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Self-Care and Its Related Factors among Patients with Congestive Heart Failure in Surakarta, Indonesia

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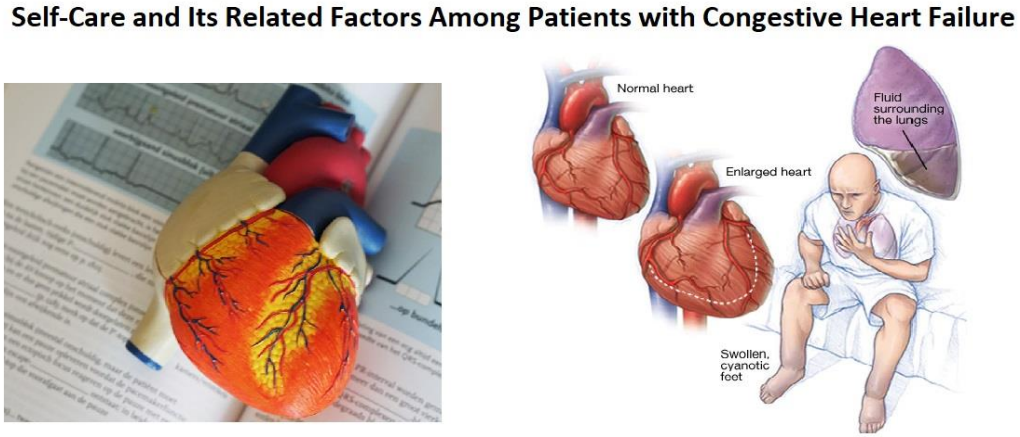
ABSTRACT

Self-care is an essential factor that affects the improvement of the health conditions of patients with heart failure. It is known that several variables affect self-care, including self-efficacy, family support, social support, distress, age, duration of illness. However, there are still few studies that have addressed these variables together. This study aimed to determine the factors that affect self-care among heart failure patients. This research used an analytic observational research design through a cross-sectional approach. The sampling method used an accidental sampling technique and resulted in 73 respondents who were selected based on pre-determined sample criteria. Participants were asked to fill out questionnaires, including self-care, self-efficacy, family support, anxiety, and demography variables. The data analysis included bivariate (Pearson) and multivariate regression analysis to estimate the correlation between self-care and self-efficacy, family support, anxiety, age, and disease length. 73 patients with heart failure in this study had an average self-care score of 31.33, which means that patients can do self-care well. From the five variables carried out in the multivariate analysis, there were only two variables (family support and self-efficacy) that had a significant effect on patient self-care. Family support is the main factor affecting self-care (β= 1,949, p= 0.000), followed by self-efficacy (β= 0.226, p= 0.001), then self-efficacy, where both had a positive correlation. The results indicated that a strategy is needed to improve self-care for heart failure patients, which includes family support and self-efficacy to achieve optimal results.

GRAPHICAL ABSTRACT



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Introduction

Heart failure (HF), often referred to as congestive heart failure (CHF), decompensatio cordis (DC), and congestive heart failure (CCF), is when the heart does not pump enough to maintain blood supply to satisfy the metabolism needs of the body tissue. Heart failure signs and symptoms usually include shortness of breath, extreme tiredness, and swelling of the legs. With exercise or when lying down, the shortness of breath is typically worse, and can wake the person at night. There is also a general characteristic of a restricted capacity to exercise. Typically, chest pain, like angina, does not occur because of heart failure. Heart failure is caused by any disease that, by injury or overloading, decreases the efficiency of the heart muscle. These variations in workload over time, induced by long-term activation of neurohormonal processes such as the renin-angiotensin pathway, result in fibrosis, dilation, and anatomical changes from elliptical to spherical in the form of the left ventricle. 38 million people in the world are estimated to experience heart failure (HF) [1–4]. In previous studies, the prevalence of HF incidence ranges from 1-2% in the adult population [5,6]. The data obtained in Indonesia is that 5% of the total patients who are hospitalized are patients with heart failure (HF). More than 50% of patients who experience heart failure are due to cardiovascular disease [7]. The condition is predicted to increase the aging population and the increasing success of the treatment of patients with acute coronary syndrome so that many patients with these conditions would survive. The rising prevalence of heart failure patients is be closely related to morbidity, mortality, and higher health costs. Therefore, heart failure is one of the leading health problems in developing countries [8].

