

# Effect of Supportive-Educative System of Activity Daily Living (ADL) In Heart Failure Patients

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**Abstract.** Background: Heart failure is a chronic phase that causes functional damage to the heart due to the many symptoms that occur. The number of symptoms that occur impacts the difficulty in meeting the needs of daily activities. Heart failure requiring proper containment procedures, an intervention can be given pharmacological and non-pharmacological therapy, which one of them supportive-educative system. This system helps patients get health information, and helps in decision making. Objective: To identify the influence of supportive-educative systems on the Daily Living Activity of Heart Failure Patients. Methods: This study used a quasi-experimental method with pre-test and post-test with a control group, a total of 34 patients who had been diagnosed with heart failure using the technique of non-probability, kind consecutive sampling. Overall respondents were divided into two groups chosen by simple random sampling. The intervention group was given treatment supportive - an educative system, while the control group was given basic intervention according to hospital discharge planning for 4 weeks, the first week of intervention (pre-test), the second and third week of observation, the last week of evaluation (post-test). The process that has been done is then tested using Wilcoxon and Paired Samples Test. Results: This study showed there was an increase in Activity Daily Living in the intervention group from the control group, and the results of different tests showed the intervention group was more influential compared to the control group with a  $p$ -value of 0.00. Conclusion: There is no effect of providing a supportive-educative system on Activity Daily Living of heart failure patients.

## 1. Introduction

Heart failure is one of the non-communicable diseases as the number one cause of death every year. According to Indonesian Cardiovascular Specialist Association [6], heart failure is a health problem that is constantly affecting the high number of totalities and morbidity in both developed and developing countries including Indonesia. Heart failure is a rapidly developing health problem with an estimated incidence of more than 37,7 million individuals worldwide [3]. Ministry of Health Republic of Indonesia, [9] stated the prevalence of heart failure cases in Indonesia in 2013 based on doctor diagnoses was estimated at around 229,696 people, while based on doctor's diagnosis/ symptoms it was estimated around 530,068 people. Medical records at the Hospital Dr. Soedarso Pontianak in 2016, congestive heart failure patients reached 646 people, and for the last three months ranked first with the most cases. While the number of patient visits at the cardiac clinic around 40-50 patient's every day.

Heart failure requires proper management of health workers, especially nurses in providing interventions that are expected to prevent the worsening of the disease. The interventions in question



are not only pharmacological but also non-pharmacological interventions need to be given serious attention. Zamanzadeh, [17] states that non-pharmacological management that can be done by nurses can be one of them in the form of a supportive educative system, where this system helps patients in obtaining health information, behavior modification, and decision making related to their disease and prevents risk factors. Effective management of heart failure requires continuous monitoring by doctors and other health teams, as well as education on patients and families regarding the use of appropriate drugs, adherence to dietary guidelines and physical activity is undertaken, symptom management and self-care [1].

The supportive - educative system is also an effective intervention given to family caregivers and patients with heart failure, due to significantly can increase the ability and confidence of families in providing home care [2]. This is because patients with heart failure also experience a disruption in their daily physical activities. Obstacles in meeting the needs of ADL are a common thing experienced by patients with heart failure, which has difficulty one or more in meeting the needs of ADL [15]. Heart failure patients need help in meeting the ADL needs because of the cognitive damage they cause. Individuals who experience ongoing ADL barriers will result in an increasingly poor prognosis experienced by patients with heart failure [11].

The results of a preliminary study conducted at Dr. Soedarso in April 2017 with interviews with patients with heart failure obtained data, five of the seven patients did not know what precautions should be taken at homes such as what should and should not be eaten, activity, or complications of current illness. Results from interviews with room nurses, education provided to patients in the form of a schedule of controls that must be carried out and medicines that must be taken at home, as well as the absence of standard operating procedures regarding education that is given to patients with heart failure. This study aims to identify the effect of a supportive-educative system on daily living activity in heart failure patients.

## 2. Research methods

The study design used is the method of quasi-experiment with using pre-test and post-test with a control group. The population in this study were all heart failure patients who were hospitalized in Dr. Sudarso Pontianak in January 2018, the number of samples in this study was 34 respondents, namely patients with heart failure who were treated in the inpatient room who met the inclusion and exclusion criteria of the study.

Inclusion criteria such as patients the diagnosis of heart failure classification according to NYHA class I-II, Patients who work as a source of income, had been hospitalized with heart failure of at least one time. Exclusion criteria in the form of patients with heart failure with complications (stroke, atrial fibrillation).

