

Educational intervention for improving self-care behaviors in patients with heart failure: A narrative review

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Abstract

Heart failure is one of the most common cardiovascular disorders, and as a chronic and progressive disorder, it can disrupt with interpersonal and social relationships, reduce physical activity, and in fact, impair self-care. Therefore, it is necessary to improve the self-care behavior of the patients with heart failure with effective interventions. There are several ways to improve self-care behavior, and educational interventions are one of these methods. Review of educational interventions causes promotion in self-care behaviors of patients with heart failure. The aim of this study was reviewing the educational intervention for improving self-care behaviors in patients with heart failure. The present study is a narrative review study that uses a search in databases such as Google Scholar, Cochrane, Science Direct, ProQuest, Springer, SID, Magiran, IranMedex, Web of science, Scopus, and PubMed from 2000 to 2018. Search for articles using Keywords: heart failure, self care, education and training. All articles with educational intervention and clinical trial in Persian and English and articles with full-text of individual or group training in the database of internal and library were included in the study, and unrelated articles with just abstract were excluded from the study. Seventy-one articles were finally included, after removing repetitive and nonrelated items. Initially 340 articles were obtained and after reviewing the articles for inclusion criteria, finally 71 articles were included in the study. Educational interventions were divided into four groups: face-to-face teach-back training and home visitation by follow-up phone call, group training, and e-learning. The results of this study showed that four abovementioned educational methods significantly improved self-care behaviors in patients with heart failure. According to the findings of this study, it is recommended to improve self-care behaviors in patients with heart failure. Based on the findings of the study, it is recommended to use one-to-one face-to-face, teach back, home visits with telephone follow-up, group training, and e-learning to improve self-care behaviors in patients with heart failure.

Keywords: Education, Heart failure, Patient, Self-care

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INTRODUCTION

Cardiovascular disease (CVD) is a common and chronic disease, contrary to many advances in its treatment and prevention; it is still considered a public health problem in the world.^[1] Congestive heart failure is a clinical syndrome in which the structural or functional disorder of the heart causes the heart inability in pumping blood at a rate proper with the metabolic needs of the body. Myocardial dysfunction causes increased intraventricular pressure and decreases cardiac output, eventually leading to pulmonary edema and peripheral edema.^[2] Heart failure exacerbating factors are failure in compliance with the medication and food regimen, uncontrolled blood pressure, inadequate treatment, and smoking and drug addiction.^[3] Heart failure is the only common CVD that its prevalence and incidence is increasing.^[4] More than 37 million people in the world and 15 million in Europe and 6 million in the United States are suffering from heart failure.^[5] Precise information is not available in Iran. Given the changes in age pyramid of our society due to the population aging in the near future, the current outbreak of the disease will be increased to 3500/100,000 people.^[6] At that time, the progression of this disease can be prevented to a large extent by self-care against exacerbating factors.^[7] Self-care is a comprehensive concept and process in which the patient uses his/her knowledge and skills to conduct recommended behaviors to maintain his/her life and promote his or her health.^[8,9] Therefore, patients need to have enough information about their illness and take appropriate care so that they can use their knowledge in different circumstances. Inadequate self-care causes poor health outcomes and rehospitalization of these patients.^[10] Instead, effective self-care increases satisfaction, independence in everyday activities and reduces stress and complications of the disease.^[11] Self-care in heart failure implies the issues such as medication and food regimen management, sodium and fluid intake limitations, daily weighing, regular exercise, signs monitoring, and symptoms of exacerbation of the disease, search, and decision-making for appropriate treatments.^[12] One of the factors affecting self-care is having enough knowledge about the disease, factors affecting it and how to prevent it.^[13] The researches have shown that patient education has a considerable impact on the reduction of risk-related behaviors and the increase in the health behaviors, and in general, it is economically feasible.^[14,15] The use of supportive educational interventions to improve self-care behaviors in patients with heart failure significantly decreased the symptoms and complaints of the patients.^[16] Educational interventions in heart failure patients include face-to-face training sessions, educational writing tools, and home visitation by follow-up phone call. These

interventions not only increase patient awareness of the disease but also play a key role in self-management of patients.^[17] Meanwhile, several studies have been done by different educational methods in the management of self-care of the patients with heart failure. With a lot of searches in the databases, we could not find any review narrative study which discusses about impact of educational interventions promoting self-care behavior of patients in heart failure. Accordingly, the purpose of this study was to investigate educational interventions promoting self-care behaviors in patients with heart failure.

