The Effect of Cognitive- Behavioral Stress Management on Health Locus of Control and Resilience in Patients with Coronary Artery Disease

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Abstract

Objective: The purpose of the present research was to examine the effect of cognitive-behavioral stress management on health locus of control and resilience in patients with coronary artery disease.

Method: This research was quasi-experimental with pre-test, post-test and control group. The statistical population of this research consisted of all patients aged 40-65 years with coronary artery disease who were referred to Kasra Hospital in Tehran in 2019. The sample was 90 patients who were selected by targeted sampling method and randomly assigned into the two experimental and control groups. Data were collected using the Multidimensional Health Locus of Control Scale and Resilience Scale. The research data were analyzed using Multivariate analysis of covariance (MANCOVA).

Results: The results showed that the cognitive-behavior stress management significantly increased internal health locus of control and resilience in the experimental group (P<0.01).

Conclusions: Cognitive-behavioral stress management may lead to a change in one's self-awareness and abilities through cognitive challenge, cognitive error detection and thought replacement, which in turn can increases individual's sense of containment and cognitive control.

Keywords: Cognitive-behavioral, Stress management, Health locus of control, Resilience, Coronary artery disease.

Introduction

Coronary Artery Disease (CAD) is the leading cause of increasing burden of disease worldwide (Giuliano, Parmenter, Baker, Mitchell, Williams, Lyndon, et al., 2017) and is recognized as the most deadly cardiovascular disease that is associated to more than 50 percent of heart deaths (Rashidi, Ahmadian, Tabaghian & Ahmadi Tahoor Soltani, 2017). It is also necessary to pay attention to this point that the health care system in this area costs more than 1.3 billion dollars annually (Giuliano, et al., 2017).

The prevalence of cardiovascular disease is increasing due to aging and population growth around the world (Shields, Wells, Doherty, Heagerty, Buck & Davies, 2018). In Iran, the share of heart disease in overall mortality is about 39% (Nikdanesh, Davazdahemami, Esmail Gheydari, Bakhtiari & Mohammadi, 2017). Given the high prevalence of cardiovascular disease, the World Health Organization (WHO) has announced that by 2025 it will reduce mortality from heart attacks by 25 percent, making it one of its goals (Huber, Henriksson, Jakobsson & Mooe, 2017).

Evidence suggests that traditional factors explain only half of the variance in coronary artery disease. For this reason, researchers are interested in the social and psychological risk factors for coronary

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artery disease (Boehm, Chen, Williams, Ryff, & Kubzansky, 2016). Studies have also shown that patients with coronary artery disease experience serious psychological disorders, including high levels of anxiety, depression, and high self-blaming, which can affect patients' health (Du, Zhang. Yin, Zhang, Li, Liu & et al, 2016). In fact, in addition to biological symptoms, psychological factors are also effective in all heart diseases. One of these influential components is health locus of control (Jia, Yue, Su-Hua & Yu-ng, 2016).

A health locus of control is a factor in which people believe that they, others, or luck will affect their health or illness.Those who take more responsibility for their health and believe that they control their own health and are more involved in behaviors related to health and automatically have positive psychological and behavioral effects on them, and those who believe that others or luck are responsible for their health, have an external health locus of control, and this will lead to loneliness and disability and unwanted disease control (Wallston, Maides & Wallston, 1976, cited by Pourhoseinzadeh, Gheibizadeh, Moradikalboland & Cheraghian, 2017). The results show that people with internal health locus of control have a health-promoting lifestyle and are more physically and psychologically healthy and have less risky behaviors such as alcohol consumption, aggression, and so on (Safavi Bayat & Taher, 2016; Pourhoseinzadeh et al., 2017).

In addition to the health locus of control variable, there is another positive psychological variable that protects the person against daily stress and chronic illness. In fact, successfully coping with stressful situations and difficult life situations along with physical health requires another ability called resilience (Mcqueen, 1996, cited to Lemos, William Moraes & Pellanda, 2016).

