursing care.

METHOD

This type of research is quantitative research with correlational methods and a cross-sectional approach design. This research was conducted in July-August 2023 in the Hemodialysis Room at the Imelda Workers Indonesia General Hospital, Medan. The population in this study were patients who underwent hemodialysis therapy at the Imelda Workers Indonesia General Hospital in Medan from January - June 2023, and the number of patients was 106 patients with an average of 35 regular patients per day. This research uses a probability sampling technique using the Multistage Sampling method, namely the stratified sampling method in the first stage then the simple random sampling method in the second stage, so that the total research sample is 60 respondents. The instrument used in this research is a questionnaire that refers to the Barthel Index to determine functional status with a score of 0 -20: Total dependence, score 21 - 40: Severe dependence, score 41 - 60: Moderate dependence, score 61 - 90: Mild dependence, score 91 – 100: Independent. For the length of time undergoing hemodialysis, a score of 1 is given if undergoing hemodialysis <6 months, score 2 if undergoing hemodialysis 6-12 months and score 3 if undergoing hemodialysis >12 months. Data analysis used univariate and bivariate analysis with statistical tests (Chi Square Test) in the SPSS application

RESULTS AND DISCUSSION

Research Result

Based on research carried out in the hemodialysis room at the Imelda Workers Indonesia General Hospital, Medan, which aimed to determine the relationship between the length of undergoing hemodialysis and the depression status of patients with chronic kidney disease, the following results were obtained:

a. Univariate Results

Table 1. Characteristics of Chronic Kidney Failure Respondents Undergoing Hemodialysis Based on age, gender, education, employment status, marital status, and length of time undergoing hemodialysis at RSU Imelda Kerja Indonesia Medan in 2023 (n=60)

No.	Characteristics	F	(%)
1	**Age**		
	26-35 Years	4	6.7
	46-55 Years	24	40.0
	56-65 Years	24	40.0
	>65 Years	8	13.3
2	**Gender**		
	Man	32	53.3
	Woman	28	46.7
3	**Education**		
	elementary school	8	13.3
	JUNIOR HIGH SCHOOL	28	46.7
	SENIOR HIGH SCHOOL	20	33.3
	College	4	6.7
4	**Job status**		
	Doesn't work	36	60.0
	Work	24	40.0
5	**Marital status**		

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	Marry	60	100.0
6	**Long time undergoing hemodialysis**		
	<6 Months	20	33.3
	6-12 Months	20	33.3
	>12 Months	20	33.3
	Total	**60**	**100**

Table 1 shows that of the 60 respondents with chronic kidney failure who underwent hemodialysis, the majority were in the age category 46-55 years, 24 people (40%) and 56-65 years, 24 people (40%), followed by respondents aged >65 years, 8 people. (13.3%) and the minority of respondents aged 26-35 years was 4 people (6.7%). Based on gender, the majority of respondents with chronic kidney failure who underwent hemodialysis were men, 32 people (53.3%), while the minority were women, 24 people (46.7%). Based on education level, the majority of respondents with chronic kidney failure who underwent hemodialysis had a junior high school education level of 28 people (46.6%), followed by respondents who had a high school education level of 20 people (33.3%), respondents who had an elementary school education level. as many as 8 people (13.3%) and the minority of respondents had a tertiary education level as many as 4 people (6.7%).

Based on employment status, the majority of respondents with chronic kidney failure who underwent hemodialysis did not work, 36 people (60%), while the minority of respondents worked, 24 people (40%). Based on marital status, the majority of respondents were married, 60 respondents (100%). Based on the length of time undergoing hemodialysis, 20 respondents were <6 months, 6-12 months and >12 respectively (33.3%).

