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Relationship between Self-Care for Fluid Limitation and Interdialytic Weight Gain among Patients with Hemodialysis at Ratu Zalecha Hospital, Martapura

Agus Rachmadi[1,2], Ita Ratnasari[2], Nursalam[3], Arief Wibowo[4]

[1]Doctoral student, Public Health Faculty, Universitas Airlangga, Surabaya, [2]Health Polytechnic Banjarmasin, Ministry of Health, [3]Faculty of Nursing, Universitas Airlangga, Surabaya, [4]Public Health Faculty, Universitas Airlangga, Surabaya; Indonesia

Abstract

Chronic kidney failure is progressive and irreversible which caused metabolism disorder as well as electrolyte imbalance. This condition makes the patients to conduct hemodialysis. Patients with hemodialysis must have the ability to do self-care for fluid limitation management. Self-care deficit in managing fluids can cause interdialytic weight gain. The aim of this study was to measure the correlation between self-care for fluid limitation and interdialytic weight gain among chronic kidney disease patients with hemodialysis in Ratu Zalecha hospital Martapura. This study used cross-sectional study, total sampling and the final sample was 50 respondents. Data were collected in 2018. We used Spearman Rank Correlation to analyze the data. The result showed that there was a correlation of self-care for fluid limitation and interdialytic weight gain among patients with hemodialysis in Ratu Zalecha Hospital Martapura (p-value< 0,000; r= 0,589). The capability of self-care for fluid limitation and increase self-confidence among patient with hemodialysis to prevent interdialytic weight gain is needed.

Keywords: *Self-care, Fluid limitation, Interdialytic weight gain, hemodialysis.*

Introduction

Kidney has an important role in the human body to maintain fluid volume and distribution [(1).] Kidney failure requirements long treatment [(1)]. More than 500 million people had Chronic kidney failure [(2)]and only 0.1% of kidney failure was detected [(3)]. 2,622,000 people with kidney failure conducted end-stage renal disease (ESRD), and 77% undergo hemodialysis treatment [(3)]. *National Center For Chronic Disease Prevention and Health Promotion* (2014) noted that the prevalence of chronic kidney failure was increased [(4)].

Chronic kidney failure is progressive and irreversible. The urea creatinine will increase as the body inability to maintenance metabolism and keep fluid and electrolyte balance[(5)]. Additionally, kidney failure caused endocrine disorder and metabolic disorder, so it needs hemodialysis or kidney transplantation [(5)]. Hemodialysis is needed to remove metabolic residual from the blood such as water, sodium, potassium, hydrogen, urea, creatinine, uric acid, and others substance through semi-permeable membranes [(6)]. Hemodialysis also assists to maintain fluid balance, but the patients have to control their fluid regularly.

Patients with hemodialysis need to be trained to calculate fluid balance within 24 hours so they can control the fluid based on their needs. The fluid restriction will prevent fluid excess, because fluid excess can cause disruption of function in other organs, such as lung and cardio [(7)]. Another consequence is interdialytic weight gain, edema, wet rheumatism in the pulmonary, swollen eyelids and shortness of breath [(5)].

Patient with hemodialysis is required to do self-care independently, it refers to self-care. Self-care is an individual effort to fulfill their needs by optimizing

Corresponding Author:
Nursalam
Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia
e-mail: nursalam@fkp.unair.ac.id

intellectual abilities, behavior and utilizing the environment[8]. Self-care can be achieved by applying Dorothea E. Orem's nursing self-care theory. According to Orem's theory, every individual with a certain age and condition has the ability to treat, protect, control, minimize and maintain the body to get healthy and well-being as well as optimal life both healthy and sick, or recovering from illness [5].

Self-care deficit in managing fluids can cause an increase in body weight between two dialysis times due to increased body fluid volume, it refers to interdialytic weight gain [9]. Interdialytic weight gain is one of the complications in patients with chronic renal failure who undergo hemodialysis caused by the inability of the renal excretion function. Increasing the value of the interdialytic weight gain will cause a negative effect such as hypotension, muscle cramps, hypertension, shortness of breath, nausea vomiting [10], also cause hypertension, peripheral edema, pulmonary edema, and increase the risk of dilatation and cardiac hypertrophy [7]. The problem in this study was to measure the relationship between self-care of fluid limitation and interdialityc weight gain among patients with chronic renal failure and hemodialysis in RatuZalecha Hospital Martapura.

Method

Participants and Settings: All of the procedures of this study got permission from Institutional review board in one of University in Indonesia. This study used cross-sectional design to analyze the correlation between self-care for fluid limitation and Interdialytic Weight Gain. The Dependent variable was self-care for fluid limitation and the independent variable was Interdialytic Weight Gain.

Data were collected from patient with hemodialysis in RatuZalecha Hospital Martapura, South Kalimantan, Indonesia, and used total sampling. We collected the data from Januari until February 2018. Total patients with hemodialysis in this hospital were 81. It produced 60% respond rate, so the final sample was 50 respondents.

Instruments: We used self-report questionnaires to collect the data.

Self-care for fluid limitation: We developed this questionnaire based on self –care concept from Orem theory (11, 12). It had 3 dimensions self-care maintenance, self-care management, and self-care confidence with total of 20 items. Self-care maintenance refers to knowledge regarding decision–making with true-false question (7 items), self-care management refers to behavior regarding health maintenance (7 items), with Likert scale (always-never), and self-care confidence regarding self-efficacy (6 items) with Likert scale (strongly disagree-strongly agree). The score between 51-80 means high score in self-care, and score between 20-50 means low score in self-care. This questionnaire had good convergent validity (r> 0.2) and adequate internal consistency with cronbach alpha= 0.839.

