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ADHERENCE OF HEMODIALYSIS PATIENTS WITH CHRONIC RENAL FAILURE TO TREATMENT GUIDELINES

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Abstract

Background: *End-stage renal Disease* (ESRD) is a major health problem for most people, with a large burden on healthcare systems and economies around the world. This disease requires various medical treatments in the form of hemodialysis, peritoneal dialysis, or hemofiltration. The duration of treatment depends on the cause and extent of kidney damage; this will be more dangerous if the sufferer is not dialysis or transplanting the kidney. Methods: This *cross-sectional* study was conducted among 176 patients with end-stage chronic renal failure who underwent hemodialysis and were selected by *purposive sampling*. Data were collected using a patient perception questionnaire, a Multidimensional *Scale of Perceived Social Support (*MSPSS) questionnaire, and an end-stage renal disease adherence questionnaire (ESRD-AQ). Data were analyzed using frequency distribution, chi-square test, and binary logistic regression. Results: This study showed that the results of long hemodialysis (HD) (P = 0.000), long-suffering from ERDS (P = 0.000), social support (P = 0.006), perception of nurse services (P = 0.038) and availability of transportation (P = 0.031) were associated with compliance of CKD patients with hemodialysis. Duration of hemodialysis (HD) (P = 0.000; OR = 8.597) was the most dominant factor associated with compliance of CKD patients on hemodialysis. Conclusion: The length of hemodialysis (HD) is the most dominant factor associated with the adherence of CRF patients undergoing hemodialysis, where the length of HD can be a factor that affects a person's compliance with CRF when undergoing hemodialysis. In certain circumstances, long HD can be a reminder for someone to remember to undergo hemodialysis so that metabolic waste does not accumulate in the patient's body.

Keywords: ***determinants, Patient Adherence, Chronic Renal Failure***

1. INTRODUCTION

End-stage Chronic Kidney Disease (ESRD) can be fatal without dialysis and transplantation. The global prevalence of ESRD is 0.1%, which varies between countries (Marthoenis et al., et al., 2021). ERDS is a major health problem in most societies attributed to the growing burden on healthcare systems and economies around the world (Okorie et al., et al., 2018). According to the 2010 Global Burden of Disease results, chronic kidney disease ranked 27th on the list of total kidney disease deaths in the world in 1990 and increased to 18th place in 2010 (annual mortality rate of 16.3 per 100,000). This incidence is estimated to reach 40-60 cases per 1 million population per year in developing countries (Ministry of Health, RI, 2017). The prevalence of CRF in Indonesia from year to year continues to increase. The Indonesian Nephrology Association (PERNEFRI) in the Indonesia *Renal Registry* (IRR) Program reported that the number of new ERDS patients in Indonesia in 2020 was recorded at 61,786, while for active patients, it was recorded at 130,931. The increase in patients with chronic kidney failure requires various medical treatments, including hemodialysis, peritoneal dialysis or hemofiltration, and fluid and drug restrictions to prevent serious complications; the duration of treatment depends on the cause and extent of kidney damage. In addition, providing the right diet can also be a therapy that patients can do so that the disease does not get worse (Wahyuni & Darmawan, 2020). When a person starts replacement kidney therapy (hemodialysis), then that is when the client has to change all aspects of his life. Clients should visit the hemodialysis unit regularly, 2-3 times a week, be consistent with

the medications they must take, modify their diet on a large scale, regulate their daily fluid intake, and measure fluid balance every day. Other problems are in the form of arrangements as a result of kidney disease, such as the impact of hemoglobin decrease that is common in kidney failure patients, regulation of potassium, calcium, Fe, and others. This is a very heavy burden for clients undergoing hemodialysis, including psychosocial and economic problems, which will certainly have a major impact, causing clients to often suffer from extreme fatigue. This eventually leads to therapy failure and worsens the prognosis of clients with CKD (Kim et al. et al., 2010).

