ORIGINAL RESEARCH

FACTORS RELATED TO COMPLIANCE WITH FLUID RESTRICTION IN HEMODIALYSIS PATIENTS

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ABSTRACT	Keywords
This study investigates compliance with fluid restriction in chronic kidney disease patients undergoing hemodialysis, focusing on factors like knowledge, motivation, and social support. This research is a quantitative correlational analytic study using a cross-sectional study design. Sampling used the convenience sampling method on a total of 146 respondents at the Tk II Dustira Hospital. Data were collected using a fluid restriction compliance questionnaire, a knowledge questionnaire, a Treatment Motivation Questionnaire (TMQ) motivation questionnaire and a Multidimensional Scale of Perceived Social (MSPSS) questionnaire. Data analysis using spearmen and linear regression. The results of the research using the spearmen test showed that there was a significant effect between knowledge, motivation and social support on fluid restriction compliance. Knowledge ($p = 0.001$, $r = 0.274$), motivation ($p = 0.008$, $r = 0.218$) and social support ($p = 0.005$, $r = 0.231$). The most dominant factor influencing compliance with fluid restriction using logistic regression test is the social support factor value of 0.006. This study can be concluded that knowledge, motivation and social support have a relationship with fluid restriction compliance and the most influential factor is social support with a p-value of 0.006 and a B-value of 1.016.	**Fluid restriction compliance, Hemodialysis patients**

INTRODUCTION

Chronic disease is a kidney disorder with impaired GFR function below 60ml/minute/173m² with or without kidney damage (Sumadi et al., 2018) Chronic disease (CKD) is a steady and permanent decline in kidney function that causes the kidneys to be unable to remove waste products and maintain fluid and electrolyte balance, causing people with chronic disease to have excessive amounts of fluid in their bodies (Fidayanti et al., 2018). End-stage chronic disease requires continuous renal therapy which is a global health problem(Bonomini et al., 2022). Hemodialysis, peritoneal dialysis, and kidney transplantation are all methods used to treat individuals with

chronic diseases. Hemodialysis is the most common treatment for patients with chronic diseases that must be done to live (Mubarak, 2021)

Chronic disease is a degenerative illness that affects over 10% of the global population, or over 800 million individuals. Chronic disease is more prevalent among the elderly, women, people of color, and those with diabetes and hypertension. Chronic diseases have become one of the primary causes of death in the world, and are one of the few non-communicable diseases whose mortality rates have increased over the past decade (Kovesdy, 2022). The prevalence of chronic kidney disease in Indonesia based on data (Kementerian Kesehatan RI, 2018) shows that with prevalence in Indonesia, the prevalence of chronic chronic disease based on a doctor's diagnosis in the population over the age of 15 years is high, namely 0.38% or around 713,783 people.

Hemodialysis (HD) is the most prevalent form of renal replacement therapy worldwide, accounting for approximately 69% of all renal replacement therapy and 88% of all dialysis. According to a 2018 cross-sectional survey of policymakers and patient representatives in 182 countries, country-specific HD usage averages 298.4 per million population but varies by a factor of over 7,000 between nations (Bello et al., 2022). In Indonesia, according to data from the Indonesian Renal Registry, 2018, which is a country with quite high active hemodialysis patients, while in 2017 there were also 77,892 active people undergoing hemodialysis, which increased to 132,142 people in 2018. The number of patients who had just undergone hemodialysis also experienced an increase in 2017 of 30,831 people to 66,433 people in 2018. Meanwhile, according to data from the Indonesian Renal Registry, the prevalence of CKD undergoing hemodialysis ranks first, namely in West Java, in 2017 there were 21,051 people actively undergoing hemodialysis, which increased to 33,828 people in 2018. The number of patients who had just undergone hemodialysis also increased in 2017 as many as 14,771 people to 33,828 people in 2018. At the Bandung Hospital, patients with chronic disease stage 5 who underwent HD therapy in 2018 were around 129 people (0 ,0003%) . Of the 129 people who underwent HD therapy at the Badung Hospital, more men with a total of

84 people (65.1%.) while 45 women (34.9%) patients (Mahesvara et al., 2020).

