

## *The Effect of Self-Care Education on Heart Failure Patients : Literature Review*

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**Abstract :** Heart failure is a heart disease which has an escalating prevalence. Disease conditions that can cause a deterioration in quality of life and even death require further treatment through self-care. Knowledge about self-care can be provided by nurses while the patient is in the hospital even when going home. The purpose of this systematic review is to determine the application of self-care education in heart failure patients to improve self-care knowledge and compliance. The research method used a systematic review design using data bases from ProQuest, EBSCOhost, Scopus, and Science Direct with several keywords used. The results obtained 7 articles that were reviewed after adjusting the inclusion criteria. The results of the study found that the provision of self-care education was able to improve self-care compliance in heart failure patients. The conclusion of this study is that education that is more applicable, interactive and sustainable can improve knowledge and compliance with self-care in heart failure patients.

**Keywords:** heart failure, self-care education, self-care adherence, self-care knowledge

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### INTRODUCTION

Heart failure is a disease that contributes to high mortality and morbidity rates (Nursita & Pratiwi, 2020). Since it was first considered an epidemic twenty-five years ago, heart failure has continued to increase in incidence as the population has grown and aged (WHO, 2020). In 2017, the number of heart failure cases globally reached 64.4 million with the most common cause being ischemic heart disease (26,5%). In Asia, the prevalence of heart failure appears to be higher than in western countries ranging from 1.3% to 6.7% and in Southeast Asia as many as 9 million people have heart failure (Harahap, 2021). In Indonesia, data on the prevalence of heart disease from the 2018 Risesdas results show that it is estimated to be 1.5% or 1,017,290 people with the highest number of cases in North Kalimantan (2.2%) and the lowest in East Nusa Tenggara (0.7%) (Kemenkes RI, 2019). At one of the major hospitals in Jakarta, Harapan Kita Heart and Vascular Hospital, there is an increase in the number of visits by heart failure patients to the clinic in 2 year (2016-2018) by 51.8% (Yahya, 2023).

Heart failure is a set of signs and symptoms resulting from systemic and pulmonary blood circulatory failure and also low circulatory failure. The incidence is often increasing and has a poor prognosis. The cause can come from the heart itself or from outside the heart. Heart failure causes conditions such as shortness of breath (dyspnea), shortness of breath when lying down (orthopnea), paroxysmal nocturnal dyspnea, cough, pulmonary crackles, edema, ascites, fatigue, jugular venous distension (Hinkle & Cheever, 2018). This can greatly reduce the functional capacity of patients and increase the risk of death (Malik et al., 2021).

The treatment that can be given to the patients with heart failure is to improve heart function, reduce symptoms, prevent further disease progression, and promote a lifestyle for heart health (Hinkle & Cheever, 2018). Increasing the functional capacity of the heart, reducing the risk of death and improving the quality of life of heart failure patients can be done by improving self-care. Self-care is the ability of individuals, families, and communities to improve health conditions by preventing and overcoming disease and disability, maintaining health with or without the support of health workers

(WHO, 2022). One thing that can be done to improve self-care is health education. Health education is an effort to influence individuals, groups, and communities to have healthy living behaviors (Sinaga et al., 2021). With health education, heart failure patients are able to improve self-care compliance (Dessie et al., 2021). Various models of health education have been conducted and produced different effects, so in order to provide health education, it is necessary to consider the best form of health education. The health education strategy provided can be the main focus for improving knowledge. Riegel et al., (2017) said a skill-building approach to improve self-care is more promising than a purely educational approach.

According to previous systematic review, it was found that health education can improve self-care knowledge and behavior in the elderly with chronic heart failure (Mansyur et al., 2022). Health education can be carried out individually and needs to be accompanied by follow-up. However, in this systematic review, the population focused only in elderly heart failure patient and did not focus on the topic of self-care on education. In another systematic review, nurse-led self-care education had positive effect on clinical outcomes such as readmission and mortality (Son et al., 2020). However, nurse-led self-care education did not clearly explain its effect on patient's quality of life and knowledge of the disease. Therefore, researchers conducted this systematic review with the aim of identifying the implementation of self-care education and its strategies on improving knowledge and self-care adherence in heart failure patients. Knowing effective health education strategies is expected to be a reference for health workers in providing the best education for heart failure patients.