Another study showed that 40.5% and 55.5% of ESRD patients had moderate and good adherence behaviors to hemodialysis treatment, respectively. Findings from other studies revealed low adherence (48.0%) of 178 total ERDS respondents who were adherent to taking medication (Naalweh et al. et al., 2017). Many factors cause non-compliance that has an impact on the client's failure to follow the kidney failure therapy program. Various studies have attempted to link demographic variation with disobedience, but demographic characteristics have not consistently predicted changes in client compliance attitudes (Shapiro et al., 1994). Other studies also state that there is a relationship or influence between age, knowledge about hemodialysis, motivation, patient perceptions of nursing services, and family support with compliance of chronic kidney failure patients in undergoing hemodialysis therapy programs (Laksono et al., 2019). Based on a review of the literature that has been done, there have been many studies that look at the relationship regarding the compliance of chronic kidney failure patients in undergoing hemodialysis. The purpose of this study was to determine the relationship between patient compliance with chronic kidney failure undergoing hemodialysis at the Aceh Regional General Hospital.

2. METHOD

This cross-sectional study was conducted from August to October 2023 at the Hemodialysis Center of Aceh Provincial General Hospital, Indonesia. A total of 176 respondents were involved in filling out questionnaires in the form of patient perception questionnaires with 6 statements, Multidimensional Scale of Perceived Social Support (MSPSS) questionnaires with 12 questions, and end-stage renal disease adherence questionnaires (ESRD-AQ). The inclusion criteria in this study were patients with stable hemodynamics, fully conscious and cooperative. The study used questionnaires consisting of age, gender, education, occupation, and marital status. In the patient perception questionnaire in the form of 6 statements with answer choices, namely 1 = never, 2 = rare, 3 = sometimes, 4 = often and 5 = always. Questionnaire Multidimensional Scale of Perceived Social Support (MSPSS) With 12 question items with 3 subscale dimensions, namely family support, friend support, and closest person support with Likert scale measurements of 1 = Strongly Disagree, 2 = Disagree, 3 = Somewhat Disagree, 4 = Neutral, 5 = Somewhat Agree, 6 = Agree, and 7 = Strongly Agree. Next is the end-stage renal disease adherence questionnaire (ESRD-AQ) with 46 questions in 5 sections in the form of general information related to the patient's ESRD and RRT (5 items), HD treatment adherence (14 items), medications (9 items), fluid restrictions (10 items) and diet (8 items).

Table 1. Socio-Demographics Characteristics of the Study Respondents

No	Respondent Demographics	Frequency	Percentage (%)
1.	Age		
	Teen/Early Adulthood	36	20,5
	Late Adulthood	72	40,9
	Seniors	68	38,6
2.	Gender		
	Male	100	56,8

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No	Respondent Demographics	Frequency	Percentage (%)
	Female	76	43,2
3.	Education		
	Elementary - Secondary School	42	23,9
	High School	86	48,9
	University	48	27,3
4.	Work		
	Work	115	65,3
	Not Working	61	34,7
5.	Marital Status		
	Unmarried	18	10,2
	Married	144	81,8
	Widow-Widower	14	8,0
6.	Duration Suffering from CRF		
	≤ 4 years	82	46,6
	> 4 years	94	53,4
7.	Duration of HD		
	≤1 year	122	69,3
	> 1 year	54	30,7
8.	HD Frequency		
	2x a week	176	100
9.	Distance to HD Centre		
	≤10-50 km	89	50,6
	>50 km	87	49,4
10.	Health Insurance		
	National	40	22,7
	Local - Aceh	136	77,3
11.	Transportation Availability		
	Private	102	58
	Public	74	42
12.	Patient perception of Nurse Services		
	Good	161	91,5
	Less	15	8,5
13	Social Support		
	Low	6	3,4
	Intermediate	71	40,3
	High	99	56,3
14.	Haemodialysis Adherence		
	Adherence	136	77,3
	Non-Adherence	40	22,7

3. RESULTS AND DISCUSSION

Of the 176 CKD patients who participated in this study, the majority were late adults (40.9%), male (56.8%), high school (48,9%), employed (65.3%), and married (81.8%). As many as 53.4% had long suffered from CRF > 4 years, 69.3% had suffered from HD ≤1 year, and 100% had an HD frequency of 2x a week. More than half of patients travel to the HD center ≤10-50 km (50.6%),

