Research Paper:

The Effect of Self-Care Education on the Resilience of the Patients With Heart Failure

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ABSTRACT

Background: Heart Failure (HF) as one of the severe consequences of cardiovascular diseases leads to high mortality in Iran and around the world. This study aims to investigate the effect of self-care education on the resilience of patients with Heart Failure.

Methods: This is a quasi-experimental study with a control group. The study population consisted of all patients with HF referring to the educational hospitals affiliated to Babol University of Medical Sciences in 2017. The obtained data were collected by the Connor-Davidson Resilience Scale (CD-RISC). A total of 88 patients were selected by convenience sampling method and randomly assigned into intervention and control groups (44 in each group). The intervention group received intervention program for 60-45 minutes in 6 sessions, per week in addition to routine care. The control group just received routine care. After one month, CD-RISC was completed again by both groups. The collected data were analyzed by descriptive and inferential statistics (Chi-square, independent t-test, ANCOVA) in SPSS-PC V. 22.

Results: Before self-care education, the mean score of resilience was not significantly different between the groups (P=0.69), but after intervention the difference was significant (P<0.001). After the intervention, the mean score of resilience increased in the control group by 2.95 unit which was significant (P=0.02). In the intervention group, the mean score of resilience increased by 20.55 unit, which was statistically significant (P<0.001).

Conclusion: Considering the effectiveness of self-care education on the resilience of patients with Heart Failure and its feasibility, implementation of this program by nurses is recommended.

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Highlights

● The mean difference of resilience before and after the intervention in the Heart failure group and healthy groups was significantly different.

● Before the self-care education, the mean score of resilience was not significantly different between the healthy and heart failure groups, but after intervention, the difference between them significantly increased.

● Self-care education was able to increase resilience in the patients with heart failure.

● Health-care providers should increase the resilience of these patients in critical conditions by providing self-care education programs.

Plain Language Summary

The heart as a functional organ can be affected by a variety of disorders and diseases. Heart failure (HF) is known as one of the cardiovascular diseases, which causes severe physical and mental symptoms in the affected patients. In recent years, the focus is on using educational interventions combined with self-care technique for its treatment. In this regard, resilience skills can reduce the likelihood of having a heart failure and encourage people to follow the health care tips. This quasi-experimental study investigated the effect of self-care education on the resilience of patients with HF. They were examined using the Connor-Davidson Resilience Scale and the test group received self-care training program. The study results showed that the mean resilience score increased after the intervention in the test group, indicating the effectiveness of self-care education.

1. Background

Cardiovascular diseases are among the most prevalent disorders in human societies and the number of people with these diseases has increased in recent decades (Mann et al. 2014). According to the World Health Organization report. These diseases account for 31% of mortalities (World Health Organization 2014). By 2020, cardiovascular diseases with 20 million victims will be the first cause of death and disability in the world (Go et al. 2014). Heart Failure (HF) has been known as one of the most important cardiovascular diseases (Glogowska et al. 2015).

According to American Heart Association Statistics Committee, 5.3 million Americans suffer from HF, and each year 550000 people are diagnosed with HF (Go et al. 2014). Cardiovascular diseases are the first cause of death in Iran, and as the most important challenge to the health care system of the country, it accounts for more than one-third of all deaths (39%). Road accidents and cancer are the second and third leading causes of death in Iran (Ahmadi et al. 2014) with so many economic burden and social consequences (Seraji et al. 2013).

HF is the final stage of heart disease (Liou et al. 2015), in which the heart is unable to pump blood to supply tissues with oxygen and food (Woo et al. 2015). Despite progress in treating heart disease, the HF prognosis is poor (Farmaks et al. 2015). In recent years, supportive and educational treatments of patients with HF have been increasingly taken into consideration, and treatment is often focused on self-care (Mohammadi et al. 2012; Khachian et al. 2016). According to Orem's theory, self-care is a human regulatory function, deliberately performed to attain structural integrity and human functioning for the purpose of maintaining life, health, and well-being (Naroie et al. 2012). Self-care is an important component of disease control in chronic diseases, and insufficient self-care results in poor health outcomes (Momeni et al. 2013).

