



The Effect of Teach-Back Training on Self-Care and Readmission of Patients with Heart Failure

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Abstract

Background: Teach-back training is one of the interactive teaching methods that assess the learner's understanding by asking questions and provide a proper educational context for behavior change. Involving patients with heart failure in treatment is a top priority.

Objectives: Accordingly, the present study aimed to explore the effect of teach-back training on self-care and readmission of patients with heart failure.

Methods: The present quasi-experimental study was conducted on 80 patients with heart failure in the Coronary Care Unit (CCU) and Post Coronary Care Unit (PCCU) of teaching hospitals affiliated to Zahedan University of Medical Sciences in southeastern Iran in 2019. The patients were selected via the convenience sampling method and randomly placed into two intervention and control groups. In the intervention group, self-care training was performed individually using the teach-back method in four sessions, each lasting 30 to 60 minutes. In contrast, the participants in the control group conventionally received self-care training. The instruments used to collect the data were the demographic information form and the European Heart Failure Self Care Behavior (EHFSCB). The EHFSCB was completed by the participants in the two groups in two stages before and three months after the intervention. The number of readmissions and the number of visits to the doctor at the end of the third month after discharge were recorded for all patients by directly asking the patients. The collected data were analyzed using SPSS-22 software, the independent samples t-test, paired-samples t-test, and chi-square test at a significant level of $P < 0.05$.

Results: After three months, the mean scores of total self-care behaviors during the intervention were significantly different between the two groups ($P < 0.001$). Besides, the average number of readmissions due to heart disease three months after the intervention showed the positive effect of the intervention in reducing readmissions in patients in the intervention group ($P = 0.002$).

Conclusions: This study showed that teach-back training could affect self-care behaviors positively and reduce the number of readmissions of patients with heart failure. Therefore, it is recommended that nurses use this training method to teach self-care behaviors to heart patients.

Keywords: Teach-Back Training, Self-Care, Readmission, Heart Failure

1. Background

Heart failure is one of the most common chronic diseases in which the heart cannot pump blood to meet the body's metabolic needs (1). The prevalence of this disease in Iran is reported to be 8% in the population over 60 years, which is higher than in other Asian countries (1.3 - 6.7). Moreover, the number of deaths due to heart failure in Iran is twice as much as the deaths in Asia (2). According to WHO statistics, by 2030, 47% of the world's population will suffer from heart failure (3). In Iran, with the change of the age pyramid and the aging of the young population, the prevalence of heart failure as a very debil-

itating and costly disease increases, so that 29 to 47% of patients are readmitted within 3 - 6 months after initial discharge, while 50% of readmissions are preventable (4). Heart failure is a consequence of many cardiovascular diseases, including heart attacks. Although the disease cannot be stopped due to the improvement of medical procedures and treatment methods, the progression of the disease can be relatively delayed (5). Thus, the patient must be committed to self-care behaviors, including adherence to medication and diet, self-management, and monitoring of signs and symptoms of the disease. A significant principle in self-care is the acceptance and engagement

of the patient to follow the dietary regimen and perform self-care behaviors (6). Many of the reasons that lead to non-compliance with treatment and exacerbation of heart failure can be prevented through nursing training interventions. Despite educational programs, heart failure patients have several problems in implementing self-care (7). Studies have shown that the self-care capacity of these patients is low (8). A study conducted in fifteen countries showed that adherence to self-care behaviors was lower than the desirable level (9). The absence of self-care behaviors leads to severe consequences of the disease and re-hospitalization of patients. A study by Shahbaz and Hemmati-Pakmaslak showed a significant relationship between self-care behaviors and readmission (10). Heart failure has the highest rate of readmission. Moreover, readmission due to this disease 30 to 60 days after discharge is reported to be about 30% (10), and after 3-6 months is 29-47% (4). Readmission is a severe problem as a result of substantial economic costs, disruption of family roles, absenteeism in the workplace, and increased provision of health services (11). Currently, many patients are discharged from the hospital shortly after hospitalization, and most of their recovery time is spent without receiving continuous nursing and medical care at home. Therefore, it is necessary to provide information in order for patients to engage in self-care at home (12).

