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Adherence to Fluid Restriction in Hemodialysis Patients at RSUD Ibu Fatmawati Soekarno Kota Surakarta

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ABSTRACT

Background: Excessive fluid intake due to non-adherence leads to a decreased quality of life in hemodialysis (HD) patients and even death. The increasing incidence of chronic kidney failure is a progressive condition affecting more than 10% of the global population, or over 800 million people. One of the common problems faced by hemodialysis patients is non-adherence to fluid intake restrictions. This non-adherence can lead to fluid overload in the body, resulting in complications of chronic kidney disease. The objective of this study is to identify the most influential factors affecting the adherence of hemodialysis patients to fluid restriction.
Method: The research method employed a quantitative approach using a cross-sectional design. Data was collected using a questionnaire and analyzed using Kendall's tau test
Result: Kendall's tau analysis indicated that while there was no significant relationship between age, marital status, and fluid adherence, there were significant correlations between gender, education level, occupation, and duration of hemodialysis and fluid adherence.
Conclusion: Gender, education level, occupation, and duration of hemodialysis were significantly associated with fluid adherence among hemodialysis patients at RSUD Ibu Fatmawati Soekarno Surakarta

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INTRODUCTION

Chronic kidney disease is a condition where kidney function deteriorates to the point of being unable to adequately filter waste, regulate electrolytes, and maintain fluid and chemical balance in the blood or produce urine. Chronic kidney disease is a major global health issue, often attributed to lifestyle changes. Patients with chronic kidney disease frequently experience no symptoms until the disease reaches an advanced stage and kidney function declines, earning it the moniker "the silent killer". Overall, the prevalence of chronic kidney disease (CKD) has increased by 1.7% each year since 2016 (1).

The increasing incidence of chronic kidney failure is a progressive condition affecting more than 10% of the global population, or over 800 million people. The 2018 Basic Health Research (Riskesdas) results show that the prevalence of chronic kidney disease among individuals over 15 years old in Indonesia from 2013-2018 was 3.8%, and in Central Java Province it was 4%, higher than the national prevalence rate. The number of kidney failure patients in the Soloraya region continues to rise year by year (2).

Chronic kidney failure can involve the progressive and irreversible loss of kidney function. Kidney failure can become a leading cause of death, and the number of cases in the community continues to increase each year. At a certain stage, the kidneys may no longer function, requiring hemodialysis therapy to help remove uremic toxins and fluids, as well as regulate fluid, electrolyte, and acid-base balance (3).

Fluid intake restriction is the most challenging regimen for hemodialysis (HD) patients to follow. Excessive fluid intake beyond the recommended amount is a common issue. Excessive fluid intake leads to weight gain between hemodialysis sessions, known as Interdialytic Weight Gain (IDWG). An increase in IDWG beyond the body's tolerance can lead to various complications. Non-adherence to fluid intake restrictions is one of the most common problems faced by hemodialysis patients (4).

Patients undergoing hemodialysis face several challenges and require many lifestyle changes to survive. The success of patient treatment depends on dietary therapy, including adherence to diet and fluid intake restrictions. Increased consumption of inappropriate foods and fluids leads to higher production of metabolites in the blood and fluid overload, resulting in complications and even death (5).

The success of hemodialysis depends on patient adherence. Among the hemodialysis patient population, the prevalence of non-adherence to fluid restrictions ranges from 10% to 60%, dietary non-adherence from 2% to 57%, delayed dialysis sessions 19%, and medication non-adherence 9%. Hemodialysis patients experience greater difficulty in managing fluid intake restrictions. Adherence to fluid restrictions is a crucial factor in determining the health and well-being of hemodialysis patients. Fluid restriction is very difficult to maintain and often causes stress and depression, especially for patients taking medications like diuretics that can dry out mucous membranes, leading to thirst and prompting the patient to drink (6).

Other management aspects include adherence to diet and fluid restrictions, hypertension control, and prevention of comorbid diseases and complications. Additionally, adherence to a low-salt diet and fluid restrictions for chronic kidney disease (CKD) patients is crucial for maintaining patient survival as part of the treatment. Factors influencing dietary and fluid intake adherence in hemodialysis patients are assessed based on sociodemographic characteristics (age, education level, occupation, height, weight), disease characteristics (length of hemodialysis, duration of hemodialysis, frequency of hemodialysis, presence of other chronic diseases), family support, and history of food and fluid consumption (7).