Heart failure is a chronic disease that is often associated with high morbidity and mortality, low quality of life and frequent rehospitalization [9]. Chronic conditions experienced by patients with heart failure require patients to be able to perform self-care in their care. Self-care is defined as a process of health care through health promotion practices and disease management. There are three components in self-care, namely self-care maintenance (for example, taking the medication regularly), self-care monitoring (for example, measuring body weight regularly) and self-care management (for example, adjusting the dosage of diuretics according to symptoms that appear) [10,11].

Self-care is an essential factor that affects the improvement of the health conditions of heart failure patients. Some studies have reported that patients with effective self-care will have a better quality of life, reduce mortality and rehospitalization [11]. Although self-care in patients with heart failure plays a vital role in improving health conditions, many patients have inadequate self-care behaviour [12]. Self-care behaviour can be influenced by several factors, including gender, level of education, income, comorbidity, knowledge of heart failure, and social support [10,13].

The influence of individual factors on patient self-care is still little investigated in Indonesia, and some of the available literature has not yet been taken as complete variables. Therefore, a study about the relationship between self-care in heart failure patients with individual and environmental factors such as social demographics, i.e. age, gender, marital status, income, level of education, psychological conditions, physical and social characteristics need to investigate. The previous studies were examining the relationship between self-care to literacy and knowledge [14], social support [15,16], depression [16,17], cognitive impairment [18,19]. Among previous studies, there were a few studies that have examined the integration of several variables that are known to affect self-care in heart failure patients.

Therefore, before nursing interventions are implemented to improve self-care in heart failure patients, it is also important to identify factors that affect the self-care. By knowing the factors that affect self-care, especially for Indonesian, clinical nurses will be able to consider the use of

more appropriate strategies to improve self-care in heart failure patients. This study aimed to determine the factors that affect self-care of heart failure patients in Surakarta, Indonesia.

Material and methods

Research Design

This type of research was a quantitative study using an analytic observational study design with a cross-sectional approach. In this study, responses were heart failure patients who were registered at the Cardiac Outpatients Clinic of the UNS Surakarta Hospital, Central Java. Responses were selected based on established inclusion criteria, including: (1) age> 20 years old, (2) diagnosed with heart failure more than six months, (3) being able to communicate well, and (4) willing to become respondents. The exclusion criteria were patients who had a mental illness and were taking antidepressants.

Ethical Consideration

The recent study received ethical approval from the Research Ethics Committee, Universitas Muhammadiyah Surakarta. Data collection was carried out in July-September 2020. All participants were told about the objectives and procedures as well as the protection of the privacy and rights related to this study. The informed consent form was signed by all study participants.

Instruments

We collected data regarding demographic characteristics, such as age, gender, education level, and marital status during the initial interview. We also obtained HF severity using interviews and categorized by NYHA classification, comorbid disease and duration of heart failure. Other variables of the study were self-care, self-efficacy, family support, and anxiety. All interviews were conducted in Indonesian.

Demography characteristic

The questionnaires on the demographic characteristics were filled in by the participants, including age, gender, education level, marital status, and duration of heart failure.

NYHA Classification

Participants filled out the questionnaire about the severity of the patient's disease using the New York Heart Association (NYHA) classification, which was reviewed by researchers based on complaints expressed by the patient.

Self-Care

The questionnaire used in this study was the European heart Failure Self-care Behaviour Scale (EHFScBS-9) [11]. There are nine questions in the questionnaire which use a 5-point Likert scale, from 1 (I strongly agree) to 5 (I strongly disagree). Scores between 9-45, with a lower score, indicate better self-care. The English version of the EHFScBS-9 questionnaire has been translated into Indonesian. Furthermore, the Indonesian version of the EHFScBS-9 questionnaire was tested for validity and reliability on 30 heart failure patients at Dr. Moewardi Hospital, Surakarta. Results demonstrated that the questionnaire was valid and reliable.

Self-efficacy

The questionnaire used to describe the self-efficacy in this study was the Cardiac Self-Efficacy Scale or the CSE Scale. CSES consists of 13 question items grouped into two subscales: Controlling symptoms and maintaining body functions. This questionnaire uses a Likert scale consisting of 5 points, ranging from 0 (not confident) to 4 (very confident). Higher scores indicate a better level of cardiac self-efficacy [20]. In the current investigation, we conducted a two-phase study. In the first stage, the English version of the CSES questionnaire was translated into Indonesian. The similarity of translations and the validity of their contents were checked. In the second stage, the Indonesian version of CSES, was tested for validity and reliability with 30 heart failure patients at Dr. Moewardi Hospital,

Surakarta, with a Cronbach α by 0.805 that indicated the questionnaire was valid.