Many studies in Iran have addressed the effect of educational methods on patients' self-care. These studies have often compared the effectiveness of different methods. Most studies have paid less attention to patients' understanding. Despite the implementation of various training interventions in self-care programs, these programs have not been effective in promoting self-care and lifestyle changes. Dickson reported that traditional education in patients with heart failure does not result in developing self-care skills (13), and it is not possible to clarify the best ways to ensure adequate retention of training information in hospitals (14). A group of researchers found that the effects of patient training might not last (15). Studies have shown that patients forget 40 to 80 percent of information almost immediately after hearing it. Besides, about half of the information they memorized is incorrect (16, 17). Therefore, it is essential to ensure that patients with heart failure understand and keep the information they receive with particular regard to their complex treatment regimen, medication program, self-management needs, and clinical condition (15).

As indicated by educational evidence and previous studies, teach-back training seems to be an excellent way to help patients with heart failure to remember training information and promote self-care. This method, which has been approved by several health care organizations, re-

duces misunderstanding of essential information in clinical settings. The teach-back method aims to provide effective learning to enhance patients' literacy (18). It allows the trainer to check for memory errors, their perception, and fixation and match messages by managing an open conversation with patients while recalling information (15). If the patient does not understand the materials well, the trainer repeats them until the patient fully understands them (19). This training method has a corrective and therapeutic aspect.

2. Objectives

Since the quality of receiving information by patients and their understanding of the materials is not considered in conventional education of clinical wards, and in some studies reported the failure of traditional teaching methods, the present study explores the effects of teach-back training on self-care and readmission of patients with heart failure in the CCUs and Post-CCUs of teaching hospitals affiliated with Zahedan University of Medical Sciences in 2019.

3. Methods

The present quasi-experimental study was conducted receiving permission from the Ethics Committee of Zahedan University of Medical Sciences (IR.ZAUMS.REC.1398.056) on patients with heart failure referred to the CCUs and Post-CCUs of teaching hospitals affiliated with Zahedan University of Medical Sciences in southeastern Iran in 2019. We selected 80 patients selected based on the inclusion criteria and randomly assigned to the intervention and control groups using numbered envelopes. The inclusion criteria were the development of moderate and severe heart failure based on NYHA Classification (Classes II, III, and IV), having no mental disorders, the ability to communicate and cooperate, being over 30 years, having a minimum literacy, not attending a face-to-face training program, having no chronic diseases (e.g., thyroid and renal and hepatic failure), having no movement restriction, and residing in the city of Zahedan. The exclusion criteria were the exacerbation of the disease during the study, non-participation in more than one training session, a stressful incident during the study, and unwillingness to continue participating in training sessions.

Following a study by Dalir et al. (20), the sample size was estimated as ten persons with a 95% confidence interval and 95% statistical test power using the following formula. However, given the probability of the dropout of

some participants and to be on the safe side, the sample size for each group was estimated as 40 persons. Thus, a total of 80 persons could attend the study.

$$n = \frac{(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta})^2 \times (S_1^2 + S_2^2)}{(\bar{X}_1 - \bar{X}_2)^2} = 10$$

$$Z_{1-\frac{\alpha}{2}} = 1.96$$

$$S_1 = 7.4$$

$$\bar{X}_1 = 48.2$$

$$Z_{1-\beta} = 1.64$$

$$S_2 = 7.3$$

$$\bar{X}_2 = 35.8$$

The instruments used to collect the data were a demographic information form and the European Heart Failure Self Care Behavior (EHFSCB) scale. The EHFSCB was completed by the participants in the two groups in two stages before and three months after the intervention. We recorded the number of readmissions and visits to the doctor at the end of the third month after discharge. The demographic information form assessed the participants' age, sex, years of education, ethnicity, marital status, history of smoking, and duration of illness. The self-care behavior scale was adopted from the European Heart Failure Self Care Behavior (EHFSCB) was developed by Jarasma et al. (2000). The scale contains 12 items scored based on a 5-point Likert scale ranging from 1 (Strongly agree) to 5 (Strongly disagree). The total score on the scale varies from 12 to 60, and a lower score indicates better self-care. Jarasma et al. (2000) measured the internal consistency of the instrument and reported its Cronbach's alpha as equal to 0.68 (21).

