JKP
JURNAL KEPERAWATAN PROFESIONAL (JKP)
Vol. 13 No. 2 (2025)
p-ISSN: 2355-679X; e-ISSN: 2685-1830

The Relationship of Family Support to Fluid Restriction Compliance in Renal Failure Patients

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Kata Kunci: Dukungan keluarga, hemodialisis, kepatuhan pembatasan cairan

Keywords: Family support, hemodialysis, fluid restriction compliance

Info article

Date posted: 22 Juni 2025

Revised date: 17 Juli 2025

Date received: 05 Agustus 2025

DOI Article:

Page : 349-362

Gagal ginjal merup akan pernyakit kronis yang memerlukan penaganan jangka panjang, termasuk pembatasan asupan cairan. Kepatuhan pasien terhadap pembatasan cairan sangat penting untuk mencegah komplikasi, namun sering kali sulit dicapai tanpa dukungan keluarga. Penelitian ini bertujuan untuk mengetahui hubungan antara dukungan keluarga dan kepatuhan pembatasan cairan pada pasien gagal ginjal yang menjalani hemodialisis. Metode yang digunkan adalah kuantitatif dengan pendekatan korelasional dan teknik sample purposive sampling. Sampel terdiri dari 132 pasien dengan kuesioner yang digunakan yaitu dukungan keluarga dan Interdialytic Weight Gain untuk menilai kepatuhan. Analisis data menggunakan uji Spearman's rho. Hasil penelitian menunjukkan tidak terdapat hubungan signifikan antara dukungan keluarga dan kepatuhan pembatasan cairan (p = 0,217; r = 0,108). Dukungan keluarga mayoritas berada dalam kategori baik, sedangkan kepatuhan pembatasan cairan berada dalam kategori sedang. Penelitian selanjutnya disarankan untuk menggunakan metode kualitatif dan sampel yang lebih besar untuk memahami lebih dalam mengenai dukungan keluarga dan hubungannya dengan kepatuhan pasien hemodialisis.

The Relationship of Family Support to Fluid Restriction Compliance in Renal Failure Patients

Renal failure is a chronic disease that requires long-term management, including fluid intake restrictions. Patient compliance with fluid restrictions is crucial to prevent complications, but it is often difficult to achieve without family support. This study aims to investigate the relationship between family support and compliance with fluid restrictions among kidney failure patients undergoing hemodialysis at private hospital in Indonesia. The method used was quantitative with a correlational approach and simple purposive sampling technique. The sample consisted of 132 patients with questionnaires used, namely family support and Interdialytic Weight Gain to assess adherence. Data analysis used Spearman's rho test. The results showed no significant relationship between family support and fluid restriction compliance (p = 0.217; r = 0.108). Family support was predominantly in the good category, while fluid restriction compliance was in the moderate category. Further research is recommended using qualitative methods and a larger sample size to gain a deeper understanding of the form of family support and its relationship with patient compliance in undergoing hemodialysis.

Introduction

Kidney failure is a chronic disorder characterized by damage to the structure and function of the kidneys, lasting more than three months. Kidney function is essential in regulating fluids, electrolytes, blood pressure, and the production of the hormone erythropoietin . When kidney damage occurs progressively and irreversibly, then this condition is categorized as chronic kidney failure. Chronic kidney failure has a major impact on the patient's quality of life because it requires long-term therapy, such as hemodialysis and fluid restriction. One of the main challenges in the management of this disease is the patient's non-compliance with daily fluid restrictions. Chronic kidney disease caused 254,028 deaths in 2020 and is predicted to increase by 41.5% by 2040 (Yonathan & Darmawan, 2021) (Ogobuiro & Tuma, 2023) (Vaidya & Aeddula, 2024) (WHO, 2021). In Indonesia, the number of hemodialysis patients has almost doubled from 2016 to 2018, reaching 132,142 active patients Indonesia Renal Registry, 2019. The provinces of East Java, West Java, and Central Java are recorded to have the highest cases of kidney failure, with more than 700,000 cases in 2019. Hemodialysis is the primary therapy for patients with end-stage renal failure, which is performed two to three times a week for four to five hours per session. This therapy requires the patient to limit fluids to prevent complications such as edema, hypertension, and heart failure. However, compliance with fluid restrictions is still a major challenge in clinical practice. Patients with oliguria are at high risk of fluid overload which can worsen the clinical condition. (Riskesdas, 2019) (Adha et al., 2020) (Dewi, 2022)