MATERIALS AND METHODS

Search method

The present study is a narrative review study using comprehensive search in the databases such as Google Scholar, Cochrane, Science Direct, ProQuest, Springer, Web of Science, Scopus, and PubMed from 2000 to 2018. The article searches were done using the keywords of heart failure, self-care, education, and training. and all Full-text studies about education as well Interventions and clinical trials in self-care behaviors Patients with heart failure were in Persian and English and educational intervention was Group and individual were included in the study. The exclusion criteria were also noninterventional studies and noneducational interventions and articles that had just abstract. The population included patients with heart failure who had educational interventions in self-care patients. In the first phase, based on this research question, what are the educational interventions for promoting self-care in patient with heart failure? A list of titles and abstracts of all the articles in the databases was prepared to determine the relevant topics. The papers were first obtained by two separate individuals in the databases. Then, the articles were reviewed by title, abstract, objectives, methodology, findings, type of study, participants, variables, and data; if there was a disagreement between the two researchers' opinions, the third person's opinions were used. In the third phase of this study, the researchers evaluated the data of the studies. Finally, related articles were reviewed. In the fourth step, the results of the studies were collected by the researcher for analysis and interpretation of the data. At the beginning of the search, 340 articles related to the self-care education of heart failure were obtained, and after deleting repetitive articles, 280 articles were left. After screening of articles, 100 articles were removed due to nonrelevance and abstract, and 180 full-text articles were investigated. After final reviewing, 109 articles were excluded due to repetition and similarity. Finally, 71 articles were included in the study [Figure 1].

Ethical considerations

The authors of the present study, while respecting ethical considerations in the translation, were loyal to the intellectual property of the articles and used the results derived from the translation of the articles in this article and avoided plagiarism.

RESULTS

Although the number of published articles was more than the number of articles that were used in this research,

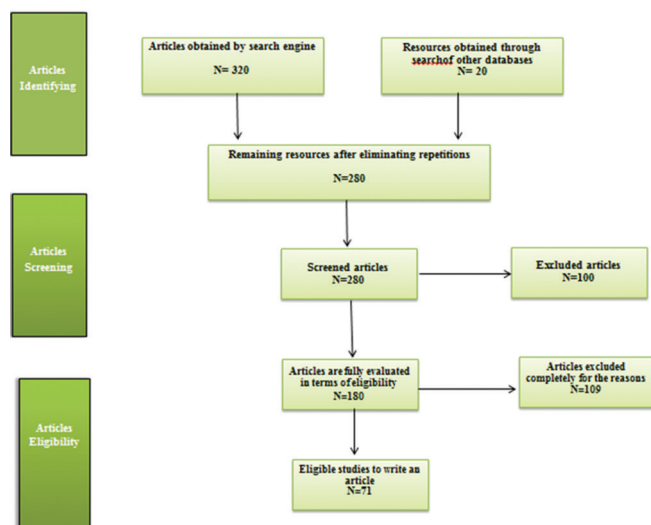


Figure 1: Flowchart of articles entered into the study

only articles in this study were used that contained accessible full text. The noteworthy point is that effective educational interventions for improving self-care behavior included face-to-face teach-back training, home visitation by follow-up phone call, group training, and e-learning [Table 1].

The findings of this study were organized in four categories:

Categories: 1: Face-to-face/teach-back training

The first category, which examines face-to-face and teach-back training on self-care behaviors, includes 25 articles. Self-care education in patients with heart failure is done by face-to-face and teach-back training. These two methods are carried out at the presence of the person. In teach-back training, the essential information for the patient is expressed so that they have an understanding of the educational contents, and the questioner ascertains the accuracy of the information received by the patient. In this way, it allows the educator to examine, understand and fix memory while memorizing patient information, errors and errors, and managing messages through managing an open conversation with patients.^[83] After each training session, educational materials are asked from patients, and the purpose of this questioning is to understand that the patients learned the educational materials correctly.^[25] In most studies, teach-back training is being used for heart failure patients' self-care.^[24,25,42] Self-care behaviors in heart

Table 1: Educational interventions affecting self-care behaviors in patients with heart failure