Hemodialysis is a partial replacement of kidney function by removing materials from the body such as air and uremic toxins. In contrast to the normal way the kidneys work continuously, hemodialysis is only done at certain times. As a result, the discharge process takes a shorter time and Hemodialysis is often performed twice a week for 4½ to 5½ hours per session, or three times a week for 4 to 4½ hours per session (Widiana et al., 2020).

According to research that has been done (Wahyuni et al., 2019) there are 89% of hemodialysis patients with excessive fluid intake experiencing moderate to severe weight gain. Too much fluid intake will cause weight gain because kidney function in kidney failure patients can no longer function optimally with elimination. Weight gain due to fluid overload confer a poor prognosis in hemodialysis patients may affect the life expectancy of hemodialysis patients. Adherence to fluid intake restriction is an important aspect in determining the health and well-being of hemodialysis patients (Ozen et al., 2019).

The results of research conducted by Wulan & Emaliyawati (2018) on 92 respondents with the results of their research showing that compliance with fluid intake restrictions in CKD patients undergoing routine hemodialysis therapy is more patients who do not comply with fluid intake restrictions undergoing routine hemodialysis therapy, which is around 58 people. (62.4%) while the patients who were obedient were 35 people (37.6%). Previous research has also been carried out by researchers (Fitriana & Herlina, 2019)with 38 respondents who also showed compliance with fluid restriction more than 22 people (57.9%) who did not comply, compared to 16 patients (42 people). ,1%.

According to the findings of previous studies, there are a number of factors that can influence hemodialysis patients' compliance with fluid limits. Previous research has also been conducted by (Ningrum, Drajat, & Imardiani, 2020) factors related to fluid restriction compliance, namely knowledge, with the results of the chi square test analysis obtained, namely p value 0.005 (p 0.05), indicating that knowledge has a significant relationship with fluid restriction compliance. From the results of research that has been done previously by (Nadi et al., 2018) it shows that

social support and motivation are related to compliance with fluid restrictions, for social support, the value of p = 0.000 (α <0.05) and shows the value of r = 0.788. and motivation obtained p value = 0.000 (α <0.05) and shows the value of r = 0.778. This research has also been carried out by (Delvia & Irawati, 2019) which shows a significant relationship between social support and compliance with fluid restrictions, namely the statistical test results obtained by P value = 0.005 means (P value 0.005 < 0.05). Research conducted by (Ernawati et al., 2019) also showed that there was a significant relationship between motivation and adherence to fluid restriction, with the Chi-square test results having obtained a p value of 0.000. statistical test analysis with Chi-square p-value 0.000 <0.05 so it can be seen that H0 is statistically rejected, which means there is a significant relationship between motivation and compliance with fluid restrictions in hemodialysis patients.

According to the findings of previous studies, there are still many hemodialysis patients who do not comply with fluid restriction, and the factors obtained from the findings of previous studies that affect fluid restriction can increase compliance in hemodialysis patients in fluid restriction, so researchers are interested in further identifying the findings of previous studies. to discover the major characteristics or predictors that have the greatest influence on hemodialysis patients' adherence to fluid restriction.

METHODS

This study is a quantitative correlational cross-sectional analytic investigation. At the Tk II Dustira Hospital, 146 individuals were sampled using the convenience sampling procedure. A fluid restriction compliance survey, a knowledge survey, a Treatment Motivation Questionnaire (TMQ) motivation survey, and a Multidimensional Scale of Perceived Social (MSPSS) survey were used to collect data. Utilizing spearmen and logistic regression for data analysis.

