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Research Article

Self-Efficacy and Compliance Fluid Intake Restrictions in Chronic Kidney Disease Patients Undergoing Hemodialysis: A Cross-Sectional Study

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Abstract

Aims: Good self-efficacy will encourage patients to behave assertively and adhere to medication, diet, and fluid restrictions in patients with chronic kidney disease undergoing hemodialysis. However, nowadays, patient non-compliance with fluid restrictions is still high, which results in increased complications experienced by patients. The study aimed to determine the relationship between self-efficacy and adherence to fluid intake restrictions in chronic kidney patients undergoing hemodialysis at RSUP Dr. M. Djamil Padang.

Methods: This study used a correlation study design and a cross-sectional method. The total sample was 81 respondents. Using purposive sampling with inclusion criteria, patients routinely undergo HD > 3 months, are over 18 years old, and can communicate well. The instruments used were the Self-Efficacy for Managing Chronic Disease (SEMCD) questionnaire and the Fluid Intake Restriction Adherence questionnaire—data analysis using the Spearman correlation test.

Result: The results revealed a significant relationship between self-efficacy and adherence to fluid intake restrictions ($p = <0.001$) with a value ($r = 0.703$) which means the correlation for both variables is firmly in positive relation.

Conclusion: Nurses in the HD room are expected to be able to provide self-efficacy training to patients to increase patient compliance, the higher the self-efficacy, the more compliant the patient with fluid intake restrictions. **Keywords:** Adherence, Fluid, Hemodialysis, Self-Efficacy.

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INTRODUCTION

Kidney disease is a disease that has a high mortality rate globally. Kidney disease mortality ranked 10th in the world in 2019, with a death rate of 1.3 million people (1). The illness known as chronic kidney disease (CKD) causes a steady and irreversible decline in kidney function (KDOQI, 2015). The incidence of chronic kidney disease in Indonesia is relatively high; the prevalence

of chronic kidney disease patients in Indonesia was 0.38% in 2018, a very significant increase from 2012 when the majority of CKD was 0.2% (2). West Sumatra Province has a relatively high number of chronic kidney disease sufferers. As many as 0.40% of its citizens suffer from kidney disease, 13,834 people (2).

Patients with CKD can be helped using hemodialysis therapy; this therapy is also

the most commonly used therapy for patients with CKD, which is around 90% of all CKD patients undergoing dialysis receiving hemodialysis (3). In Indonesia, 132,142 active hemodialysis participants were recorded in 2018. In addition, West Sumatra had 1,334 patients actively undergoing hemodialysis therapy in 2018, ranking among the top 5 provinces in terms of the number of patients (4).

Hemodialysis patients need to follow a number of therapeutic management measures, such as fluid restrictions, dietary guidelines, prescribed medications, and frequent dialysis treatments, in order for the therapy to be as effective as possible (5)(6). Previous studies have identified that fluid restriction is one of the most challenging things for hemodialysis patients to follow (7) (8). Research conducted in Turkey showed that 95% of clients participating in hemodialysis therapy were not compliant with limiting fluid intake, so patients experienced fluid overload (9).

Excess fluid intake can cause edema around the body; this condition will increase blood pressure and make the heart work harder; extra fluid volume can also cause shortness of breath (10). Non-compliance with these fluid restrictions can lead to a significantly increased risk of hospitalization and death in hemodialysis patients (8). Most people in West Sumatra also have a habit of processing food generally, which tends to taste salty, fatty, and oily and uses various spices. Meanwhile, consuming salty or sodium foods can increase thirst, encourage drinking, and increase blood pressure. Excessive thirst and high blood pressure can cause kidney damage to get worse (7) (8).

Some of the things that affect hemodialysis patients need help following the restriction of fluid intake, including; level of knowledge, length of time on hemodialysis, social support, and self-efficacy. Research has shown that self-efficacy is one of the most substantial factors in compliance with fluid intake restrictions in patients

receiving hemodialysis in Indonesia. Self-efficacy is an assessment of confidence regarding the ability to complete several tasks in the future(11).