Category	Articles/authors/year of publication	Results
Face-to-face Teach-back training	Mangolian <i>et al.</i> , 2012, ^[18] Zamanzadeh <i>et al.</i> , 2013, ^[19] Heidari <i>et al.</i> , 2016, ^[20] Aghakhani <i>et al.</i> , 2017, ^[21] Ghahramani <i>et al.</i> , 2011, ^[22] Tung <i>et al.</i> , 2011, ^[23] Dinh <i>et al.</i> , 2018, ^[24] Dalir <i>et al.</i> , 2015, ^[25] Wonggom <i>et al.</i> , 2018, ^[26] Smeulders <i>et al.</i> , 2006, ^[27] Siabani <i>et al.</i> , 2010, ^[28] Khaledi <i>et al.</i> , 2013, ^[29] Otsu and Moriyama 2008, ^[30] Dickson <i>et al.</i> , 2015, ^[31] DeWalt <i>et al.</i> , 2009, ^[32] Deek <i>et al.</i> , 2013, ^[33] Vellone <i>et al.</i> , 2016, ^[34] Riegel <i>et al.</i> , 2002, ^[35] Cossette <i>et al.</i> , 2010, ^[36] Caldwell <i>et al.</i> , 2005, ^[37] Doughty <i>et al.</i> , 2002, ^[38] Saidpour <i>et al.</i> , 2016, ^[39] Yaser Moradi <i>et al.</i> , 2017, ^[40] Delaney <i>et al.</i> , 2013, ^[41] Pistoria <i>et al.</i> , 2012 ^[42]	Face-to-face and Teach-back training improved all aspects of physical and emotional life and sports, emotional and social aspects, increased awareness and knowledge of patients in self-care, social support, reduced the number of hospitalized days, and improved the behavior of self-care
Home visitation by follow up phone call	Ruschel 2013, ^[43] Trojahn <i>et al.</i> , 2013, ^[44] Bowles <i>et al.</i> , 2010, ^[45] Young <i>et al.</i> , 2015, ^[46] Sethares and Elliott 2016, ^[47] Masterson Creber <i>et al.</i> , 2013, ^[48] Riegel <i>et al.</i> , 2016, ^[35] Paradis <i>et al.</i> , 2010, ^[49] Navidian <i>et al.</i> , 2016, ^[50] Arredondo Holguín <i>et al.</i> , 2010, ^[51] Lycholip <i>et al.</i> , 2018, ^[52] Hoban <i>et al.</i> , 2012, ^[53] Bryant and Gaspar 2012, ^[54] Rodríguez-Gázquez <i>et al.</i> , 2012, ^[17] Du <i>et al.</i> , 2011, ^[55] Arredondo-Holguín 2012 ^[89]	Home visiting and training improved the quality of life, more adherences to diet and regular use of medications increased the level of knowledge and awareness of patients about self-care, increased self-esteem and the self-efficacy in controlling the diseases, more fellowship participation in patient care and restoring self-care and reducing the rate of hospitalization in patients
Group training	Smeulders <i>et al.</i> , 2007, ^[56] Mamianloo H 2014, ^[57] Wu <i>et al.</i> , 2018, ^[58] Shoja Fard <i>et al.</i> , 2008, ^[59] Meng <i>et al.</i> , 2013, ^[60] Meng <i>et al.</i> , 2016, ^[61] Khaledi <i>et al.</i> , 2015, ^[29] Vaillant-Rousse <i>et al.</i> , 2016 ^[62]	Group training increases knowledge and awareness about the disease, improves quality of life, improves self-care behavior, and increases social support and adherence to diet and better management of the disease
E-learning	Baert <i>et al.</i> , 2018, ^[63] Howie-Esquivel <i>et al.</i> , 2012, ^[64] Srisuk <i>et al.</i> , 2017, ^[65] Boyde <i>et al.</i> , 2017, ^[66] Cameron <i>et al.</i> , 2015, ^[67] Clark <i>et al.</i> , 2013, ^[68] Cockayne <i>et al.</i> , 2014, ^[69] Dunbar <i>et al.</i> , 2015, ^[70] Köberich <i>et al.</i> , 2013, ^[71] Boyde M 2018, ^[72] Smeulders <i>et al.</i> , 2010, ^[73] Smith <i>et al.</i> , 2014, ^[74] Stamp <i>et al.</i> , 2015, ^[75] Taylor <i>et al.</i> , 2015, ^[76] Moradi <i>et al.</i> , 2016, ^[40] Veroff <i>et al.</i> , 2011, ^[77] Boyne <i>et al.</i> , 2014, ^[78] Dansky <i>et al.</i> , 2010, ^[79] Boyde 2018 ^[80] Dansky <i>et al.</i> , 2008, ^[79] Boyde <i>et al.</i> , 2012, ^[81] Ross <i>et al.</i> , 2014 ^[82]	Training by using electronic instruments increases knowledge and awareness about self-care behavior, improves self-care behavior, reduces cognitive impairment, reduces depression, improves quality of life, increases adherence to diet and drug orders, reduces the rate of admission, increases the participation of fellows in Self-care and increases self-care and self-care management