with most patients using local health insurance (77.3%). The vast majority (91.5%) stated that they received good care from nurses, and more than half (56.3%) received good social support from their families. Lastly, most of them (77.3%) adhere to hemodialysis. A detail of the socio-demographic characteristics of the respondents is presented in Table 1. The results of logistic regression analysis found that long-suffering from ERDS (p = 0.001, OR= 0.016), long time undergoing HD (p = 0.001, OR= 8.597), transportation availability (p = 0.031, OR= 3.147), perception of nurse services (p = 0.038, OR= 6.508) and social support (p = 0.006, OR= 0.220) obtained p values < 0.05 and simultaneously associated with compliance of CKD patients in undergoing hemodialysis. The results of this analysis also showed that the length of HD was the determinant most associated with compliance of CKD patients with hemodialysis (OR= 8.866). The longer the HD, the more it affects the compliance of CKD patients in doing hemodialysis regularly. The factors associated with adherence to medication are presented in Table 2.

Table 2. Factors associated with adherence to HD treatment.

Variable	P	95% CI	OR/ Exp (B)
Long suffering from ERDS	0,001	0,003 - 0,096	0,016
Old HD	0,001	2,883 - 25,635	8,597
Transportation Availability	0,031	1,112 – 8,908	3,147
Perceptions of Nurse Services	0,038	1,114 – 38,021	6,508
Social Support	0,006	0,075 – 0,645	0,220

3.1 Compliance of CKD patients with hemodialysis

The results showed that CKD patients who were undergoing hemodialysis at the Aceh Regional General Hospital had implemented adherence to the problem of kidney failure that some patients had carried out hemodialysis procedures well, which showed that transportation access had no obstacles, received high social support both from friends, family, and nurses, had a communicative nurse and patient relationship so that public perception of Nurses, especially those on duty in the hemodialysis department, are also good. Other studies on the adherence of CKD clients who received hemodialysis therapy found very varied results. This showed that patients with good adherence had a 33% lower risk of worsening ERDS when compared to patients with lower adherence. Then, the compliance of ERDS patients can affect their quality of life, where the higher the level of compliance of ERDS patients with the implementation of therapy, the quality of life will increase (Laksono et al., 2019).

3.2 Long suffering from ERDS

The results of the study in 97.9% of patients with CRF who had long suffered from ERDS > 4 years showed adherence in undergoing hemodialysis. From the results of statistical tests with p = 0.001 which means that there is a significant relationship between the length of time suffering from CRF undergoing hemodialysis. From the results of this study, it can be seen that patients who have suffered from CRF for a long time > 4 years are more obedient in carrying out hemodialysis than patients with CRF < 4 years. More than 70% of end-stage renal disease (ESRD) patients choose hemodialysis as a survival therapy globally. It is the best treatment available for long-term survival of chronic renal failure patients and can maintain the patient's quality of life at a satisfactory level (Meichelboeck, 2017). Patients who have been on hemodialysis for a long time will have high ureal and creatinine levels. High urea will interfere with the production of the hormone erythropoietin. The production of the hormone erythropoietin that is small will affect the production of decreased

red blood cell count called anemia. As a result, patients will experience fatigue, fatigue, and lethargy which are symptoms of fatigue (Suharyanto & Majid, 2013).

3.3 Duration of HD

The results of this study related to the length of HD in CKD patients showed that there were 87.7% of patients who underwent hemodialysis ≤ 1 year were adherent. The results of statistical tests obtained p = 0.001, which shows that there is a significant relationship between the length of HD and the compliance of CRF patients undergoing hemodialysis. In addition, the duration of hemodialysis is closely related to the efficiency and adequacy of hemodialysis, so the duration of hemodialysis is also influenced by the level of uremia due to the progression of worsening kidney function and comorbid factors, as well as blood flow speed and dialysate flow speed. Hemodialysis therapy takes a long time, costs a lot, and requires patient adherence to fluid restrictions and diet. Patients will lose freedom due to some rules, and patients are very dependent on healthcare providers. Income will be reduced or even lost due to unproductive patients. With the support of several other aspects, such as physical, psychological, socioeconomic, and environmental aspects, it can affect the quality of life of kidney failure patients (Saputra & Wiryansyah, 2023).

3.4 Transportation Availability

The results of the study related to the availability of transportation showed that as many as 85.3% of respondents regarding the availability of transportation were compliant. The results of statistical tests show that there is a significant relationship between the availability of transportation and the compliance of CRF patients undergoing hemodialysis. Although most CRF patients are obedient in undergoing hemodialysis therapy, there are still patients who are not compliant because the patient's body still feels comfortable, so they can still survive even though they do not have hemodialysis therapy for patients with a place that is quite far from the hospital. In addition, patients do not do hemodialysis schedules regularly because they have busy work, so they are forced to go through the day without doing therapy. Hemodialysis is very important to do in CRF patients so that there is no buildup of metabolic waste substances that can harm the patient's body (Sumah, 2020).

