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THE EFFECTS OF A SELF-MANAGEMENT PROGRAM BASED ON 5 A`S MODEL ON THE QUALITY OF LIFE AND SELF-EFFICACY IN THE MYOCARDIAL INFARCTION PATIENTS

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ABSTRACT

INTRODUCTION AND OBJECTIVES. The myocardial infarction is the most severe manifestation of coronary artery disease. The promotion of self-efficacy in these patients can be effective in the improvement of their quality of life. The aim of this study was to investigate the effects of a self-management program based on 5 A`s model on the quality of life and self-efficacy of the patients with myocardial infarction.
METHODS. The current study was a clinical trial that was conducted in Ayatollah Kashani and Hajar hospitals in Shahr-e Kord (Iran) with the participation of 96 patients with myocardial infarction. The research units were blocked randomly into two 48-patient intervention and control groups. The training content was provided to the intervention group in five stages and they were asked to implement in three months. The demographic information questionnaire, the Ferrans and Powers Quality of Life questionnaire, and Sullivan Self-Efficacy questionnaire were the data collection instruments. The mean scores of pre and post-intervention were compared by the use of SPSS, version 16, software, paired t-test, single t-test, chi-square, and Fisher's Exact Test.
FINDINGS. The results showed that the mean squares of quality of life and self-efficacy in pre and post-intervention had a significant difference and the intervention group had a higher quality of life and self-efficacy levels compared to the control group (P<0.001).
CONCLUSION. According to the results of the study, it is suggested to use this model for empowerment and caring of patients besides the medicinal treatments, so that it would not lead to inability, reduction about the medical centers, frequent hospitalization, and ultimately, reduction in medical costs, and promotion of the society's health.

Keywords: *myocardial infarction, self-management, quality of life, self-efficacy, 5 A`s model*

INTRODUCTION

The most prevalent cardiovascular disease is coronary heart disease caused by the buildup of atheromatous plaques in the lining of the arteries that narrow or block blood flow in the large arteries of the heart (1, 2). The myocardial infarction is the most severe manifestation of coronary artery disease and CAD leads to annually more than 0.4 million deaths in the United States and more than 4 million deaths in Europe and Asia (3). The rate of manifestation of this disease in Iran is estimated to be 181.4 people in every 100,000 persons (4). Recently, the age of myocardial infarction in Iran has decreased from 40 to 70 years

to 20 to 60 years (5). As a result, the number of people with cardiovascular diseases has increased (6, 7). Myocardial infarction not only does affect the patient's comfort, but also it affects his/her social relationships, common life patterns, occupation, and income (8).

Myocardial infarction is a life-threatening disease that requires changing the lifestyle and adherence to the drug regimen (9). It also affects the quality of life (10). Quality of life is a multi-dimensional and relative concept that is influenced by time, place, and personal/social values (11). Besides, the undesirable quality of life is accompanied by the intensification of the disease severity, lower survival, and increase of the hospitalization period (6, 10, 11). The active and effective participation of patients with chronic diseases in the self-management of their disease has been emphasized, as well (12). Regarding the significant effect of the chronic diseases, besides the inadequacy of the lone application of the medicinal treatments and surgeries in the improvement of the patients' health condition, the self-management program focuses on the central role of the patient in the management of his/her disease (13). These programs, in addition to helping the patient with the treatment of the disease, provide the patient with the maintenance of the functional roles, management of negative feelings such as fear and depression, and increase the knowledge, skill, and self-confidence to confront the disease's complications (12-14).

Self-management is the person's ability in decreasing or managing the symptoms, treatment of the physical, spiritual, and mental problems, correction of the lifestyle, and finally, having a desirable life despite chronic disease (15, 16). The self-management in chronic diseases such as cardiovascular diseases is an important component of the care and can lead to a decrease in the readmission costs and complications of the disease (17). By implementation of the self-management programs, the patient actively participates in the self-care, and the management of the disease is transferred from the health personnel to the patient himself/herself (12, 13, 18). The objective of the self-management programs is to prevent the disease or control its complications, provide the patient with the highest access to independence and welfare, deciding about one's self, promotion of the health, and improvement of his/her quality of life.