## METHOD

This study applied systematic review design with article question arrangement using PICO (Population, Intervention, Comparison, Outcomes). PICO criteria applied are P: heart failure patient, I: self-care education, C: self-care basic education, O: life quality improvement. The research question to the heart failure patients was how self-care education influences his life quality improvement.

Articles were reviewed based on inclusion criteria, namely: 1). the target population was heart failure patients; 2). intervention in the form of self-care education; 3). the results of the study affected the improvement of quality of life or improvement of self-care; 4). full text article; 5). publication between 2018-2022. The inclusion and exclusion criteria of articles are in table 1.

**Table 1. Inclusion and Exclusion Criteria of Articles**

Criteria	Inclusion	Exclusion
Population	Heart failure patients	Not heart failure patients
Focus	Self-care education intervention	Education other than self-care topics
Outcome	Quality of self-care	Beside quality of self-care
Type	Original research in full text articles	Review
Year of published	2018-2022	Before 2018

Article search using PRISMA through four databases namely ProQuest, EBSCOhost, Scopus, Science Direct. The search used keywords such as heart failure, self-care education, quality of life. Further screening was carried out to select relevant articles and exclude duplicate articles and not included in the inclusion criteria. After screening, 814 relevant articles were selected for review. Article were filtered again based on the title and abstract, 16 articles were obtained which will be selected for content, resulting in 7 articles to be reviewed. Studies related to self-care education in heart failure patients will be further analyzed to meet the objectives of this literature study. The results of article from database are in table 2. The articles reviewed are included in table 3.

**Table 2. Results of Article from Database**

Databases	Articles	Screening articles	Found articles
ProQuest	268.074	698	1
EBSCOhost	1325	28	1
Scopus	285	82	4
Science Direct	11	6	1
Total	269.695	814	7

