Original Article

The Effect of the Family-Centered Self-Care Program on the Health Literacy Level and Self-Efficacy of Patients with Acute Coronary Syndrome During Discharge from Hospital

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Abstract

Background: One of the factors effective in controlling acute coronary syndrome (ACS) symptoms, such as heart failure, is sufficient knowledge of the disease, factors effective on its occurrence, and its prevention. Moreover, the improvement of self-efficacy, which is a predictor of important life factors in these patients, such as treatment process and quality of life (QOL), must be considered as one of the main goals of nursing care for these patients. The aim of this study was to determine the effect of the family-centered self-care program on the health literacy level and self-efficacy of patients with ACS during hospital discharge. **Materials and Methods:** The present study was a quasi-experimental study performed with a pretest-posttest design. The statistical population of the study consisted of all patients with ACS hospitalized at Shahid Chamran Hospital in Isfahan in 2020. Through the convenience sampling method, 50 patients were selected and randomly divided into intervention and control groups. For the intervention group, 6 sessions of 45–60 minutes of family-centered self-care intervention were held. The subjects completed the Health Literacy for Iranian Adults (HELIA) questionnaire before and after the intervention. Data were analyzed using Chi-square test, independent *t*-test, and paired *t*-test in the SPSS statistical software. **Results:** The mean score of health literacy did not significantly differ between the intervention and control groups before the intervention ($p > 0.050$). However, after the intervention, this rate was equal to 82.16 (7.94) and 60.85 (15.71) in the intervention and control groups, respectively, which was significantly higher in the intervention group compared to the control group ($p < 0.001$). Furthermore, there was no significant difference between the two groups in terms of the mean self-efficacy score before the intervention ($p > 0.05$). However, after the intervention, this score was significantly higher in the intervention group 34.71 (10.11) compared to the control group 35.22 (13.30). **Conclusions:** Family-centered self-care program after discharge, as a simple, applicable, and efficient method can improve the health literacy level and self-efficacy of patients with ACS.

Keywords: *Acute coronary syndrome, family-centered self-care, health literacy, self-efficacy*

Introduction

Cardiovascular disease (CVD) is one of the most common chronic diseases.[1] Coronary artery disease (CAD) is the third cause of death in the world and causes the death of 17.8 million people annually.[2,3] As in other countries, acute coronary syndrome (ACS) has increased significantly in Iran, accounting for 25% of all heart diseases.[4] Among CVDs, ACS is one of the manifestations of CAD, which includes chronic stable angina, unstable angina, and acute myocardial infarction.[2] ACS, besides high costs of care and treatment for patients, causes complications such as acute pulmonary edema, cardiogenic shock, and heart failure, and has a very high mortality rate.[4] One of the effective factors in controlling the complications of ACS, such as heart failure, is to have sufficient knowledge of the disease, effective factors in its occurrence, and how to prevent this disease.[5] This ability is termed health literacy. In the WHO Health Promotion Glossary, health literacy has been defined as a social cognitive skill that determines the motivation and ability of individuals to access, understand, and use information in a way that leads to maintaining and promoting their health.[2] Obtaining accurate information from reliable sources and using it to manage the disease is one of the results of health literacy.[5]