The hemodialysis service at RSUD Ibu Fatmawati Soekarno Surakarta is capable of serving 90 patients per day, divided into 3 (three) shifts: morning, afternoon, and evening. The number of hemodialysis patient visits at RSUD Ibu Fatmawati Soekarno in Surakarta City has increased annually, reaching 12,450 visits. Many hemodialysis patients still find it difficult to limit their fluid intake due to frequent feelings of thirst and the desire to drink. Non-adherence among kidney failure patients can lead to fluid overload in the body. These conditions form the background for this study, aimed at analysing the factors influencing adherence to fluid restriction in hemodialysis patients.

METHOD

The type of research used is descriptive analytic with a cross-sectional design. This study is conducted at RSUD Ibu Fatmawati Soekarno Surakarta. The population in this study consists of patients undergoing hemodialysis at RSUD Ibu Fatmawati Soekarno Surakarta, with a sample size of 30 respondents. The sampling technique employed is accidental sampling based on the schedule of patients present during hemodialysis. Data analysis uses Kendall's tau test.

RESULTS

Table 1. Table of Frequency Distribution of Respondent Characteristics

Respondent Characteristics	Category	Total	
		N	%
Age	24 – 35 years	0	0
	36 – 45 years	8	27
	46 – 55 years	9	30
	56 – 65 years	11	37
	> 65 years	2	7
Total		30	100
Gender	Male	11	37
	Female	19	63
Total		30	100

Education Level	Elementary School	1	3
	Junior High School	10	33
	High School	18	60
	University	1	3
Total		30	100
Occupation	Self-Employed	0	0
	Private Employee	4	13
	Housewife	14	47
	Teacher	6	20
	Civil Servant	4	13
	Unemployed	2	7
Total		30	100
Duration of Hemodialysis	< 1 years	3	10
	1 – 2 years	11	37
	≥ 3 years	16	53
Total		30	100
Marital Status	Married	20	67
	Single	4	13
	Divorced	6	20
Total		30	100

Based on Table 1, it can be observed that the majority of respondents are aged 56-65 years, with a total of 11 respondents (37%) in this study. There are 8 respondents (27%) aged 36-45 years, followed by 9 respondents (30%) aged 46-55 years, and 2 respondents (7%) aged over 65 years. In terms of gender distribution, the majority of respondents are female, totaling 19 individuals (63%), while there are 11 male respondents (37%). Regarding education level, the majority of respondents have a high school education, totaling 18 individuals (60%). There is 1 respondent (3%) with an elementary school education, 10 respondents (33%) with a junior high school education, and 1 respondent (3%) with a college education.

The results of the frequency distribution for employment status show that the majority of respondents are housewives, totaling 14 individuals (47%). This is followed by respondents working as teachers, totaling 6 individuals (20%), respondents with private sector jobs totaling 4 individuals (13%), respondents working as civil servants also totaling 4 individuals (13%), and 2 respondents (7%) who are unemployed. For the frequency distribution of the duration of hemodialysis, it was found that the majority of respondents have been on hemodialysis for ≥ 3 years, totaling 16 individuals (53%). This is followed by respondents with 1-2 years of hemodialysis experience, totaling 11 respondents (37%), and respondents with less than 1 year of hemodialysis experience, totaling 3 individuals (10%). Regarding marital status distribution, the majority of respondents are married, totaling 20 individuals (67%), followed by respondents who are divorced, totaling 6 individuals (20%), and respondents who are single, totaling 4 individuals (13%).

Table 2. Respondent Characteristics Based on Adherence to Fluid Restriction

Respondent Characteristics	Category	Total	
		N	%
Adherence to Fluid Restriction	High	7	23
	Moderate	14	47
	Low	9	30
Total		30	100

Based on Table 2, it can be observed that the majority of respondents have a moderate level of fluid adherence, with a total of 14 individuals (47%). There are 9 respondents (30%) with low adherence, and 7 respondents (23%) with high adherence.