One of the models used in terms of self-management is the 5 A's model, which is known as the behavior change consulting. It was first developed by Glasgow et al. in 2003 to support the self-management in patients with chronic diseases. This model is an evidence-based approach to correct the behavior and it will promote health. It includes 5 stages of **assessing, advising, agreeing, assisting, and arranging** (19, 20). Self-efficacy was defined by Bandura and it is one of the most important prerequisites of the behavior change (21). Self-efficacy is the person's belief and trust in his abilities to show specific behaviors in specific situations (22), and in the process of chronic disease treatment, increasing the self-efficacy is greatly important. According to Bandura, self-efficacy is a constructive ability by which the cognitive, social, emotional, and behavioral skills of people are organized for the realization of the different objectives in an effective manner (23). In this regard, self-efficacy is related to the person's efforts and stability of the individual in all aspects of life (24). Evaluation of the patients' self-efficacy by the nurses could be a valuable instrument in the work of nurses and their support can lead to an increase in patients' motivation for self-care (25).

Self-efficacy plays an important role in self-management activities and people's health status and it is predictive of the stability in showing health determining behaviors such as adherence to the treatment regimen (26, 27). The studies have shown that people with higher self-efficacy have a better interpretation of the behaviors related to health and hygiene (21, 28). Therefore, investigation of the self-efficacy as one of the indicators of the effectiveness of self-management program is greatly important and its promotion can modify the health behaviors, increase the life expectancy, and decrease the use of health services (4, 28). Regarding the aforementioned issues, myocardial infarction is a chronic disease with different complications that affects all aspects of the patient's life. Regarding this fact, the conducted studies mostly have focused on the effects of the 5 A's management model. Therefore, the current study aimed to assess the effects of a self-management program based on 5 A`s model on the Quality of Life and self-efficacy in the myocardial patients.

MATERIALS AND METHODS

Design of the study. A clinical trial randomized study was conducted on the patients with the myocardial infarction who admitted to the Kashani and Hajar hospitals affiliated Shahrekored University of Medical Sciences. Inclusion Criteria: myocardial infarction, not having previous myocardial infarction, don't have advanced diabetes, chronic renal failure, and malignancy, informed consent to participate in the study, ability to communicate, ability to read and write and don't have mental disorders and mental retardation. Exclusion Criteria were unwillingness to continue to participate in the research, disability and death.

Sampling and sample size: Assuming that the difference between the mean of the quality of life of patients during the study in the two groups is equal to

0.7 and equal the standard deviation of the quality of life therefore based on the following formula, taking into account 95% confidence and 80% power, the sample size in each group is equal to 48 people.

$$n = \frac{\left(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta}\right)^2 (S_1^2 + S_2^2)}{d^2} = \frac{(1.28 + 1.96)^2 (1.5^2 + 1.5^2)}{1} \approx 48$$

First, the research units were selected according to availability, therefore all patients in cardiac unite who have criteria inclusion were selected, then the samples were entered in both case and control groups based on Random Allocation Rule. In this method, according to the sample size, two card colours (red and blue) with the same number equal to the total sample size are placed in the pot. Eligible to enter the study randomly remove one of the cards from the pot and enter one of the research groups according to the researcher's definition.

Data collection. In the current study, Ferran's and Powers Quality of Life questionnaire measured the quality of life, Ferrans and Powers Quality of Life questionnaire includes two sections. The first section measures the quality of life aspects and the second section measures the patient's satisfaction with each of these aspects. Each section includes 35 questions. Fifteen questions are related to the physical health aspect, eight questions measure the spiritual and mental aspects, and five questions are about familial relationships. It is scored based on the 6-scale Likert Scale and the items have been graded from very important (6) to very trivial (1). The final score obtained from the quality of life questionnaire is a number from zero to 30. In this regard, the score from zero to nine is indicative of the undesirable quality of life, 10-19 is indicative of the relatively desirable quality of life, and 20-30 is indicative of the desirable quality of life (29). In terms of satisfaction, also, the items have been graded from very satisfied (6) to very unsatisfied (1) (30). The quality of life questionnaire of Ferrans and Powers heart patients in Iran was used in a study by Shojaei et al., the validity of this questionnaire evaluated by content validity and the Alpha-Cronbach for the quality of life questionnaire has been reported to be 0.86 (31).

