Effect of continuous care model on self-care behaviors in heart failure patients: a randomized controlled trial (Continuous care model for self-care behaviors promotion)

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ABSTRACT

Background: The prevalence ratio of heart failure is significantly increased, especially in low and middle-income countries. Adoption of self-care behaviors effectively and efficiently might be reducing the costs in result of heart failure outcomes and complications from the disease. This study aimed to determine the effects of the continuous care model on self-care behaviors in heart failure patients.

Methods: A Randomized controlled trial with Pre-test/Post-test control group design was conducted on some 80 patients with heart failure. The subjects in this study were randomly assigned to intervention (n=40) and control group (n=40). In the experimental group, Continuous care model applied for a period of three months from April to the end of June 2016, and self-care behaviors in heart failure patients in the two groups before and after the implementation of continuous care models were compared. Data collection tools included two parts: Demographic characteristics and specific questionnaire of self-care heart failure index. The data were analyzed by SPSS v. 20, chi-square, independent T, and paired test.

Results: The mean score of the Self-Care Behaviors before the intervention, at the intervention and control group were 28.33 ± 12.72 and 26.99 ± 1.96 respectively (P= 0. 663). But after the intervention, mean score of the Self-Care Behaviors in the intervention and control groups were 50.86 ± 11.96 and 28.93 ± 10.96 respectively (P < 0.0001).

Conclusion: Implementation of the continuous care model can lead to improving self-care behaviors in heart failure patients.

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INTRODUCTION

The most common complication of cardiovascular disease is heart failure, which increases mortality, disability and imposes enormous costs on the country.[1] About 23 million patients worldwide suffer from heart failure.[2] This disease is responsible for one million hospitalizations and 5000 deaths in the United States each year.[3] Also, heart failure is a major cause of disability and death in Iran, and on the current prevalence of heart failure, 3500 people per one hundred thousand people will be added by changing the age pyramid of society and aging of the young population in the near future in Iran.[4] If serious measures are not taken in this regard, heart failure in the future will be one of the main challenges.[5]

In recent years, focusing on educational-supportive therapy, particularly reception their treatment and care in patients with heart failure has been increasingly considered.[6] However, one of the major complaints that are frequently stated by patients with heart failure is a lack of awareness in self-care behaviors.[7] According to the studies, poor self-care behaviors observed in these patients have been associated with increased readmission rate. Therefore, the majority of heart failure management programs, emphasizes that the improvement of self-care behaviors as a key to promotion of quality of life, reduced mortality and health care costs in these patients.[5,7,8]

So that 90 percent of patients when discharging from hospital and continuation of daily activities at home have questions about their care, diet, medications, and complications. Health care providers, especially nurses must communicate effectively and consistently with them and follow up them, in case of any problems and questions to help patients and to provide guidance to solve their problems.[9] Zamanzadeh in their study concluded that although many patients with heart failure receive training, they do not have a clear understanding of self-care behavior, and these patients require frequent training.[10] Accordingly, lifestyle changes in heart failure patients require follow-up and education by health care providers, especially

nurses.[4] Therefore, a continuous care model that has been designed by Ahmadi for patients with chronic coronary artery can be effective for patients with heart failure. This model consists of four phases, i.e. orientation, sensitization, control and evaluation. In this model, patient as a continues care agent in your health trends, continues care as a systematic process in order to achieve effective communication, interaction and follow-up, and nurse as a provider of health care services to identify the needs, problems and sensitization of patients to take continuous health behaviors to help improving and promoting their health has been introduced.[11]

Developing a program to increase acceptance, attitude and suitable performance for care, is the main purpose of the continuous care model so hereby, disease and its possible complications able to be controlled.[12] Studies have shown that using this model are effective on indices such as admissions, the number of doctor visits, blood lipid levels and dietary modification, frequency of use of sublingual nitroglycerin pills and also, the quality of life in patients with coronary heart disease.[13,14] Therefore, it can be concluded that self-care is an important part of successful treatment in patients with heart failure that leads to decrease of complications and mortality.[15] This paper aimed to study the effect of continuous care model on self-care behaviors in patients with heart failure.

