

SURAT KETERANGAN

Nomor: 037/UNUSA/Adm-LPPM/I/2021

Lembaga Penelitian dan Pengabdian Kepada Masyarakat (LPPM) Universitas Nahdlatul Ulama Surabaya menerangkan telah selesai melakukan pemeriksaan duplikasi dengan membandingkan artikel-artikel lain menggunakan perangkat lunak **Turnitin** pada tanggal 12 Januari 2021.

Judul : *Factors related to Adherence to Limiting Fluid Intake in Hemodialysis Patients with Chronic Kidney Disease in Hemodialysis Room*

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Identitas : *International Journal of Psychosocial Rehabilitation Volume 24 Issue 9 December 2020*

No. Pemeriksaan : 2021.01.18.016

Dengan Hasil sebagai Berikut:

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Submission date: 12-Jan-2021 12:17PM (UTC+0700)

Submission ID: 1486163947

File name: is_Patients_with_Chronic_Kidney_Disease_in_Hemodialysis_Room.pdf (200.62K)

Word count: 3082

Character count: 16286

Factors related to Adherence to Limiting Fluid Intake in Hemodialysis Patients with Chronic Kidney Disease in Hemodialysis Room

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Abstract---Adherence to limiting fluid intake for hemodialysis patients is very important because fluid accumulation and cardiovascular complications might happen if they ignore it. This study was aimed at identifying the factors that relate to adherence to limiting fluid intake in the patients with chronic kidney disease in hemodialysis room of RSI Jemursari Surabaya. It is an analytic study done by using cross sectional approach. The population involved all patients with chronic kidney disease found in hemodialysis room of RSI Jemursari Surabaya, totaling 50 people in which 44 respondents were chosen as the samples by using simple random sampling technique. The independent variables comprised age, sex, level of education, level of knowledge, occupation, and family support, whereas the dependent variable was adherence in limiting fluid intake. The data were collected using questionnaire. The data were analyzed using logistic regression test ($\alpha = 0.05$). The results showed that there was no correlation between age, sex, occupation and adherence ($p > \alpha (0.05)$); there was a correlation between knowledge and adherence ($p = 0.002$); there was a correlation between education and adherence ($p = 0.000$); and there was a correlation between family support and adherence ($p = 0.000 < \alpha (0.05)$). Moreover, the multiple logistic regression test showed that the factors closely related to patients' adherence in limiting fluid intake were family support and knowledge in which they interact to one another. The higher the level of education, knowledge, and family support is, the more adherent the patients to limiting fluid intake will be. Therefore, the nurses are expected to give health education to the patients and their family to develop their knowledge and support to limit fluid intake.

Keywords---adherence, limiting fluid intake, chronic kidney disease, hemodialysis

I. INTRODUCTION

Chronic kidney disease is a health problem for global society with increasing prevalence and incidence of kidney failure, bad prognosis, and high cost [1]. It has become a serious problem in Indonesia. Data released by the Ministry of Health (Kemenkes) reveal that the number of people with kidney disease in Indonesia ranks in the second position after heart disease and grows nearly 100 percent in 2014-2015 [2].

People suffering from this disease are at productive age. Data taken in 2014 show that 56 percent of people suffering from kidney disease are at productive age, namely under 55 years old. The prevalence rate of chronic kidney disease has increased from 2% in 2013 to 3,8 % in 2018 [2]

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The common problem experienced by patients with chronic kidney disease receiving hemodialysis treatment is the behavior in controlling fluid. As the consequence, many hemodialysis patients have swelling in heels and arms, high blood pressure, and tightness resulting from excessive fluid. Fluid control is a part of self-management that receives low adherence from hemodialysis patients [3]. Limiting fluid intake is a behavior that is difficult to be done by patients, especially if they consume medicines that cause the membrane mucus to dry, such as diuretic effects resulting in thirst that causes them to have a drink. It happens because humans in normal condition cannot stand without fluid longer than food intake [4]

Adherence to therapy for hemodialysis patients is important because accumulation of dangerous substances from body metabolism in the blood. Limiting fluid intake in patients with chronic kidney disease needs a big attention. It is purposed to prevent oedema and cardiovascular complications [3].

I. METHOD

The design of this study was analytic observational done by using cross sectional approach [5]. The population of this study was all patients with chronic kidney disease found in hemodialysis room of RSI Jemursari Surabaya, totaling 50 people. 44 people were chosen as the samples by using simple random sampling technique [6]. This study was conducted in June 2018.

The independent variables comprising age, sex, level of education, level of knowledge, and family support, whereas the dependent variable was adherence to limiting fluid intake. Questionnaire was used to collect the data which were analyzed using logistic regression test with $\alpha = 0.05$.