Research has shown that CKD patients undergoing hemodialysis with high self-efficacy have a better quality of life than patients with low self-efficacy. A study in Western Pennsylvania, United States of America, in 2018 showed that hemodialysis patients with high self-efficacy are easier to follow dietary sodium restrictions than patients with low self-efficacy (12). Additionally, research done at the Al-Islam Hospital in Bandung demonstrates that compliance with restricting fluid consumption increases with self-efficacy and vice versa (13).

From the data and research above, researchers are interested in researching the relationship between self-efficacy and adherence to fluid intake restrictions in patients with chronic kidney disease undergoing hemodialysis.

METHODS

Correlation research using a cross-sectional methodology is what this study is about. Patients receiving routine hemodialysis at RSUP Dr. M. Djamil participated in the study. The Medical Research Ethics Committee of RSUP Dr.M.Djamil Padang issued approval for this study with the following number: LB.02.02/5.7/204/2022. Purposive sampling was used in this study to pick a sample of 81 respondents from a total population of 102 respondents who had been chosen based on inclusion and exclusion criteria. The inclusion criteria in this study were: patients routinely undergo HD > 3 months, are over 18 years old, and can communicate well. The exclusion criteria in this study were: Age > 75 years, visual and hearing impairments, and experience complications that cause patients to have difficulty communicating. The research instruments used were the Self-Efficacy Questionnaire for Managing Chronic Disease (SEMCD) (14) and the Liquid Restriction Compliance Questionnaire (15). In this study, if

the data is normally distributed, then the mean approach is used, namely the high category if the data \geq the mean and the standard type if $x <$ the mean. Univariate analysis is displayed as a frequency distribution table. In contrast, the bivariate analysis uses the Spearman correlation test. If a significance value of $p < 0.5$ is obtained, it can be concluded that the two variables have a significant correlation.

RESULTS

Based on Table 1, it is known that the frequency of male and female respondents who filled out the questionnaire was almost the same, the age category of respondents was mainly in the middle adult age range, most of the respondents had last education in high school, the majority of respondents were not working. Almost the same number

of respondents underwent hemodialysis < 12 months and > 24 months, and the fewest respondents underwent hemodialysis for 12 to 24 months; a small proportion of respondents experienced weight gain $> 5\%$ of dry body weight. Regarding the frequency distribution of restricted fluid intake, it shows that there were a large proportion of respondents who complied with limiting fluid intake, as many as 45 people (55.6%), and some small respondents who did not comply with violations of fluid intake, namely as many as 36 people (44.4%). The frequency distribution of self-efficacy shows that most respondents have high self-efficacy, 42 people (51.9%), and a small proportion of respondents have low self-efficacy, namely 39 people (48.1%).

Table 1. Frequency Distribution of Respondent Characteristics of Hemodialysis Patients at RSUP Dr. M. Djamil (n=81)

Characteristic Demographic	f	%
Gender		
Male	40	49,4
Female	41	50,6
Age (year)		
Early adult (18-40)	17	21
Middle adult (41-60)	46	56,8
Adult (>60)	18	22,2
Education		
Elementary	5	6,2
Junior high school	13	16
Senior high school	46	56,8
University	17	21
Length of hemodialysis		
<12 month	34	42
12- 24 month	12	14,8
>24 month	35	43,2
Weight gain		
Slight	19	23,5
Moderate	42	51,9
Severe	20	24,7
Restricting Fluid Intake		
a. Compliance	45	55,6
b. Non-compliance	36	44,4
Self Efficacy		
a. High Self Efficacy	42	51,9
b. Low Self Efficacy	39	48,1

Table 2. The Relationship of Self-Efficacy with Restriction Compliance Fluid Intake

Variabel	Compliance Restricting Fluid Intake	
	Correlation Coefficient (r)	p value
Self-Efficacy	0,741	0,000

Based on table 2 above shows that the results of the Spearman statistical test show a value of $p = 0.000$, which if the value of $p < 0.05$, then means there is a significant relationship. The statistical test results also showed a value of $r = 0.741$, which means that the two variables are strongly correlated and have a positive correlation direction ($r = 0.741$). Therefore, it can be concluded that there is a strong significant relationship with the direction of positive correlation between self-efficacy and adherence to fluid intake restrictions in chronic kidney patients undergoing hemodialysis at Dr. M. Djamil Padang Hospital, which means that the higher the increase in self-efficacy, the more obedient the patient is in limiting fluid intake.

