
Effect of Education Using Booklet Media on Low Salt Diet Compliance and Fluid Restriction in Congestive Heart Failure Patients

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Abstract: Heart failure patients must follow self-care instructions, including a low-salt diet and fluid restriction. This study aimed to determine the effect of education using booklet media on the average score of adherence to a low-salt diet and fluid restriction in heart failure patients. This research design was quasi-experimental, with the number of respondents 76 heart failure patients registered at the cardiac outpatient clinic at the Sebelas Maret University Hospital, Surakarta. Data collection used a non-probability sampling method with a purposive sampling technique. The results demonstrated that a total of 76 respondents conducted in the study, 58% were male and 42% were female. Most of the respondents were in the age range of 56-65 years. The difference in the average score of low-salt diet adherence pretest-posttest in the intervention group used the Wilcoxon sign rank test, the mean value was -5.868 ($p = 0.001$), and in the control group, the mean was 0.316 ($p = 0.111$). The difference in the average adherence score to fluid restriction pretest-posttest in the intervention group used the paired sample test, the mean value was -7.289 ($p = 0.001$), and the control group used the Wilcoxon sign rank test, the mean value was -0.263 ($p = 0.095$). The study concludes that education using booklet media significantly affects the average score of adherence to a low salt diet and fluid restriction in the intervention group. There was no significant difference in the control group's mean score of adherence to a low-salt diet and fluid restriction.

Keywords: Congestive Heart Failure, Low Salt Diet, Fluid Restriction, Education Program, Booklet Media.

INTRODUCTION

Heart failure is when the heart cannot pump enough blood to meet the body's needs. More than 6.5 million Americans are estimated to have heart failure, making it one of the most common chronic diseases in the country (Park & Lee, 2020). Data in Indonesia for 2018 shows heart failure is included in 10 non-communicable diseases, and an estimated 229,696 (13%) people suffer from heart failure. Central Java Province in 2018 estimates that the number of people with heart failure is 3,493 (1.6%) (Rikesdas, 2018).

One of the primary management of heart failure patients is self-care. Self-care in patients with heart failure includes taking the medication regularly, reducing the consumption of salt in the diet, exercising regularly, and monitoring symptoms regularly. Self-management is the ability of heart failure patients to manage themselves. In addition, heart failure patients must know about their disease. Patient knowledge can be increased by education from nurses, and with good self-care management, heart failure patients will be motivated to deal with their illnesses (Hasanpour-Dehkordi et al., 2016).

Some patients with heart failure do not follow self-care instructions properly, one of which is a low-salt diet and fluid restriction (Laksmi & Putra, 2020). From the results of previous research conducted by Farhana & Hudiyawati, (2020). at Sebelas Maret University Hospital, it was found that 70 respondents showed 51.4% had poor self-management. Respondents who have poor self-management, namely daily weighing therapy and non-compliance with a low-salt diet, are due to respondents' lack of knowledge about self-care in patients with congestive heart failure.

A significant factor in doing a diet for heart failure patients is the knowledge factor. Education in heart failure patients is expected to increase the knowledge of heart failure patients (Purnamawati et al., 2018). The purpose of providing education is to increase knowledge about self-care at home so that the patient's ability to perform self-care can increase, especially on the average score of adherence to a low-salt diet and fluid restriction also increases. Adherence to a low-salt diet is complying with a low-salt diet prescribed by a health professional. A low-salt diet can reduce sodium intake and prevent fluid retention in heart failure patients.

The results of the Preliminary Study showed that the number of heart failure patients at the Sebelas Maret State University Hospital (UNS) Surakarta amounted to 211 patient visits in July 2021. Furthermore, based on the interviews with five patients, information was obtained that three respondents said they needed to follow the diet correctly. In contrast, two respondents did not carry out the recommended fluid restrictions.

Based on research conducted by Hardiyanti et al., (2022), providing technology-based education in the form of Cardiac application and periodic monitoring is considered capable of increasing the average value of patient compliance in self-management of heart failure patients. so that heart failure patients can manage their diet and monitor their health regularly. Based on this description, it is necessary to research the effect of education using booklet media on adherence to a low-salt diet and fluid restriction in patients with congestive heart failure at Sebelas Maret University Hospital.