failure patients include adherence to the pharmaceutical and nonpharmaceutical regime and follow-up and decision-making for proper therapeutic measures during the onset of the disease in the acute phase.^[12] Self-care is one of therapeutic methods for heart failure.^[8] Face-to-face education is also one of the best teaching methods for educating learners to change their behavior. In this type of training, the trainer and the trainee communicate directly and face-to-face with each other and the learner can talk, ask questions, and provide comments freely. My biggest education is to be an individual who can sleep with a person and help them change their behavior. Individual training makes an opportunity to raise questions about the trainees' particular interests.^[22] In this method, the training is given to patients individually or in group with face-to-face teach-back training.^[18,19,23,26,28,31,35-37,39,40] Various studies have shown that in-person training with face-to-face interaction has increased awareness and knowledge self-care.^[20,21,27,29,30,32-34,38,40] Delivering materials in a comprehensible manner based on individual needs and using individual education and face-to-face and teach-back training can provide better results and most importantly have been effective in sustaining health behaviors. Face-to-face and teach-back training improved all aspects of physical and emotional life and sports, emotional and social aspects, increased awareness and knowledge of patients in self-care, social support, reduced the number of hospitalized days, and improved the behavior of self-care.^[18-21,23-40] In a study, this method of training was effective in reducing the fatigue score of patients but did not influence on the mean of their activity tolerance.^[20] The results of some studies showed that self-care training has improved the patients' daily weight control and fluid intake.^[21,38] In some studies face-to-face education has improved the self-care of patients and reduced the mortality of heart failure patients.^[27,32,38] In another study, face-to-face teaching style had increased motivations, improved self-care, self-management, and self-confidence in therapy, reduced depression and anxiety, and improved sleep.^[34] Face-to-face education has also increased social support and self-care in cardiac patients.^[29]

Categories: 2: Home visitation by follow-up phone call

The second category, which examines the impact of home visiting training with phone call follow-up on self-care behaviors in heart failure patients, includes 16 articles. Other educational methods that are effective in promoting self-care behaviors of patients with heart failure is home visitation by follow-up phone call. Telephone follow-up by a nurse is a useful tool for exchanging information, controlling symptom, rapid complication diagnosing,^[84] improving the clinical status, promoting of life quality^[41,57,58,62,85] and ensuring the patient and his

family, and reducing the hospital costs.^[84] Readmission of the patients can be due to the factors such as failure to observe diet and medication, lack of knowledge about disease and treatment, recurrence and course of illness and its progress.^[49] The patient needs care after hospital discharge. Improving the knowledge of the patient and his/her care at home is important and requires the ability of caregivers through home-based training. Various studies have shown that the use of home visitation by follow-up phone call has increased the self-care of the patients.^[17,46,52,57] Home Visiting improves quality of life, increases patient and carer awareness, increases self-care, and self-management and self-esteem in self-care, and reduces patient readmission.^[17,46,49,52,57,84,85] Some studies home visits with telephone follow-up have not been effective on self-care, quality of life, and readmission.^[35,45,47,49-54]

Categories: 3: Group training

The third category includes 8 articles which studies the impact of group training on self-care behaviors. One of the recommended teaching methods in small groups is due to the positive features of this method, such as active participation, face-to-face contact, and head activity.^[86] One of the recommended teaching methods is teaching in small groups. Group training facilitates communication and raise and strengthen the spirit, creativity, and more initiative in deciding the treatment process, improving the patient's performance when needed, reducing the costs, and saving the time. Group training increases knowledge and awareness about the disease, improves quality of life, improves self-care behavior, and increases social support and adherence to diet and better management of the disease.^[17,56-62] The use of this training program also has improved the reception of low-sodium diet in patients. Using group training in rehabilitation intervention in patients with heart failure increased their understanding and self-care^[60] and improved the symptoms and physical activity and reduced the readmission.^[17] Using group training has increased perceived social support and self-care in patients with heart failure.^[29] Group training as a workplace and telephone follow-up of patients improved the quality of life of the elderly but had no effect on reducing mortality in the elderly.^[61]