Table 3. Bivariate Test Table Kendall's tau test

Variable	Category	Kepatuhan Cairan									
		High		Moderate		Low		Total			
		%		%		%		%	r	P	
Age	24 – 35 years	0,0%		0,0%		0,%		100.0%			
	36 – 45 years	12.5%		62.5%		25.0%		100.0%			
	46 – 55 years	11.1%		66.7%		22.2%		100.0%	0,163	0,332	
	56 – 65 years	11.1%		41.7%		50.0%		100.0%			
	> 65 years	11.1%		100.0%		0.0%	2	100.0%			
	Total (n)	10.0%	7	56.7%	0	33.3%	0	100.0%			
Gender	Male	0 0%		45 .5%		5 4.5%	1	1 00.0%			
	Female	1 5.8%	2	63 .2%		2 1.1%	9	1 00.0%	- 0,371	0 ,038	
	Total (n)	1 0.0%	7	56 .7%	0	3 3.3%	0	1 00.0%			
Education Level	Elementary School	0, 0%		10 0.0%		0, %	1	1 00.0%			
	Junior High School	3 0.0%		50 .0%		2 0.0%	0	1 00.0%			
	High School	0. 0%	1	61 .1%		3 8.9%	8	1 00.0%	0 ,381	0 ,029	
	University	0. 0%		0. 0%		1 00.0%		1 00.0%			
	Total (n)	1 0.0%	7	56 .7%	0	3 3.3%	0	1 00.0%			
Occupation	Self-Employed	0. 0%		0. 0%		0. 0%	0	1 00.0%			
	Private Employee	0. 0%		25 .0%		7 5.0%		1 00.0%			
	Housewife	0 .0%	9	6 4.3%	5	3 5.7%	4	1 00.0%	- 0,380	0 ,021	
	Teacher	3 3.3%	3	5 0.0%	1	1 6.7%		1 00.0%			
	Civil Servant	2 5,0%	2	5 0.0%	1	2 5.0%		1 00.0%			
	Unemployed	0 .0%	2	1 00.0%	0	0. 0%		1 00.0%			
	Total (n)	1 0.0%	1 7	5 6.7%	1 0	3 3.3%	0	1 00.0%			
Duration of Hemodialysis	< 1 years	0 ,0%	0	0. 0%	3	1 00.0%	3	1 00.0%			

	1 – 2 years	0 .0%	6	5 4.5%	5	4 5.5%	1	1 00.0%			
	≥ 3 years	1 8.8%	1	6 8.8%	2	1 2.5%	6	1 00.0%	- 0,535	0 ,002	
	Total (n)	1 0.0%	7	56 .7%	0	3 3.3%	0	1 00.0%			
Marital Status	Married	7. 4%	5	55 .6%	0	3 7.0%	27	1 00.0%			
	Single	0. 0%		0. 0%		0. 0%		1 00.0%			
	Divorced	3 3.3%		66 .7%		0. 0%		1 00.0%	- 0,288	0 ,109	
	Total (n)	1 0.0%	7	56 .7%	0	3 3.3%	0	1 00.0%			

Table 3 shows that most respondents are aged 56-65 years and are known to have moderate fluid adherence. The results of the Kendall's tau analysis indicate a calculated p-value of 0.332. A p-value greater than 0.05 suggests that there is no significant relationship between age and fluid adherence in patients undergoing hemodialysis at RSUD Ibu Fatmawati Soekarno Surakarta. The cross-tabulation results of the relationship between gender and fluid adherence in hemodialysis patients show that most of the respondents are female and have moderate fluid adherence. The Kendall's tau analysis indicates a calculated p-value of 0.038. Since the p-value is below 0.05, it suggests a significant relationship between gender and fluid adherence in patients undergoing hemodialysis.

The cross-tabulation results of the relationship between education level and fluid adherence in hemodialysis patients show that most respondents have a high school education and exhibit moderate fluid adherence. The Kendall's tau analysis indicates a significance value (p) of 0.029. Since the p-value is below 0.05, it suggests a significant relationship between education level and fluid adherence in patients undergoing hemodialysis at RSUD Ibu Fatmawati Soekarno Surakarta. The cross-tabulation results of the relationship between occupation and fluid adherence in hemodialysis patients show that most respondents are housewives and exhibit moderate fluid adherence. The Kendall's tau analysis indicates a significance value (p) of 0.021. Since the p-value is below 0.05, it suggests a significant relationship between occupation and fluid adherence in patients undergoing hemodialysis at RSUD Ibu Fatmawati Soekarno Surakarta.