Resilience is a personality trait that, as a psychological factor, is associated with the spread of chronic diseasesand is defined as an ability to deal with life's problems in the health sciences which acts as a shield against the negative daily events (De Santis, Florom-Smith, Vermeesch, Barroso & DeLeon, 2013). Studies show that resilience is known to be a protective factor against chronic diseases such as cardiovascular problems, and the prognosis is better when patients with cardiovascular disease have a higher level of resilience (Bergh, Udumyan, Fall, Almroth & Montgomery, 2015; Limoos et al., 2016; Liu, Liu, Yu, Peng, Wen, Tang & Kong, 2018). Liu, et al. (2018) investigated the correlation between resilience and self-efficacy with negative emotions in patients with heart problems on 88 heart patients and showed that negative emotional scores such as anxiety and depression had a significant negative relationship with resilience. The researchers concluded that quality of life could be improved by enhancing resilience and self-efficacy.

Given the health systems' focus on lifestyle to prevent and treat disease, researchers state that health occurs through lifestyle improvements, this is while one way to improve lifestyle quality is stress management (Kazemi, Noredini & Moghadam, 2015). Cognitive-behavior stress management training is a multifaceted approach through which techniques such as relaxation, diaphragmatic breathing, meditation, identifying negative automatic thoughts, cognitive distortions, and reconstructing it by replacing rational thoughts, effective coping training, anger management, and assertion are taught to individuals (Antoni, Ironson & Schneiderman, 2007).

In this regard, Saleh (2017) in his research about the effectiveness of cognitive-behavioral stress management training on quality of life, showed that the difference between the overall mean of quality of life in both experimental and control groups was significant. In other words, the results showed that the quality of life of the experimental group in the post-test stage was significantly higher than the control group. Based on the results of this

study, behavioral cognitive stress management training can increase the quality of life and reduce the clinical rate of patients with heart disease. In a study on the effectiveness of stress management training on the quality of life of 150 outpatient cardiovascular patients aged 36 to 84, Blumenthal et al. (2016) showed that patients experienced less stress and better improved in the medical process. Adawi, Fathi Marghmaleki and Modmeli (2017) in their study aimed at examining the effect of cognitive-behavioral stress management training on perceived stress in women with hypertension, showed that there was a significant difference between perceived stress scores in pre-test, post-test and follow-up. The researchers concluded that stress management training could be used as an intervention model to reduce perceived stress in women with high blood pressure.

Doering, McGuire, Eastwood, et al. (2016) also have done studies on cognitive-behavioral therapy for depression, pain relief, and pain control in patients undergoing heart surgery. Their finding showed that cognitive-behavioral therapy reduces depression, pain, and improves pain control. In a study, Freedland, Carney, Rich, et al. (2015) examined cognitive-behavioral therapy for depression and self-care in patients with heart failure, and the result showed that cognitive-behavioral therapy is effective in depression of patients with heart failure and reduces anxiety and fatigue and increases social functioning and better quality of life.

Given above mentioned and the psychological problems of this group of patients and determining the impact of these interventions in the country, the present study seeks to answer the main question of how cognitive-behavioral stress management training affects the health locus of control and resilience in patients with coronary heart disease regarding that there are not too many researches about the effectiveness of Cognitive-Behavioral Stress Management on this group of patients.

Method

The research method was quasi-experimental with pre-test, post-test and control group.In this study, therapy methods are considered as independent variables at two levels (cognitive-behavioral stress management and non-intervention), and health focus of control and resilience as dependent variables. The statistical population of this study included all patients aged 40-65 years with coronary heart disease who were under treatment in Kasra Hospital in Tehran in 2019. The sample consisted of 90 patients with coronary heart disease who were selected by available sampling method and randomly assigned to two experimental and control groups.Due to the specificity and limited size of the population and using the following formula, the sample was selected with 95% confidence and 5% accuracy.

$$n = \frac{2\left(1 - \frac{\alpha}{2} + 1 - \beta\right)^{\wedge}2}{\Delta^2} + 1$$

The inclusion criteria were: the patient's willingness to participate in the study, patients with coronary heart disease in men and women between the ages of 40 and 65 years old who were diagnosed by a specialist, patients who have been diagnosed with the disease for 2 years, and the patient's literacy should be at least third grade in secondary school for participating in this study. The exclusion criteia were patients who did not cooperate with the therapist, unwillingness to continue participating in research, receiving other psychiatric and psychological intervention simultaneously, having another chronic physical illness, and drug addiction.