Hemodialysis is a long-lasting treatment process that often makes patients lose motivation, which then has an impact on non-compliance with recommended dietary rules (Nurchayati et al., 2024) . One of the main challenges in hemodialysis patients is non-compliance in fluid restriction as well as affecting overall health conditions (Fitriana et al., 2019) . Uncontrolled fluid and nutrient deficiencies can increase the risk of malnutrition, while if left untreated, this condition can lead to death. Based on Widiany's research, the average intake of energy, protein, and sodium in hemodialysis patients is not enough to meet the needs, while the fluid consumption exceeds the recommended limit. In addition, the patient's weight gain often exceeds the ideal limit of interdialysis by 1.5 kg, thus indicating that the success of the application of the diet in patients with kidney failure is still low From

the existing studies, most of the studies looked at adherence from the dietary aspect in general, this indicates that there is still limited research that specifically focuses on the aspect of fluid restriction in patients with kidney failure in Indonesia. (Scott, 2017). In a study conducted in the hemodialysis room of the North Jakarta Regional Hospital, it showed a significant relationship between family support and patient dietary adherence. The greater the support provided by the family, the higher the patient's level of compliance in carrying out his diet (Naryati & Nugrahandari, 2021) . Forms of family support include physical (instrumental) assistance, emotional support, providing information, and assessment or appreciation of the patient's efforts. Parties who provide support to patients undergoing fluid restriction greatly influence patients in complying with fluid restrictions. Good family support can motivate, provide a sense of security, maintain health, and manage the right food and drinks to patients. Even so, the distance of the family's residence is an obstacle for families to control, deliver and plant patients to undergo hemodialysis therapy. Previous studies have extensively described the relationship between family support and patient adherence to their diet, but no studies have clearly explained how family support is directly related to fluid restriction adherence specifically in patients. Therefore, researchers are interested in examining the relationship between family support and fluid restriction compliance in patients with kidney failure in Indonesia. (Gulo et al., 2023) (Mukaromudin et al., 2024)

Method

This study uses a cross-sectional design. Cross-sectional design is used to identify associations between variables, but cannot be used to infer cause-and-effect relationships (Wang & Cheng, 2020) . The population of this study is all chronic kidney failure patients undergoing hemodialysis at one of the private hospitals in Indonesia, with a total of 172 patients. Based on the Slovin formula with an error limit of 0.05, a sample of 132 respondents was obtained. The sampling technique used is purposive sampling, which is a technique based on inclusion and exclusion criteria determined by the researcher. Inclusion criteria include patients with composing awareness, stable blood pressure and vital signs, and having a nuclear family. Family support uses (Firmansyah & Dede, 2022) *the Perceived Social Support from Family* (PSS-Fa) tool which has been adapted into Indonesian by Barriyah

Nurul in her thesis. PSS-Fa consists of four dimensions, namely informational, assessment, instrumental, and emotional support as many as 11 items. The results of the validity test that had been carried out by the previous researcher were 0.460-0.923 and the results of the reliability test obtained a family support value of 0.788 which indicated that the measuring instrument was reliable. Compliance with fluid restrictions using (Barriyah, 2018) *the Interdialytic Weight Gain* (IDWG) observation sheet. IDWG is a patient's weight gain between hemodialysis sessions. From these results, it can be evaluated regarding the adherence of kidney failure patients in limiting fluid intake. IDWG is calculated by weighing the patient's body weight before and after hemodialysis and then calculating the difference in body weight before and after hemodialysis using the IDWG formula. Data analysis was carried out in two stages, namely univariate and bivariate analysis. Based on the results of the normality test, the data is not distributed normally, so the statistical test used is Spearman's rho. (Handayani et al., 2024)

Research Results

Table 1. Frequency Distribution Based on Respondent Characteristics

Variabel	Category	N	%
Gender	Man	64	48.5
	Woman	68	51.5
	Total	132	100
Age (years)	17–25 (late teens)	1	0.8
	26–45 (adults)	25	18.9
	46–65 (lansia)	106	80.3
	Total	132	100
Education	No school	6	4.5
	Primary school	20	15.2
	Junior high school	19	14.4
	High school	59	44.4
	Higher education	28	21.0
	Total	132	100
Work	Work	56	42.4
	Not working	76	57.6
	Total	132	100
1 month income	No income	32	24.4
	< 5 million	85	64.4
	> 5 million	15	11.4

Total	132	100

Based on figure 1 above, it is known that the most respondent characteristics in the gender study were 68 women (51.5%), the most age was in the range of 46–65 years (elderly) 106 people (80.3%), the last level of education was 59 people (44.4%), the most jobs were not working 76 people (57.6%) and the income of the respondents with the most income was those who earned the most <5 million rupiah per month 85 people (64.4%).