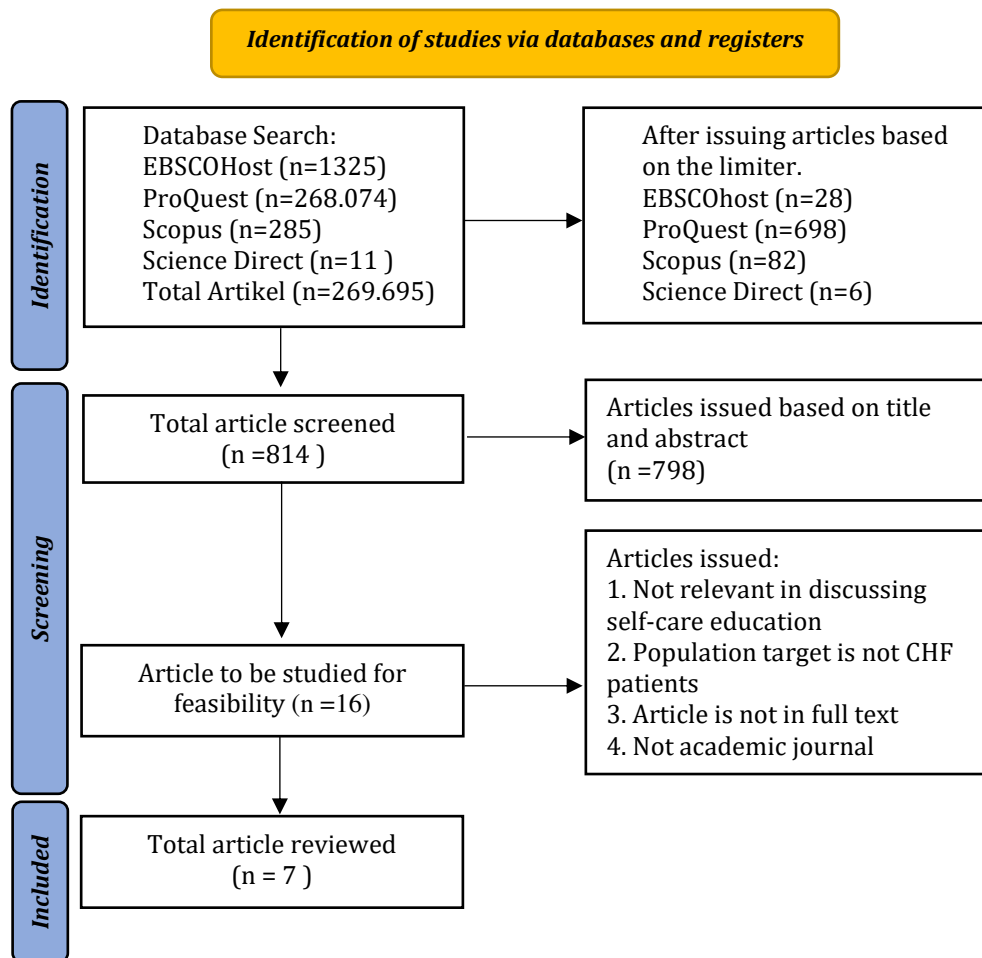


Illustration 1. Selection Process of Systematic Review

## RESULTS

The results of the research conducted showed that providing self-care education could improve self-care compliance, knowledge and perceptions of self-care, self-care management and behavior, patient function, reduced readmission rates, and statistically reduced mortality. However, one study conducted (Zuraida et al., 2022) showed that there were no differences between readmission rates in the intervention group and control group. But, self-care treatment and self-care management differed significantly after intervention implemented.

The educational interventions carried out in the studies were so diverse that two of the seven studies used the basic of social cognitive theory. Educational interventions in all studies were conducted or led by nurses with three of the seven studies involving multidisciplinary. The study conducted by (Dessie et al., 2021) involving such as doctors, nutritionists, physiotherapists, health educators. (Yu et al., 2022) conducted their study involving cardiologists and nutritionists. The study

by (Zuraida et al., 2022) involving doctors, nutritionists, pharmacists. Multidisciplinary collaboration was used to review educational materials and establish the educational program.

The media used varied, with two studies using video media to help provide education (Dessie et al., 2021; Tsuyuki et al., 2019). In addition to videos, patients were also given pamphlets, leaflets, posters to support the education provided through videos. Pamphlets, leaflets and posters were also used in five other studies. All studies used educational methods such as counseling, question and answer, discussion, joint review, practicing skills directly. The control group in six of the seven studies were given education in the form of standard education, such as basic discharge instructions, basic education without dialogue and without follow-up.

The education was delivered in several meetings with a varying number of sessions. Three studies provided only one education session. Other studies provided education sessions starting from the time the patient was admitted to the hospital that were provided several times during treatment. All studies conducted post-treatment follow-up sessions via telephone, home visits or at the health facility. In four of the seven studies, education was given in groups.

**Table 1. Literature Search Outcome**

No.	Reference	Purpose	Method and Intervention	Outcome
1.	Dessie et al., (2021)	Assesing the effectiveness of an educational intervention to improve self-care adherence of patients with congestive heart failure.	A Clustered Randomized control trial (Sampel: 228 patients)  Intervention: The intervention group was provided education with videos, photos, illustrated leaflets, interactive exercises (1 hour of training per session/day for four days and one hour of follow-up sessions every months). The control group was given only basic discharge instructions.	Self-care education significantly improved self-care adherence scores in congestive heart failure patients.
2.	Yu et al., (2022)	To compare an empowerment-based self-care education program with didactic education program in patients with heart failure.	Double-blind randomized clinical trial (Sampel: 236 patients)  Intervention: Empowerment group in 12 weeks through tactical and situational skills training, peers influence optimization, obstacle and challenge management. 5 face to face sessions and followed by phone calls in several time. Didactic group included similar topic without empowerment strategy.	Empowerment group has lower risk to be admitted to ER and be hospitalized, better knowledge in self-care, clinically relevant improvement in symptoms perception and self-care management, and cost effective.
3.	Loghmani & Monfared, (2018)	Finding out self-care education effectivity on knowledge and function towards heart failure patients.	Randomized Control Trial (Sampel: 150 patients)  Intervention: Intervention group received diet notes and motion exercises in two sessions for 15-20 minutes in groups using education preaching, poster, and pamphlet methods. Evaluation was conducted in the following month. The control group was not provided with self-care program.	Self-care education improves function and knowledge (awarness) of the patient's self-care.
4.	Anzio et al., (2022)	Detecting the differences in admission level before and after intervention implementation.	Quasi Experiment (Sampel: 42 patients)  Intervention: Intervention group was provided education using discharge bundle and re-taught by phone as a follow-up in 1-2 weeks after going home. Control group was not given discharge bundle.	There was a decrease of heart failure patient readmission for 30 days of intervention.
5.	Huesken et al., (2021)	Evaluating short time and long time impacts of structured education by	Longitudinal study (Sampel: 150 patients)  Intervention:	Nurse-based educational system significantly improved patient's knowledge on disease and self-

