


Comparison of the Effectiveness of Compassion-focused Therapy and Mindfulness-based Stress Reduction on Cognitive Emotion Regulation among Patients with Coronary Heart Disease

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Article Info	ABSTRACT
<p>Article type: Original article</p>	<p>Background and Aim: Coronary artery disease is one of the psychosomatic diseases that is affected not only by biological factors but also by psychosocial factors. Therefore, this study aimed to compare the effectiveness of compassion-focused therapy (CFT) and mindfulness-based stress reduction (MBSR) on cognitive emotion regulation among patients with coronary heart disease.</p>
<p>Article History: Received: 18 November 2020 Revised: 13 March 2021 Accepted: 5 April 2021</p>	<p>Materials and Methods: This quasi-experimental study was conducted based on a pretest-posttest control group design and follow-up. The statistical population of the present study consisted of all heart disease patients referring to the Cardiology Interior Department of Shahid Rajaei Hospital, Karaj, Iran, in 2019. The samples (n=45) were patients with coronary heart disease selected using the convenience sampling method and randomly assigned to three groups, namely CFT, MBSR, and control. Subjects responded to the Cognitive Emotion Regulation Scale for pretest, posttest, and follow-up. Both treatment packages were held in eight 90-minute sessions. The collected data were analyzed in SPSS software (version 24) using the analysis of variance with repeated measures design. The significance levels were considered 0.05 and 0.01.</p>
<p>Keywords: Mindfulness Metacognition Heart diseases</p>	<p>Results: Based on the results, CFT and MBSR had a significant effect on cognitive regulation of emotion in patients with coronary heart disease. However, it was revealed that there was no difference between the effectiveness of these two methods and their effectiveness continues in the follow-up period (P=0.001).</p> <p>Conclusion: Compassion-focused therapy and MBSR were both effective on cognitive emotion regulation in patients with coronary heart disease. It is recommended that therapists and healthcare professionals use the training of these two methods to improve the mental and physical health of patients with coronary artery disease.</p>

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Introduction

The relationship between body and mind has been emphasized since time immemorial, in other words, since 1,000 BC. However, the focus has mainly been on the physical condition of chronic patients. Meanwhile, the psychological dimensions

of chronic diseases are often overlooked, meaning that it is often thought that most patients adapt well to the psychological aspects of chronic illnesses. Nevertheless, when patients experience a defect in their physical health, the mental adjustment

becomes more difficult. Chronic medical illnesses require behavioral changes due to increased self-care needs (1).

One of the chronic physical diseases is coronary heart disease. Coronary heart disease refers to several heart conditions that are caused by atherosclerotic lesions in the coronary arteries (2). Cardiovascular disease is a general term used for diseases of the heart and blood vessels defined as progressive damage due to the inability of the heart to proper blood circulation throughout the body. This disease is one of the three leading causes of death in industrialized countries (3) which are associated with impaired mental health and more psychological distress (4).

Heart disease is one of the psychosomatic diseases that is affected not only by biological factors but also by psychosocial factors. Although biological models in relation to coronary heart disease have been able to properly identify biological risk factors, the most important and major deficiency of these models is that they study heart disease from one perspective (purely physical aspect). However, today, many studies consider these diseases multifactorial and have heavily emphasized the role of risk and protective psychosocial-cultural factors in the occurrence, prevention, and prognosis of heart disease (5).

The results of numerous studies indicate that the prevalence of the cardiovascular disease is increasing so rapidly that it is been ranked the first among debilitating diseases. Cardiovascular rehabilitation guidelines presented in different societies always emphasize the importance of prevention of this disease more than its treatment. However, the promotion of physical health through the rehabilitation process is only effective if the psychological condition of individuals is sufficiently favorable (6). Therefore, the control of risk factors and modification of lifestyle among cardiovascular patients have important roles and lead to the empowerment of such patients to take care of themselves (7). Nonetheless, based on the findings of various studies, physical factors alone lack a decisive role in the occurrence of these diseases; rather, psychological and personality factors also play a major role in the incidence of this disease (8).