Because of the disease treatment prognosis, the patients with HF will face a change in their self-care needs. In other words, they need proper self-care behaviors to deal with the disease problems (Mohammedi et al. 2012). Self-care behaviors in HF are complicated and difficult, because the patients should monitor the symptoms and observe medication regimens, identify and evaluate their own status, select the appropriate treatment option, and evaluate its effectiveness (Moser et al. 2012). Chronic diseases provide an opportunity for education to encour-

age patients to actively participate in self-care activities (Ghahramani et al. 2013).

Teaching how to deal with chronic conditions is the main pillar of self-care. Since nurses have the most effective role in teaching patients, many reasons that cause treatment failure and exacerbation of the disease can be predicted through educational nursing interventions (Momeni et al. 2013). Self-care ability allows patients to better control their daily living activities. Accepting this responsibility requires strong motivation as it can overcome the problems and disabilities of the patients (Disler, Gallagher & Davidson 2012).

One of the most influential factors in the progression of chronic diseases is resilience, which has been the topic of investigation for many researchers (Doustdar Tousi & Golshani 2014). In mental health sciences, resilience is defined as the ability of an individual to deal with difficulties without giving up and postponing adverse effects of stressful events (Edward 2013). Over the years, resilience was thought to be a special trait of some people, but recent studies have indicated that it is a general characteristic and does not solely exist in particular individuals with unique personality (Pourafzal et al. 2013).

Sarouei et al. (2013) believed that although some of the resilience features naturally would exist in a person, the resilience skills could be trained and bolstered. The patients with acute cardiovascular disease experience high levels of anxiety and numerous problems such as pain, changes in tissue blood flow, intolerance to activity, and ineffective adaptation to the disease. Stress caused by this condition can clinically put the patient at a serious risk (Noori Saeid et al. 2014). Studies have indicated that the adoption of therapeutic approaches to increase resilience may improve prognosis of the disease (Edward 2013). Etesamipour and Amirpour (2014) by comparing resilience and depression of cardiac patients with those of normal people reported that low resilience leads to inability to cope with crises and life events, and consequently, catching multiple diseases, including HF or delay in the treatment process.

The use of active coping skills, such as self-care behaviors, reduces the chances of getting sick. Jaser and White (2011) in a study on 30 adolescents with type 1 diabetes, reported an association between coping strategies and resilience indices. There is also evidence that the supportive learning environment can enhance the coping ability and resilience of the individuals (Allister & Kinnon 2009). To the best of our knowledge, almost no study was found on the effect of self-care education on the resilience of HF patients. In this regard, this study was conducted to determine if training for promoting the self-care skills in these patients can increase their resilience.

2. Materials and Methods

Study sample and design

The present research is a quasi-experimental study with a control group. Study population consisted of all patients with HF referring to Shahid Beheshti and Ayatollah Rouhani hospitals affiliated to Babol University of Medical Sciences in Babol City, in 2017. Using sequential sampling method and based on inclusion criteria, the study samples were selected. The inclusion criteria were as follows: being 18 to 65 years old, lacking any psychological or physical disorders, being able to read and write, having HF class 2-3, performing self-care, lacking history of participation in self-care programs for HF, passing Connor-Davidson Resilience Scale (CD-RISC) score less than 50, and not attending in another concurrent study.

Those who did not participate in a training session were excluded. The required sample size was set as 40 with 95% confidence interval, 80% test power, and the effect size (d) of the self-care educational program on resilience in the intervention group (in comparison with the control group) of at least 10 to be statistically significant. Considering the sample attrition, 10% was added to the sample size. Thus, the final sample size was n=44 for each group (n=88).