The sampling technique using non-probability sampling techniques with a consecutive sampling approach. This research was conducted for four weeks, the first week was pre-tested and intervention was carried out. The intervention group was given treatment in the form of a supportive-educative system and the control group received the Discharge Planning in the room. The observation was done once a week for two weeks in both groups. Last week the ADL data post-test was conducted.

## 3. Result

Different in the quality of life between the intervention group and the control group is known using the Mann-Whitney test, obtained  $p$  value of 0.012 with a smaller  $p$  value  $\alpha$  (0.05). The difference the quality of life between the intervention and control groups can be known using the Mann-Whitney test obtained  $p$  value of 0,000 with a greater  $p$  value  $\alpha$  (0.05).

Results

**Table 1.** Demographic Data

Variable	Intervention group (N = 17)		Control group (N = 17)	
	F reQUENCY	%	Frequency	%
Age (years)				
33-45	2	11.8	2	11.8
46-58	15	88.2	15	88.2
Gender				
Male	12	70.6	13	76.5
Girl	5	29.4	4	23.5
Education				
Elementary school	1	5.9		
Middle School	2	11.8	2	11.8
High school	11	64.7	12	70.6
College	3	17.6	3	17.6
Occupation				
Civil servants	4	23.5	2	11.8
Private	1	5.9	3	17.6
entrepreneur	3	17.6	6	35.3
Farmers	2	11.8	5	29.4
Others	7	41.2	1	5.9
Experience being treated in a hospital with heart failure				
1				
≥ 1	15	88.2	16	23.5
	2	11.8	1	1.5

Table 1 shows that the age characteristics of the most respondents in the range of the age group 46-50 years, namely the intervention group and the control group each of 15 respondents (88.2%). The most sex is male in the intervention group of 12 respondents (70.6%) and the control group of 13 respondents (76.5%). Characteristics of the level of education of the high school are high in the intervention group of 11 respondents (64.7%) and the control group of 12 respondents (70.6%).

The most occupational characteristics in the highest intervention group were the other 7 respondents (41.2%) and the most control group were the entrepreneur 6 respondents (35.3%). For the characteristics of the experience of being hospitalized in the intervention and control group, the most were with one-time pain experience of 31 respondents (91.17%) and pain experience more than once 3 respondents (8.82%).

**Table 2.** Characteristic of ADL before and after supportive-educative system in the intervention and control group

ADL	Intervention Group				Control group			
	Pre-test		Post-Test		Pre-Test		Post-Test	
	N	%	N	%	N	%	N	%
Fully Independent (6)	11	64.7	16	94.1	10	58.8	12	70.6
Partial Dependence (3-5)	6	35.3	1	5.9	7	41.2	5	29.4

Based on table 2 shows the ADL before and after the intervention in the intervention group and the control group. Most respondents before we're given a supportive-educative system with full independence 11 (64.7 %) in the intervention group and most with full independence 10 (58.8%) in the control group. ADL after the intervention given supportive-educative system, most were fully independent 16 (94.1%) in the intervention group and most were fully independent 12 (70.6%) in the control group.

**Table 3.** Difference in quality of life between before (pre-test) and after (post-test) providing supportive-educative system to the intervention and control group (N=34)

ADL	Timepoint	Mean $\pm$ SD	p-Value *	p-Value **
Intervention group	Pre-test	5.3 $\pm$ 0.9	0.025	0.728
	Post-test	5.8 $\pm$ 0.3		
Control group	Pre-test	5.1 $\pm$ 1.1	0.016	
	Post-test	5.9 $\pm$ 0.2		

\* P < 0.05 based on Wilcoxon test

\*\* P < 0.05 based on the Mann-whitney test

It is known that based on the Wilcoxon test, a value of  $p$ -value of 0, 2, 5 was obtained. It was seen that  $p$ -value  $0.025 > \alpha$  (0.05) showed a significant correlation between ADL between before and after giving the supportive-educative system to the intervention group. Based on table 11 it can be seen that based on the Wilcoxon test, the value of  $p$ -value is 0.157. It can be seen that the  $p$ -value  $0,016 > \alpha$  (0.05) shows that there is a significant relationship between Activity daily living (ADL) between before and after giving the supportive-educative system to the control group.

It is known that based on the *Mann Whitney Test*, the  $p$ -value is 0.728. It was seen that  $p$ -value  $0.16 > \alpha$  (0.05) showed no significant relationship between ADL between the intervention group and the control group.