Family support

The family support questionnaire used in this study was the Multidimensional Scale of Perceived Social Support (MSPSS). This questionnaire consists of 3 evaluated aspects, including significant factors, friends, and family, including 12 question items with a Likert scale consisting of 7 points for each question (1 = strongly disagree once to 7 = strongly agree). Assessment or scoring on the MSPPS is done by adding up all the scores on the 12 questions then dividing them into 12 (final score range 1-7).

In the current study, the domain focuses on family support, so the scoring method is to add up the scores on 4 question items related to the family, then the total score is divided by 4. The results of the assessment are divided into three categories, namely low support (1-2.9), moderate support (3-5), and high support (5.1-7). This family support questionnaire has been tested for validity and reliability with a Cronbach value of 0.91 [21].

Anxiety

The questionnaire used in this study was Generalized Anxiety Disorder-7 (GAD-7), which was used to measure anxiety levels. General Anxiety Disorder-7 (GAD-7) consists of 7 questions related to the patient's psychological condition during the last two weeks. This questionnaire uses a Likert scale which has four answer choices in the range 0-3 (0: never feels symptoms; 3: almost every day), so the score is between 0-21. Low scores indicate minimal anxiety, while higher scores indicate more severe anxiety [22]. Based on the instrument reliability test conducted by researchers at the cardiac outpatient's clinic of Dr Moewardi Hospital in Surakarta, Cronbach's alpha was 0.746 so the instrument was reliable and valid.

Data Analysis

The data analysis was done by a computer program. The instrument reliability coefficient was tested using Cronbach's alpha value. Variant analysis and independent t-test were used to differentiate self-care, self-efficacy, family support, level of anxiety, and severity of heart failure. Pearson's correlation coefficient was used to identify multicollinearity and the correlation between self-care and the factors that influence it. In addition, linear regression was used to analyse the variables that influence self-care in a recent study.

Result and Dissection

The study results consisted of respondent characteristics, including age, gender, education, length of illness, marital status, NYHA degree, comorbidity status (Table 1).

Respondents in this study consisted of 73 respondents. The mean age of the respondents was 58 ± 12.08 years. The majority of the gender was male (86.5%), most of the respondents had a secondary education level (senior high school) (41.1%). The disease severity based on the NYHA classification (NYHA I-III) had almost the same number of respondents in each category, 39.7%; 35.6%; 24.7%; with the duration of the disease less than five years (78.1%). The most common comorbid among respondents was Hypertension, 41.1%. The majority of respondents had a partner of 86.3% (Table 1).

In this study, it was found that there was a significant difference in the mean between self-care based on age category (t = 0.043, p = 0.006) and duration of the disease (t = 0.046, p = 0.002). The mean score of self-care in the <60 years age category was greater than that of >60 years, 18.03 ± 4.21, and 20.24 ± 4.19, respectively. Likewise, the mean score of self-care in the category of the duration of the disease <5 years (18.14 ± 4.18) was greater than >5 years (20.19 ± 4.05). Meanwhile, the mean self-care score on other demographic characteristics such as gender, education level, comorbidity, marital status, and NYHA classification did not have a significant difference (Table 2).

Table 1: Description of demographic characteristic among patients with Congestive Heart Failure (CHF)

Variable	Mean SD	f	%	Total (%)
Age (years)	58 + 12.08			100
<60 years		39	(53.4%)	
>60 years		34	46.6%)	
Gender				100
Male		50	(86.5)	
Female		23	(31.5)	
Marital status				100
Marriage		63	(86.3)	
Single		10	13.7)	
Level education				100
Primary		20	27.4	
Secondary		30	41.1	
Tertiary		23	31.5	
NYHA Classification				100
I		29	39.7	
II		26	35.6	
III		18	24.7	
Comorbid				100
Coronary heart disease		8	11	
Diabetes		13	17.8	
Hypertension		30	41.1	
None		22	30.1	
Duration of the disease (years)				100
<5		57	78.1	
>5		16	21.9	

Table 2: Comparison of self-care score with respect to demographic characteristic among patients with Congestive Heart Failure (CHF)