DISCUSSION

Compliance with Restricting Fluid Intake of Hemodialysis Patients

From the results of research conducted on patients undergoing hemodialysis at RSUP, Dr. M. Djamil Padang showed that out of 81 respondents, most of the respondents, namely as many as 45 people (55.6%), had complied with limiting fluid intake. In contrast, almost half of the respondents, namely as many as 36 people (44.4%), did not comply with restricting intake. The high non-compliance with limiting fluid intake is in line with research by Herlina & Rosaline (2021) which showed that 57.9% of respondents did not comply with restricting fluid intake. This study says that besides efficacy, several factors can influence patient adherence to fluid inputs, such as respondent characteristics, knowledge factors, attitudes, behaviors, and family support. (16).

Apart from assessing the behavior of patients trying to reduce fluid intake, the success of limiting fluid intake in hemodialysis patients can also be seen in the increase in Interdialytic Weight Gain (IDWG). The rise in IDWG should be less than 5% (or approximately 2.5 kg) between two dialysis sessions (Sharaf, 2019). Increase in IDWG in this study was obtained from a demographic questionnaire by asking the patient's weight after the previous hemodialysis and the patient's weight before the current session of hemodialysis. The research data found that half of the respondents, namely as many as 41 people (50.6%), experienced a moderate increase in IDWG (2% -5%). There was still a small number of respondents who experienced a rise in IDWG in the heavy category ($> 5\%$), namely 19 respondents (24.7%).

The addition of a high IDWG value can result in unfavorable symptoms for the client's condition, including hypotension, numbness, muscle cramps, hypertension, shortness of breath, edema, nausea, vomiting, and others. Despite the fact that only a small percentage of respondents experienced an excessive increase in IDWG, this needs to be of concern (17). There are still patients with an increase in IDWG in this severe category, indicating that there are still many patients undergoing hemodialysis at RSUP. Dr. M. Djamil Padang did not comply with limiting fluid intake while still consuming more fluids than recommended by health workers.

Self Efficacy

The research results obtained from data conducted on patients undergoing hemodialysis at RSUP Dr. M. Djamil Padang

found that out of 81 respondents, the majority of respondents, namely as many as 42 people (51.9%) had good self-efficacy and a small number of respondents, namely as many as 39 people (48.1%) had poor self-efficacy. This is the same as research conducted by Sukma & Isnaini (2020) which showed that more patients had high self-efficacy than low self-efficacy, most of the total respondents (56.2%) had high self-efficacy and a small proportion had low self-efficacy (43.8%) (18). Likewise, Oktarina & Sulistiawan's research (2020) found that most hemodialysis patients had high self-efficacy (56.6%), and a small proportion had low self-efficacy (43.5%) (19).

Based on the results of the data found in this study, out of the six questions on the SEMCD questionnaire, most respondents feel confident that they can control the emotional stress caused by their illness which will interfere with the things they want to do (mean = 8.05). This is to the theory from Bandura, which states that one of the sources that can lead to self-efficacy is emotional and physical conditions. Strong emotions such as fear, anxiety, and stress can reduce a person's level of self-efficacy, while an increase in feelings (which are not excessive) can increase self-efficacy (20).

Furthermore, of all the question items, respondents were least sure they could control their physical discomfort and pain (mean = 7.17). This is to research conducted by Oktarina & Sulistiawan (2019), which also found that managing physical discomfort and pain is a question with the lowest mean among other questions (19).

Some of the disturbing symptoms of pain experienced by hemodialysis patients include lack of energy, pain in the waist, muscle cramps, numbness, pruritus, edema, and dry mouth. Patients feel that if they feel discomfort or pain, they can't do anything to reduce the pain. Lack of patient knowledge about pain management can be one of the causes of low self-efficacy in managing pain (19). As a result, nurses can

inform patients about non-pharmacological pain management to reduce patient suffering. Warm or cold compresses, acupuncture, massage, deep breathing exercises, touch and nutrition treatment, relaxation techniques, and other non-pharmacological interventions are a few examples.