Categories: 4: E-learning training

The fourth category includes 22 articles which examines the impact of e-learning on self-care behaviors. Educational aids are one of the most important and effective teaching methods. A large number of patients can be trained with relatively little time and without trained personnel by adding the image.^[64] Adding images related to the words can contribute to involvement of the learner's mind and his active learning.^[68] The use of e-learning tools provides 24-h

access to educational materials. Training by using electronic instruments increases knowledge and awareness about self-care behavior, improves self-care behavior, reduces cognitive impairment, reduces depression, improves quality of life, increases adherence to diet and drug orders, reduces the rate of admission, increases the participation of fellows in self-care, and increases self-care and self-care management.^[63,66-68,70,71,74-76,78-81] In some studies, the use of media was not effective in self-care of the patients.^[65,66,69,72,73,77,82] The use of e-learning in rehabilitation programs for patients with heart failure improved the patients' quality of life, which is economically affordable.^[76] DVD training along with follow-up phone call in self-care and self-management of heart failure patients has reduced the readmission of the patients.^[75] A study showed that patients registered on mobile phones improved self-care by controlling patients' daily weight but were not effective in adhering to diet, smoking and alcohol.^[80] In the study, media education for patients with heart failure in three areas of self-care (self-preservation, self-management, and self-trust) was not significant.^[79]

DISCUSSION

The purpose of this study was to investigate educational interventions' self-care behaviors in patients with heart failure that was performed on valid internal and external databases. The results of this study showed that education in face-to-face teach-back training, home visitation by follow-up phone call, group training, and e-learning improved self-care behaviors in patients with heart failure.

Face-to-face/teach-back training

The first category: In this category also, the effect of face-to-face teach-back training on self-care in heart failure patients has been studied. The findings suggest that this kind of education improves self-care behaviors in patients with heart failure.^[24,25] Training is also one of the effective ways to promote self-care behaviors.^[13] In teach back-based training, the trainer due to receiving teach back from patients after training is informed about the accuracy of the transfer of information to the patient, and if patients find misconceptions and misunderstandings, the content is again expressed in plain language.^[83] Various studies have shown that teach back-based training has increased awareness about the disease and how to care for themselves at home and observing the diet and ultimately improving the patients' self-care behaviors.^[24,25] Face-to-face training is done because of the presence of the educator and according to the needs of the patients and the questions of the patients and their caregivers. The researcher based on the results of the studies^[20,21,24,25,27,29,30,32-34,38] believes that

self-care education for patients with heart failure can be used with confidence face-to-face and teach-back training. Delivering materials in a comprehensible manner based on individual needs and using individual education and face-to-face and teach-back training can provide better results and most importantly have been effective in sustaining health behaviors.^[18-21,23-40,42]

Home visitation by follow-up phone call

The second category: The findings indicated that home-visiting education and phone-call training improved clinical status, quality of life, control of disease symptoms, and a reliable way to transfer information to the patients and their family members.^[57,85] Because of the chronic nature of the disease and spending more time at home, patients and their caregivers need to be trained about self-care behaviors and how to deal with the patient in the acute and critical phase of the disease at home so that they can take appropriate action.^[17,57] In-home education training combined with monitoring telephones has helped patients gain better control over their weight. Ultimately, it increases the awareness and knowledge of patients and their family members about the disease.^[35] Moreover, in some studies, home visitation by follow-up phone call has not been effective self-care in heart failure patients.^[45,47,49,50,52-54] Moreover, the contradictions of these studies were the lack of familiarity of nurses with the monitoring system and the high age of participants in these studies. In another study, home visitation by follow-up phone call and sending health message were not effective on quality of life and hospitalization,^[47] and the cause of the dissimilarity of the results of this study was the patient's age and duration of the disease. Based on these studies, it seems that providing training, institutionalizing with repetition and monitoring in a familiar environment like home for the patient and monitoring in a familiar environment like home can be a factor in promoting self-care behavior in patients with heart failure. An important goal in education should be the creation of healthy, right, and lasting behaviors to be effective with the continuity of care in promoting a behavior, and this is the continuity of care which is valuable to the patient.^[87,88]