Table 2. Category of Family Support of Respondents

Variabel	Category	N	%
Family support	Low = score <35	39	29.5
	Enough = score 35-47	15	11.4
	Good = score >37	78	59.1
	Total	132	100

Based on figure 2 above, it can be seen that family support for kidney failure patients in one of the private hospitals in Indonesia is the most in the good category, namely 78 respondents (59.1%).

Table 3. Fluid Restriction Compliance Measured Using *Interdialytic Weight*

Variabel	Category	N	%
Compliance with fluid restrictions	Light = score <4%	39	29.5
	Medium = score 4-6%	52	39.4
	Weight = score >6%	41	31.1
	Total	132	100

Based on figure 4 above, it can be seen that the compliance with fluid restriction in patients with kidney failure is in the moderate category, namely 4-6% of 52 respondents (39.4%).

Table 5. The Relationship of Family Support to Fluid Restriction Compliance Using Interdialytic Weight Gain

Family Support	**Liquid Restriction Compliance**						**Total**		***Spearman'rho***	
	Light		Keep		Heavy				*Correlation coefficient*	*Sig. (2-Tailed)*
	N	%	N	%	N	%	N	%		
Low	13	33.3	16	30.8	10	24.4	39	29.5	0.108	0.217
Enough	3	7.7	11	21.2	1	2.4	15	11.4		
Good	23	59	25	48.1	30	73.2	78	59.1		

Based on figure 5 above, it can be seen that the results of the analysis of the spearman's rho test obtained a correlation coefficient value of r = 0.108 with a significance value of p = 0.217 (p > 0.05).

Discussion

The results of the characteristics of the respondents in this study were obtained by the most female respondents as many as 68 people (51.5%). Women have a higher risk of developing kidney disorders due to the influence of hormones, particularly estrogen, which plays a role in the formation of kidney stones as one of the causes of chronic kidney failure. Based on age, the most respondents aged 46-65 years old were 106 people (80.3%). Old age is an important risk factor in degenerative diseases, including kidney failure, due to the progressive decline in organ function, including kidney function. In addition, changes in the elasticity of blood vessels and a decrease in the number of nephrons with age also increase the risk of kidney failure (Herlina & Dea Rosaline, 2021) (Maria Goes et al., 2019) (Toyama et al., 2020) . Based on education, the most respondents were found in high school or school to vocational school as many as 59 people (44.7%). Education affects the ability to understand health information, including the importance of fluid restriction. Patients with low education tend to have lower awareness of early detection of diseases (Syahriza et al., 2025; Komariyah et al., 2024; Wua Tessa et al., 2019). In contrast, patients with high knowledge tend to have better awareness in recognizing early symptoms and conducting regular health check-ups, thus allowing for early detection and treatment of the disease (Mailani, 2023) .

Based on work, the most respondents were not working as many as 76 people (57.6%). This is in line with the findings. which reported that 46.57% of hemodialysis patients also did not work. This condition is often caused by physical disorders due to chronic kidney failure that decreases the ability to be active (Lea, 2022) (Susilawati et al., 2018) , plus fatigue, dependence, and time limitations due to routine hemodialysis therapy. As a result, many patients choose to quit their jobs or be laid off because they are unable to meet the demands of the job. In terms of income, the respondents with the most income were those with an income of <5 million rupiah per month, 85 people (64.4%). This result is in line with the findings of Prasetyo's research that most of the respondents earned less than IDR 5 million, namely 85 people (64.4%). (Saraswati & Lestari, 2024) (Azira et al., 2023) (Prasetyo et al., 2018) Respondents with incomes below IDR 5 million have an impact on the limited fulfillment of basic needs and compliance with fluid restrictions, as well as increasing the risk of complications (Andu et al., 2024; Yanti et al., 2022)

Family Support

The results of the study showed that the family support received by respondents was categorized into three levels, namely low, adequate and good. Based on family support, the most respondents (59.1%) were included in the category of good family support. These results show that most patients feel good support from their families during hemodialysis therapy. These results are in line with the research and show that the most respondents received good family support as many as 70.7% of respondents and 72.6% of respondents. (Kusniawati, 2018) (Sulistianingrum et al., 2023)

Family support is an important part of helping a family member who is sick, emotionally, socially, and physically. This support can be in the form of attention, affection, real assistance such as accompanying to the hospital, providing information about the disease, to encouraging patients to remain strong undergoing treatment. Friedman divides family support into four types, namely emotional support such as care and love, informational support in the form of helpful advice or information, instrumental support in the form of real help such as food or money, and reward support such as praise or encouragement (Friedman, 2013) .