The heart, which is the most sensitive and active organ in the body, is affected by any change that directly threatens the organism (4). Therefore, the identification of problems among individuals with coronary artery disease greatly facilitates the elimination of mental and physical injuries. Since psychological status is influential in causing or exacerbating the disease in such patients, the adoption of a better procedure in the clinical field to

choose effective treatment strategies and use appropriate preventive strategies for patients with coronary heart disease highlights the importance and necessity of the present study.

One of the influential variables in mental health is cognitive emotion regulation. Cognitive emotion regulation refers to cognitive coping strategies adopted to respond to stressful environmental events, as well as managing stimuli that trigger emotion regulation (9). It has been suggested that individuals resort to a variety of cognitive emotion regulation strategies to confront stressful events. Cognitive emotion regulation strategies are divided into two negative and positive categories. Negative strategies include rumination, self-blame, blaming others, catastrophizing, while positive strategies include positive refocusing, positive reappraisal, acceptance, refocusing on planning, and putting into perspective (10). In addition, cognitive emotion regulation strategies are effective personality factors in cardiovascular disorders, the role of which should be considered in these disorders (11).

The dramatic increase in the incidence of heart disease and its negative consequences for the individual and family have led numerous researchers and psychologists to try to devise and provide effective treatments in this domain. New therapies are developing in the field of psychological variables related to the treatment of heart disease, including a wide range of therapies, such as mindfulness-based cognitive therapy and compassion-focused therapy (CFT).

Mindfulness is the awareness of the present moment without judgment. It is the awareness of one's environment, thoughts, and feelings without confirming anything or considering it good or bad. Therefore, mindfulness also involves the regulation of cognitive evaluations and the objective observation of experiences. Additionally, it enables more adaptive coping and management of undesirable stimuli. Individuals with higher mindfulness report better emotional and behavioral self-regulation and show more compassion toward themselves (12).

People with high compassion toward themselves are more likely to accept their responsibility for negative life events, can perceive negative events as they are without adopting a judgmental approach to themselves, and ruminate less about negative events. Compassion is itself a powerful predictor of mental health. Self-compassion is an important human force that includes the attributes of kindness, fair judgment, and interconnected emotions, as well as helping others find hope and meaning in their lives when faced with problems. It means simply directing kindness to oneself, being

open to experiences, and being affected by the suffering of others.

Self-compassion, simultaneously, requires that individuals do not reject or suppress their painful feelings (13, 14). A positive mindset can be considered an emotion regulation strategy by increasing self-compassion, in which the experience of annoying and unpleasant emotions is not prevented; rather, the individual tries to find new ways to deal with them (15). Due to the acute condition of patients with heart disease, the adoption of the preferred treatment or combination of therapies that are more effective for the mental condition of such patients is an important issue that should be further investigated.

In Iran, it is necessary to include psychological interventions in the treatment protocol of patients to control and reduce the harmful variables of personality. As a result, the necessity of the present study is to reduce the psychological consequences and improve the condition of patients with coronary heart disease. The programs that need to be included are in the form of educational interventions, which along with medical interventions prevent the severity of the disease and re-attacks, accelerate the healing process, promote general health, and make a long-term adaptation of these patients (16).

Despite the prevalence of heart disease in Iran, there is scarcity in the studies conducted to investigate the effectiveness of various treatments. To this end, it is logically necessary to perform research to investigate these issues. Due to the acute condition of patients with heart disease, the adoption of the preferred treatment or combination of therapies to be more effective for the mental condition of such patients are important issues that should be further investigated. Therefore, this study aimed to compare the effectiveness of CFT with mindfulness-based cognitive therapy on cognitive emotion regulation in

patients with coronary heart disease.

Materials and Methods

This quasi-experimental research was conducted based on pretest-posttest control group design and follow-up. The statistical population of the present study consisted of all heart disease patients referring to the Cardiology Interior Department of Shahid Rajaei Hospital, Karaj, Iran, on an outpatient or inpatient basis in the summer of 2019. The samples ($n=45$) were patients with coronary heart disease selected using the convenience sampling method. The inclusion criteria were having at least primary education, aging over 18 years old, being diagnosed with coronary heart disease by a cardiologist, being willing to participate in the study, lacking mental retardation, and lacking chronic physical illness other than heart disease or mental disorders.