METHOD

The research design was quasi-experimental, using a Non-Equivalent Control Group. The study was conducted at the Cardiology Polyclinic of Sebelas Maret University Hospital. The study began in November 2021 – January 2022. This study used a sample of 76 respondents from the intervention group and the control group. Respondents' inclusion criteria included: congestive heart failure patients who were enrolled in the cardiac polyclinic of Sebelas Maret University Hospital, NYHA II and III, fully conscious, and patients who could communicate.

This study used a low-salt diet questionnaire consisting of 11 questions and fluid restriction consisting of 8 questions. The lowest score on the low-salt diet questionnaire was 11, and the highest was 44. A low score indicates poor low-salt diet adherence. In contrast, a high score indicates better diet adherence. The lowest score on the fluid restriction adherence questionnaire was 11, and the highest was 32. A high score indicates better fluid restriction adherence. The validity and reliability tests were conducted at Surakarta City Hospital on 20 respondents showing that all items were valid with a value above 0.444 and Cronbach's alpha die low salt questionnaire at 0.801 and fluid restriction 0.771. The Cronbach alpha value of the two questionnaires is more than 0.60, so the two instruments are reliable.

This research was conducted at the Cardiology Polyclinic, Sebelas Maret University Hospital. The research began in November 2021, Selecting respondents according to the inclusion and exclusion criteria. After the number of respondents was fulfilled according to the criteria, the respondents were divided into two groups, namely the control and intervention groups. Each group was given questions according to the questionnaire. In the intervention group, after being asked questions according to the questionnaire, they were given treatment through education using booklets. In January 2021, the researchers again asked questions to the two groups. The results of the questions were given the score and processed by the researcher.

The data analysis utilized a frequency distribution to represent the respondents' demographic data and a chi-square analysis and independent t-test to compare the basic characteristics of the two respondents. The homogeneity test results using the Levine test indicated that both groups' characteristics were normally distributed (p -value > 0.05). Therefore, the paired t-test was used to determine the score of pre-test and post-test data within the group if the data were normally distributed. While the Wilcoxon test was used to determine the score of before and after data within the group if the data was not normally distributed.

RESULTS

Table 1 depicts data on respondent characteristics based on age, occupation, gender, status, education, smoking history, length of stay, NYHA classification, hospitalization history, and homogeneity test results between the two groups.

Table 1. Characteristics of Respondents

Variable	Intervention Group		Control Group		P Value
	F	%	F	%	
Age (years old)					
12-16	-	-	1	2.6	
26-35	-	-	1	2.6	
36-45	7	18.4	3	7.9	0.884
46-55	7	18.4	5	13.2	
56-65	19	50.0	10	26.3	
>65	5	13.2	18	47.4	
Employment status					
Employment	21	55.3	13	34.2	0.561
Unemployment	17	44.7	25	65.8	
Gender					
Female	15	39.5	17	44.7	0.716
Male	23	60.5	21	55.3	
Marital Status					
Not married yet	1	2.6	1	2.6	.
Marry	31	81.6	28	73.7	0.365
Widow widower	6	15.8	9	23.7	
Education					
No school	-	-	1	2.6	
Primary school	11	28.9	6	15.8	
Junior High School	6	15.8	5	13.2	0.556
Senior High School	12	31.6	16	42.1	
College	9	23.7	10	26.3	
Smoking History					
Yes	14	36.8	11	28.9	0.087
Not	24	63.2	27	71.1	
Long Suffering of the disease (years)					
<1	23	60.5	22	57.9	0.085
1-3	10	26.3	14	36.8	
4-6	3	7.9	2	5.3	
>6					
NYHA Classification					
NHYA 2	22	57.9	17	44.7	0.184
NYHA 3	16	42.1	21	55.3	
History of Hospitalization					
Once	9	23.7	12	31.6	0.805
Never	29	76.3	26	68.4	
Total	38	100.0	38	100.0	

Table 1 demonstrates that there is no significant difference in the distribution of respondents between the intervention and control groups (p -value > 0.05). 50.0% of the intervention group and 26.3% of the control group were between 56 and 65 years of age. In the intervention group, 44.7% of respondents were unemployed, while in the control group, 65.5% of respondents were unemployed. Most respondents were male, 60.5% in the intervention group and 55.5% in the control group. Most respondents (81.6% in the intervention group and 73.3% in the control group) were married. The majority of respondents had completed high school, with the intervention group comprising 31.7% and the control group 42.1%.