Based on Friedman's (2013) theory, family support consists of four types, namely emotional, informational, instrumental, and appreciative. In this study, the most widely felt type of support in the good category was emotional support, which was experienced by 90 respondents (68.2%). Meanwhile, as many as 44 respondents (33.3%) felt informational support in the good category, which shows that families also provide useful information, advice, or direction in helping patients undergo treatment. A total of 70 respondents (53%) felt instrumental support in the good category, which included direct assistance such as accompanying them to the hospital or providing financial assistance. Meanwhile, as many as 35 respondents (26.5%) felt the support of the award in the good category, which included support in the form of motivation, praise, and strengthening of enthusiasm for patients.

According to research, 84.3% of respondents felt that they received family support, this confirms that all forms of support can increase the self-esteem and motivation of patients to undergo therapy. Good family support indicates the family's ability to recognize and deal with health problems of its family members, especially patients with kidney failure. stated that as many as 91% of respondents received good family support, which had an impact on the emotional state of patients who felt calmer and cared for. The existence of good family

support can increase the patient's confidence in undergoing treatment and maintain the spirit of life. The form of support provided by the family can be in the form of instrumental support such as cost assistance, food, and arrangement of therapy schedules. In addition, informational support such as giving advice or explanations about the disease also helps patients understand their condition. Emotional support such as providing a sense of security, love, and attention and reward or evaluative support also play an important role, for example by providing reinforcement for the patient's efforts in undergoing therapy. (Syahputra et al., 2022) (Arisandy & Carolina, 2023)

The most common form of support is assessment support, such as motivation to keep surrendering and praying. Many families are also present in person during the hemodialysis process, which indicates high emotional involvement. The presence of family, both physically and morally, is a source of strength for patients. This support gives encouragement and a sense of appreciation, so that patients do not feel alone in dealing with their illness. Therefore, it can be concluded that family support not only has an impact on the clinical aspect, but is also very important in maintaining the psychological condition of hemodialysis patients (Rizani et al., 2019) . The impact of good support from the family not only helps the patient in undergoing medical procedures, but also has a positive impact on the patient's psychological condition and motivation to continue to undergo therapy regularly. (Susilawati et al., 2018)

Liquid Restriction Compliance

Based on the results of the study, it is known that out of 132 respondents, as many as 52 respondents (39.4%) were in the *category of moderate Interdialytic Weight Gain* (4–6%), These results show that most patients experienced weight gain during the *interdialytic* period (Wayunah & Saefulloh, 2022). The *Interdialysis* Period is a period of time in which the patient does not undergo a hemodialysis session, which is between one hemodialysis session and the next (Rahayu, 2023). To determine the compliance of fluid restriction in patients undergoing hemodialysis therapy, the *Interdialytic Weight Gain* indicator can be used, the higher *the Interdialytic Weight Gain value*, the lower the patient's level of compliance, this is contained in (Wayunah & Saefulloh, 2022) .

Fluid restriction is an important part of fluid management that involves the patient's ability to recognize problems, set goals, and make decisions based on perceived changes in

symptoms such as swelling, shortness of breath, or increased blood pressure at risk of serious disorders. The safe limit (Lestari et al., 2018) *of Interdialytic Weight Gain* is less than 4% of dry body weight. Patients with a category above 4% of dry body weight indicate the need for increased education and supervision of patient compliance in undergoing fluid restriction. An increase in *Interdialytic Weight Gain* above this limit is at risk of complications such as intradialysis hypertension, increased pressure on the heart and edema (Fitriana et al., 2019)

During the hemodialysis process, blood pressure can undergo changes, including an increase or decrease in blood pressure. If *Interdialytic Weight Gain* occurs continuously and excessively, it can lead to a variety of serious complications, such as increased hypertensive blood pressure, fluid edema buildup, heart disease, and other health problems that can worsen the patient's condition. This shows the importance of ongoing education to improve patient understanding of the consequences of excess fluid in the body. One of the causes of lack of compliance is the patient's low self-care ability, which is often associated with low knowledge. The results of this study support this, because it was found that the most respondents had the last level of high school or vocational education as many as 59 people (44.7%). Low levels of education are often associated with low knowledge and awareness to carry out early detection of diseases. This is exacerbated by the non-specific early symptoms of kidney disease, so it often does not encourage individuals to check themselves out with health services. These results are in line with previous studies that showed that approximately 60% of hemodialysis patients experienced (Sitoresmi et al., 2020) (Rosdiana et al., 2018) (Maryland, 2023) *Interdialytic Weight Gain* >4%, mostly indicating a lack of adherence to fluid restrictions (Hossain et al., 2024) .