The self-efficacy was measured by the Sullivan Self-Efficacy questionnaire. The Sullivan's Self-Efficacy Questionnaire has 13 items ordered in a 5-scale Likert Scale. This questionnaire evaluates the trust and self-efficacy of the person in terms of adherence to general care, controlling the disease symptoms, and observance of the medical prescriptions. Each item has four scores which are graded from zero (no trust at all) to four (the highest trust). A total score is a number from zero to 52, and higher scores are indicative of higher self-efficacy. The validity and reliability of the Sullivan's

Self-Efficacy Questionnaire have been calculated as 0.93 (32) in Agha Mohammadi et al. study and 0.77 in O'Neill et al. study (33).

Summary of research implementation. The researcher first explained the research objectives to the patients and take of their consent. Before interventions, quality of life and self-efficacy were measured by the questionnaire. A self-management program based on the 5 A's model was implemented for the intervention group.

In the first stage, by physical examination and interview a precise evaluation of the patient's status from the point of view risk factors disease, signs and symptoms of myocardial infarction, the test results, the drug and food regimens, and the rate of the patient's adherence to them and activity patterns.

In the second stage inform patients form the abnormality and the intervention they need.

In the third stage, which is named agreement stage, based on the condition of patients and the list of problems behavioral goals were taken, then for each behavioral goal action plan was designed.

In the fourth stage, which is named 'assist' stage, individual and group training although use of educational booklets to improve participants' knowledge in the field of disease, diet, medication as well as how to manage the disease.

In the fifth stage, which was the arrange stage, the patient's improvement status was weekly followed in a 3-month interval by phone calls or visiting the patient in the clinic or the hospital, and he/she was reminded about the practical plan implementation.

After finishing these stages (end of the third month), the research variables were re-measured through the questionnaire (34, 35). The control group has received only the care provided and trained by the treatment staff. The research variables were re-measured after three months.

Ethical and clinical trial code of study. Ethics code of the Committee of the Shahrekord's University of Medical Sciences (IR.SKUMS.REC.1397.155), and clinical trials or IRCT code (IRCT20181024041449N3).

RESULTS

The results of the demographic features of the research units in terms of age, gender, marital status, job status, and education have been presented in Table 1. In the intervention group, the lowest age was 41 and the highest age was 68 with a mean of 55.12±9.29. Also, in the control group, the lowest age was 43 and the highest was 69 with a mean of 56.15±9.27. the statistical test did not show any significant differences between the two groups point of age, gender, marital status, job and education (p>0.05).

Table 1. Demographic characteristic of the participants (intervention and control groups)

Variables	Groups	Intervention		Control		Total		P - value
		Number	Percentage	Number	Percentage	Number	Percentage	
Gender	Female	24	50	24	50	48	50	*1
	Male	24	50	24	50	48	50	
	Total	48	100	48	100	96	100	
Age group	35-44	12	25	12	25	24	25	**1
	45-54	12	25	12	25	24	25	
	55-64	12	25	12	25	24	25	
	65-74	12	25	12	25	24	25	
	Total	48	100	48	100	96	100	
Education status	Middle school	27	5.26	23	47.9	50	52.1	**0.715
	Associate degree	15	3.21	18	37.5	33	34.4	
	University degree	6	1.52	7	14.6	13	13.5	
	Total	48	100	48	100	96	100	
Occupation status	Employer	11	2.92	8	16.7	19	19.8	0.867
	Retired	14	2.29	14	29.2	28	29.2	
	Homemaker	8	1.76	10	20.8	18	18.8	
	Others	15	3.21	16	33.3	31	323	
	Total	48	100	48	100	96	100	
Marital status	Single	1	2.1	2	4.2	3	3.1	**0.775
	Married	42	8.57	39	81.2	81	84.4	
	Divorced	1	2.1	2	4.2	3	3.1	
	Deseased spouse	4	8.3	5	10.4	9	9.4	
	Total	48	100	48	100	96	100	