RESULTS

Tabel 1. Frequency Distribution by Age

Variabel	Mean	SD	Min	Max
Usia	48.95	8.615	21	70

Tabel 2. Frequency Distribution by gender, education

Variabel	Frekuensi	Presentase (%)
Jenis Kelamin		
Laki-laki	76	52,1%
Perempuan	70	47,9%
Pendidikan		
SD	31	21,2%
SMP	50	34,2%
SMA	55	37,7%
PT	10	6,8%

Tabel 3. Descriptive analysis of fluid restriction compliance, knowledge, motivation and social support

Variabel	Median±SD	Frekuensi	Persentase
Total skor Kepatuhan Pembatasan Cairan	27.00±6.105	75	51,4%
Patuh		71	48,6%

Tidak Patuh

Total skor Pengetahuan			
Baik	18.00±4.208	86	58,9%
Kurang Baik		60	41,1%
Total skor Motivasi			
Tinggi	120.00±10.011	82	56,2%
Rendah		64	43,8%
Total Skor Dukungan Sosial			
Tinggi		79	54,1%
Sedang	72.00±23.430	67	45,9%

Tabel 4. Effect of Knowledge, Motivation, and Social Support on Fluid Restriction Compliance in Hemodialysis Patients

Variabel	Kepatuhan Pembatasan Cairan			
	Median	**SD**	**R**	**p-value**
Kepatuhan Pembatasan Cairan	27.00	6.105	1	
Pengetahuan	18.00	4.208	0.274	0.001
Motivasi	120.00	10.011	0.218	0.008
Dukungan Sosial	72.00	23.430	0.231	0.005

Tabel 5. Effect of Knowledge, Motivation, and Social Support on Fluid Restriction Compliance in Hemodialysis Patients

	B	**SE**	**p-value**	**Exp(B)**
Pengetahuan	0.970	0.368	0.008	2.638
Motivasi	0.878	0.370	0.018	2.406
Dukungan Sosial	1.016	0.366	0.006	2.762

The description of the respondents' characteristics shows that the average age is 48.95 (SD=8.615; range21-70). Gender is more in males (52.1%). More education at the high school level (37%). The description of knowledge has good knowledge with a median value of 18.00 (SD = 6.105). High motivation with a median value of 120.00 (SD=10.011). and high social support with a median value of 72.00 (SD=23,430). The relationship between knowledge, motivation and social support with fluid restriction compliance showed a correlation coefficient of 0.274 with a significant level of 0.001 (p <0.05). Motivation shows a correlation coefficient value of 0.218 with a significant level of 0.008 (p<0.05). And social support showed a correlation coefficient value of 0.231 with a significant level of 0.005 (p <0.05). Factors related to compliance with fluid restriction showed the most influential factor, namely social support with a B value of 1.016 and a p-value of 0.006 (p<0.05).

DISCUSSION

Age is a factor that can describe a person's condition that can affect his health status, the older a person is, the body system will also experience a decrease in function (Delvia & Irawati, 2019). Age is one of the risk factors for CKD, the older a person is, the greater the risk of developing CKD. Old age can also increase the morbidity and mortality of CKD patients (Mallappallil et al., 2014). This study also shows the age of hemodialysis patients. were at an average age of 48.95. This study is in line with the annual report from the Indonesia Renal Registry (2019) which shows that the highest proportion of hemodialysis patients is in the 45-64 year age category. This study

is also supported by previous research conducted by (Arianti1 et al., 2020)patients undergoing hemodialysis with the highest range in the age of 46-65 years. Based on the explanation of the research results, theoretical reviews, and previous research, the researcher assumes that as a person gets older, his kidney function will decrease.