MATERIALS AND METHODS

Study Design and Participants

This randomized controlled trial with pre-test/post-test control group was conducted between January and September 2016. A total of 80 hospitalized patients with heart failure in Abbasi hospital of Miandoab were selected through the convenient sampling method. A sample size of 36 patients was estimated for each group by using similar studies with a confidence interval of 95 percent and power $(1-\beta)$ 90 percent.[16] Inclusion criteria included were patients older than 30 years, patients with heart failure based on clinical symptoms, ECG and echocardiography which represents an ejection fraction less than 40% with the approval of cardiologist according to patient records, diagnosed as heart failure class II, III, having shortness of breath or swelling of the ankles in the last month, patients with at least literacy, access and control over the 3 month follow-up and give informed consent to participate in the study. The exclusion criteria were patients with severe mental disorders or cognitive, receive information about self-care in heart failure, lack of informed consent to participate in the study,

participate in similar research projects, malignant or other chronic.

Finally, considered the possibility of attrition, 40 samples were selected for each group. To maintain uniform conditions in both groups, random allocation method was used in the intervention and control groups.

Instruments

The data collection tools consist of two parts, i.e. demographic information and self-care heart failure index which was designed by Riegel et al. Sixth Edition of this questionnaire published in 2009 which has made of three separate subscales but interlinked, namely maintenance of self-care (10 items), management of self-care (6 items) and confidence of self-care (6 items). The standard score is 0 to 100 for each of three subscales.[17]

To determine the validity of self-care heart failure index, quantitative method of content validity was utilized. In this study, judgment for content validity index was done by seven persons of nursing experts and three cardiologists. In a Moadab study (2015), content validity index (CVI) obtained higher than 0/83 (18) and in this study, this index was 0/87.

In the present study to determine the reliability, a method of internal consistency was used with samples of 20 patients with heart failure. Cronbach's alpha coefficient 0/84 obtained for the self-care of heart failure index.

Procedures

Following the informed consent, patients were assured of the secrecy and confidentiality of their information. After completing the questionnaire for the intervention and control groups, follow-up care model was implemented for the intervention group, while the control group received only routine care. Continuous care has four stages that this process had its own coherence. In this study, the interventional stage had consisted of four continuous phase.

The first phase of continuous care model was orientation and ensuring the necessary sensitivity about the disease and the problems. The purpose of this phase was to correct the understanding of the problem, motivating and feeling of the need for follow-up process to the clients. Researcher coordinated through the meeting, which lasted for 30 to 45 minutes, with the patient and his family and expressed for them, mutual expectations, a continuation of health care relationship, how to contact by phone. The phone numbers were given to patients, and their relatives for next follow up. Specific demographic questionnaire and self-care index in patients with heart failure were completed for them.

In the second phase of continuous care model (sensitization phase), the researcher described important points of self-care by using the telephone, lectures, question and answer, booklet, poster presentations and video training. The venue for classes was in the hall of Abbasi Hospital. The content of educational programs had been set based on newest literature and consultation with experts. At the end of each session, training package that includes self-care booklets and CDs were given to patients and their families.

The orientation and sensitization were performed in the first three weeks of the three months. Since the model used was named continuous care and follow-up, the remaining time was related to follow-up which was named control phase. At this stage, commensurate with patient's care needs, counseling about continuous care was conducted by telephone calls and face to face every week for three months. Evaluation was the fourth and final step of this model, but it had considered since the beginning of work. One month after the intervention, post-test were taken from both groups.

Ethical Considerations

The present study was approved by the Ethics Committee of Urmia University of Medical Sciences under the following code: ir.umsu.rec.1395.11. Informed consent was obtained from all participants. Participants were briefed on the objectives and methods of the study and ensured about the voluntary nature of participation in and withdrawal from the study as well as the confidentiality of their data. Informed oral consents were then taken from all participants. In order to comply with the Code

of Ethics, training manuals were given to control group at the end of the study.

Data Analysis

SPSS 20 was utilized to analyze the data. Further to descriptive statistics, first Kolmogorov-Smirnov test was used to assure the normal distribution of variables, and then independent and paired T-test was utilized to study the mean of scores between and within groups. Chi-square test was also used. Normally distributed data were presented as mean ± standard deviation (SD). The significance of data was set at p-value of 0/05.