The reliability of the instrument was reported in studies conducted in Iran as equal to 0.68-0.71 (22, 23). The reliability of the instrument was calculated via Cronbach's alpha coefficient, and the corresponding value was 0.75.

Before starting the intervention, the EHFSCB was completed for each patient. The participants in the intervention group attended four training sessions, each lasting 30-60 minutes. The sessions were held during the hospitalization days after ensuring the patients were ready to participate in training sessions individually using the teach-back method. The first training session was held on the second day of hospitalization according to the patient's condition. To this end, the patients were instructed slowly and clearly in simple and understandable language and short sentences without using medical terms. Afterward, they were asked to recite the instructed materials in their language. If the patient did not understand the materials well, the instructional materials would be repeated by the researcher until the patient fully understood them. The materials covered issues such as the significance of self-care, diet, medication regimen, physical activity, weight

control, fluid intake, warning signs and symptoms of disease aggravation, sleep and rest, and methods of muscle relaxation. The participants in the control group also attended four training sessions of 30-60 minutes individually and received only conventional training. At the end of the training intervention, a booklet containing the materials in the training sessions was given to the patients in the intervention and control groups. Three months after discharge, the EHFSCB was completed by the participants in both groups, and the number of their readmissions (if any) was recorded. The patients referred to the hospital completed the questionnaire. If patients were not readmitted to the hospital, they would be called to attend the hospital on a predetermined date to complete the questionnaire. However, if they failed to do so, the researcher referred to his/her home upon making prior arrangements with the patient to have the questionnaire completed by him/her. The Shapiro-Wilk test was used to check the data normality. The collected data were analyzed using SPSS software (version 22) via the independent samples t-test, paired-samples t-test, and chi-square test at a significant level of $P < 0.05$.

4. Results

The results of the chi-square test and independent samples t-test showed that the two groups did not significantly differ in terms of demographic characteristics ($P > 0.05$) (Table 1). Moreover, the results of the independent samples t-test indicated that the mean self-care scores for the participants in the two intervention and control groups were 41.17 ± 15.56 and 43.05 ± 12.03 in the pretest stage, showing no significant difference ($P = 0.77$). However, the mean self-care scores of the intervention group (33.90 ± 17.43) and the control group (41.45 ± 12.82) showed a statistically significant difference ($P = 0.03$) three months after the intervention. The results of the paired-samples t-test showed a significant difference in the mean self-care scores of the participants in the intervention group before and after the intervention ($P = 0.001$) (Table 2). However, the mean self-care scores of the participants in the control group were not significantly different before and after the intervention ($P = 0.58$).

As shown in Table 3, the number of visits to the physician due to heart problems after discharge in the intervention group was significantly less than the visits made by the patients in the control group ($P = 0.01$). Moreover, the mean number of readmissions in the intervention group was 0.52 ± 0.67 , and the corresponding value for the participants in the control group was 1.05 ± 0.74 . It shows a significant difference between the two groups in terms of the number of readmissions at the end of the third month after discharge ($P = 0.002$).

Table 1. The participants' Demographic Characteristics

Variable	Groups		P Value (Sig.)
	Intervention (Mean ± SD)	Control (Mean ± SD)	
Age (year)	64.05 ± 12.97	63.75 ± 11.29	0.91 ^a
Educational records (year)	6.300 ± 3.18	5.65 ± 2.52	0.31 ^a
Duration of illness (year)	5.72 ± 5.56	5.30 ± 4.64	0.71 ^a
Sex, No. (%)			0.82 ^b
Female	23 (57.5)	24 (60)	
Male	17 (42.5)	16 (40)	
Ethnicity, No. (%)			0.17 ^b
Baloch	19 (47.5)	25 (62.5)	
Sistani	21 (52.5)	15 (37.5)	
History of smoking, No. (%)			0.59 ^b
Yes	21 (51.3)	20 (50)	
No	19 (47.8)	20 (50)	
History of other chronic diseases, No. (%)			0.77 ^b
Yes	24 (60)	26 (65)	
No	16 (40)	14 (35)	