Instruments:

Multidimensional Health Locus of Control (MHLC): Health Locus of Control questionnaire was developed by Wallston and Wallston (1982). This questionnaire consists of three components of internal locus of control, powerful other locus

of control, and chance locus of control. The questionnaire has 18 items, each of which consists of 6 options ranged from 'completely agree' (score 1) to 'completely disagree' (score 6). Each individual's score varies from 6 to 36 for each subscale that is calculated separately. From 18 items, 6 of them measure people's beliefs about internal health locus of control, and 12 items have been designed to measure the impact of factors such as luck, power of others, doctors and other people on the health of an individual, which are considered an external source of health locus of control (Wallston, 2005). The validity and reliability of this measure has been translated and localized for the first time in Iran by Moshki, Ghofraniapour, Hajizadeh and Azadfallah (2007), which have been reported to be acceptable. Cronbach's alpha coefficients of 0.70, 0.75, and 0.69 were also reported for components I, P, and C, respectively. In the study of Hatamlavi Saadabadi, Poursharifi and Babapour Khairuddin (2011), by using Cronbach's alpha, internal consistency for components I, P and C were reported to be 0.94, 0.65 and 0.90, respectively.

Conner-Davidson Resilience Scale (CD-RIS): Conner and Davidson (2003) resilience scales were used to measure resilience. Conner and Davidson (2003) prepared this questionnaire by reviewing the research resources of 1991-1979 in the field of resilience. The questionnaire has 25 items that are graded on a Likert scale of zero to five. Although this scale measures different levels of resilience, it has a total score. The results of a preliminary study of the psychometric properties of this scale confirm its reliability and validity (Conner & Davidson, 2003). This scale has been standardized in Iran and Cronbach's alpha method has been used to determine its reliability and the reliability coefficient of 0.89 has been reported for it (Mohammadi, 2005, cited by Rajabi, Asareh, Shiri, Keshvari, Mikaeli Hoor & Pornik Dast, 2014). In another study, Cronbach's alpha coefficient reported an internal consistency of 0.93 for this scale, and by doing factor analysis,

the main components confirmed the existence of a factor in this scale (Jokar, 2007, cited by Pasandideh & Zare, 2016).

Cognitive- Behavior Stress Management: This treatment refers to a set of stress management therapies that focus on the cognitive-behavioral approach. The program combines a variety of relaxation, cognitive reconstruction, effective coping training, anger management, and expression training in behavior cognition manner (Anthony et al., 2007). Group therapy of cognitive-behavioral stress management is a treatment protocol developed by Anthony et al. which is conducted in 10 sessions of 90 minutes and is held once a week in groups.

Procedure and participants

In this research, first, the theoretical principles of the study were collected based on the library method. Then, after receiving the introduction letter and obtaining a permission from the university, where the study took place, the necessary arrangements were made to cooperate with Kasra Hospital in Tehran to conduct the intervention. Next, in accordance with ethical considerations, the research samples were selected by targeted sampling method and randomly assigned to two experimental and control groups. While explaining to the subjects, observing the ethical considerations and clarifying the objectives of the research, the subjects were asked to participate in the treatment.

Before applying the therapy method, both groups were tested and asked to complete the research questionnaires. The duration of treatment sessions in the cognitive-behavioral stress management was ten 90-minute sessions and was performed in groups and once a week in the hospital. After completing the training sessions, the two groups, the experimental groups and the control group, took the post-test and the data were analyzed using SPSS software.

Table 1: Intervention sessions and structure and content of cognitive-behavioral stress management

Session 1: Introducing the group therapist to members and introduction session, general information about the program, explanation of the program structure, stressors and stress responses, gradual muscle relaxation for 13 muscle groups, summarizing, homework and hospitality.
Session 2: Muscle relaxation for a muscle group, homework review, the effects of stress, stress and awareness, increased awareness of the physical symptoms of stress, summarizing, homework, and hospitality.
Session 3: Relaxation with imagination and diaphragmatic breathing, homework review, review of signs and effects of stress, communication between thoughts and feelings, training of thinking power, summarizing, homework and hospitality.
Session 4: Relaxation with imagination and diaphragmatic breathing, homework review, negative thinking and cognitive distortions, negative thoughts and behaviors, negative thought identification exercise, summarizing, homework, and hospitality.
Session 5: Relaxation with imagination and diaphragmatic breathing, homework review, the difference between logical and irrational self-talking, steps to replacing logical thoughts, exercise to replace logical thoughts, summarizing, homework and hospitality.
Session 6: Relaxation with imagination and diaphragmatic breathing, homework review, definition of coping, types of effective coping, types of ineffective coping, discussion on intervention of coping strategies, summarizing and homework and hospitality.
Session 7: Relaxation with imagination and diaphragmatic breathing, homework review, effective coping steps, effective coping training, summarizing, homework, and hospitality.
Session 8: Relaxation with imagination and diaphragmatic breathing, homework review, discussion of anger response intervention, self-assessment of anger, rage and awareness, anger management, summarizing, homework and reception.
Session 9: Relaxation with imagination and diaphragmatic breathing, homework review, assertion training, interpersonal styles, obstacles to assertive behavior, components of assertive communication, using problem solving in conflicts, steps to more expressive behavior, summarizing, homework and reception.
Session 10: Relaxation with imagination and diaphragmatic breathing, homework review, social support, understanding social support, benefits of social support, barriers to social support, stress management techniques to maintain social support, summarizing, homework and reception.