The Relationship of Family Support to Fluid Restriction Compliance

The results of *the spearman* correlation test between the category of family support and compliance with fluid restrictions showed a correlation coefficient value of 0.108 with a significance value of 0.217. These results showed that there was no meaningful relationship between family support and compliance with fluid restrictions. The correlation value was positive, indicating that there was a tendency to increase family support, and compliance with fluid restrictions also tended to increase However, the correlation value was so weak that it did not show a direct effect of family support on increased compliance with fluid restrictions. if associated with Friedman's theory (2013), family support should provide a

relationship to the patient's health behavior because the family is the main support system in a person's life. These results suggest that there are possible other factors that have a greater influence on patient compliance such as knowledge and self-efficacy. This indicates that despite the support provided, the autonomy of the patient to decide for himself the actions to be taken can affect whether or not the patient complies with the fluid restriction. Further studies are recommended to look at factors that affect patient adherence to fluid restriction. (Friedman, 2013)

The results of the study showed that there was no significant relationship between family support and compliance with fluid restrictions, which was explained that the family had provided good family support emotionally and instrumentally, but the patient's level of knowledge became the basis for their compliance with hemodialysis. With a good level of knowledge, the attitude to undergo hemodialysis will be better so that in the study there is no significant relationship between family support and compliance with fluid restrictions. These results are in line with the educational characteristics of education researchers obtained by the most respondents in high school or vocational schools. Education affects the ability to understand health information, including the importance of fluid restriction. Patients with low education tend to have a lower awareness of early detection of the disease. (Pratama et al., 2023) (Maryland, 2023)

The results of the study by Rizani reported that there was no association between family support for fluid restriction and increased *Interdialytic Weight Gain*. Although the family provides emotional support and motivation to the patient, it does not guarantee the patient's compliance with fluid restrictions. The researcher explained that there are other factors that also affect patient behavior, such as self-efficacy, stress levels, and thirst. These factors have the potential to be more dominant than the influence of family support itself. Therefore, a holistic approach that pays attention to the patient's psychological condition and understanding becomes essential in improving compliance with fluid restrictions. Further studies related to these factors are recommended to be conducted. (Rizani et al., 2019)

Various studies have shown that family support has a significant relationship with fluid restriction adherence in hemodialysis patients. However, to achieve compliance, there are other internal and external factors that influence the patient's obedient behavior to limit fluids. The high level of family support provided cannot directly increase patient compliance

with fluid restriction, because there are factors from patients that can more dominively influence their behavior towards fluid restriction.

From the results of this study, there are still factors that have not been further explained regarding their contribution to fluid restriction compliance in patients. In addition, the results of this study cannot be generalized to kidney failure patients in all hospitals in Indonesia because the samples only come from one private house. Thus, further research is needed to gain a clearer understanding of the factors that contribute to fluid restriction adherence in patients with renal failure.

Conclusion

Based on the results of the study, it can be concluded that 78 respondents (59.1%) received family support in the good category. However, 52 respondents (39.4%) had moderate compliance with the liquid restrictions. The results of statistical analysis using the Spearman's rho test showed a correlation coefficient value of r = 0.108 with a significance of p = 0.217 which showed that there was no significant relationship between family support and fluid restriction compliance in hemodialysis patients. The high level of family support provided does not directly increase patient compliance, this happens because there are factors that are estimated to be more dominant to influence patient behavior related to fluid restriction. Factors such as knowledge, efficacy of, autonomy, problem-solving ability, awareness are thought to have a role in the patient's behavior. Further studies can take these factors into account to be studied so that a more comprehensive understanding of patient compliance in restricting fluids can be obtained. For further researchers, it is also possible to use qualitative or quantitative methods with a larger sample involving more hospitals.

Acknowledgments

The researcher expressed his gratitude to the Faculty of Nursing, Pelita Harapan University, one of the private hospitals in Tangerang as a place where research was carried out and hemodialysis patients who were willing to become voluntary respondents.

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