No.	Reference	Purpose	Method and Intervention	Outcome
		qualified heart nurses on self-care behavior and disease knowledge.	Education session was provided by a nurse in private for 60 minutes. Education includes presentation on disease, self-care behavior, brochure distribution, daily body weight monitoring, discussion (multidiscipline team involved if needed).	care behavior and has durable effect.
6.	Zuraida et al., (2022)	Investigating self-care education effect through health fostering on 30 days readmission and patients outcomes with heart failure.	Quasi Experiment (Sampel: 46 patients)  Intervention: Intervention group received standard treatment, health fostering, self-management booklet and note book, house visite as a follow-up. Booklet covers independent care, monitoring, and self-care management. Control group received standard treatment.	Self-care management education through health development improved self-care maintenance and management.
7.	Tsuyuki et al., (2019)	Determining the effect of a video-based educational intervention for heart failure patients on clinical outcomes.	A Randomized Control Trial (Sampel: 539 patients)  Intervention: The intervention group watched a 20-minute video during hospitalization, was given a copy of the video to take home, an educational booklet with explanations of the education in the video, a diary. Reminder cards and 3 newsletters were sent home. The control group received usual care, an educational booklet without joint review, and a dialog about heart failure.	At the six-month assessment, there was a significant increase in heart failure knowledge in the intervention group.

## DISCUSSION

The self-care learning model could influence the effectiveness of expected outcomes. Various forms of education could be carried out by health service providers especially by nurses. A well planned and structured educational program development could give maximum result for patients. The planned education provision could strengthen patients' self-care ability so it could give patients hope in fortifying their knowledge (Nursita & Pratiwi, 2020). The innovative self-care decision aids could also support complex decision makings by helping to recognize decision making situation (Riegel et al., 2017). There were some research using motivation approach in promoting treatments. The re-teaching approach was also effective in improving self-care and self-care efficacy (Oh et al., 2023). The re-teaching method has been proved by Anzio et al., (2022) and there was a reduction in the incidence of 30-day readmission in heart failure patients. Educative approach also needs to consider patients' ages and educational background that may influence material acceptance delivered. Other consideration in providing education is how this education will be able to change someone's behavior in complying his own self-care. Factors that influence someone's behavior such as knowledge, attitude, habit, trust, and social norms (Sari et al., 2018).

Education for all research was delivered by nurses and only one research providing education by nurses and pharmacy. The reason was nurses were assumed to be more understanding patients' conditions. Some research showed that nurses were more suitable to be the main educator in patient's treatment compared to the other professionals since nurses had more time communicating with patients that it can build a mutual trust relationship (Bryant & Himawan, 2019; Huang et al., 2022; Son et al., 2020). Nurse-based education provision was also able to improve the knowledge and behavior of self-care (Huesken et al., 2021).

Based on the research conducted, it has been obtained several important matters regarding on how to provide education that could make patients independent in performing their own self-care. In general education was provided through media such as pamphlet and booklet. In a research by Marganingsih & Hudiawati, (2023), education provision by booklet was able to improve the diet compliance on low salt and liquid limitation on congestive heart failure patients. This was support by (M. Yu et al., 2015) that health education by using booklet with some adjusted information could increase self-care adherence.

Education really gave impact in improving patients' knowledge, but if intervention was only focused on the knowledge itself, the expected outcomes were not enough to improve self-care behavior (Riegel et al., 2017). Educative process with empowerment on heart failure patients can be done with tactical skills and solution to overcome obstacle and challenges in self-care. This interactive process in positive way influenced the self-care management and perception (D. S. F. Yu et al., 2022). More applicative education could be conducted by directly practicing how self-care performed. This is supported by Sari et al., (2018) research that showed that health education with demonstrative method could make self-care improvement on diabetes mellitus patients. Applicative health educational process was not limited to directly practice how to do self-care. Technology which is now more sophisticated should be utilized to escalate health level, among others through virtual simulation. Patients' virtual simulation can be provided as education for clinical reasoning, procedural skill, information dissemination, and decision making mechanism. Virtual patients provide active learning and significantly could improve skills to be more effective (Kononowicz et al., 2019).