^aIndependent samples t-test.^bChi-square test.**Table 2.** A Comparison of the Pretest and Post-Test Self-Care Scores in the Two Groups

Variable	Pretest score	Posttest score (three months after the intervention)	Paired-samples t-test
Intervention group	41.17 ± 15.56	33.90 ± 17.43	t = 1.61, df = 39, P = 0.001
Control group	43.05 ± 12.03	41.45 ± 12.82	t = 0.55, df = 37, P = 0.58
Independent samples t-test	t = 0.59, df = 77, P = 0.77	t = 2.20, df = 78, P = 0.03	

Table 3. A Comparison of the Frequency of Medical Visits and Readmissions After Discharge Between the Two Groups

Variable	Intervention group		Control group		Test results
	Mean	SD	Mean	SD	
Post-discharge-readmissions	0.52	0.67	1.05	0.74	t = 3.28, df = 78, P = 0.002
Post-discharge-medical visits	0.87	1.28	1.65	1.52	t = 2.45, df = 75, P = 0.01

5. Discussion

The present study indicated that teach-back training is effective in promoting self-care behaviors and reducing readmission of patients with heart failure. These findings are consistent with other studies regarding the improvement of self-care behaviors via teach-back training (e.g., Daliret et al., 2016; White et al., 2013) (15, 20). For instance, White et al. (2013) found that 84.4% of patients during hospitalization and 77.1% of the participants 7 days after discharge and phone follow-ups provided correct responses to 75% of the questions related to the materials instructed through teach-back training during hospitalization (15),

confirming the positive effect of this method on the retention of learned information and consequently the improvement of disease outcomes. Given the nature of teach-back training, the trainer can correct the patients' learning problems by determining their learning abilities. In another study, Dalir et al. (2015) provided training using the teach-back method for three to four days. The results showed that the mean scores of self-care in the intervention group increased significantly compared to the control group (20), confirming the positive effect of this training method on a variable such as self-care.

Furthermore, Dinh et al. (2016) examined the effect

of teach-back training on adherence and self-management in people with chronic diseases. They searched databases and found 21 articles, 12 of which used the teach-back method. The results of four studies showed that this training method could increase the disease-specific knowledge of the participants in the intervention group. The variables explored in the above studies adhered to medication, diet, and self-efficacy of type 2 diabetic patients (24). Salavati et al. (2017) showed that teach-back education improved the quality of life of patients with myocardial infarction (25).

The present study showed that the patients receiving teach-back training were engaged more frequently in self-care behaviors than the patients in the control group who received routine training. Ghanbari et al. (2016) examined the effect of the teach-back method on adherence to the treatment regimen in dialysis patients (26). Although the intervention period and post-test duration (7 and 30 days after the intervention) were different from the present study, the authors showed that teach-back training affects the retention and learning of information provided to the patients. Zakerimoghadamet al. (2015) posited that education based on illness perception affected the self-care behaviors of patients with heart failure (27). Although the training method and tools used in their study were different from the procedure employed in the present study, both training methods improved the self-care behaviors of patients with heart failure. Reyhani (2016) conducted a clinical trial to examine the effect of teach-back training on self-efficacy and self-care of patients with heart failure and reported that the average score of patients' self-efficacy in the intervention group was significantly improved after the intervention compared to the conventional training group (28).

In another study, Nasiri et al. (2012) investigated the effect of a teach-back training program on self-care deficiencies of hemodialysis patients. They found that teach-back self-care training could reduce the self-care deficiencies in physical and mental aspects of hemodialysis patients (29). Although the target group was different from the sample in the present study, the results of both studies pointed to the positive effect of the teach-back training method on self-care behaviors of patients with chronic diseases.