Interdialytic weight gain (IDWG): This is an observational instrument and measure body weight before hemodialysis, body weight after hemodialysis. We used Nerbass theory to determine the different bodyweight as well as the percentage of body weight (13). If the percentage of bodyweight < 5% refer to normal.

Statistical analysis: We used SPSS for windows to analyze the data (p value of < 0.05 are considered to describe statistically significant differences). Descriptive statistics (frequency and percentage) were used to calculate all variables. A spearman correlation was used to explore the relationship between self-care for fluid limitation and Interdialytic Weight Gain. Regarding response rate we used the recommendation from the previous study, that was 60% response rate [14].

Findings:

Characteristic of Respondents: Table 1 shows the characteristic of participants, included in this study: age, gender, and length of hemodialysis. Regarding age, 34% of participants were 45-55 and 56 -65 years old, the proportion of male was 54% and female was 46%. Length of hemodialysis showed that 54% of participants undergo hemodialysis around 12-24 months and 40% of participants undergo hemodialysis > 24 months.

Table 1. Demographic characteristic of participants

Characteristic	N	%
Total = 50		
Age (Years)		
18-40	3	6
41-45	8	16
46-55	17	34
56-65	17	34
>65	5	10

Characteristic	N	%
Gender		
Male	27	54
Female	23	46
Length of Hemodialysis		
<12 months	3	6
12 – 24 months	27	54
>24months	20	40

Descriptive statistics among variables: Table 2 shows 58% participants had good self-care for fluid limitation and 42% had low self-care for fluid limitation. In term of Interdialytic Weight Gain, 58% participants had normal Interdialytic Weight Gain and 42% participants had abnormal Interdialytic Weight Gain.

Table 2. Statistical Description of variables

Variables	N	%
Total = 50		
Self-care for fluid limitation		
High	29	58
Low	21	42
Interdialytic Weight Gain		
Normal	29	58
Abnormal	21	42

Correlation among Study Variables: Table 3 shows significant correlation between self-care for fluid limit and Interdialytic Weight Gain with moderate relationship (r = 0.589, *p* value < 0.01)

Table 3. Relationship between self-care for fluid limit and Interdialytic Weight Gain

	Interdialytic Weight Gain
Self-care for fluid limit	0.589**

**p value < 0.01

Discussion

Self-care for fluid limitation among patients with hemodialysis in Ratu Zalecha Hospital Martapura: Patients with hemodialysis generally have complex problems and require to fulfill their needs. One of their needs was related with ability to care themselves. Patients with hemodialysis must have ability to maintain their fluid intake to achieve optimum quality of life. Self-care in this study used Orem theory[11,12,15]. Based on this study, 58% of respondents had good self-care for fluid limitation (table 2). Most respondents showed higher self-care maintenance (knowledge) followed by self-care confidence (self-esteem) and self-care management (behavior). Previous study noted that quality of life could be achieved by increasing self-care[3].

This study also showed most of the respondents had low self-care management to manage the fluid intake. The patients did not calculate the fluid intake and urine output a day. They consume 2-3 glasses of water in a day, with urine output 500 ml/24 hours and also manage thirst by brush their teeth and gargling. However, they did not know that they must restrict salty food that induces thirstily. Previous study mentioned about the obstacle of self-care management among patients with hemodialysis was internal and external factors. Internal factors were low of motivation to diet and fluid restriction during activity. External factor was cost of hemodialysis [16]. Fluid restriction is needed to give comfort to patients before and after conducting hemodialysis [5].

Interdialytic weight gain among patients with hemodialysis in Ratu Zalecha Hospital Martapura: Interdialytic weight gain is related to the patient's fluid restriction. Fluid restriction is one of the treatments for end-stage renal disease (ESRD) to prevent worse conditions. The amount of fluid was determined for a day, and it depends on kidney function, the patient's edema and urine output [17]. This study showed that 58% participants increased of body weight and it was normal range. 42% of participants were an abnormal range (table 2). Fluid intake among patients with chronic renal failure related to Interdialytic weight gain. This study was similar to previous study [17]. We assumed that Interdialytic weight gain due to thirsty condition among participants, it was similar to Black and Hawks theory[18].

Increased interdialytic weight gain exceeding 5% of dry weight can cause several of complications such as hypertension, interdialytic hypotension, left heart failure, ascites, pleural effusion, congestive heart failure, and also can lead to mortality. Many factors contribute to interdialytic weight gain, such as internal factors (thirst, stress, and self-efficacy) also external factors such as family support and fluid intake [19].

Relationship between self-care for fluid limitation and Interdialytic weight gain among patients with hemodialysis in RSU Ratu Zalecha Martapura: In this study showed 82.8% respondents had high self-care for fluid restriction experienced an increase in normal

interdialytic weight gain and the remain was respondents with low self-care for fluid restriction experienced an increase in abnormal interdialytic weight gain. This study also showed that self-care for fluid restriction was statistically significant with interdialytic weight gain (table 3) with moderate correlation (r = 0.589). This study was similar previous study about significant relationship between fluid intake and interdialytic weight gain[17].

Limitation: This study had some limitation. This study used cross-sectional study and relatively small sample size. Therefore, the results may be generalized carefully. Further study is needed to increase self-care for fluid limitation among patients with hemodialysis to prevent Interdialytic weight gain.

Conclusion

Besides the limitations, this study produced enough response rate. We are confident that self-care for fluid limitation related to interdialytic weight gain. This study suggests evidence to increase self-care for fluid limitation to prevent Interdialytic weight gain.

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Conflict of Interests: The authors declare no potential conflict of interests.

Ethical Clearance: All procedure of this study was granted IRB from Health Research Ethics Committee, PoliteknikKesehatan (Poltekkes) Banjarmasin, South Kalimantan, Indonesia, number 158/KEPK-PKB/2018.

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