#### 4. Discussion

Based on the study there was an increase in ADL from partially independent to fully independent in the intervention group, in the control group the increase was not as much as in the intervention group only two respondents. It is said to be fully independent if the respondent can carry out all activities without assistance, namely: eating, bathing, toileting, moving to the bathroom and dressing [12].

Most respondents showed full independence ie 94.1% after being given intervention, this is caused by factors that influence it such as age, sex, disease complications and marital status [11]; [15]; [14]. The factors that influence ADL are largely controlled, so there are no respondents with total dependence. One of the complications of the disease is that all respondents do not have a history of dementia, because they are at risk of experiencing obstacles in meeting the needs of ADL [11]

Based on the Wilcoxon test showed a significant relationship between ADL between before and after giving a supportive-educative system to the intervention group. This is clinically meaningful where there is an increase in the activity of daily living from partially independent to fully independent. The increase in activity of daily living is due to the education and motivation of respondents. According to Notoatmojo [16], education is a series of learning processes for individuals to get higher knowledge and understanding of certain objects aimed at a person or a larger group.

Education can provide the information needed by patients with heart failure and increase patient knowledge of disease management, because patients get information about how activities can be done. Musekamp et al, [4] who said that education provided as a form of intervention to patients with heart failure that is carried out with a focus and ongoing and have a fit in everyday life will have a sustainable influence.

In research not only education that affects ADL in patients but also influenced by a patient motivation to do ADL independently at home, can be seen from the results of ADL post-test patients increased. By research Klompstra et al. [8] states that higher levels of education, self-efficacy in sports and motivation are associated with higher levels of ADL. These factors need to be considered in educating heart failure patients.

In the control group, there was a significant correlation between ADL between before and after giving a supportive-educative system. This means that clinically there is an increase in ADL from partial dependence to fully independent, although the increase is not significant. The increase in ADL is due to

the majority of respondents doing physical activity exercises when returning home. According to Klompstra et al, [8] which states that exercise programs can provide a significant impact on daily physical activity and provide better potential for increasing exercise capacity in heart failure patients. According to Muller et al [7] a home-based program in the form of exercise activities carried out as an active lifestyle and carried out routinely twice a week, showed ADL to increase significantly. So that the exercise of this activity is safe and feasible in daily activities.

Symptoms of dyspnea and weakness were also a factor in the absence of an increase in ADL in the control group. Because there were several respondents in the control group there were symptoms of recurrence in the form of dyspnea and weakness. Dyspnea and weakness and fatigue are typical clinical symptoms for patients with heart failure, due to myocardial failure to meet the body's metabolic needs [5]. According to Klabunde, [13] states that heart failure can greatly limit the ability of physical activity and exercise. In mild heart failure, resting arterial pressure may still be normal, but if the patient starts doing physical work, the maximum workload of the heart will be reduced, so that he will experience fatigue and shortness of breath for normal activities. This is what causes the appearance of symptoms of dyspnea and fatigue in patients with heart failure, and ultimately interferes with the fulfillment of daily physical activity in patients.

According to Dunlay et al, [15] the obstacles in meeting the needs of ADL are a common thing experienced by heart failure patients, who have difficulty one or more in meeting the needs of ADL. Individuals who experience continual ADL inhibition will result in an increasingly poor prognosis experienced by patients with heart failure. Heart failure patients who are hospitalized have a greater risk of being obstructed from meeting ADL needs.

The results showed the average ADL after being given a *supportive-educative system* intervention after being given a *supportive-educative system* in the intervention group there was no significant increase, and the statistical results showed no significant relationship between ADL between the intervention group and the control group. This shows the existence of clinical significance where there is an increase from partial independence to become fully independent when viewed from an increase in the ability to fulfill their daily activities. Although statistically there is no visible increase in average and there is no meaningful relationship. ADL is a person's ability to meet the needs of daily activities, where the measured value is behavioral and is multifactorial [10].

Behavioral assessment requires a long time, and is also influenced by many factors, one of which is the time in providing interventions. In this study, respondents were only given one supportive-educative system intervention, so that it became one of the causes not seen statistically increased. This is according to Etemadifar et al. [2], stating that effective supportive-educative interventions are given as interventions to families and patients with heart failure, interventions that are carried out for a long time from time to time show good results. The intervention was given four times and carried out for six months, with each session given for two hours.

## 5. Conclusion

The results of this study can provide benefits for nursing services to implement nursing actions, especially those related to education in heart failure patients, thereby increasing the ADL of heart failure patients.

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