On the other hand, the case who were absent more than two treatment sessions, did not cooperate in the sessions, and withdrew from the research procedure due to their illness aggravation or other personal reasons were excluded from the study. After obtaining the approval of the proposal, necessary permits, and ethical code of research from the Islamic Azad University, Karaj Branch, Karaj, Iran, the researcher referred to the Cardiology Interior Department of Shahid Rajaei Educational and Medical Center, Karaj, Iran. The eligible patients ($n=45$), who were also willing to participate in training sessions, were selected with the coordination of the Hospital officials and randomly assigned to two experimental groups and one control group ($n=15$ each).

The experimental groups underwent eight 90-minute weekly sessions of training regarding themselves, and the control group was placed on a waiting list for training. The content of the CFT intervention was performed based on the protocol presented by Gilbert 2014 (Table 1).

Table 1. Summary of compassion-focused therapy and mindfulness-based stress reduction sessions

Session	Compassion-focused therapy	Mindfulness-based stress reduction
First	Establishing initial communication, grouping, reviewing the structure of meetings, being familiar with general principles, distinguishing between compassion and self-pity, assessing the extent of emotional abuse, describing compassion-focused therapy, explaining emotional abuse and the factors associated with its symptoms, and conceptualizing self-compassion training	Explaining the nature of meeting; introducing and familiarize members with each other; discussing educational information about stress, including stress psychology, stress response, and the effect of appraisal on stress perception
Second	Mindfulness training along with the practice of body examination and breathing, being familiar with brain systems based on compassion, empathy training, training to make people understand that they feel they can handle the situation with a sympathetic attitude, and performing homework	Performing body examination exercise; discussing last week's experiences, especially homework experiences

Table 3. Continued

Third	Becoming familiar with the characteristics of people with compassion, feeling compassion for others, cultivating the feelings of warmth and kindness to oneself, developing the understanding that others also have flaws and problems in the face of self-destructive feelings and shame (cultivating a sense of human commonalities), teaching empathy, and providing homework	Introducing calm movements and conscious Yoga mind as a way of calming the physical symptoms of stress and becoming aware of the delicate movements of the body
Forth	Reviewing the exercise of the previous session, encouraging the subjects to self-knowledge and examine their personality according to educational topics; identifying oneself as a non-compassionate or compassionate person; identifying oneself as a person who values self-compassion, empathy and sympathy; developing a compassionate mind; applying exercises to oneself and others; teaching the physiotherapist metaphor; teaching forgiveness; and assigning homework	Starting the practice of sitting meditation with an emphasis on understanding bodily emotions as mere emotion (as opposed to interpretations and thoughts about emotions, such as catastrophizing)
Fifth	Performing compassionate mind developing exercises; reviewing the previous session; being familiar and applying forgiveness, acceptance without judgment, teaching the metaphor of the flu, and teaching patience; teaching acceptance of issues; accepting the changes ahead; enduring difficult and challenging situations considering the changing nature of life and confronting with different challenges; and assigning homework	Exchanging views regarding the completion of half of the path, discussing the homework requirement and the impact of this program so far. Expanding sitting meditation to awareness of thoughts entering and exiting the mind
Sixth	Reviewing the exercise of the previous session, creating compassionate images practically, teaching styles and methods of expressing compassion (verbal compassion, practical compassion, intermittent compassion, and continuous compassion); applying these methods in daily life and for spouse, children, parents, friends, teachers, and acquaintances; teaching the developing valuable and transcendent emotions; and assigning homework	Discussing homework; practicing deep sitting meditation for a long time (the content of the meeting included paying close attention to the sounds in the environment.)
Seventh	Reviewing the exercise of the previous session, teaching writing compassionate letters for oneself and others, teaching daily registering and recording real situations based on compassion and individual's performance in applying this method in that situation	Performing full mindfulness, which included a brief review of the training in sessions 4, 5, and 6
Eighth	Training and practicing skills, reviewing and practicing the skills presented in previous sessions for helping subjects to confront different situation in different ways; final summarizing, and providing solutions to maintain and apply this therapeutic method in everyday life	Summarizing the items mentioned in the previous sessions, applying mindfulness in all aspects of life

The intervention of CFT was administered by a psychologist with a degree in CFT during 90-minute sessions once a week in one of the counseling and psychological centers of Karaj city in 2019. The methods applied in these sessions were lectures, group discussions, and practical skills training was implemented. The required data were collected using two questionnaires, namely the demographic form and the Cognitive Emotion Regulation Questionnaires.