The majority of non-smoking responders in the intervention group was 63.2%, while in the control group, it was 71.1%. The longest duration of congestive heart failure was between one and three years. It was 60.5% in the intervention group and 57.9% in the control group. NYHA II respondents in the intervention group were 57.9%, but NYHA III respondents in the control group were 55.5%. More than half of the respondents, 76.3% in the intervention group and 68.4% in the control group have no history of rehospitalization.

Table 2 Educational analysis using booklet media on the average score of adherence to a low-salt diet and fluid restriction

Variable	Baseline	4 weeks after giving education	\bar{z}	P	Differences Intervention and Control groups
Low Salt Diet					
Intervention Group	33.34±3.98	38.21±3.281	-5,868	0.001	0.001
Control Group	33.47±4.285	33.16±4.328	0.316	0.111	
Liquid Restriction					
Intervention Group	19.10±3.585	26.39±2.138	-7,289	0.001	0.001
Control Group	19.47±2.447	19.73±2.627	-0.263	0.095	

Table 2 reveals that in the intervention group, the pretest score for a low-salt diet was low, with a mean of 33.34, whereas the posttest score was 38.21, with a mean compliance score of 5.868 ($p = 0.001$). In the control group, pretest compliance was 33.47, and posttest compliance was 33.16, with a p -value of 0.111. Its mean score before and after intervention did not differ significantly, with a decreased compliance average of 0.316. Using the Mann-Whitney test, the mean score between the intervention and control groups on a low-salt diet was significantly different ($p 0.001$).

In the intervention group, the mean score for fluid restriction adherence was 19.10 at the pretest and 26.39 at the posttest, with a mean difference score increase of 7,289 ($p = 0.001$). In contrast, the control group did not demonstrate a statistically significant difference between the mean score before (19.47) and after (19.73) the procedure, with a mean difference score increase of 0.263 (p -value = 0.095). Using the Mann-Whitney test, there was a statistically significant difference ($p 0.001$) between the intervention and control groups regarding fluid restriction adherence.

DISCUSSION

Demographic Characteristics

According to the study's findings, most respondents are between the ages of 56 and 65 or older 65. This research concurs with the findings of Donsu et al., who discovered that the majority of patients with heart failure are over 60 years old (Donsu et al., 2020). There were no differences between the intervention and control groups regarding the age variable.

More than fifty percent of respondents were unemployed. According to a recent study by Ufara et al., the majority of heart failure patients were unemployed. These findings are consistent with this finding (Ufara et al., 2017). Work is also strongly tied to illness triggers, such as heart failure, in which

disease development can be directly triggered by disease-causing environmental variables, stressful work settings, a lack of physical activity, and unmanageable workloads (Aryani et al., 2020).

More than fifty percent of responders were male, based on their gender. According to Kristinawati and Khasanah, more than fifty percent of heart failure patients were male, as indicated by the study's findings (Kristinawati & Khasanah, 2019). In contrast to the findings of Rispawati, (2019) this study reveals that the majority of respondents (72.7%) who encountered heart failure were female. According to Aryani, this is because women frequently are unaware of their heart failure (Aryani et al., 2020).

The majority of respondents are married, based on their marital status. This investigation conforms to the findings of Prihatiningsih and Sudyasih. The majority of respondents were married, according to survey results (Prihatiningsih & Sudyasih, 2018). Although marital status is not a risk factor for heart failure, it is a form of social support for patients; therefore, the presence of a spouse can encourage healthy and positive behavior, particularly during therapy and the course of treatment (Saida et al., 2020).

The majority of respondents had a high school education, according to their educational background. It is consistent with a study by Putradana et al., which found that the characteristics of the respondents in heart failure patients indicated that more respondents had a high school education or above (Putradana et al., 2021). In addition, education is a process that fosters the growth of a person's abilities and traits; the more education a person has, the greater his or her capacity to use the acquired knowledge (Aryani et al., 2020).