Variables	*mean*	*SD*	*t or F*	*P* value
Gender				
Male	18.29	4.02	1.212	0.275
Female	19.27	4.68		
Age (years)				
< 60	18.03	4.21	0.043	0.006*
> 60	20.24	4.19		
Education level				
Primary	18.17	4.29	0.276	0.760
Secondary	18.42	4.06		
Tertiary	19.26	4.37		
Comorbid				
Complication	18.66	4.28	1.01	0.315
Without complication	17.95	3.57		
Duration of the disease (years)				
< 5	18.14	4.18	0.046	0.002*
> 5	20.19	4.05		
NYHA Classification				
NYHA I	18.41	3.85	0.41	0.126
NYHA II	19.77	4.74		
NYHA III	17.17	3.68		
Marital Status				
Marriage	18.73	4.12	0.766	0.446
Single	17.70	4.95		

*$p<0.01$

Self-care score has a significant relationship with self-efficacy (r = 0.784, p = 0.001), family support (r = 0.83, p = 0.001), age (r = - 287, p = 0.02) and anxiety (r = -0.522, p = 0.001). Based on the correlation direction, there are differences, self-efficacy and family support had a positive correlation with self-care. In contrast, age and anxiety had a negative correlation to self-care. The correlation of self-care with self-efficacy and family support was significant, self-care and anxiety had a strong correlation, and self-care with age had a good correlation (Table 3).

Table 3: Correlation of self-care with self-efficacy, family support, duration of disease, anxiety and age among patients with Congestive Heart Failure (CHF)

Variables	*mean*	*SD*	*r*	P value
Self-efficacy	36.39	6.05	**0.784**	**0.001***
Family support	3.94	1.16	**0.831**	**0.001***
Duration of disease (years)	3.38	3.39	**0.47**	**0.695**
Age	57.55	12.13	**- 0.287**	**0.02***
Anxiety	6.89	1.9	**- 0.522**	**0.001***

*$p<0.05$

In carrying out the stages of regression analysis to identify factors that affected self-care, independent variables showed significant differences in self-care according to general characteristics (Table 2) and showed a significant correlation between self-care and related variables (Table 3). There are four variables to be analysed, including family support, self-efficacy, disease duration, age, and anxiety. The analysis results obtained only two variables that affect self-care, i.e. self-efficacy and family support. Seen in Table 4, family support has the strongest factor (β= 1,949, p= 0.000), followed by self-efficacy (β= 0.226, p= 0.001).

Table 4: Factor affecting self-care among patients with congestive heart failure (CHF)

Variables	β	*t*	*P*	R^2	*Adjusted* R^2	*F*	*P*
Family Support	1.949	5.615	0.000	0.691	0.686	96.779	0.000
Self-efficacy	0.226	3.394	0.001				

Based on the study results, we found that male respondents experienced a higher number of Congestive Heart Failure (CHF) (86.5%) than women (31.5%). It is supported by research conducted by Morgan et al. [23], stating that the number of CHF patients in men was more than in women, by 66 men (53%). Massouh also reported that males experience CHF than women by 76 respondents [24]. In the opinion of Reyes in Indonesia, which is one of the nine countries in Asia, patients with CHF in male patients (66%) is more dominant than female patients (34%) [7]. Men tend to have unhealthy lifestyles, including smoking and consuming alcohol, which can increase the risk of various diseases compared to women [25]. In contrast, women have the hormone estrogen, which has a protective effect on the cardiovascular system. This condition shows a slower impact of about ten years in women than men [26].

The majority of respondents were married or had a partner. Patients who had a partner have more support related to their disease. The family or partner will help the patients in doing self-efficacy, reducing anxiety levels and being able to carry out self-management well. The support provided can help patients face and address their health problems [27]. In line with research conducted by Khachian, their family support could have a positive effect, including increased motivation and quality of life for patients. Families also take responsibility for caring for CHF patients [28].

Respondents with the highest education level distribution were secondary education. Education is one of the factors that can influence the self-management of heart failure patients. Based on the results of research conducted by Gonzalez, respondents with good self-management were affected by patient's

knowledge about the self-care of Congestive Heart Failure (CHF) [29]. The education level affects the patient's ability to understand their health and also to carry out self-management, medication, and care. Higher levels of education in patients affect patient adherence to treatment so that it has an impact on healthy behaviour and being able to adapt to their health conditions [30]. Furthermore, a study by Krueger indicated that the level of self-care would be influenced by how long they have known their illness [31].

Based on the results of this study, the number of respondents with class NYHA I was 39.7% higher than class NYHA II and NYHA III. This is in line with the previous study that demonstrated that patients in NYHA I classification are mostly found in outpatient clinics because their conditions tend to be stable. CHF patients with NYHA I do not have physical activity restrictions and can perform normal physical activity without causing excessive shortness of breath, pain, palpitation [32].