Cognitive Emotion Regulation Questionnaire: This

instrument, developed by Garnowski *et al.* (2002), is a multidimensional questionnaire used to identify individuals' cognitive coping strategies after experiencing negative events or situations (17). This 36-item questionnaire is self-reported and has two forms, one specially designed for adults and the other for children. The Cognitive Emotion Regulation Scale assesses nine cognitive strategies, namely self-blame, acceptance, rumination, positive refocusing, refocus on planning, positive reappraisal, putting into perspective, catastrophizing, and other-blame.

Garnewski *et al.* reported good validity for this questionnaire.

The items are rated on a 5-point Likert scale (from always to never) that every four items assess one of the nine mentioned factors. The Persian version of this scale has been validated by Samani and Jokar (2007). This questionnaire is highly easy to be implemented and can be used for individuals aged 12 years old and over (both normal and clinical cases). The reliability of this questionnaire, calculated by its developers using Cronbach's alpha coefficient, was obtained at 0.91, 0.87, and 0.93 for positive strategies, negative strategies, the total questionnaire, respectively (18).

In this research, ethical considerations were observed, including obtaining informed consent and ensuring anonymity and confidentiality. This study was approved by the Islamic Azad University, Karaj Branch, with the code of IR.IAU.K.REC.1398.083. The collected data were analyzed in SPSS software (version 24) using mixed ANOVA.

Results

All three groups of the research, namely CFT, mindfulness therapy, and control, consisted of 10 (66.67%) and 5 (33.33%) females and males, respectively. In the CFT group, 5 (33.33%), 5 (33.33%), 3 (20%), and 2 (13.33%) cases were respectively in the age groups of 30-35, 36-40, 41-45, 46-50 years. In the mindfulness treatment group, 6 (40%), 4 (26.67%), 3 (20%), 2 (13.33%) subjects aged 30-35, 36-40, 41-45, and 46-50 years, respectively. In the control group, 4 (26.67%), 6 (40%), 2 (13.33%), 3 (20%) participants were in the age groups of 30-35, 36-40, 41-45, 50-46 years,

respectively.

In the present study, the study of assumptions showed that the results of Levene's test were not significant for any of the research stages; therefore, the homogeneity of variances for the treatment follow-up variable was met in the three stages. The examination of the results of Mauchly's sphericity test showed that the assumption of the equality of variances within-subjects was not established for the positive and negative cognitive regulation variables of emotion. Considering that the Greenhouse-Geisser epsilons were obtained at the values of < 0.75 for positive cognitive regulation, this test was used to evaluate positive cognitive regulation. Moreover, since the same value was estimated at > 0.75 for negative cognitive regulation, the Huynh-Feldt test was used to evaluate negative cognitive regulation.

Table 2 shows that the effects of time, time*group interaction, and groups were significant for the variables of positive and negative cognitive emotion regulation. Therefore, it was concluded that CFT and mindfulness group training were effective on cognitive emotion regulation in patients with coronary heart disease.

Based on Table 3, the results of the Bonferroni post hoc test showed that the means of pre-test had a significant difference with those of post-test and follow-up for positive and negative cognitive emotion regulation variables. Moreover, Table 3 indicated the positive effect of CFT and group training of mindfulness in the experimental group and the continuation of this effect in the follow-up phase.