According to Gigante et al. (2017), men are more likely to develop chronic kidney disease due to the influence of the hormone estrogen, a faster decline in glomerular filtration rate than women, unhealthy lifestyles such as smoking and alcohol consumption, and differences in systolic blood pressure, with women having lower systolic blood pressure than men. The majority of respondents in this survey (52.1%) were male. Data from the (Indonesian & Registry, 2017) showed the same results that in Indonesia 56% of HD patients were male. According to research (Fazriansyah et al., 2018) in hemodialysis patients there are more men (66.7%). This study is supported (Wijayanti et al., 2017) which shows that there are 65.78% more male respondents in hemodialysis patients. Researchers assume that the comparison between men and women can be seen from the quality of daily life that men are more at risk of CKD because of an unhealthy quality of life.

Experience and non-formal education, such as reading and counseling, can help to form knowledge. The lower a person's health knowledge, the lower their practice of healthy living behavior (Notoatmodjo, 2010). In this study, it shows that more respondents have good knowledge with a median value of 18.00. The results of this study are also in line with research from (Widiany, 2017) whose research results show that there are more respondents with good knowledge (70%). The results of this study are also supported by researchers (Ningrum et al., 2020) with research results that have good knowledge of hemodialysis patients. Based on these findings, the researcher assumes that a person's good knowledge can also affect compliance with fluid restrictions, where the better a person's knowledge, the more effective compliance will be.

According to (Koontz, 2001) motivation begins with a need, followed by a desire to meet it (reach the goal), resulting in psychological tension that directs behavior toward the objective (satisfaction). Motivation is a state of mind that inspires, activates, or moves a person and directs or channels action toward goals. According to the findings of this study, the motivation of hemodialysis patients was high, with a median value of 120.00. The findings of this study are consistent with those of earlier researchers (Nadi et al., 2018), who discovered that hemodialysis patients are highly motivated (74%). Based on these data, the authors hypothesize that the stronger the motivation, the greater the desire to attain goals in a person's quality of life, and the higher a person's motivation, the more obedient in fluid limits to avoid issues that may emerge.

(Kammerer, J., Garry, G., Hartigan, M., Carter B. & Erlich, 2007) According to Kammerer's research, the presence of social support in the form of emotional support from other family members, friends, time, and money is a key element in adherence to medical regimens. It will boost a person's compliance with fluid limitations with the support of the nearest person. Hemodialysis patients exhibited a high level of social support in this study, with a median score of 72.00. The results of this study are in line with research (Nadi et al., 2018) which shows that hemodialysis patients have more high social support (74%). Based on these findings, the researcher assumes that high social support can help a person to improve his or her quality of life by following one's recommendations for compliance in limiting fluid intake which can be controlled by the closest person.

According to (Siregar, 2020) Compliance with fluid restrictions is an acceptance of patients to comply with nursing actions to maintain fluid and electrolyte balance in the body or to calculate fluid intake and output. Fluid restriction is also done to prevent complications from too much fluid. According to the study's findings, more respondents were obedient, with a median value of 27.00. This study is also in line with

research conducted by (Ningrum et al., 2020) hemodialysis patients who have more adherence to fluid restriction (53.8%). Research (Nurohkim et al., 2018) also shows that patients are the most obedient to fluid restriction. The results of this study are supported by previous researchers (Novitasari, 2015) showing more patients who adhere to fluid compliance. Adherence means that the patient must take the time to undergo the necessary treatment such as in diet and fluid management to improve the quality of life. Based on these findings, the researcher assumes that the more obedient the patient is, the better the quality of a person's life by following the directions of health workers to avoid complications that will arise.

According to (Notoatmodjo, 2003) a person's actions (behavior) are formed from behavior based on knowledge, behavior based on knowledge will affect better actions. The more knowledgeable a person is on fluid restriction compliance, the more willing they are to reduce their fluid intake. According to the findings of knowledge research, there is a correlation coefficient value of 0.274 with a significant level of 0.001 (p 0.05) indicating a substantial association. This study is consistent with previous research (Ningrum et al., 2020), with the chi square test analysis yielding a p value of 0.005 (p 0.05). This research was conducted (Zahroh & Giyartini, 2018) the significance threshold of p value = 0.032 was determined by statistical testing utilizing the Spearmen's rho test results.. Based on the reasoning provided above, researchers assume that there is a relationship between understanding and patient compliance with fluid restrictions in CKD patients. Knowledge is one thing that can enhance patient compliance.