*Fisher exact test
**Chi-squared test

The results indicated that in the case group, after the intervention, there was a significant difference in the mean score of self-efficacy and quality of life (p<0.001), while in the control group, there was not such a difference in these two items (p=0.141). Also, the changes in the mean scores of self-efficacy in pre and post-intervention in the intervention and control groups showed a significant difference using independent t-test (p<0.001). The mean scores of self-efficacy after the intervention in the intervention and control groups showed a significant difference using independent t-test (p<0.001). The changes in the quality of the mean score of life in pre and post-intervention regarding the intervention and control groups showed a significant difference using independent t-test (p<0.001) (Table 2).

The mean scores quality of life after the intervention in the intervention and control groups showed a significant difference using independent t-test (p<0.001). All four aspects of the quality of life including the physical, economic, spiritual, and familial aspects, were investigated by the paired t-test in pre- and post-intervention regarding the intervention group, and it was revealed that there were significant differences in the quality of the score of life aspects in pre and post-intervention regarding the intervention group (p<0.001). However, there were no significant differences in the control group (p>0.05). Moreover, the changes in the quality of the mean score of life aspects in pre and post-intervention regarding the two intervention and control groups were investigated by the use of independent t-test and it was revealed that there was a significant difference (p<0001). The mean scores quality of life aspects in the intervention and control groups showed no significant differences using the independent t-test (p>0.05). However, there was a significant statistical difference in the intervention and control groups after the intervention (p<0.001) (Table 3).

Table 2. Mean and standard deviation of self-efficacy scores in participations (intervention and control group)

Variable	Stage	Groups		P - value
		Control	Intervention	
		M±SD	M±SD	
Self-efficacy	Pre-intervention	1.5±0.94	1.4±0.29	0.549
	Post-intervention	1.5±0.69	2.4±0.23	<0.001
	Between group	0.141	<0.001	-
	Within the group (post-pre)	0.1±0.25	8.3±0.97	<0.001

Table 3. Mean and standard deviation the total and domination of quality of life score in participations (intervention and control group)

Variable		Stage	Groups		P - value
			Control	Intervention	
			M±SD	M±SD	
Quality of life	Physical aspect	Pre-intervention	6.1±0.67	6.1±0.38	0.317
		Post-intervention	6.1±0.49	8.0±0.21	<0.001
		Between group	0.136	<0.001	-
		Within the group (post-pre)	0.0±0.18	1.1±0.83	<0.001
	Economic aspect	Pre-intervention	3.0±0.64	3.0±0.36	0.079
		Post-intervention	3.0±0.67	5.1±0.42	<0.001
		Between group	0.508	<0.001	-
		Within the group (post-pre)	0.0±0.45	2.0±0.67	<0.001
	Mental aspect	Pre-intervention	3.0±0.12	2.0±0.95	0.193
		Post-intervention	3.0±0.25	4.0±0.23	<0.001
		Between group	0.22	<0.001	-
		Within the group (post-pre)	0.0±0.13	1.0±0.28	<0.001
	Familial aspect	Pre-intervention	2.0±0.18	2.0±0.75	0.234
		Post-intervention	2.0±0.22	2.0±0.73	<0.001
		Between group	0.691	<0.001	-
		Within the group (post-pre)	0.0±0.03	0.0±0.66	<0.001
	Total score of the quality of life	Pre-intervention	1.2±0.62	1.3±0.77	0.203
		Post-intervention	1.2±0.56	2.2±0.069	<0.001
		Between group	0.779	<0.001	-
		Within the group (post-pre)	0.1±0.06	5.1±0.83	<0.001