A majority of respondents were non-smokers. On the other hand, tobacco use is a risk factor for congestive heart failure, as it raises systolic and diastolic blood pressure, pulmonary artery pressure, and vascular resistance. Moreover, smoking can lead to plaque accumulation in blood vessels, resulting in the occlusion of blood vessels (Febtrina & Nurhayati, 2017). Therefore, in order to help patients retain their quality of life and prevent their condition from worsening, self-care education for heart failure patients is crucial, as demonstrated by the findings of this study.

More than half of the respondents have been afflicted for one to three years. This research aligns with the findings of Utami. Her study revealed that heart failure sufferers had been afflicted for less than five years (Utami, 2019). More than half of the respondents belonged to NYHA II. It conforms to Sulisty's RSUD Ir research. Soekarno reported that the majority of respondents suffered from NYHA functional class II heart failure (Sulisty, 2018). The majority of respondents have never been hospitalized, according to their hospitalization history. It aligns with Anggraheni's findings. Her research demonstrated that almost 50% of respondents had never been hospitalized (Anggraheni, 2019).

The effect of education using booklet media on the mean score of adherence to a low-salt diet and fluid restriction

Low-salt diet

In the intervention group, the mean score of adherence to a low-salt diet increased, according to the findings of a study. It demonstrates that compliance with a low-salt diet and fluid restriction takes time. This research concurs with Rispawati's findings that cardiac diet counseling affects respondents' heart diet knowledge (Rispawati, 2019). The respondent's dietary compliance will likewise grow with an increase in the respondent's knowledge of the provided diet education.

Following this idea, there was a substantial change in this study and a rise in the average low-salt diet adherence score after respondents received health education or information on a low-salt diet to maintain and improve their health. According to the follow-up data, some respondents said they had adopted a low-salt diet after receiving education. The follow-up was conducted on the second and third following the pretest. The follow-up was conducted by phone if the respondent did not respond to the WhatsApp message. Therefore, the mobile phone is essential for monitoring (Putradana et al., 2021).

The results of the average adherence score in the control group did not alter between the pretest and posttest, indicating that the mean score of low-salt diet adherence did not increase. Notoatmodjo asserts that knowledge influences compliance (Notoatmodjo, 2014). The control group receives regular hospital treatment, so participants' understanding of a low-salt diet remains limited. Consequently, it may reduce the respondent's level of compliance.

Fluid restriction

Fluid restriction for congestive heart failure patients is between 1500 and 2000 milliliters (Hudiyawati & Suswardany, 2021). In the intervention group, there was an increase in the average score of respondents' compliance with fluid restrictions after they received an education. As a result, respondents are better aware of the optimal number of glasses to consume daily and the significance of weighing themselves daily.

The mean adherence score in the control group indicated no variation between the pre-and post-tests, i.e., there was no increase in the mean compliance score after the procedure. The control group did not get booklet-based education. Therefore their understanding of fluid restriction remained poor. It could reduce the respondent's compliance level. According to Oktaviani et al., knowledge is one aspect that affects compliance (Oktaviani et al., 2020). Without booklet-based instruction and lack of follow-up in the control group, fluid restriction compliance remains in the moderate range, as respondents must comprehend fluid restriction for heart failure patients. If heart failure patients do not adhere to fluid limitations, they will develop edema and ascites due to excess fluid volume (Abdurrachim & Chairunnisa, 2021)

CONCLUSION

Based on the findings of this study, it can be concluded that booklet-based instruction improves the mean scores of adherence to a low-salt diet and fluid restriction among heart failure patients at UNS Surakarta Hospital. Therefore, patients with congestive heart failure are expected to enhance their adherence to a low-salt diet and fluid restriction to prevent the condition from deteriorating. Educating patients with congestive heart failure to adhere to a low-salt diet and fluid restriction is, thus, a crucial responsibility of healthcare professionals.

The researcher recognizes that this study has significant limitations, including that the results cannot be generalized to all patients with heart failure because the sample size is still minimized. Therefore, in the future, researchers can increase the number of representative samples and controls for each confounding variable.

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