Table 2. Frequency Distribution of Functional Status of Chronic Kidney Failure Respondents Undergoing Hemodialysis at Imelda Workers Indonesian RSU Medan in 2023 (N=60)

Status CategoryFunctional	F	(%)
Independent	20	33.3
Mild Addiction	16	26.7
Moderate Dependency	10	16.7
Heavy Addiction	14	23.3
Total Dependency	0	0.0
Total	**60**	**100.0**

Based on table 4.2, it shows that of the 60 respondents with chronic kidney failure who underwent hemodialysis, the majority were in the independent functional status category, 20 people (33.3%), followed by the mild dependency functional status category, 16 people (26.7%), then the functional status category. There were 14 people (23.3%) with severe dependency, and 10 people (16.7%) in the minority of respondents in the moderate dependency functional status category, while there were no severe dependency functional status categories.

a. **Bivariate Analysis**

Table 3 Cross Tabulation of Time Undergoing Hemodialysis with Functional Status of Respondents with Chronic Kidney Disease at the Imelda Indonesian Workers General Hospital, Medan, 2023 (N=60)

			Functional State (Dependency)					Total
			Independent	Light	Currently	Heavy	Total	
Long time undergoing	< 6 Months	F	12	4	4	0	0	20
		%	60.0%	20.0%	20.0%	0.0%	0.0%	100.0%
	6-12 Months	F	8	8	0	4	0	20
		%	40.0%	40.0%	0.0%	20.0%	0.0%	100.0%

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| hemodial ysis | > 12 Months | F | 0 | 4 | 6 | 10 | 0 | 20 |
| | | % | 0.0% | 20.0% | 60.0% | 50.0% | 0.0% | 100.0% |

Based on table 3, it shows that the functional status of respondents undergoing hemodialysis <6 months is the majority in the independent category, 12 people (60%), followed by the minority of respondents in the mild and moderate dependency categories, 4 people each (20%). The majority of functional status of respondents who underwent hemodialysis for 6-12 months were in the independent and mild dependency categories, 8 people each (40%), followed by the minority of respondents in the severe dependency category, 4 people (20%). The majority of respondents who underwent hemodialysis for >12 months had their functional status in the severe category, 10 people (50%) and the minority of respondents had their functional status in the light category, 4 people (20%).

Table 4 Chi Square Statistical Test To find out the relationship between the length of time undergoing hemodialysis and the functional status of respondents with chronic kidney disease at the Imelda Workers Indonesian General Hospital, Medan, 2023 (N=60)

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	44.829a	6	,022
Likelihood Ratio	20,715	6	,002
Linear-by-Linear Association	0.398	1	,001
N of Valid Cases	60		

a. 12 cells (100.0%) have expected count less than 5. The minimum expected count is 1.67.

Based on table 4, the results of the Chi-Square statistical test show a significant (p) value of 0.02 or $p < 0.05$, meaning there is a relationship between length of time undergoing hemodialysis and the functional status of respondents with chronic kidney disease at the Imelda Workers Indonesia General Hospital, Medan, 2023.

DISCUSSION
Variable length of time undergoing hemodialysis for Chronic Kidney Failure Respondents Undergoing Hemodialysis at Imelda Workers Indonesen RSU Medan in 2023
Based on the research results, 20 respondents with chronic kidney disease underwent hemodialysis <6 months, 6-12 months and >12 respectively (33.3%). Researchers assume that a long period of undergoing hemodialysis can make a person experience limitations and dependency, or in other words, it can affect a person's quality in carrying out their daily activities. This is in line with research Wahyuni et al. (2018), stated that hemodialysis therapy is carried out to restore damaged kidney function as an effort to prolong the life of sufferers and the length of time a person undergoes hemodialysis will influence and improve their well-being. The length of time undergoing hemodialysis can influence the level of compliance in undergoing the hemodialysis process because it is possible that you have received education from health workers, such as research Sagala et al. (2023) which states that education can influence a person's level of health in carrying out daily activities. However, the length of time undergoing hemodialysis can also be an obstacle to compliance because the longer a person undergoes hemodialysis, the higher the potential for complications, as in research conducted by Bayhakki & Hasneli (2018) which states that around 60% -80% of hemodialysis patients died due to complications.