3.5 Perceptions of Nurse Services

The results of the study related to the perception of nurse services showed that as many as 80.7% of respondents who underwent hemodialysis were compliant. The results of statistical tests show that there is a significant relationship between patient perceptions of nurse services and compliance with CRF patients undergoing hemodialysis. In other words, hemodialysis is an important thing to do for CRF sufferers to remove metabolic waste that is no longer needed in the body. However, some patients' non-compliance with undergoing hemodialysis is due to patients getting bored with the frequency of hemodialysis and feeling futile by undergoing hemodialysis because it does not provide benefits for recovery, as evidenced by a long history of hemodialysis, which is more than 1 year. In general, non-compliance of dialysis patients includes four aspects, namely non-compliance with the hemodialysis program, non-compliance with the treatment program, non-compliance with fluid restrictions, and non-compliance with the diet program (Nurchayati, 2011).

3.6 Social Support

The results of the study related to social support showed that as many as 86.9% received support from families who were obedient to undergo hemodialysis. The results of statistical tests show a significant relationship between family support and compliance of CRF patients undergoing hemodialysis. Family support is one of the external factors that has the strongest relationship with patients. The existence of family is able to provide very meaningful motivation to patients when they have various problems changing life patterns that are so complicated saturating with all kinds

of health programs (Sumah, 2020). In addition, some families are busy working, so they do not have time to accompany patients during the hemodialysis process. Patients who do not get good family support are also because families who live far away from hemodialysis patients make it difficult to control, accompany, or even escort patients in doing hemodialysis therapy. So, family support is a factor that can affect the compliance of CRF patients to undergo hemodialysis process therapy.

3.7 Dominant factors

The results of logistic regression analysis found that the length of time undergoing HD was the aspect most related to patient compliance undergoing hemodialysis (OR = 8.597). The longer undergoing HD that is done or carried out according to procedures and scheduled can help patients carry out activities well even though they have limitations due to kidney problems they experience, considering that someone who has experienced CRF must undergo kidney replacement therapy for the rest of his life. The level of compliance is an attitude that CRF sufferers must show to comply with the procedures that must be undertaken. CRF patients have experienced a decrease in hemoglobin levels due to decreased kidney function. Hemodialysis can also reduce the patient's hemoglobin levels, which can trigger anemia. CRF sufferers also have other causes, namely erythropoietin deficiency, causing the life span of red blood cells to decrease, and iron deficiency in sufferers. Other problems that can interfere are spiritual, psychological, social, and family aspects and affect the physical, cognitive, and emotional patients. Patients can also experience a decrease in autonomy, loss of family role identity, separation from family, feelings of isolation, need for help, limited physical activity and followed by other stressors in the form of decreased social contact and uncertainty about the future (Saputra &; Wiryansyah, 2023). In addition, other studies have shown that there is no association between the length of HD with patient compliance because it causes a decrease in hemoglobin levels for sufferers. Other factors that cause a decrease in hemoglobin levels are iron adequacy in the body, in addition to iron metabolism in the body, nutrition, blood loss, shortened erythrocyte life span due to uremia conditions, folic acid deficiency and acute and chronic inflammatory processes (Syamsiah, 2011).

4. CONCLUSION

The length of time on hemodialysis (HD) is the most dominant factor associated with the adherence of CRF patients undergoing hemodialysis, where the length of HD can be a factor that affects a person's compliance with CRF when undergoing hemodialysis. In certain circumstances, long HD can be a reminder for someone not to forget to undergo hemodialysis so that metabolic waste does not accumulate in the patient's body. In addition, in certain circumstances, the length of HD can also be an individual problem, especially in the patient's quality of life, which decreases and causes patients to be forced to change their routine life habits. This applies to patients who have not been on hemodialysis for a long time and patients who feel not ready to accept and adapt to changes that occur in their lives, especially in addition to the inability, patients have to depend on others and medical costs that are not small so that it interferes with activities like normal people.

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