Ethical consid erations

Ethical considerations include getting the informed consent, respecting the participants, and taking into account the confidentiality of collected data. Also it has been explained that if a participant is not willing to attend the sessions, he/she is free to withdraw from the research. After the research free training sessions were planned for control group.

Results

Table 2 shows the mean and standard deviation of the health locus of control and resilience in coronary artery patients in both control and experimental groups based on pre-test and post-test.

As can be seen in the Table, the difference between the mean scores of the health locus of control and resilience in the control and experimental group is significant in the post-test, in that in the

experimental group, the mean of internal health locus of control and resilience in post-test is higher than in pre-test, while the mean score of powerful others locus of control and chance locus of control in post-test are less than in pre-test.

Before using the multivariate parametric analysis of covariance, to test the hypotheses, Box and Loon tests were used. Based on the Box test, which was not significant for any of the variables, the homogeneity condition of the variance/covariance matrices was correctly observed (BOX=16.275, F=3.11, P=0.065). According to Loon test result for the post-test steps and its meaninglessness for all variables, the condition of equality of within group variances has been observed. Therefore,

multivariate analysis of covariance was used. The results of Wilkes Lambda also showed that in the study groups in the post-test phase, there is a significant difference at least in terms of one of the dependent variables (Wilkes Lambda=0.0233, F=91.32, P<0.001). Also, based on ETA result, it was found that the difference between the two groups in terms of the dependent variables is generally significant and the rate of this difference in the post-test is 77% based on the Lambda Wilkes test (ETA^2=0.767), that is 77% of the variance of the difference between the two groups is due to the reciprocal effects of the dependent variables of the health locus of control.

Table 2: Mean and standard deviation of the health locus of control and resilience of study groups in pre-test and post-test

Variables		Experimental group		Control group	
		Mean	SD	Mean	SD
Internal locus of control	Pre-test	15.36	2.65	15.29	2.57
	Post-test	19.95	2.14	14.44	3.23
Powerful others locus of control	Pre-test	19.20	2.04	18.71	1.65
	Post-test	15.09	1.87	17.55	1.45
Chance locus of control	Pre-test	18.00	2.11	17.60	1.67
	Post-test	14.13	1.97	16.49	1.41
Resilience	Pre-test	43.58	6.32	44.69	6.85
	Post-test	50.22	7.55	43.66	5.68

Table 3: Results of covariance analysis of the effect of cognitive-behavioral stress management group therapy on health locus of control

Variable	Change esource	SS	Df	MS	F	Eta^2
Internal locus of control	Pre-test	383.65	1	383.65	129.68***	0.604
	group	667.98	1	667.98	225.78***	0.726
	error	251.478	85	2.959		
Powerful others locus of control	Pre-test	7.236	1	7.236	2.65	0.030
	group	131/39	1	131.39	48.17***	0.362
	error	231.84	85	2.73		
Chance locus of control	Pre-test	10.20	1	10.20	3.62	0.041
	group	119.70	1	119.70	42.48***	0.33
	error	239.49	851	2.82		

***P<0.001 **P<0.01

As the results of Table 3 show, despite the control of the pre-test effect, there is significant difference between the two experimental and control groups in terms of post-test related to the mean scores of the internal locus of control (F= 25.78), the powerful other locus of control (F = 48.17), and the chance locus of control (F=42.48) at P <0.001.In other words, cognitive-behavioral stress management group therapy has significantly increased the internal health locus of control in patients with coronary heart disease in the experimental group in post-test. Cognitive-behavioral stress management group therapy has also significantly reduced the powerful others locus of control and the chance locus of control in patients with coronary heart disease in the post-test.

