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Hemodialysis Therapy Compliance in Chronic Kidney Disease Patients

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ABSTRACTS

Background: Chronic kidney disease (CKD) is a progressive and irreversible impairment or decrease in kidney function, occurring gradually over three months or more as a result of permanent damage to the kidney structure. One of the management for patients with CKD is hemodialysis therapy which replaces kidney function to eliminate the remnants of protein metabolism products and remove excess fluid and electrolytes through hemodialysis machines, and artificial kidneys (dialyzer). One of the major problems that contribute to failure in the management of hemodialysis therapy is patient compliance. Objective: This study was conducted to identify adherence to hemodialysis therapy in CKD patients in Bandung City Hospital. Methods: research design using descriptive analysis on 44 respondents with purposive sampling technique. Data collection using the End Stage Renal Disease–Adherence Questionnaire (ESRD-AQ) questionnaire. Univariate data analysis using frequency distribution. Results: In CKD patients undergoing hemodialysis therapy at the Bandung City Hospital as many as 33 respondents (75%) were compliant and 11 people (25%) were not compliant in undergoing hemodialysis therapy. The domains of adherence of CKD patients who were most adhered to by respondents were therapy attendance (75%), shortening duration (79.55%), length of time shortening therapy (79.55%), and medication adherence (52.27%). Conclusion: most of the patients were obedient in undergoing hemodialysis therapy. The suggestion from this study is that the hospital should include an assessment of the level of compliance of patients undergoing hemodialysis therapy as an additional domain in indicators of the quality of health services in the hemodialysis room of the Bandung City Hospital.

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1. INTRODUCTION

Chronic Kidney Disease (CKD) is a clinical condition when the body experiences progressive and irreversible kidney function disorders, namely the gradual decline in kidney function over 3 months or more as a result of permanent damage to the kidney structure. In this condition, the kidneys fail to remove the remnants of the body's metabolism and fail to regulate fluid and electrolyte balance, causing symptoms of uremia and fluid retention (Smeltzer, 2010 in Wiliyanarti and Muhith, 2019). Based on data from the Institute for Health Metrics and Evaluation (IHME) in its 2017 Global Burden Disease research, it stated that globally in 2017 the incidence of CKD cases increased to 697.5 million people with an estimated prevalence of 9.1% of the total world population. . The death rate from kidney disease has also increased to 1.2 million people, ranking 12th as the leading cause of death in the world after tuberculosis. Meanwhile, according to the same source, the incidence of CKD cases in Indonesia in 2017 reached 27.2 million people with a total death rate from the disease of 35,446 people (Bikbov et al., 2020).

One of the treatments for CKD patients is hemodialysis therapy (HD). This therapy is a kidney replacement therapy that aims to eliminate the remnants of protein metabolism products and correct fluid and electrolyte balance disturbances through an HD machine and a semipermeable membrane (dialyzer) which acts as an artificial kidney. Data obtained from the 2018 Indonesian Renal Registry (IRR) shows that in Indonesia in 2018 there was a sharp increase in the number of new CKD patients undergoing HD therapy by 54% compared to 2017, namely the number reached 66,433 people in 2018 from initially 30,831 people in 2017. This has resulted in the number of CKD patients who are actively undergoing HD therapy increasing by 41%. This condition is suspected to be due to the increase in the number of National Health Insurance (JKN) participants, so that CKD patients can easily get access and help with HD service fees. In West Java Province, the number of new CKD patients undergoing HD therapy in 2018 also increased by 14,711 people so that CKD patients who were actively undergoing HD therapy totaled 33,828 people (PERNEFRI, 2018).

In patients with end-stage CKD, namely at stage 5, HD therapy is the best choice to maintain survival and improve the quality of life of sufferers, so that CKD patients must undergo HD therapy routinely for life. CKD patients undergoing routine HD therapy must be able to adapt to various types of HD therapy programs such as routinely carrying out hemodialysis measures, maintaining and limiting fluid intake, taking routine HD medications, and following a food intake diet. This causes CKD patients to become dependent on HD

machines and patients experience many changes in their lifestyle and lifestyle (Kristianti et al., 2020).

Compliance (adherence) is the level of individual behavior following a treatment plan, diet, lifestyle and lifestyle that are in accordance with advice or instructions from health care providers (Febriana, 2014). According to the National Kidney Foundation-Kidney Disease Outcomes Quality Initiative (NKF-KDOQI) non-adherence in HD therapy includes: (1) Non-adherence to pharmaceutical treatment; (2) Eliminating or shortening the hemodialysis session time; (3) Excessive fluid intake and foods that are high in potassium and phosphorus (Alikari, 2017). One of the major problems that contribute to failure in therapy for chronic diseases is patient adherence, overall it has been estimated that around 50% of patients do not comply with at least part of their HD therapy program (Syamsiah, 2011). Kim et al (2010) said that the non-compliance rate of CKD patients undergoing HD therapy varies, such as skipping hemodialysis sessions, around 0-32.3%; non-compliance with treatment around 1.2-81%; non-compliance with fluid restriction around 3.4-74%, and non-compliance following a diet program around 1.2-82.4%.