However, some studies reported results that contradict the findings of the current study. For instance, Kandula et al. (2011) explored the effect of a teach-back training program on information retention in diabetic patients. They showed that teach-back training did not significantly affect information retention (30). These contradictory results can be attributed to differences in the training method (a combination of multimedia education and teach-back training) and the research population (diabetic patients).

The findings of the present study suggested that the patients in the intervention group had a lower number of readmissions than the patients in the control group, as was indicated in previous studies in the literature. For instance, Delaney et al. (2012) reported that telemonitoring and self-care training could reduce the readmission rate of patients with heart failure (31). Also, Azizi et al. (2020) showed that the teach-back training method could decrease readmission cases in patients with acute coronary syndrome (32).

Besides, Shojaee et al. (2013) examined the effect of telephone follow-up and patient education by nurses on readmission of patients with heart failure. They found that readmission in the intervention group had a significant decrease within three months after the intervention (33), which is consistent with the observations made in the present study. Although the trained method used in this study was different from the method employed in the present study, it confirms the positive effect of patient training on the readmission of patients. The results of the present study confirmed the positive effect of teach-back training in improving self-care behaviors and reducing the number of readmissions. A cross-sectional study by Shahbaz et al. (2017) showed that the self-care behaviors of most patients were not satisfactory, and there was a negative relationship between self-care behaviors and readmission (10). It seems that the implementation of self-care training programs can reduce the frequency of readmission of patients. Brown et al. (2014) studied the effect of teach-back training by providing the instructions during discharge on the rate of readmission and adherence to treatment in heart failure patients. They showed that there were no significant differences in the treatment adherence scores of the patients in the two groups after the intervention (34). Perhaps the differences between the results found by Brown et al. and the present study can be attributed to a shorter follow-up period. Boyde (2017) believed that multimedia self-care education could reduce the readmission of people with heart failure (35). In other words, the use of simple and understandable tools and methods in providing education can facilitate the patient's perception of self-care. Moreover, providing practical and necessary instructions plays a significant role in reducing readmissions. In the present study, the training program was implemented with an emphasis on essential points, and teach-back training was provided in a way that was understandable to the patients. Chehriat et al. (2018) studied the effect of different educational methods on self-care of patients with heart failure and showed that teach-back self-care programs can help prevent, control, and reduce readmission of patients with heart failure (36).

Ghahramani et al. (2013) investigated the effect of self-

care education on knowledge, performance, and readmission of heart failure patients. They showed that the training program was effective in improving patients' knowledge and performance but did not affect their readmission significantly, which was not consistent with the results of the present study (37) and was probably due to the review of readmission in a short period.

The present study indicated that the patients in the control group who conventionally received training displayed less improvement in self-care behaviors than those in the intervention group. The teach-back training provided for the patients in the intervention group improved the patients' awareness and understanding and consequently enhanced their self-care behaviors and reduced readmission compared to the control group. Therefore, the findings of the present study confirmed the positive effect of teach-back training on self-care and readmission of patients with heart failure.

5.1. Conclusion

The present study showed that teach-back training had a positive effect on self-care and readmission of patients with heart failure. Accordingly, a significant increase in self-care and a lower number of readmissions were observed in patients in the intervention group compared to the control group, confirming the effectiveness of the teach-back training program. Therefore, providing effective education for patients with heart failure can enhance their self-care and reduce their readmission while decreasing the costs imposed on the health care system and improving the health of patients. Based on these findings, it is recommended that future studies explore the effect of other educational methods and compare their efficacy with the teach-back training method. Also, patients should be monitored for a longer period, and educational programs should be developed and implemented based on each patient's needs.

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Footnotes

Authors' Contribution: Hedyeh Mesbahi: Contributing to the design, data collection, and drafting of the article. Fatihe Kerman Saravi: Contributing to the design, analysis, and interpretation of the data and final approval of the article. Fatemeh Kiani: Collaboration in design and participation in writing the article.

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