Before using the multivariate analysis of the multivariate covariance parametric analysis to observe assumptions, the Lvevne's test was used. Based on Levin's test and its non-significance for the resilience variable, the condition of equality of within group variances has been observed.

The results of Table 4 show that despite the control

Table 4: Results of univariate covariance analysis related to the effect of cognitive-behavioral stress management group on resilience in coronary heart patients

Variable	Change resource	SS	Df	MS	F	Eta^2
Resilience	Model	2311.66	1	2311.66	55.27***	0.388
	Pre-test	295.199	1	295.199	7.06**	0.075
	Group	1052.51	1	1052.51	25.17***	0.224
	Error	3638.58	87	41.82		

*P<0.05 **P<0.01 ***P<0.001

of the pre-test effect, there was a significant difference between the control group and the cognitive-behavioral stress management group in terms of post-test related to the mean of resilience scores (F = 17.25) at P<0.001. In other words, the cognitive-behavioral stress management group significantly improved resilience in patients with coronary heart disease.

Discussion and Conclusion

Based on the findings of the study, the hypothesis stating "cognitive-behavioral stress management group therapy is effective in health locus of control of patients with coronary heart disease." was confirmed. In other words, cognitive-behavioral stress management group therapy has significantly increased the internal health locus of control in patients with coronary heart disease in the post-test of experimental group. Cognitive-behavioral stress management group therapy has also significantly reduced the powerful others locus of control the chance locus of control in patients with coronary heart disease in the post-test of experimental group. In this regard, on the effectiveness of cognitive-behavioral stress management group therapy on the health locus of control in coronary heart disease patients, Ridiot, et al. (2017) in their study aimed at examining the health locus of control in cardiac transplant patients showed that patients who had internal locus of control showed a better process of improvement and recovery. Sepahmansour and Bagheri (2017) also, in their research with the aim of predicting a health-promoting lifestyle based on health locus of control and attachment styles among students, showed that there are significant positive and negative correlations between promoting health behaviors with internal and external health locus of control center, respectively. Safavi Bayat

and Taher (2016) in their study aimed to investigate the correlation between health locus of control source and self-care and following the diet therapy in patients with hypertension, showed that patients who have internal health locus of control follow a diet.

Explaining the effectiveness of this treatment on the health locus of control, it can be said that cognitive-behavioral stress management provides a realistic insight of their cognitive capabilities to patients and by reducing negative emotions, it can affect the quality of their health locus of control. As the basis of cognitive-behavioral group therapy is increasing life skills, these cognitive-behavioral skills help increase mental health components by reducing stress and enhancing coping skills (Thomaes, Poorthuis & Nelemans, 2011).

This treatment creates realistic assessments and proper cognition that allows the person to use the appropriate coping methods to eliminate or control the stressors and act to reduce stress. In fact, the cognitive-behavioral stress management leads to a change in one's self-awareness and abilities through cognitive challenge, cognitive error detection, and ultimately cognitive reconstruction and thought replacement, which in turn increases individual's sense of containment and cognitive control (Chew, Cheng & Chair, 2019). Those who take more responsibility for their own health and believe that they control their own health are more involved in behaviors related to health and automatically have positive psychological and behavioral effects on them. While, several studies have shown that people who have a strong sense of personal control become less worn out during stressful time (Sarfino, 2002, Gavin-Breier, 2017). Following this cognitive reconstruction, behavioral control, cognitive control, decision making, and information control are enhanced, and this leads to the promotion of internal control in the individual, which in turn reduces the control of others' power and chance. Each type of control can reduce

stress, but cognitive control seems to have the most beneficial and lasting effect (Sarafino, 2002, translated by Ahmadi Abhari, et al., 2017). The result of some research also shows that if stress is managed and effective coping skills are provided, a person will be able to cope better with the needs and challenges of life (Godfrey, 2004). It should also be noted that this treatment, in order to reduce stress, causes people to have a high sense of internal control through proper training of coping strategies. In other words, a high sense of efficiency and adequacy in these patients leads them to appropriate self-control. In general, these people by relying on a sense of efficiency and adequacy in controlling stressful situations, see the disease controllable and underestimate its negative emotional effects (Stanton, Revenson & Tennen, 2007). Also, a sense of personal control leads to a belief in the adequacy of internal and external resources to cope with the requirements of the disease. The adequacy of resources, in turn, creates a strong sense of self-worth and self-guidance. Therefore, these people use effective coping strategies such as self-disclosure and information seeking, and as a result, show fewer signs of emotional distress (Schore & Schore, 2008).