After obtaining informed written consent from the participants, the study questionnaires were completed by all samples before the intervention. In the next step, a number was assigned to each questionnaire to prevent contamination of information. The first 22 patients of each hospital were assigned to the control group and the remaining 22 patients to the intervention group.

Data collection tools

Data collection tools were a demographic form and CD-RISC. The demographic form collected patients' information on age, gender, number of children, marital status, level of education, economic status, occupation, status of residence, insurance status, type of insurance, duration of living with HF, history of hospitalization, last hospitalization, discharge fraction, type of HF, and HF class that was completed by the patients or their family members and some parts by the researcher based on the medical records.

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To determine the validity of demographic form, it was reviewed by ten professors of Faculty of Nursing and Midwifery in Iran University of Medical Sciences and after implementing their comments, the form was used in the study. The CD-RISC is a Likert-Type Scale with 20 items which is rated from "0= not true at all" to "4= true nearly all of the time". The results ranged between 0 and 100, and higher scores indicate higher resilience (Haqh-Ranjbar et al. 2011). Connor and Davidson (2003) reported its Cronbach alpha as 0.86. In the study of Haqh-Ranjbar et al. (2011) the reliability of the Persian version of CD-RISC was obtained by Cronbach alpha coefficient as 0.85. As the reliability of the test was already accepted, no other measurements were conducted in our study. Before and one month after the intervention, CD-RISC was completed again by both groups.

Intervention protocol

The participants in the intervention group received self-care intervention in addition to routine care. It was given using a designed self-care booklet. The content of the booklet included the nature of Heart Failure and self-care activities presented in seven dimensions; diet and medication management, sodium and fluid restriction, daily weighing, regular exercise, monitoring signs and symptoms of HF exacerbation, deciding and choosing appropriate therapies, and some coping skills in self-care and resilience areas.

The educational program was provided to the patients in the intervention group (for groups of 5-10 members) with the help of the physician in 6 sessions, 60-45 minutes a week at the evening in a classroom located at the cardiovascular clinics of both hospitals by face-to-face presentation (via giving lectures and questions & answers sessions). The subjects in the control group received routine care and teaching programs at the hospi-

tals. At the end of self-care education in the experimental group, the booklet was also given to the participants in the control group.

Data analysis

The collected data were analyzed by descriptive (frequency, mean, standard deviation) and inferential statistics (Chi-Squared Test and Fisher's Exact-test for examining the normal distribution of qualitative variables, independent t-test for comparing the mean of variables, ANCOVA to compare the mean of resilience between groups by controlling the age factor, and paired t-test for comparing the mean scores of resilience within group) in SPSS-PC V. 22. The significance level was set at 0.05.

3. Results

A total of 88 patients participated in the study. Of 44 patients in the control group, 24 were men and 20 were women, and of 44 patients in the intervention group, 19 were men and 25 were women. The results of Fisher's exact-test and Chi-squared test indicated that the qualitative variables were homogeneous. The quantitative variables were examined by Independent t-test and the results showed no significant differences between them except for the age variable (P=0.01). Hence, the effect of age factor was examined by ANCOVA Test to compare the mean resilience scores in both groups before and after the intervention.

According to the results in Table 1, before educational intervention, the mean score of resilience was not significantly different between two groups (P=0.690), while the difference was significant after the intervention (P<0.001). The pre-test mean resilience score was 39.11 in the control group, while the post-test mean score was 42.06. According to the results of paired t-test, this dif-

Table 1. Comparing resilience scores of the participants before and after self-care education in the intervention and control groups (n=88)

Time	Mean ± SD		Mean Difference	P
	Control	Intervention		
Before the intervention	39.11 ± 5.88	39.65 ± 7.15	0.54	F = 0.747, P = 0.69
After the intervention	42.06 ± 6.19	60.20 ± 6.35	18.14	F = 194.03, P < 0.001
P*	t = 2.43	t = 43.76	-	-
	df = 43	df = 43		
	P = 0.02	P < 0.001		