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Despite patients' need for health literacy skills, many people do not have an accurate understanding of the disease, treatment, and medications prescribed. Additionally, much of the information on health promotion and disease education is not understood by many people with low levels of education.[6] A low level of health literacy in patients with CVDs is directly related to a high rate of rehospitalization, low rate of health-related quality of life (QOL), and anxiety.[6] However, the results of studies conducted on these patients indicate that patients with ACS do not have an adequate level of health literacy,[5,7] which in turn disrupts the ability of patients to understand basic and complex information or accurately assess health risks, and may prevent patients from participating in self-care and lower their QOL.[5] Aryani *et al.*[8] found that the families of patients with MI did not perform well in the face of MI in a family member, and it was recommended that family performance be improved in this regard by promoting health literacy. Given the important role of health literacy in improving patients' health-related QOL, one of the important goals of nursing practice is to strengthen health literacy through training patients in skills that will show them that they can control the disease by learning about it.[9] Therefore, patient health literacy and self-care are among the issues that should be seriously considered in the field of patient care during and after discharge.[10] There is a two-way relationship between self-care and health literacy, meaning that one of the ways to promote patients' health literacy is self-care education, and gaining health literacy can enhance self-care behaviors.[11] Educating and employing patients to participate in self-care during hospitalization, especially at the time of discharge, is absolutely necessary to make them fully aware of all that they must observe and follow in various fields without any ambiguity and concern, and while preventing possible complications to achieve complete recovery as effectively as possible through self-care.[12] Furthermore, the results of previous studies on patients with ACS have shown that to improve QOL and reduce the complications of this disease, we must try to improve factors such as self-efficacy in self-care and treatment adherence through nursing interventions.[12] Self-efficacy includes the individual's trust and confidence in his/her ability to perform self-care tasks efficiently in a way that he/she will achieve more favorable results from self-care,[13] and it will affect his/her understanding, performance, adaptive behaviors, environment selection, and the circumstances individuals try to reach.[14] In patients with ACS, high self-efficacy is a predictor of QOL, social support, forward-moving behaviors, mental health, and increased sense of well-being.[12] In fact, one of the effective factors in the improvement of QOL and preventive behavior in patients with ACS is self-efficacy, which requires greater attention.[15] One of the important goals in providing nursing care to these patients is to give them a sense of self-efficacy or improve their sense of self-efficacy and self-management by teaching them skills that will convince them that they can control their life and their illness, and decrease the negative impacts of their disease.[16] Based on the findings of previous studies, individuals with high self-efficacy are stronger under difficult conditions and in facing problems.[17] A sense of self-efficacy makes people capable of achieving great things through the use of their skills.[18]

Moreover, the role and responsibility of the patient in the self-care process have been highly regarded and it is claimed that the best results of health care are achieved when patients are actively involved in self-care.[13] To overcome the problems and complications of the disease and improve the patient's QOL, the patient's participation in the treatment and care process is very important for which it is necessary to increase awareness, change attitudes, and acquire self-care skills.[11] Among the many areas of self-care, an important area is the family-centered self-care approach that has recently attracted much attention.[14] In this approach, in addition to the patients' families being considered in nursing care, the patient and his/her family members are also involved in the treatment. In this method, in addition to meeting the educational, emotional, and therapeutic needs of the patient and his/her family, honor and respect, information sharing, participation, and cooperation are also covered.[15] Furthermore, because families are involved in care, it is necessary for both service providers and family members to obtain a sufficient amount of accurate and scientific information.[16]

Increased hospitalization costs, distance from family, and the risk of nosocomial infections have caused home nursing care to be better received. In addition, in long-term illnesses, because improvement is not expected in the near future, continued care at home is considered.[14] Home care is the provision of services related to patients' health at home by patients' family members, which is an alternative to some hospital services that are acceptable to patients and families and in many cases accelerates the return to normal life.[17] Lack of presentation of adequate and timely information to patients' families at the time of discharge causes an uncertain feeling about the patient's condition, treatment, and care, reduces their control over the patient's needs, and causes stress.[8] Given the above, it can be stated that the health literacy and self-efficacy of patients with ACS are very important and can affect all QOL and disease aspects. Furthermore, the use of educational methods, such as self-care education, especially in a family-centered way, in addition to reducing patients' costs, can lead to joint efforts and involvement of the patient and his family in health planning. Moreover, transferring accurate and scientific information to the patient and his/her family for home use can save resources, time, and facilities. Accordingly, the researcher decided to conduct a study to determine the effect of the family-centered self-care program on the health literacy level and self-efficacy of patients with ACS during hospital discharge.

Materials and Methods

This 2-group quasi-experimental study with a pretest-posttest design was performed on patients with ACS during discharge from Shahid Chamran Heart Educational, Medical, and Research Center in Isfahan City, Iran, in 2020. According to the sample size determination formula (Pukak formula), to compare the mean of variables between the two groups (d2 with 95% confidence interval: 1.96; z2 with a test power factor of 80%, 0.84; s: standard estimate in both groups, d: minimum significant difference between the two groups, and s = 0.7), the sample size was considered to be at least 25 individuals in each group. Considering a 10% drop rate, 28 people were enrolled in each group. The study inclusion criteria were diagnosis of ACS and hospitalization for the treatment of ACS in Shahid Chamran Hospital, age of 18–65 years, minimum literacy, stable hemodynamic status during the intervention, having an active family member to take care of the patient, familiarity of the patients with Persian, having a mobile phone with the ability to install WhatsApp, minimum literacy of the active family member. The exclusion criteria included lack of cooperation, death of the patient during the intervention, and migration to another place. Sampling was performed using the convenience sampling method for 2 months. For randomization, 56 patients were divided into the intervention and control groups using a random number table.