Compliance with HD therapy is an important factor for successful therapy, contributing to reducing morbidity and mortality, as well as reducing side effects of hemodialysis measures such as muscle cramps, malnutrition, sepsis, infections, and others (Alikari et al., 2017). Non-compliance with fluid restrictions can cause edema and hypertension which will burden the cardiovascular system in the patient's body. Cardiovascular disease is the first cause of death (42%) in routine HD patients (PERNEFRI, 2018) and a study found a positive relationship between non-compliance with fluid restrictions and death (Alikari et al., 2017).

Non-compliance with diet and medication regimens can lead to chronically elevated serum phosphorus levels leading to secondary hyperparathyroidism and renal osteodystrophy. Increased phosphate levels can also increase the risk of coronary heart disease even in patients at a young age there is a significant increased risk of death. Severe hyperkalemia is common in patients undergoing HD therapy with a tendency to neglect appropriate dietary regimens. Skipping or shortening hemodialysis sessions will reduce dialysis adequacy rates (adequacy), missing at least one HD session per month and shortening the duration of HD procedures by more than 10 minutes (≥ 3 times per month) have been associated with a 25-30% risk of death (Alikari et al. , 2019).

Based on the results of interviews with 10 routine HD patients, it was found that 2 patients had never had HD therapy; 4 people said it was still difficult to limit fluid intake because of thirst; 2 people can not reduce the habit of consuming fruit; and 2 people said they found it difficult to follow the treatment program, especially hypertension drugs on the grounds that there was no family to help remind them. The purpose of this study was to identify adherence to hemodialysis therapy in patients with chronic kidney disease at Bandung City General Hospital.

2. METHODS

This research is a type of quantitative research with a descriptive research design. The research was conducted on January 10-12 2022. The population in this study were all CKD patients in the Hemodialysis Room at the Bandung City Hospital, 52 people/month. A sample of 44 people with purposive sampling technique. The inclusion criteria used in this study were: CKD patients undergoing hemodialysis therapy for at least 3 months, age> 18 years, awareness of composure, able to communicate well, stable hemodynamic status, able to read and write, and willing to be a respondent by signing an informed consent .

This study used an instrument in the form of a modified ESRD-AQ (End Stage Renal Disease -Adherence Questionnaire) questionnaire. The ESRD-AQ questionnaire in this study consisted of 15 question items which answered questions from respondents in the ESRD-AQ using a combination of Likert scale (ordinal) and multiple choice. The ESRD-AQ is a valid and reliable instrument. Based on the results of the validity test, it was found that 5 out of 6 statements had an r value that was greater than the r table value, except for statement 1 (r = 0.076). However, statement 1, which is substantially important, must exist for 1 package of statements about compliance, so the statement is not discarded, so that it is declared valid and can be given to the respondent in full 6 statements. As for the reliability test, the value of r alpha = 0.762, where r alpha is greater than r table (0.762 > 0.423), then all of these statements (6 statements, including statements 2, 3, 4, 5 and 6) are declared reliable.

Data analysis in this study used univariate analysis. Interpretation of the degree of compliance with the compliant category is obtained when the total score of each compliance domain reaches ≥ 800 and the non-compliant category is obtained when the total score is < 800. The data that has been collected is then entered in excel format and processed using the JASP statistical application version 0.16 .1. The research ethics applied to this research are the

principles of beneficence, respect for human dignity, and the principle of justice (right to justice).

3. RESULTS AND DISCUSSION

The description of the characteristics of the respondents in this study consisted of a demographic description and a description of the respondents as hemodialysis patients. The demographic description of the respondents consists of the characteristics of age, sex, marital status, education, occupation, and people who live with the respondent which can be seen in table 1. Meanwhile the description of the respondents as hemodialysis patients consists of the characteristics of the patient's length of HD therapy, causes of disease, type vascular access, transportation of the respondent to the hospital, and the people accompanying him to the hospital can be seen in table 2.