DISCUSSION

This study is aimed to investigate the effects of a self-management program based on 5 A`s model on the quality of life and self-efficacy of patients with myocardial infarction. The results of the study showed the positive effect of this program on the quality of life in myocardial infarction patients as other studies have confirmed this effect. Rad et al. in their study reported the positive effects of a self-care program based on the 5 A's model, as an effective, implementable, and low-cost nursing intervention for the promotion of quality of life in the elderly people with the acute coronary syndrome (36). The results of Puschel et al. showed that a self-care model based on the 5 A's was effective in quitting smoking in men and women and promoting their quality of life (37). The results of Heidari et al. showed that training the self-care based on the 5 A's model would lead to the reduction in fatigue and dyspnea in patients with COPD, and would increase their quality of life (38). MacKenzie et al. have also reported that a self-care program based on the 5 A's model would lead to weight loss in obese patients and ultimately would increase their quality of life (39).

Ghaderpanah et al. also managed to change the behavior of overweight pregnant women and improve their quality of life through the use of this model (40). There are many strategies to support and improve the self-management skills of people with chronic diseases (41). Training the self-management based on the 5 A's model, which is an evidence-based model, leads to a vast range of behavior changes in different conditions and situations, based on the 5 stages of this model (42). The 5 A's model, through planning based on the patients' behavior, beliefs, and motivation analysis, led to advising and informing about the damaging and unhealthy behaviors, and through increasing the self-efficacy, led to the control over the risk factors and behaviors by the patients, and ultimately, improved and promoted their quality of life. What is very important in this educational planning is the consideration for all aspects of quality of life and not merely the issues related to the disease and health. Regarding the effectiveness of the self-management program based on the 5 A's on the reduction of symptoms in patients with chronic diseases, it can be used as an optimal method, and besides decreasing the costs of repetitive reference to the medical centers, it can reduce the main complications of the disease in these patients.

The data analysis showed that there were no significant differences in self-efficacy between the intervention and control groups in the pre intervention phase. However, after the intervention, a significant difference was observed . In a way that in pre and post-intervention also, both groups were investigated and it was revealed that in the intervention group, there was a significant difference, but it was not observed in the control group. The results study showed the positive effects of a follow-up care model on the self-efficacy of patients with myocardial infarction (43).

Nakahei et al. have reported the positive effects of Orem's self-care model on the promotion of the mothers' self-efficacy for the prevention of home accidents and controlling the risks (44). Cajanding has reported the positive effects of training organized self-care in the hospital discharge on the promotion of the self-efficacy of the patients (45). Kim et al. found out that self-care promotion and training by a preplanned and organized program could be effective on the improvement of the self-efficacy of the elderly people with hypertension (46). Parhiz et al. also reported the positive effects of a self-care based empowerment program on the self-efficacy of mothers with premature babies (47).

The self-management based on 5 A's model can have an effective role in behavior change and lead to the creation of motivation, change in attitude, and change in lifestyle in a way that the patients have an active role in self-care and can manage their behavior and health effectively and efficiently. Regarding the

weakness of the traditional training in considering the active role of the patients in controlling their disease, and the effectiveness of the short-term structured training programs due to the active participation of the patients in controlling the disease's symptoms, the increase in patient's independence can be expected. This method can be used as a low-cost method for the improvement of the situation. And through preparing the proper platform and without the need for high costs of repetitive references to the medical centers, the main problems stemmed from this disease can be decreased.

Study limitations. Differences in patients based on the individual, sex, age, level of education, and level of the economic condition may be affected by the results of the study therefore in this situation researchers attempt was made to minimize these differences by randomly replacing the samples.

Clinical application. The results of the study indicate that the use of nursing interventions based on nursing models and health behaviors is very effective in improving the level of the health of patients and the effectiveness of nursing interventions in patients with chronic diseases; therefore, the use of nursing care and interventions based on nursing models in clinical wards should be given more attention.

CONCLUSION

Based on the results of the current study it was shown that implementation of a self-care training program based on the 5 A's can lead to the improvement of quality of life and self-efficacy of the patients with the myocardial infarction. Thus, it is suggested to use this model for the empowerment and caring of the patients, besides the medicinal treatments, to prevent disability, decrease the references to the medical centers and repetitive hospitalizations, and ultimately reduce the medical costs and promote the society's health.

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