Motivation and expectations are one of the factors that can improve patient compliance. Motivation is something that encourages or encourages someone to act to achieve certain goals (Saam dan Wahyuni, 2012) Good behavior is supported by high motivation without motivation, people will not be able to do anything, motivation is a driving force with human motivation to carry out activities faster, this is important

and is felt as a necessity. Based on the results of the study, it shows that there is a correlation coefficient of 0.218 with a significant level of 0.008 (p <0.05) which shows a significant relationship. This study is in line with research conducted (Nadi et al., 2018) where p value = 0.000 (α <0.05) and shows r = 0.778. The results of this study are also supported by researchers (Ernawati et al., 2019) with the results of the Chi-square test having obtained a p value of 0.000 (p <0.05). The results of the study on the relationship between the two variables, it was found that the higher the patient's motivation, the more obedient the patient to fluid restrictions. This statement is in line with research (Kammerer et al., 2007) which proves that strong motivation has a strong relationship with compliance. Researchers assume that there is a relationship between motivation and patient compliance with fluid restriction in CKD patients based on the explanation given above. One of the factors that can improve patient compliance is motivation.

Family social support is one of the most important factors in the quality of life of chronic kidney failure patients undergoing hemodialysis because it allows the family to function with different intelligences and senses, which improves their health and adaptation in life. More precisely, effective social support has been linked to lower mortality, better recovery from sickness, cognitive function, physical, and emotional health (Setiadi, 2013) According to the study's findings, social support had a correlation coefficient value of 0.231 with a significant level of 0.005 (p 0.05), indicating a substantial association. This finding is consistent with research, where p = 0.000 (0.05) and r = 0.778 (Nadi et al., 2018).
(Delvia & Irawati, 2019) This finding is also corroborated by researchers who achieved statistical test results with a P value of 0.005. Noted that social support influences the quality of life of hemodialysis patients because it can give an ideal quality of life by involving the efforts of all family members as active partners when the patient is receiving hemodialysis. Based on the reasoning provided above, researchers

assume that there is a relationship between social support and patient compliance with fluid limits in CKD patients. Social support is one factor that can increase patient compliance. (Black, J. M., & Hawks, 2014) From the bivariate discussion, which are all related, after being tested together from multivariate analysis using linear regression analysis, it can be proven that knowledge, motivation and family support are related to fluid restriction compliance with the most dominant factors being social support (0.006), knowledge (0.008), and motivation (0.018). The results of the study that greatly influenced the adherence to fluid restrictions were social support with a p value of 0.006 (p <0.05). The closeness of the patient to the people around him can lead to an emotional bond between the two. Adequate social support comes from family, friends, and someone special. Emotional bonds can be felt by patients as social support and become an influence for patients that can affect compliance in fluid intake restrictions. The higher the social support received by chronic kidney disease patients undergoing hemodialysis, the more obedient the patient will be in limiting fluid intake (Nadi et al., 2018). Supported by research conducted by (Delvia & Irawati, 2019) which showed a significant relationship between social support and compliance with fluid restrictions, namely the statistical test results obtained P value = 0.005 means (P value 0.005 < 0.05). Based on these results, researchers assume that social support is very influential on compliance because having people closest to them who care about the patient's health is more controlled in fluid restrictions which can improve quality of life and avoid complications if they do not comply with fluid restrictions.

CONCLUSION

This study concludes that knowledge, motivation, and social support are significantly associated with fluid restriction compliance among participants. Among these factors, social support emerged as the most influential determinant, with a p-value of 0.006 and a B-value of 1.016. These findings highlight the critical role of interpersonal and community connections in promoting adherence to fluid restriction guidelines, suggesting that strengthening social support networks may be an effective strategy for improving compliance.

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