The data collection tools employed in this study were a demographic characteristics form, the Health Literacy for Iranian Adults (HELIA) questionnaires, and the cardiac self-efficacy scale (CSES) developed by Sullivan. The HELIA questionnaire includes 33 items in the five areas of access (6 items), reading skills (4 items), comprehension (7 items), evaluation (4 items), and decision-making and application of health information (12 items). The items of the questionnaire are scored on a 5-point Likert scale, except for items 1 to 4, ranging from 5 (always) to 1 (never). Items 1 to 4 are scored on a 5-point Likert scale ranging from 5 (quite easy) to 1 (quite difficult). The total score of the questionnaire is the sum of all dimensions and is in the range of 0–100; a score of 0–50, 50.1–66, 66.1–84, and 84.1–100 indicates insufficient, not so much sufficient, sufficient, and excellent health literacy, respectively.[18] The construct validity of the questionnaire was confirmed with 33 items in five dimensions using exploratory factor analysis (EFA). Furthermore, the reliability of this questionnaire was confirmed using Cronbach's alpha method with an alpha of 0.72–0.89.[19] The CSES includes 13 questions that assess the confidence and self-efficacy of patients in observing general care, controlling disease symptoms, and observing medication instructions. The questions are scored on a 5-point Likert scale ranging from 0 (not at all confident) to 4 (completely confident). The total score of the CSES ranges from 0 to 52, and higher scores illustrate better-perceived self-efficacy. Sullivan believed that scores of 0–19, 20–38, and 39–52 illustrate poor, medium, and good self-efficacy, respectively.[20] The CSES is a reliable scale and its validity and reliability have been approved in foreign and domestic researches.[21-22] In the study by Varaei, the validity of this scale was approved, and its reliability was evaluated through internal consistency and was approved with Cronbach's alpha of 0.977.[23]

The study process was as follows: the researcher first referred to each patient's room and introduced himself and explained the study objectives. After random allocation and before the intervention, the demographic characteristics form, the HELIA questionnaire, and the CSES were completed through self-report. For the intervention group, the family-centered self-care program was implemented in the four steps of perceived threat. Self-efficacy training was provided by emphasizing the effective role of the individual and other family members in six sessions, lasting between 45 and 60 minutes. With the advanced announcement of the appointment and when both the patient was ready to accept the training and the caregiver was present, the researcher as the nurse provided the necessary and pre-designed training on WhatsApp live video call and the patient and caregiver asked their questions. Finally, 1 month after the end of the intervention, the questionnaires were completed through telephone contact with the subjects by the researcher. During the study, three members of the control group and three members of the intervention group were excluded from the study due to unwillingness to continue the intervention. The SPSS software (version 19.0, SPSS Inc., Chicago, IL, USA) was used to analyze the data, and descriptive statistics were employed to determine the frequency, and mean and standard deviation (SD) of the variables. In addition, paired *t*-test was utilized to compare the health literacy scores before and after the intervention and an independent *t*-test to compare health literacy and self-efficacy scores between the intervention and control groups. The significance level was considered as $p < 0.05$.

Ethical considerations

This study was performed with the ethical code IR.MUI.REC.1398.663 obtained from the Office of Vice Chancellor for Research and Technology of Isfahan University of Medical Sciences, Isfahan. Before the study, sufficient explanations were given to the subjects about the purpose and method of the study, and informed written consent was obtained from them. At any stage of the study, the subjects could announce their unwillingness to continue the study and withdraw from it.

Results

In this study, the age range of the subjects was 31–69 years. The demographic characteristics of the subjects are presented in Table 1. The results presented in this table show that there was no statistically significant difference

between the control and intervention groups in terms of the study variables.

The independent *t*-test results indicated that the mean score of health literacy before the intervention was not significantly different between the two groups ($p > 0.05$) [Table 2]. However, 4 weeks after the intervention, the scores in the intervention group were significantly higher than those in the control group ($p < 0.05$). The paired *t*-test showed that the mean score of health literacy in the control group did not differ significantly between the two data collection times ($p > 0.05$), but there was a significant difference between the two data collection times in the intervention group ($p < 0.05$) [Table 2]. Additionally, independent *t*-test revealed that the mean changes in the total score of health literacy and all its dimensions in the intervention group were significantly higher than those in the control group ($p < 0.001$) [Table 2].