The cross-tabulation data on the relationship between the duration of hemodialysis and fluid adherence in hemodialysis patients show that the majority of respondents have been on hemodialysis for ≥ 3 years and exhibit moderate fluid adherence. The Kendall's tau analysis indicates a calculated p-value of 0.002. Since the p-value is less than 0.05, this suggests a significant relationship between the duration of hemodialysis and fluid adherence in patients undergoing hemodialysis. The cross-tabulation results of the relationship between marital status and fluid adherence in hemodialysis patients show that the majority of respondents are married and exhibit moderate fluid adherence. The Kendall's tau analysis indicates a calculated p-value of 0.109. Since the p-value is greater than 0.05, it suggests that there is no significant relationship between marital status and fluid adherence in patients undergoing hemodialysis.

DISCUSSION

Age

The older the patient, the higher the dementia scale they score, and the greater their non-adherence to fluid intake restrictions. Based on the age distribution, most respondents fall within the 56-65 age range. This is consistent with the general profile of chronic kidney disease (CKD) patients undergoing hemodialysis in Indonesia. As reported by the IRR in 2021, 89% of CKD patients undergoing hemodialysis were aged 35-70, with the largest age group being 45-54 years, accounting for 27% (8). Age influences a person's comprehension and thought patterns. As age increases, cognitive ability and thought patterns develop, improving the quality of information they receive (9).

Most kidney disease is diagnosed in late adulthood because it typically develops due to unhealthy lifestyle habits over a long period. At this age, respondents have often maintained poor lifestyle choices for an extended time. However, it is not only age that influences the high incidence of respondents undergoing hemodialysis (10).

Most kidney diseases are diagnosed in late adulthood because they typically arise due to poor lifestyle habits over a long period. At this age, respondents have often maintained unhealthy lifestyles for an extended time. However, it is not only age that influences the high number of respondents undergoing hemodialysis (11).

Gender

The analysis shows that the majority of hemodialysis patients are female. Female patients tend to exhibit more fluid non-adherence, particularly younger women. Women have higher fluid needs compared to men. Monthly fluctuations in estrogen and progesterone levels influence women's hydration requirements. Higher fluid needs, combined with lower heat tolerance and quicker fatigue in women, contribute to lower fluid adherence among female patients. This condition is also influenced by higher levels of estrogen in women, which can affect calcium levels in the body by inhibiting the formation of cytokines, a factor that can lead to kidney stones—a key cause of chronic kidney disease (12).

The results of the statistical test indicate that there is a significant relationship between gender and adherence among patients with chronic kidney disease (CKD) undergoing hemodialysis. Problem-solving ability, analytical skills, competitive drive, motivation, sociability, and learning ability are comparable between men and women. Women tend to be better listeners and can quickly grasp the core issues during discussions without focusing solely on themselves. They are generally more responsive and sensitive to others (13).

Education Level

The analysis shows a relationship between education level and fluid adherence. Hemodialysis patients with higher education tend to have better adherence, as higher education is associated with greater knowledge about the diagnosis and its management. The researcher suggests that this relationship is influenced by the ease of access to information today, allowing patients to obtain education from the internet and more educated family members. This aligns with previous studies, which indicate that highly educated patients tend to have better knowledge, enabling them to manage their condition more effectively and plan appropriate strategies for dealing with their illness compared to patients with lower education levels (14).

A good education leads to better or more accurate decision-making in life. Respondents with higher education are more likely to make good decisions, including regularly undergoing hemodialysis therapy and adhering to fluid intake restrictions. This aligns with the research findings, where the majority of respondents complied with fluid intake limitations (9).

Occupation

Hemodialysis patients cannot afford to be fatigued due to their impaired kidney function, which disrupts their daily activities. These patients often rely heavily on their families for both their hemodialysis therapy routine and their daily needs. This dependence is more pronounced among those still working, as their busy schedules often lead them to neglect their health, frequently eating outside, which can worsen their kidney disease. In contrast, patients who spend more time at home, such as housewives, tend to be more adherent because they have more time to focus on their health (15).