No.	Variable		Frequency (f)	Percentage (%)
1.	Age	18 - 25	1	2,27
		26 – 35	2	4,55
		36 - 45	9	20,46
		46 - 55	12	27,27
		> 55	20	45,46
2.	Gender	Man	21	47,73
		Woman	23	52,27
3.	Marital State	Not married yet	1	2,27
		Widow/Divorced	10	22,73
		Marry	33	75
4.	Education	PT (S1/Diploma)	6	13,64
		SD	14	31,82
		SMA	8	18,18
		SMP	16	36,36
5.	Work	Laborer	4	9,09
		IRT	5	11,36
		civil servant	1	2,27
		Doesn't work	27	61,36
		Self-employed	7	15,91
6.	Living together	Main family	37	84,09
		Another family	7	15,91

Table 1. Distribution of the demographic characteristics of the respondents (n=44)

Based on the table 1 data, it can be seen that CKD patients undergoing HD therapy at the Bandung City Hospital, most of the respondents were aged > 55 years, with 20 people (45.5%). Most of them were female, 23 people (52.3%), most of them were married, 33 people (75%), most of them had junior high school education, 16 people (36.4%), most of the

respondents did not work, 27 of them people (61.6%), and most of them live or are domiciled with their nuclear family, namely their wife/husband and their children as many as 37 people (84%).

No.	Variabel		Frequency (f)	Percentage (%)
1.	Hemodialysis duration	1 - 3 Years	10	22,73
		3 - 12 Month	8	18,18
		3 - 5 Years	13	29,55
		>5 Years	13	29,55
2.	Etiology / Causes of Disease	Asam urat	1	2,27
		Diabetes	8	18,18
		Hipertensi	26	59,09
		Infeksi Ginjal	6	13,64
		Intoksikasi	1	2,27
		Obstruksi (Prostat)	1	2,27
		PNC	1	2,27
3.	Types of Vascular Access	AV Fistula/Cimino	43	97,73
		CDL	1	2,27
4.	Transportation to hospital	Public transportation.	7	15,91
		Walk	1	2,27
		Taxis/online taxis	3	6,82
		Private vehicle	33	75
5.	The person accompanying him to the hospital	Child	15	34,09
		Parent	1	2,27
		Married couple)	12	27,27
		You	2	4,55
		Alone	14	31,82

Table 2. Distribution of the characteristics of respondents as hemodialysis patients (n = 44)

Based on table 2, most of the time the respondents underwent routine hemodialysis therapy for 3-5 years were 13 people (29.6%) and for >5 years there were 13 people (29.6%). Most of them had a history of hypertension as many as 26 people (59.1%), almost all of the respondents had AV Fistula vascular access 43 people (97.7%), most of the respondents went to the hospital using private transportation such as motorbikes/cars as many as 33 people (75%), and 15 children (34%) accompanying them to the hospital.

No.	Variable	Frequency (f)	Percentage (%)
1.	obey	33	75
2.	Not obey	11	25

Table 3. Distribution of Compliance Level Undergoing HD Therapy (n=44)

Based on table 3, the level of compliance of respondents in undergoing HD therapy was 33 people (75%) adherent and as many as 11 people (25%) did not comply. This level of adherence is obtained from the total score of several HD therapy adherence domains.

No.	Variable	Frequency (f)	Percentage (%)
1.	Presence on hemodialysis		
	Was absent 2 times	2	4,55
	Missed 1 time	9	20,45
	Always present	33	75
2.	Shorten the duration		
	Twice	1	2,27
	One time	8	18,18
	Never	35	79,55
3.	Length of time shorten		
	> 30 minute	1	2,27
	21 - 30 minute	4	9,09
	11 - 20 minute	4	9,09
	Never	35	79,55
4.	Skip taking medication		
	Never	23	52,27
	Seldom	4	9,09
	Sometimes	7	15,91
	Often	7	15,91
	Always	3	6,82
5.	Limit fluid intake		
	Never	2	4,55
	Seldom	6	13,63
	Sometimes	10	22,73
	Often	7	15,91
	Always	19	43,18
6.	Follow a food diet program		
	Never	1	2,27
	Seldom	2	4,55
	Sometimes	19	43,18
	Often	9	20,45
	Always	13	29,55

Table 4. Domain distribution of adherence to HD therapy (n=44)

Based on table 4, 33 people (75%) always attended HD therapy, 35 people (79.55%) never shortened the duration of HD, 23 people (52.27%) never missed taking medication, 19 people (43.18%) always limit fluid intake, and as many as 19 people (43.18%) sometimes follow a food diet program.

The results showed that most patients with chronic kidney disease were adherent in undergoing hemodialysis therapy. This is in line with Syamsiah's research (2011), namely 71.3% were obedient and 28.7% were non-compliant. The study conducted by Siti and Edison (2018) showed 50.9% adherents and 49.1% did not comply. Research by Naalweh et al (2017) found that adherence of CKD patients undergoing HD therapy was in the category of good adherence 55.5%, moderate adherence 40.5%, and poor adherence 4.1%. Another study showed that 71.3% did not comply and 28.7% complied (Pratiwi, 2019). This is likely influenced by several factors of the respondent's characteristics such as age, gender, marital status, education, employment, family support, length of time undergoing HD therapy, and ease of access in obtaining HD services.