RESULTS

The average age of patients in the intervention and control group was 67.5 ± 12.58 and 69.47 ± 9.54 years old, respectively. 55% of the participants in the intervention group were male and 45% were female. In the control group, 42.5% of the participants were male and 57.5% were female. The chi-square and an independent t-test showed no significant difference between two groups in terms of qualitative and quantitative demographic variables. Also, according to independent t-test for groups before applying the continuous care model, a statistically significant difference was not observed in the pre-test results both groups in none of the subscales and total score of self-care behaviors. But after applying the continuous care model, the results were noted a significant increase in mean scores for all subscales and total score of self-care behaviors in the intervention group than the control group (Table 1). Also paired t-test results showed that, in the intervention group, a significant increase was observed between mean

Table 1 A comparison of self-care behaviors between intervention and control groups

(SCHFI)	Before			After		
	Control group	Interventional group	*P*-value	Control group	Intervention group	*P*-value
Maintenance	22/31 ± 11/71	24/64 ± 12/47	0.392	23/39 ± 10/83	49/86 ± 12/58	0.001
Management	33/00 ± 14/75	35/52 ± 14/49	0.451	34/50 ± 10/24	55/38 ± 15/06	0.001
Confidence	24/87 ± 15/76	25/17 ± 18/86	0.941	29/51 ± 21/98	45/82 ± 16/27	0.001
self-care behaviors	26/98 ± 11/96	28/33 ± 12/72	0.663	28/83 ± 10/96	50/86 ± 11/96	0.001

Table 2 A comparison of self-care behaviors within intervention and control groups

(SCHFI)	Control group			Intervention group		
	Before	After	*P*-value	Before	After	*P*-value
Maintenance	22/31 ± 11/71	23/39 ± 10/83	0.286	24/64 ± 12/47	49/86 ± 12/58	0.001
Management	33/00 ± 14/75	34/50 ± 10/24	0.330	35/52 ± 14/49	55/38 ± 15/06	0.001
Confidence	24/87 ± 15/76	29/51 ± 21/98	0.072	25/17 ± 18/86	45/82 ± 16/27	0.001
self-care behaviors	26/98 ± 11/96	28/83 ± 10/96	0.024	28/33 ± 12/72	50/86 ± 11/96	0.001

scores of before-after intervention in all subclasses and self-care behaviors, while in the control group, only in mean scores of before / after self-care behaviors was observed increase statistically significant (Table 2).

DISCUSSION

The results of this study noted that applying the continuous care model has been led to improving self-care behaviors in patients with heart failure. This result is consistent with the findings from the studies of Salehy-taly et al (2010), Otaghi et al (2016), Shojaei et al (2014), Navidian et al (2015) in which they have emphasized the importance of the follow-up interventions for the empowerment and the promotion of self-care behaviors in patients with heart failure.[4,6,19,20] In another research conducted by Miche et al., the results of their study showed that self-care behaviors gradually 1, 2 and 3 months after the implementation of the program was better in the experimental group. So that 3 months after the training and follow-up interventions, quality of life in patients in the intervention group increased significantly than the control group.[21] Also, in a study by Rodriguez et al in 2012, after follow-up interventions, mean scores of self-care behaviors were increased significantly.[22] It seems that important goal in education is making the healthy behaviors, right and lasting. This continuity of care is valuable for patients.[23]

In our study, comparison within groups by paired t-test showed statistical significance in the mean scores of self-care behaviors in the control group. In this regard can be said Firstly, this increase compared with intervention group was insignificant, so that the difference between mean scores before and after, confirms it. Secondly sensitizing the participants in the control group when completing the questionnaire can affect these findings.

All findings above, insist to this point: for that which self-care behaviors in patients be correct, they have must be adequate knowledge about these behaviors. Because Rigel study demonstrated, improving self-care behavior without the knowledge of the behavior and the understanding of their importance, not possible.[24] Then, combination of follow-up and continuous care with an increased awareness may lead to the ability of patients to improve self-care behaviors.

CONCLUSION

Nursing models are a guideline for nursing care; using of nursing models, especially models that are compatible with the culture of the society, can be effective in nursing care performance, continuity of care and managing of potential conflicts of care. Development and application of clients based models can lead to increased understanding of nurses towards the people and their health needs. Therefore, it is necessary, nurses with applying the continuous care model take an important step for management and improvement of self-care behaviors in patients with heart failure.

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