Group training

The third category: Findings indicated that group-based training motivates more patients and caregivers, activates participation in self-care, increases, and exchanges more information by other patients.^[71] The findings showed that group training has increased awareness and health literacy of the patients; therefore, the patients adhere to the low sodium diet, and they pay more attention in their diet to limit the fluid and sodium intake.^[58] Observing these factors

makes patients to have better self-care.^[17,35,51,56-61] Low sodium diet and liquid constraints reduce the edema and dyspnea in patients, and they are less likely to be admitted to the hospital.^[57] Studies have shown that increasing the awareness of the patients and their caregivers has improved their health behaviors such as physical activity and athletic performance. Physical activity enhances vitality, improves sleeping, alacrity, and improves their quality of life.^[56] Studies have shown that group training improves the rehabilitation of patients with heart failure. Heart failure patients require rehabilitation interventions such as getting familiar with medicines and physical activity. With the participation of patients in group rehabilitation, their motivation for self-care will increase.^[58-60] Various studies showed that group training has been effective on self-care in heart failure patients.^[17,29,56-62] Group education leads to increased health awareness and literacy as well as greater understanding of the benefits and barriers of self-care in patients. But it has not reduced patients' morbidity and behavior change, such as smoking cessation and weight loss.^[62] Factors such as high age and patient culture not affect mortality and health habits. The researcher believes that if self-care activities are activated with educational methods by recognizing the attitudes and beliefs of patients and providing a favorable environment by creating confidence and comfort for the client, using the group training method can play an effective role in promoting good health behaviors.^[56,57]

E-learning

The fourth category: Findings indicated that e-learning education has improved self-care behaviors in patients with heart failure.^[63,68,80] Given the age of technology, the use of electronic equipment makes it possible to transfer more information between individuals at any time and place; on the other hand, accessibility of the educational materials and the use of images and related words will increase the motivation of individuals in learning.^[64,68] A research showed that e-learning has improved the cognitive status of the patients.^[73] On the other hand, e-learning in patients' rehabilitation program has improved the patients' quality of life.^[76] A study also found that telemonitoring of patients by cell phone improves self-care behaviors, daily weight control, liquid restriction, physical activity improvement, and appropriate interventions in critical situations.^[45] According to the results of the studies, this method can be used to educate the patients. It also will help the training cost to be saved, and patients and their caregivers can identify the symptoms of the disease and make appropriate decision. Studies have shown that using of educational tools (laptops and DVDs, power point), telephone

follow-up, mobile virtual system, and e-mail is effective in self-care for heart failure patients.^[63,66-68,70,71,74-76,78-81] However, in some studies, the use of media was not effective in self-care of the patients.^[65,66,79,72,73,77] Factors such as high age, severity of the patient, and cognitive and psychological disorders disrupt the learning of patients. The reasons for these inconsistencies with the present study were the lack of retraining during telephone follow-up during the follow-up period, factors such as the age of the patients, the presence of comorbidities, routine home visits by a trained nurse. It seems that according to the results of the previous studies, this method can be used to train patients. This method will help to save on education costs, and nurses spend less time teaching self-care for the patients with heart failure and prevented the patient and staff from wasting time.^[68,76,78,81,82]

CONCLUSION

The results of this study showed that educational interventions using face-to-face and teach-back training, home visitation by follow-up phone call, group training, and e-learning have a significant effect on self-care behaviors in patients with heart failure. Given the high prevalence of heart failure and the importance of self-care in heart failure, it is recommended to use one-on-one face-to-face training, home-based feedback, home visits with telephone follow-up, group training, and e-learning. Considering the importance of self-care in patients with heart failure, nurses need to be aware of the different educational methods in self-care of these patients so that they can use any of the educational methods according to the level of literacy and culture of the patients. It is also recommended that hospitals and nurses be aware of the advantages and disadvantages of educational methods so that they can train patients with heart failure by spending less time and money. It is recommended that in future studies, a systematic review and meta-analysis on each educational intervention on self-care behaviors in patients with heart failure should be conducted. The strengths of this study were to report various educational methods in promoting self-care behaviors in patients with heart failure. The limitations of this study were the studies that their full text was not available or there were language restrictions and abstracts of articles. Furthermore, due to language restrictions, articles that were not in Farsi and English were excluded.

Limitation

The limitations of this study were the studies that their full text was not available or there were language restrictions and abstracts of articles.

Conflicts of interest

There are no conflicts of interest.

Authors' contribution

All authors contributed to this research.

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