From the research it was found that as many as 45.5% were elderly. At this age, usually a person has technical, psychological and spiritual maturity/maturity to be able to accept his own condition and be more able to make a wise decision and be open to the views and input of other people, so that in following the recommended therapy, the respondent will more obedient than younger respondents (Syamsiah, 2011). The characteristics of the respondents in this study were mostly women and still have partners or are married, also live with their families, both their wives/husbands and their children. This has an effect on providing support and motivation as well as great technical assistance to patients to comply with each recommended treatment therapy program both in fulfilling the HD therapy schedule in the hospital and in adhering to the medication program, fluid restriction diet, and daily food diet at home. .

In this study, 36.4% had a junior high school level of education. According to Syamsiah (2011) a good level of compliance is found in respondents who actually have low education. This suggests that higher education does not always guarantee a person's adherence to therapy, but understanding medication instructions and the importance of treatment may be more important than the patient's education level. Another characteristic of the respondents was that most of them did not work because they were retired and/or physically unable to work anymore, so that the respondents spent more time at home and were not preoccupied with activities outside the home, except for going to the hospital twice a week for HD therapy. This allows respondents to be more obedient in following the HD therapy schedule compared to those who work. However, another impact on the respondent not working, especially if the respondent is a man, is that it will have an impact on the economic status of the family,

which is likely to be a problem in meeting transportation costs/costs to the hospital and medical expenses (Kusniawati, 2018). Lack of transportation and medical costs are the main contributors to non-adherence to treatment in chronic dialysis patients (Syamsiah, 2011).

In this study, the majority of respondents had easy access to HD services, namely the availability of private transportation, both motorbikes or cars, and the presence of a companion who accompanied them in undergoing HD therapy at the hospital, namely by their children and spouse/husband, so as to increase adherence in undergoing therapy. HD. Most of the respondents had undergone HD therapy for more than 3 years (59.1%) and even 13 respondents (29.55%) had undergone HD for more than 5 years. The length of time respondents underwent HD therapy was a factor that influenced adherence to HD therapy (Syamsiah, 2011). The longer the respondent underwent HD therapy, the more the respondent's understanding and experience of his own health condition and knowledge about the process of HD action on him increased, so that he would be more compliant in undergoing the HD therapy program.

Based on the results of this study, the domain of compliance with the presence of undergoing HD is the most adhered domain of compliance. Respondents who were always present at each HD action session were 75% and most never shortened the duration or duration of HD action by 79.55%. According to Kim (2010), the attendance adherence domain for HD therapy has the highest score compared to other adherence domains, so this domain is the most influential factor in assessing the degree of adherence to HD therapy. The domain of attendance compliance at the HD procedure is thought to be closely related to the mortality rate of HD patients, so that it becomes an important domain for the success of HD therapy. Patient compliance with the presence of HD procedures will reduce or eliminate the problems of uremia, overhydration and hyperkalemia experienced by CKD patients, thereby reducing patient mortality and the incidence of CKD patient hospitalization (Inayah, 2017).

The domain of compliance with limiting fluids and following a food intake diet in this study was a domain that was not complied with by respondents. The number of respondents who always adhered to the domain of limiting fluids was 43.18% and the domain following a food intake diet was 29.55%. This is not in accordance with research by Siti and Edison (2018), namely compliance with a food intake diet of 73.7%. The domain of adherence to dietary intake, especially in limiting foods that contain lots of potassium, is a domain that is often ignored by CKD patients, apart from the domain of compliance with fluid intake restrictions.

Compliance with these two domains will affect the high rate of emergency hemodialysis services in hospitals, because non-compliance with these two domains is likely to cause a worsening of the patient's condition due to overhydration and hyperkalemia so that immediate HD action is required/emergency. These results are in accordance with the phenomena that occur in the Bandung City Hospital where the high rate of immediate/emergency HD services is found in the Bandung City Hospital due to cases of overhydration and hyperkalemia. Cases of CKD patients with overhydration (pulmonary edema) or hyperkalemia if HD is not taken immediately/emergency will result in the death of the patient.

4. CONCLUSION

From this study it can be concluded that the majority of CKD patients at the Bandung City General Hospital are compliant in undergoing hemodialysis therapy. The domains of CKD patient compliance that most respondents adhered to were attendance compliance, shortening duration, shortening duration of therapy, and medication adherence. The domain of compliance that still needs to be improved is the compliance domain of limiting fluids and following a food intake diet.

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