Paired *t*-test showed that the mean total score of health literacy and its dimensions in the intervention group after the intervention was significantly higher than that before the intervention ($p < 0.001$). The results of the independent *t*-test showed that the mean score of self-efficacy did not differ significantly between the groups before the intervention ($p > 0.05$) [Table 3]. Moreover, independent *t*-test results showed a significant difference between the intervention and control groups in terms of the mean changes in the score of self-efficacy after the intervention compared to before it ($p < 0.001$) [Table 4].

Discussion

The aim of this study was to determine the effect of the family-centered self-care program on the level of health literacy and self-efficacy of patients with ACS during discharge from Shahid Chamran Hospital in Isfahan. The results showed that after the intervention, the mean score of the patients' health literacy and self-efficacy was significantly higher in the intervention group compared to the control group. In fact, it can be declared that the family-centered self-care program has been effective in the level of health literacy and self-efficacy of patients with ACS.

The results of the present study were in line with that of the study by Gangi *et al.* on patients with hypertension; they reported that the self-care training program in four sessions was effective in promoting the health literacy of the patients.[24] The nature of the education and promotion of the patients' information is one of the main reasons for and justification of the similarity in findings. Nasiri *et al.* found that one of the effective models in promoting self-care in patients is the family-centered empowerment model. They confirmed the effect of this model on patients' self-care

Table 1: Frequency of demographic variables in the intervention and control groups

Variable		Intervention group	Control group	Chi-square test		
		n (%)	*n* (%)	χ^2	df	*p*
Gender	Man	15 (60)	14 (56)	0.08	1	0.77
	Woman	10 (40)	11 (44)			
Marital status	Single	0 (0)	2 (8)	-	-	0.24
	Married	25 (100)	23 (92)			
Employment	Unemployed	0 (0)	2 (8)	6.92	4	0.14
	Self-employed	8 (32)	8 (32)			
	Retired	9 (36)	3 (12)			
	Housewife	6 (24)	10 (40)			
	Employee	2 (8)	2 (8)			
Underlying disease	Hypertension	12 (48)	14 (56)	0.32	1	0.57
	DM*	8 (32)	6 (24)	0.40	1	0.53
	COPD**	2 (8)	2 (8)	<0.001	1	>0.99
	Other	3 (12)	5 (20)	0.10	1	0.75
Variable		**Intervention group**	**Control group**	***Z***	***p***	
		n (%)	***n(%)***			
Level of education	Pre-diploma education	11 (44)	11 (44)	0.15	0.88	
	Diploma	9 (36)	8 (32)			
	University degree	5 (20)	6 (24)			
Monthly income	Low	5 (20)	6 (24)	0.57	0.56	
	Moderate	19 (7)	19 (76)			
	High	1 (4)	0 0			
		Mean	**SD**	**Mean**	**SD*** **	***t***	**df**	***p***
Age (year)		52.88	8.53	51.80	5.98	0.44	48	0.66
Duration of disease (year)		5.98	6.88	5.72	5.20	0.14	48	0.89
Number of hospitalizations per year		1.40	0.31	1.28	0.26	0.30	48	0.77

*Diabetes Mellitus; **Chronic Obstructive Pulmonary Disease; ***Standard Deviation

Table 2: Comparison of the mean total score of health literacy and its dimensions (out of 100) before the intervention between the study groups