* Paired t-test

Table 2. Comparing resiliency changes after self-care education in the intervention and control groups (n=88)

Variables	Mean ± SD	
	Test	Control
Resilience changes	20.55 ± 3.11	2.95 ± 1.64
T-test results	t = 33.92	
	df = 86	
	P < 0.001	

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ference was significant (P=0.02). The pretest mean resilience score was reported 39.65 in the intervention group, and its post-test mean score was 60.20. The difference of resilience score in this group was also significant according to the results of paired t-test (P<0.001).

The mean difference in the intervention and control groups increased by 20.55 and 2.95 units, respectively. The Independent t-test results showed that resilience changes were significantly different between the groups (P<0.001) (Table 2).

4. Discussion

This study examined the effect of self-care education on the resilience of patients with HF. Comparing the changes in the patients' resilience before and after the self-care education indicates that the mean difference of resilience score increased by 20.55 units that was significant.

This finding is consistent with the findings of Liou et al. (2015), Seyam, Hidarnia and Tavafian (2011) and Momeni et al. (2015). Liou et al. (2015) reported that self-care program had a significant positive effect on the test group. Seyam, Hidarnia and Tavafian (2011) found a significant difference between the mean score of problem-focused coping strategies in the test group before and after the intervention. Momeni et al. (2015) reported that distress score in the test and control group was significantly different after educational intervention.

The mean difference of resilience before and after the intervention in the intervention group and control groups was significantly different (Table 1). The results of İnci and Temel (2016) study are congruent with this result. After comparing the resilience scores of the samples in the test and control groups after the intervention, a significant difference was found between the two groups where the resilience score of the subjects in test group increased.

According to Momeni et al. (2015) study, there was a significant decrease in the distress scores of participants in the intervention group compared to the control group before the self-care intervention. Based on our study results, the changes in the resilience of the two groups were significantly different. In the intervention group, it increased more than 20 units. In the study of Evans, Bell and Smith 2016 the results indicate that resilience has a predictive role in the self-care of patients with chronic diseases, including those with chronic HF.

Results of the study of Chang et al. (2017) revealed that resilience reduced the direct and indirect effects of depressive symptoms through self-care confidence on self-care maintenance in HF patients. Our results were also consistent with the findings of Aghakhani et al. (2017). They concluded that the educational-supportive self-care package can reduce anxiety and depression among patients with myocardial infarction.

Self-care education was able to increase resilience in patients with Heart Failure. It can play a significant role in empowering patients to deal with difficult conditions. Regarding the important role of nurses in teaching patients and in order to promote community health, it is recommended that nurse managers include self-care education in patients' care plans to increase the patients' resilience. Because the majority of patients with HF have not received proper training in relation to their disease, as well as how to cope with difficult and vital conditions, it is recommended that health-care providers increase the resilience of these patients in critical conditions by holding self-care education programs. This will improve the patients' response to their illnesses. Considering the effectiveness of self-care education on the resilience of patients with HF and the importance of the subject, further studies are recommended to address the resilience related factors in patients with Heart Failure.

Ethical Considerations

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Compliance with ethical guidelines

Ethical considerations were observed according to principles of Iranian Ethics Committee and the Declaration of Helsinki (1981). The study was approved by the Ethics Committee of Iran University of Medical Sciences (code: IR.IUMS.REC.1395.9311686004). The patients were assured of the confidentiality of their information and were informed that they are free to leave the study whenever they want. The study was also submitted to Iranian Registry of Clinical Trials. However they informed us that registration of this proposal is not required according to the definition of WHO for registration of RCTs "A clinical trial is any research study that prospectively assigns human participants or groups of humans to one or more health-related interventions to evaluate the effects on health outcomes".

Authors contributions

All authors contributed in preparing this article.

Conflicts of interest

The authors declared no conflict of interest.

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