Hypertension was the most common comorbid disease in patients in the current study. This is supported by previous research [33,34], which stated that hypertension is the most common comorbid disease for CHF patients in Asia with a percentage between 31.5% to 77.8%. In line with the previous study, uncontrolled hypertension was the main precipitating factor leading to Congestive Heart Failure (CHF) disease.

The current study was conducted to determine the factors that affect self-care among heart failure patients. In the study results, self-care scores showed a significant difference in age and the duration of the disease. The results showed that those who are elderly have lower self-care than younger ages. The elderly age group tends to show impaired physiological body functions, including cognitive deficits, which will affect the ability of the elderly to carry out the self-care [35]. Lee and Park supported the finding of a current review where the elderly patients indicated lower self-care score [36]. Furthermore, lower score of self-care also has been reported in the group of longer duration of illness (> 5 years). These findings are consistent with the previous studies, where the duration of the disease is a as predictor of level of self-care in patients with HF [35,37].

The results of the regression analysis of a recent study demonstrated that family support was the main factor affecting self-care, then followed by self-efficacy. The results of previous studies are consistent with this study's findings that having a family or getting family support is as an important factor in better self-care in HF patients [15,38,39]. Family support is provided by family members in achieving optimal self-care by supporting activities related to symptom management, maintaining drug regimens and adherence to diet [39–41]. Khaledi also found a similar finding that there was a positive relationship between family support and self-care. The better the perceived family support, the more able the participants to achieve optimal self-care behaviours [42].

Self-efficacy was another variable that affects self-care. These results contradict a previous study that mentioned self-efficacy was a core factor in self-care and chronic disease management [43–45]. The possible explanation is the different demographic characteristics between the high-income and low-middle-income countries. Indonesia is a low-middle income country, with an average level of population education being relatively low, especially in rural areas. Moreover, the cultural factor in which the family's role for the elderly in Indonesia is vital. The family acts as a support system that is the most important for the Indonesian people. The elderly tends to stay with children and other family members [46]. For that reason, family support can be a significant factor than self-efficacy in heart failure patients' self-care. However, self-efficacy should not be neglected in developing interventions to improve patient self-care.

Bandura states that processes that activate efficacy play an important role in self-regulation, motivation, and helping patients achieve treatment goals in four ways, including mastery

experience, verbal persuasion, emotional arousal, and experiential representation [47]. Mastery experience is indicated to be the most effective way to optimize patient self-efficacy. Nurses as caregivers can motivate patients to take medication regularly, control their diet, and exercise independently.

Schönfeld et al. stated that self-efficacy is an individual's ability to perform specific tasks [48]. Self-efficacy shapes how comorbidity patients make care and decisions about self-care management, especially maintaining dietary restrictions and making food choices, two vital elements in treatment adherence [49]. Self-efficacy could appear in patients who already understand the condition they are experiencing [50]. When individuals experience illness, the individual has the confidence to return to a healthy state and believe they can live a better life [50].

Many positive factors can affect a person's efforts when engaging in various levels of difficulty in life. Self-efficacy has both positive and negative impacts. Good self-efficacy is associated with a better quality of life, while low self-efficacy is a barrier to self-care [51]. A study conducted by Steca et al. showed that low self-efficacy was associated with worse functional NYHA in patients with Congestive Heart Failure (CHF) [52]. High self-efficacy is proven to encourage acceptance of limits and capitalization on strengths and is associated with ongoing self-management involvement [53].

Conclusion

In conclusion, family support was identified as the most important factor affecting self-care in the current study. Besides, self-efficacy also affected self-care in heart failure patients. The clinical implication is to recommend that healthcare providers involve families in the patient care process. However, the study results should be interpreted with caution because of their limitations. These limitations included a cross-sectional design, and the sample size that was limited to one hospital. Given these limitations, it is recommended that future research include multiple study sites, adjust the study design, and analyse the data used. Moreover, emphasizing providing effective interventions to improve self-care in CHF patients can be used as a reference for independent nursing practice. The results of the current study indicated that the family support is the main factor affecting self-care (β= 1,949, p= 0.000), followed by self-efficacy (β= 0.226, p= 0.001), then self-efficacy, where both had a positive correlation

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Authors' contributions

All authors contributed toward data analysis, drafting and revising the paper and agreed to be responsible for all the aspects of this work.

Conflict of Interest

We have no conflicts of interest to disclose.

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