Time	Health literacy and its dimensions	Intervention group	Control group	*p*		
		Mean (SD)	Mean (SD)	*t*	df	*p*
Pretest	Reading skill	61.51 (25.59)	61.75 (27.14)	0.03	48	0.98*
Posttest		78.65 (22.87)	61.25 (25.71)	2.53	48	0.02*
Mean difference		16.46 (2.40)	–0.50 (1.57)	5.91	48	0.001*
p		0.001**, *t*=6.86	0.75**, *t*=32			
Pretest	Access	56.07 (19.26)	55.83 (23.17)	0.04	48	0.97*
Posttest		85.33 (9.77)	55.09 (20.97)	6.54	48	0.001*
Mean difference		29.27 (3.61)	–0.75 (1.64)	7.56	48	0.001*
p		0.001**, *t*=8.10	0.65**, *t*=0.45			
Pretest	Understanding	70.71 (14.55)	69.71 (22.50)	0.19	48	0.85*
Posttest		83.86 (7.65)	68.41 (18.45)	3.87	48	0.001*
Mean difference		13.14 (2.13)	−1.30 (2.34)	4.56	48	0.001*
p		0.001**, *t*=6.17	0.58**, *t*=0.56			
Pretest	Evaluation	56.25 (16.44)	55.50 (23.96)	0.13	48	0.90
Posttest		73.50 (11.70)	55 (20.31)	3.95	48	0.001*
Mean difference		17.25 (2.78)	−0.50 (2.15)	5.05	48	0.001*
p		0.001**, *t*=6.21	0.82**, *t*=0.23			
Pretest	Decision-making and behavior	64.34 (15.42)	65.14 (14.06)	0.19	48	0.85*
Posttest		89.45 (6.22)	64.50 (9.55)	10.94	48	0.001*
Mean difference		25.10 (2.73)	−0.64 (1.67)	8.03	48	0.001*
p		0.001**, *t*=9.18	0.71**, *t*=0.38			
Pretest	Total score	62.26 (13.08)	61.82 (17.82)	0.10	48	0.92*
Posttest		82.16 (7.94)	60.85 (15.71)	6.05	48	0.001*
Mean difference		19.90 (2.01)	−0.97 (1.11)	9.10	48	0.001*
p		0.001**, *t*=9.93	0.39**, *t*=0.87			

SD: Standard deviation; *Independent *t*-test, **Paired *t*-test

Table 3: Comparison of the mean scores of self-efficacy before and 4 weeks after the intervention between the study groups

Time	Intervention group	Control group	Independent *t*-test		
	Mean (SD)	Mean (SD)	*t*	df	*p*
Before the intervention	36.84 (13.17)	35.22 (13.30)	0.43	48	0.67
4 weeks after the intervention	57.18 (3.50)	34.71 (10.11)	10.48	48	<0.001

Table 4: Comparison of the mean changes in the score of self-efficacy 4 weeks after the intervention with before the intervention between the study groups

Group	Mean (SD)	Independent *t*-test		
		t	df	*p*
Intervention	20.34 (11.76)	7.31	48	<0.001
Control	−0.51 (1.61)			

and proposed family support in patient education as one of the success factors in health education and promotion and disease prevention through increasing self-efficacy.[25]

The study by Hejazi *et al.* showed that group training, centralized group discussion, and face-to-face education can significantly promote health literacy and self-care behaviors of patients with type 2 DM.[26] One of the important dimensions of health literacy is understanding, which in the present study was promoted along with other dimensions after the intervention. The results of the study conducted by Beigi *et al.* illustrated that self-care education increases awareness and changes the lifestyle of patients with hypertension.[27] Decision-making and behavior are among other important dimensions. In this regard, by conducting a systematic review of studies of the last 20 years, Nasiri *et al*. concluded that self-care education for patients significantly increases their effort to perform self-care behaviors.[25] By studying patients with heart failure, Navidian *et al.* showed that self-care education and promotion programs can improve the knowledge, awareness, and self-care behaviors of patients hospitalized due to heart failure.[28]

Family empowerment increases knowledge and attitude, improves performance, increases self-care capacity, leads to improved quality of care and accelerated recovery of patients, and reduces complications in patients with heart failure, and those undergoing hemodialysis and coronary artery bypass graft surgery (CABG).[25] Attention to family and non-professional caregivers is very important in treatment programs. In the present study and the abovementioned

study, family-based interventions were used, but in the present study, in addition to using the face-to-face training method, various and combined methods such as virtual training, educational aids (pamphlets), and telephone follow-up were also used, which was one of the strengths of the present study. One of the limitations of the present study was the coincidence of sampling with the Coronavirus Disease-2019 (COVID-19) pandemic conditions, which complicated the conditions. Other limitations of the study included the study of the content on WhatsApp, for which the researcher had to trust the patients' statements.

Conclusion

The findings of the present study confirmed and supported the study hypothesis, and showed that the implementation of the family-centered self-care program improves the level of health literacy of patients with ACS during discharge from the hospital. This means that this treatment plan as a nursing intervention and an easy, low cost, and available method can play a very important role in the treatment plan of these patients.

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Conflicts of interest

Nothing to declare.

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