This research has been ethically reviewed by the research ethics committee of Surabaya Jemursari Islamic Hospital (ref: Certificate No. 00011/KEPK-RSI JS/II/2018) and was certified ethically eligible. This research is beneficial. Each candidate received sheets of information explaining the nature, reasons, and volunteerism aspects in this research, as well as informed consent and complaint form. To provide respondents' confidentiality, code number was used.

II. RESULTS AND DISCUSSION

Respondent's characteristics comprising age, sex, level of education, level of knowledge, occupation, family support, and adherence were shown in table 1. Based on table 1, most of the respondents (56.8%) were males, nearly all of them (84.1%) were < 60 years old, nearly half (43.5%) graduated from elementary level of education, most (54.5%) had high level of knowledge, most (63.6%) were unemployed, most (54.5%) received family support well, and most (52.3%) adhered to limiting fluid intake.

Table 1. Frequency distribution of the respondents by age, sex, level of education, level of knowledge, occupation, family support, and adherence.

Variable	Frequency	Percentage (%)
Sex		
Male	25	56.8
Female	19	43.2
Total	44	100.0
Age (Year)		
< 60	37	84.1
≥ 60	7	15.9
Total	44	100.0

Level of Education		
Elementary	19	43,2
Secondary (high school)	13	29,5
Higher education	12	27,3
Total	44	100,0
Level of Knowledge		
Low	20	45,5
High	24	54,5
Total	40	100,0
Occupation		
Unemployed	28	63,6
Employed	16	36,4
Total	40	100,0
Family Support		
Low	20	45,5
High	24	54,5
Total	40	100,0
Adherence		
Non-adherent	21	47,7
Adherent	23	52,3
Total	40	100,0

The factors related to adherence to limiting fluid intake in patients with chronic kidney disease in hemodialysis room of RSI Jemursari were shown in table 2. The table explained that sex, age, and occupation had no correlation with adherence to limiting fluid intake ($p > 0.05$). The result of this study shows no correlation between sex, age, and occupation and adherence to limiting fluid intake in patients with chronic kidney disease. Sex has no correlation with adherence even though the result reveals that females have a tendency not to be adherent 1.4 times compared to males. The Results of these studies differ from the following studies that men had no complied with fluid and dietary restrictions [7] and also different from researched [8], that female patients had more obedient than male patients.

Based on age, incidence rate of kidney failure happens to people who have not reached the age of 60 classified in late adulthood (at productive age). This is in line with the result obtained by Riskesdas (Basic Health Research) in 2018 that people suffering from chronic kidney disease are at productive age between 45-55 years [2]. Based on age, those who are under 60 have a tendency not to be adherent 2.6 times than those above 60. It shows that at the age of 60, people get wiser in making the best decisions for their health and prosperity. The study had also consistent with studies [9]) that older patients will be more obedient than younger patients. This study also showed the same result as the study [8] that young patients tend to be less likely than older patients.

Based on occupation, unemployed respondents tend to be non-adherent 1.9 times than employed respondents. Employed respondents have more hopes for their health so that they have higher adherence. This result had different from the results of the study [10], that patients who work had more disobedient than patients who did not work.

The factor related to adherence to limiting fluid intake was level of education ($p = 0.000$). Education has a correlation with adherence to limiting fluid intake. It is an important factor for patients with chronic kidney disease to help understand and manage themselves in limiting food and drink. Good education results in positive attitude which influences behaviors, especially in making decision to always adhere to the given therapy. People with high level of education have a tendency to produce positive behaviors because education provides humans with basic understanding. Education is an experience which functions to develop the ability and personal quality of humans, in which higher level of education will give them more ability to make use of their knowledge and skills [11]. The results of this study had synergistic with research conducted by [7], that patients who did not comply often occur in patients with primary school.

The factor related to adherence to limiting fluid intake was level of knowledge ($p = 0.002$) with $OR = 9.000$. It illustrated that patients with low level of education had a tendency not to be adherent 9 times compared to those found with high level of knowledge. Knowledge significantly correlates with patients' adherence. This study also showed the same results as the study [12] that patient understanding will influenced adherence.

Respondents with high level of knowledge tend to have higher adherence 9 times than those possessing low level of knowledge. Broader knowledge enables patients to control themselves when facing problems, to have high self-confidence and experiences, and to have precise description about handling an incidence and easily understanding suggestions given by health workers so that knowledge helps them to make the best decisions. The results of this study are supported by the theory stating that knowledge or cognitive is a highly important domain to produce an action and behaviors based on knowledge will be maintained longer that those produced without knowledge. Humans develop their knowledge to fulfill their needs for the continuation of their lives [11]. For this reason it was important for health workers to provided health education in order to increase knowledge and understanding which will ultimately affected adherence to fluid restrictions [12]; [13].