Learning can be conducted through several processes, namely modelling, inhibition and imitation. Modelling refers to how a person learns from a behavior modelled by someone else. In a broader concept, the modelling concept does not have to be a person (Hill, 2021). In this matter, learning can be visual education namely video, photograph or flier with picture like a study carried out by Dessie et al., (2021). Inhibition process is when a person who has learned something and has been processing on how that person makes a decision for his own self-care. The decision making may not be easy and confusing for the patients, like the presence of comorbidity to the disease that make the patients difficult to make decision for his self-care as a result of disease symptoms that may

overlap (Riegel et al., 2022). Therefore, in the process of educational provision it is necessary to at the same time facilitate discussion on making complex decision for the patients. Decision making is conducted to provide learning, patients targeted goals, perception on disease symptoms and appropriate self-care management in accordance with the patients' conditions (Yu et al., 2022). Making self-care decisions by adjusting to the needs of the patient will be more effective and allow patients to focus on their self-care (Collins et al., 2021).

Health education provided needs further monitoring or follow up through self-care dairy which covers daily body weight scaling, daily blood pressure check, fluid intake, body exercise, diet intake and other self-cares that possibly done by patients. Daily self-care is performed by patients in daily basis with regular monitoring by counsellor or educator. It is not only providing knowledge for heart failure patients but also expected to help the patients change gradually their self-care behavior. There are several stages in behavior changing process, one of them is trial which is a testing ground for a something new with a hope resulting suitable and acceptable conditions (Irwan, 2017).

In general, the most effective education model was by applying intervention which has been implemented sustainably. Education provision conducted in a series of days and then followed up after the patients go home after receiving hospital treatment will be more effective in increasing compliance than the intervention through basic education of patients' discharge like discharge planning. The number of education session attended by education participants has significant impact on self-care adherence (Dessie et al., 2021). This was also supported by Yu et al., (2022) who has conducted education implementation sustainably for 12 weeks from the time of hospitalization until after the patient was discharged. The follow up education could be conducted in clinic, patient's house, or by telephone. Significantly, the post education follow-up conducted by telephone can improve self-care adherence in heart failure patients and reduce the cost burden (M. Yu et al., 2015). This was supported by Mansyur et al., (2022) that the follow-up by telephone works better than the standard treatment especially for the elderly patients.

The follow-up approaches implemented have been proved to improve the management and perception and also self-care knowledge as well. The social cognitive theory assumed that a sustainable education can develop awareness and effectively practical skill (Hill, 2021). A study by Huesken et al., (2021) even found there were no differences between patients' knowledge in a day after intervention and that in six months after which showed that the effect of education can last up to six months. This contradicted another study that although patients' knowledge on heart failure tended to grow over six months, it became faded by the sixth month (Kato et al., 2016). This differences showed the importance of re-education provision to the patients after six months to improve and refresh patients' memories over the knowledge they have learned.

Based on this systematic review, education provision with follow-up until several months after treatment in hospital was more effective to improve patients' self-care. This was expected to be a basic model of effective self-care education and becomes nurses' consideration in giving self-care education to the patients especially to the heart failure patients. This systematical review was expected to be a reference for the next research, as a basis for developing research interventions. A limitations of this study is the very broad search terms of education and even self-care. However, this study focuses on educational related to self-care topics, especially in patients with heart failure. So that, the research articles obtained do not all have the exact same goal but are still interrelated with self-care.

## CONCLUSION

Self-care health education can improve self-care adherence, improve self-care management, reduce readmissions, and reduce the cost of treatment. Education can be provided to heart failure patients in various ways. Nurses as nursing care providers can develop programs that are able to empower patients.

So that, we recommend for health service providers, especially nurses to be able to develop educational programs that more applicable, interactive program face to face or in groups and sustainable program to facilitate heart failure patients to be able to perform self-care independently.



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