Functional Status of Chronic Kidney Failure Respondents Undergoing Hemodialysis at Imelda Workers Indonesian RSU Medan in 2023

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Based on the research results, it shows that of the 60 respondents with chronic kidney failure who underwent hemodialysis, the majority were in the independent functional status category, 20 people (33.3%), the minority of respondents in the moderate dependency functional status category were 10 people (16.7%) and in the dependency category total in this study was not found. Researchers assume that chronic kidney disease sufferers undergoing hemodialysis will have dependence or limitations on functional status, such as being limited in carrying out daily activities such as eating, bathing, personal hygiene, dressing, defecating, urinating, moving, going up and down stairs and mobilization.

The results of this study are in line with the research resultsBachtiar & Purnamadyawati (2021), where the majority of respondents with chronic kidney disease who underwent hemodialysis were in the fully independent category in carrying out daily activities, namely 33 people (79%) and respondents who were in the partially independent category were 9 people (21%) and there were no respondents who had complete dependency. However, the results of this study are different from researchSaroni (2023)where the majority of respondents with chronic kidney disease who underwent hemodialysis needed assistance in carrying out activities, namely 50.9% and 49.1% of respondents could carry out their activities independently.

The relationship between the length of time undergoing hemodialysis and the functional status of Chronic Kidney Failure patients undergoing hemodialysis at RSU Imelda Kerja Indonesia Medan in 2023

The results of this study show that the functional status of respondents undergoing hemodialysis <6 months is predominantly in the independent category, 12 people (60%), the functional status of respondents undergoing hemodialysis 6-12 months is the majority in the independent and mild dependency categories, 8 people each. (40%) and the majority of respondents who underwent hemodialysis for >12 months had a functional status in the severe dependency category, 10 people (50%).The results of the Chi-Square statistical test showed a significant (p) value of0.02 or p < 0.05,meaning there is a relationship betweenlength of time undergoing hemodialysis and the functional status of respondents with chronic kidney disease at the Imelda Workers Indonesia General Hospital, Medan, 2023. Based on the results of this study, researchers assume that the longer a person undergoes hemodialysis, the more their functional status will decrease or, in other words, the more they will experience dependency in carrying out daily activities. This could have happened due to the age factor of the respondents, the majority of whom were 24 people aged 46-55 years (40%) and 24 people 56-65 years (40%), where at that age the body's anatomical and physiological functions decreased so that the condition This causes a person's ability to carry out activities such as eating, bathing, personal hygiene, dressing, defecating, toileting, moving, going up and down stairs and mobilization also decreases or becomes dependent on the help of other people.

This is in line with researchAmaliyah et al. (2019)which states that the longer one undergoes hemodialysis therapy, the more severe a person will experience functional disorders, where the results of statistical tests show p value = 0.027 or p value <0.005. Impaired functional status means chronic kidney disease patients undergoing hemodialysis are limited in carrying out activities, so this will have an impact on the patient's quality of life, which according to researchRizkilillah et al. (2023)states that the lighter or more limited a person is in carrying out activities, the worse their quality of life will be and the chi square test results show p value = 0.001 < 0.05.

CONCLUSION

Based on the results of research conducted onrelationship between the length of time undergoing hemodialysis and the functional status of chronic kidney disease patients at the Imelda

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Workers Indonesia Hospital in Medan, the following conclusions were obtained:Of the 60 respondents with chronic kidney failure who underwent hemodialysis, the majority were in the age category 46-55 years and 56-65 years. The majority of respondents are male. the majority of respondents had a junior high school education level. The majority of respondents do not work. The majority of respondents were married and based on the length of time undergoing hemodialysis, 20 respondents were <6 months, 6-12 months and >12 respectively.Of the 60 respondents with chronic renal failure who underwent hemodialysis, the majority were in the independent functional status category, followed by the functional status categories of mild, severe and moderate dependence, while the functional status category of severe dependence was not found.The majority of functional status of respondents undergoing hemodialysis <6 months is in the independent category, the functional status of respondents undergoing hemodialysis 6-12 months is the majority in the independent and mild dependency categories respectively and the majority of respondents undergoing hemodialysis >12 months have functional status in the dependent category heavy.The results of the Chi-Square statistical test showed a significant (p) value of0.02 or $p < 0.05$,meaning there is a relationship betweenlong time undergoing hemodialysis with the functional status of respondents with chronic kidney disease at the Imelda Workers Indonesia General Hospital, Medan

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