According to Rustina (2013), patients who have been undergoing hemodialysis for a long time tend to have lower anxiety and are more adaptive compared to patients who have recently undergone hemodialysis because they are used to having dialysis for a long time (21). This opinion is in line with research data obtained in this study; namely, patients who have undergone hemodialysis for more than 24 months tend to have higher self-efficacy. Suwanti (2019) research shows that education level also influences hemodialysis patients' self-efficacy (22). Patients with low education tend to have low self-efficacy because the lower the education, the less knowledgeable a person is, which is related to self-efficacy. The results of Suwanti's research (2019) align with the research data that researchers obtained: patients with high self-efficacy values are at a higher educational level (22).

Correlation between Self-Efficacy and Compliance with Restricting Fluid Intake

After the Spearman correlation test was carried out, a p-value was obtained for the relationship between self-efficacy and adherence to fluid requirements testing in patients with chronic kidney disease undergoing hemodialysis at RSUP Dr. M. Djamil Padang is $p = 0.000$, where the p-value is <0.05 which means that there is a significant relationship between self-efficacy and adherence to fluid restrictions in patients undergoing hemodialysis at RSUP Dr. M. Djamil Padang. Both variables have a strong correlation with a positive direction of correlation ($r = 0.741$), which means that the higher the self-efficacy score, the higher the compliance with fluid intake.

These results are in line with the research conducted by Perdana & Yen (2021), in which self-efficacy was found to be a factor that greatly influences adherence to fluid intake in hemodialysis patients with a p-value = 0.001, according to Perdana & Yen measuring self-efficacy periodically is a step a good start in detecting patients most at risk of nonadherence to a fluid restriction (11). Likewise, Gartika et al. (2021) research said that there was a relationship between self-efficacy and compliance with fluid regulations in hemodialysis patients with a p-value = 0.000. In this study, self-efficacy and fluid restriction adherence had a moderate and a positive correlation with a value of $r = 0.535(13)$.

High self-efficacy is required to develop motivation from within to comply with therapy needs, according to Bandura (1997), who also noted that self-efficacy could affect patient motivation in undertaking therapy (hemodialysis). The most difficult aspect of hemodialysis for patients is adhering to fluid consumption limitations (8).

From the results of this study, it was found that patient self-efficacy can influence patient behavior to comply with fluid intake limits. Apart from the correlation test results, this can also be seen from the respondents' statements when collecting data. Respondents with high self-efficacy tend to feel that they can try to reduce thirst by applying ice cubes to their lips or trying to resist the urge to drink when the maximum limit of fluid intake in a day has been reached and by using a small glass when drinking so they can estimate the amount of fluid that has been drunk.

For this reason, efforts are needed to increase the self-efficacy of hemodialysis patients so that the patient's behavior in limiting fluid intake is better, such as nurses in the hemodialysis room can facilitate self-efficacy training activities. Nurses are also advised to evaluate hemodialysis patients regarding the patient's daily fluid intake limits. Suppose patients are not compliant

with fluid intake limits. In that case, nurses can be re-educated regarding the importance of limiting fluid intake in hemodialysis patients so that they can return to complying with restrictions. Fluid intake so that complications do not occur, such as edema, shortness of breath, hypertension, and others.

CONCLUSION

The research showed a strong significant relationship with a positive correlation between self-efficacy and adherence to fluid intake restriction in chronic kidney patients undergoing hemodialysis. This research is likely to be used as reference material for hospital institutions to determine the level of self-efficacy and adherence to fluid intake restrictions in hemodialysis patients and evaluation material for following up on hemodialysis patient behavior related to fluid intake restrictions. It is recommended for nurses who work in the hemodialysis unit at RSUP Dr. M. Djamil to be able to provide self-efficacy training, re-educate regarding the importance of limiting fluid intake, and conduct evaluations regarding patient behavior in restricting fluid intake.

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