Respondents undergoing hemodialysis cannot afford to be fatigued due to their poor kidney condition, which disrupts their daily activities. They rely heavily on their families for support, both in managing their hemodialysis routines and in meeting their daily needs. This study shows that the majority of respondents have stopped working but tend to be more compliant in restricting their fluid intake compared to those who are still employed. This occurs because working respondents often have many commitments that lead them to neglect their health, eat out more frequently, and consequently worsen their kidney disease (10).

Duration of Hemodialysis

The results of the study conducted on 30 patients undergoing hemodialysis at the hemodialysis unit of RSUD Ibu Fatmawati Soekarno Surakarta indicate a relationship between the duration of hemodialysis and compliance with fluid intake restrictions. The study results indicate a significant relationship between the duration of hemodialysis and fluid adherence. Most respondents have been undergoing hemodialysis for 3 years or more. The longer patients undergo hemodialysis therapy, the more compliant they become with fluid intake restrictions

The longer patients undergo hemodialysis therapy, the more knowledge they acquire, which influences their compliance with fluid intake restrictions, allowing them to manage their fluid intake correctly. Compliance with fluid intake is a significant issue among hemodialysis patients (23). The longer an individual undergoes hemodialysis therapy, the more opportunities they have to adapt to the treatment program. Chronic kidney disease patients must undergo dialysis therapy throughout their lives, typically two to three times a week for a total of 9 to 12 hours (16).

The length of illness can influence a patient's adherence. Chronic diseases often come with adherence challenges. Long-term illness, lifestyle changes, and frequent complications impact the patient's physical, emotional, psychological, and social well-being. The longer a patient undergoes hemodialysis, the more adherent they tend to become, as they experience the benefits of the treatment. Patients often report that in the days leading up to their hemodialysis sessions, they experience symptoms such as shortness of breath, headaches, leg swelling, and weight gain, prompting them to seek treatment promptly. Moreover, over time, patients tend to reach a stage of acceptance, recognizing that hemodialysis has become an essential part of their lives (17).

Marital Status

Chronic kidney disease is a long-term or lifelong condition that requires patients to adhere to various treatment programs, including fluid restriction, which demands a strong commitment. Younger patients often take longer to accept their condition, leading to potential non-adherence (22). Other studies have indicated that younger age and being unmarried are predictors of challenges in fluid restriction adherence. Middle-aged and younger patients may have other priorities in life, such as work and social commitments, which can complicate their adherence. Patients who are single or divorced are more likely to struggle with fluid restriction due to a lack of social support and reminders to motivate compliance (16).

Support from a partner is crucial for kidney failure patients, as both in health and illness, they require a good support system. Kidney disease can also cause stress for patients due to changes in body shape and physical appearance (21). These issues can be mitigated with strong support from their partner. Respondents who are married tend to receive better support from their extended family, spouse, and children, which can enhance their optimism, self-confidence, and motivation to improve their quality of life, as well as their enthusiasm to undergo treatment (18).

Family is the closest and inseparable part of a patient, providing joy and tranquility through care and support, which enhances the patient's confidence in facing and managing their illness, including following family advice in efforts to maintain the patient's health (19). Patients have someone they can talk to about their problems, facilitated by the expression of positive hope from their family to the patient (20).

CONCLUSION

The majority of respondents are aged 56–65 years (37%), with 19 respondents (63%) being female, 18 respondents (60%) having a high school education, 14 respondents (47%) being housewives, 16 respondents (53%) having undergone hemodialysis for ≥ 3 years, and 20 respondents (67%) being married. The majority of respondents exhibit moderate fluid adherence behaviour, with 14 individuals (47%) in this category. There is no significant relationship between age and fluid intake adherence among hemodialysis patients. There is no significant relationship between marital status and fluid adherence. There is a relationship between gender and fluid adherence among hemodialysis patients. There is a relationship between education level and fluid adherence among hemodialysis patients. There is a relationship between occupation and fluid adherence in hemodialysis patients. There is a relationship between the duration of hemodialysis and fluid adherence in hemodialysis patients.

SUGGESTION

To control fluid intake in HD patients, it is advisable to involve the family to provide support for the patient, thereby encouraging adherence to the ongoing therapy.

Future researchers can develop similar studies by adding other variables that may be related to adherence to fluid intake restrictions, using a larger sample size to better represent the research outcomes.

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