Based on the findings of the study, the hypothesis stating "cognitive-behavioral stress management group therapy is effective in the resilience of coronary heart disease patients" was confirmed. In other words, cognitive-behavioral stress management group therapy has significantly improved resilience in patients with coronary heart disease.

In this regard, on the effectiveness of cognitive-behavioral stress management group therapy on improving the resilience of coronary heart disease patients, Radmehr and Yousefvand (2017) in a study aiming at investigating the effect of cognitive therapy based on the presence of mind on reducing perceived stress and increasing hope for the survival of women with coronary artery disease has shown

that cognitive therapy based on the presence of the mind is effective in reducing perceived stress and increasing hope for the survival of patients with coronary artery disease. Lio, et al. (2018) in their study aiming to investigate the correlation between resilience and self-efficacy with negative emotions in patients with heart problems of 88 heart patients showed that negative emotional scores such as anxiety and depression had significantly negative correlation with resilience. The researchers concluded that quality of life could be improved by improving resilience and self-efficacy. Talebi Amiri, et al. (2015) in their study to investigate the effectiveness of cognitive-behavioral group therapy on improving the quality of life of patients with cardiovascular disease in cardiac patients at Shahid Rajaei Hospital in Tehran showed that training cognitive-behavioral group therapy significantly improved quality of life of patients with coronary heart disease. In a study, Ferdland, et al. (2015) examined cognitive-behavioral therapy for depression and self-care in patients with heart failure. The result has shown that cognitive-behavioral therapy is effective in depression of patients with heart failure and reducing anxiety and fatigue and increasing social functioning and better quality of life.

For explaining this finding, it can be said that the cognitive-behavioral stress management can be effective by changing the dysfunctional cognitions on resilience and subsequently public health. The probable explanation is that the individual's familiarity with his or her positive traits, the promotion of social skills associated with his or her acceptance, and coping with inconsistent relational styles improve personal competence and, consequently, enhance one's resilience. In fact, by providing realistic assessments and appropriate cognition, this treatment allows the individual to use appropriate coping techniques to relieve or control the stressor and reduce stress. In fact, this treatment changes a person's self-awareness and

abilities, leaving the person feeling alienated and valuable, which in turn increases the person's sense of restraint. It also causes a sense of challenging and fighting by training patients the desirable coping strategies and replacing problem-oriented strategies with emotion-oriented ones so that they consider the problems of life as a field for struggle and growth and do not show helplessness and surrender in the face of events (Hassan Shahi & Daraei, 2005). Research also shows that if stress is managed and effective coping skills are provided, a person will be able to cope better with the needs and challenges of life (Godfrey, 2004).

Considering that learning life skills such as empathy, conflict resolution, goal setting, and determining necessary strategies are elements of resilience, by improving these skills, this treatment leads to the growth of resilience in patients with coronary heart disease. In fact, learning skills such as self-control and effective communication methods, awareness of personal characteristics and situational factors in communication and the use of appropriate methods of expression, causes people to avoid isolation from others and withdrawal from community and reduces people's negative feelings in everyday social interactions. Thus, cognitive-behavioral group training causes patients to deal with functional and interactive situations in a more effective way by replacing more appropriate behaviors.

In another explanation, it can be said that expression, social support, and social communication are among the internal supportive factors that facilitate resilience. Accordingly, we can point to the increase in social communication and ultimately social support that these patients learn and benefit from this intervention. Due to their depressed mood and high irritability, most of these patients have a lot of problems in terms of interpersonal relationships, and by increasing communication and subsequent social support, they can improve their resilience and reduce the symptoms of depression and

anxiety. Therefore, one of the goals of the training sessions was to consider the correct and courageous communication style along with the expression and anger control to encourage patients to an enhancing and appropriate social interaction.

This study was done on patients aged 65-40 years old with coronary heart disease in Kasra Hospital in Tehran in 2019, which is why the generalizability of its results is limited. Another limitation of this study was the lack of using follow-up test to accurately determine the status of people exposed to long-term interventions. Sampling and mere use of the questionnaire are other limitations of the present study. The results of this study have important implications for the education and promotion of mental health of patients with coronary heart disease. According to these points, it is recommended that this treatment be performed on a larger number of patients with higher homogeneity and in other cities in order to have more generalizability. It is also recommended to study the effect of this treatment on other types of heart disease.

Resources

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