Family support also correlates with respondents' adherence to limiting fluid intake ($p = 0.000$), $OR = 15.2$ which meant that respondents receiving low family support had a tendency not to be adherent 15.2 times compared to those who received high family support. Those who receive high family support have higher adherence that those receiving low family support. Family may become the factor which highly affects and determines decisions and values of individual health and helps them to determine the medical program they will receive. Family also helps them to eliminate temptations of being non-adherent. Moreover, family has often become the supporting group to achieve adherence [8] ; [14].

Table 2. Factors related to adherence to limiting fluid intake in patients with chronic kidney disease

	Adherence						p	OR
	Non-adherent		Adherent		Total			
	F	%	f	%	F	%		
Sex								
Male	11	44	14	56	25	100	0,761	1,414
Female	10	52,6	9	47,4	19	100		
Total	21	47,7	23	52,3	44	100		
Age (years)								
< 60	19	51,4	18	48,6	37	100	0,416	2,639
≥ 60	2	28,6	5	71,4	7	100		
Total	21	47,7	23	52,3	44	100		

Occupation								
Unemployed	15	53,6	13	46,4	28	100	0,360	1,923
Employed	6	37,5	10	62,5	16	100		
Total	21	47,7	23	52,3	44	100		
Level of Education								
Primary	15	78,9	4	21,1	19	100	0,000	
Secondary (high school)	6	46,2	7	53,8	13	100		
Higher education	0	0	12	100	12	100		
Total	21	47,7	23	52,3	44	100		
Level of Knowledge								
Low	15	75	5	25	20	100	0,002	9,000
High	6	25	18	75	24	100		
Total	21	47,7	23	52,3	44	100		
Family Support								
Low	16	80	4	20	20	100	0,000	15,2
High	5	20,8	19	79,2	24	100		
Total	21	47,7	23	52,3	44	100		

Factors mostly correlating with adherence to limiting fluid intake in patients with chronic kidney disease in hemodialysis room of RSI Jemursari Surabaya were shown in table 3. The result of bivariate analysis showed that there were 3 factors that correlated with adherence to limiting fluid intake in patients with chronic kidney disease, namely level of education, level of knowledge, and family support. Multivariate analysis done by using multiple logistic regression test showed that the factors significantly correlated with adherence to limiting fluid intake were family support and level of knowledge.

Table 3. The results of multivariate logistic regression analysis on family support and level of knowledge correlated with adherence to limiting fluid intake in patients with chronic kidney disease

Variable	B	P Wald	OR	95% C.I.	
				Lower	Upper
Family support	2,842	0,002	17,143	2,950	99,606
Level of knowledge	2,337	0,009	10,350	1,787	59,959
Constant	-7,893	0,001	0,000		

-2 Log likelihood = 36.251 G = 24.655 p value = 0,000

Family support having interaction with level of knowledge had a correlation with level of adherence ($p = 0.000$). Among the two factors, family support was the most dominant factor which correlated with adherence ($OR = 17.143$) meaning that respondents who received high family support had a potency of being adherent 17 times to limiting fluid intake compared to those received low family support after being controlled by level of knowledge. Respondents with high level of knowledge had a tendency to be adherent 10 times compared to those with low level of knowledge after being controlled by family support ($OR = 10,330$).

The results of multivariate analysis using multiple logistic regression test show that family support is the factor which dominantly correlates with respondents adherence. Family is an external factor which has the strongest relationship with patients. The existence of family enables patients to create significant motivation when they have problems with complicated changes in their life patterns and get bored with various health programs [15]. Family support may become the most influential factor in determining decisions and values, as well as the medical program they will receive. Family also gives supports and makes a decision about treatment for their sick relatives.

The results of this study reveal that the two factors have interaction each other and have a correlation with adherence are knowledge and family support. Respondents who receive high family support will have higher adherence to limiting fluid intake if supported by knowledge too. Similarly, those who have high level of knowledge will have higher adherence to limiting fluid intake when they receive good support from their family. This study showed results that was in line with researched [8]; [9] that family support and knowledge had related to adherence to fluid restriction in chronic kidney failure patients undergoing hemodialysis

III. CONCLUSION

Factors correlating with limiting fluid intake in patients with chronic kidney disease receiving hemodialysis are level of education, level of knowledge and family support. Among the three factors, family support is the dominant factor. Moreover, there is an interaction between family support and level of knowledge. Patients with chronic kidney disease receive good family support will be more adherent if they also receive support from high level of knowledge. Therefore, nurses need to provide patients with education about limiting fluid intake and to involve their family to make the program of limiting fluid intake successful.

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