Table 4 presents the results of the Bonferroni test for pairwise comparisons of time means*groups. Accordingly, it was concluded that there was no

Table 2. Results of mixed ANOVA with repeated measures in explaining intragroup, intergroup, and interactive effects

Variable	Source of effect		Sum of squares	Degrees of freedom	Mean square	F	Sig.	Eta Squared
Positive cognitive regulation	Time	Intragroup	723.57	1.66	435.48	343.77	0.001	0.891
	Time*	Intragroup	429.36	3.60	119.00	101.99	0.001	0.829
	Groups	Intergroup	1086.50	2	543.25	9.30	0.001	0.301
Negative cognitive regulation	Time	Intragroup	1986.05	1.26	1569.14	216.19	0.001	0.837
	Time*	Intragroup	905.45	2.53	357.69	49.28	0.001	0.701
	Groups	Intergroup	1536.45	2	768.23	9.27	0.001	0.316

Table 3. Bonferroni test results for pairwise comparisons of group and time effect means

Variable	Group effect	Mean	Standard error	Group differences		Mean difference	Standard error	Sig.
Positive cognitive regulation	CFT	40.82	1.56	Compassion	Mindfulness	0.333	1.63	1.000
	Mindfulness	40.48		Compassion	Control	6.17		0.001
	Control	34.64		Mindfulness	Control	5.84		0.003
Negative cognitive regulation	CFT	36.93	1.32	Compassion	Mindfulness	0.133	1.87	1.000
	Mindfulness	36.80		Compassion	Control	-7.08		0.001
	Control	44.02		Mindfulness	Control	-7.22		0.001

Table 3. Continued

Positive cognitive regulation	Pre-test	35.37	0.722	Pre-test	Post-test	-4.91	0.233	0.001
					Follow up	-4.91	0.245	0.001
	Post-test	40.2	0.657	Post-test	Pre-test	4.91	0.233	0.001
					Follow up	7.10	0.161	1.000
	Follow up	40.28	0.656	Follow up	Pre-test	4.91	0.245	0.001
					Post-test	-7.10	0.161	1.000
Negative cognitive regulation	Pre-test	44.66	0.780	Pre-test	Post-test	7.84	0.538	0.001
					Follow up	8.40	0.535	0.001
	Post-test	36.82	0.854	Post-test	Pre-test	-7.84	0.538	0.001
					Follow up	0.556	0.190	0.017
	Follow up	36.26	0.789	Follow up	Pre-test	-8.40	0.535	0.001
					Post-test	-0.556	0.190	0.017

CFT: Compassion-focused therapy

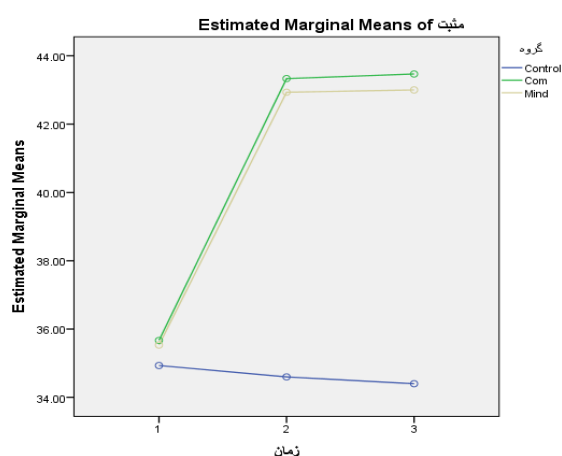


Figure 1. Effectiveness of compassion-focused therapy on the means of positive cognitive regulation variable in three stages of pre-test, post-test, and follow-up

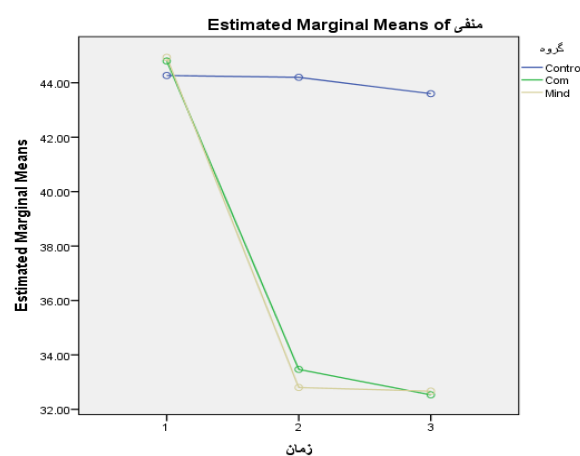


Figure 2. Effectiveness of compassion-focused therapy on the means of negative cognitive regulation variable in three stages of pre-test, post-test, and follow-up

Table 4. Bonferroni test results for pairwise comparisons of time * group means

Interactive effect of time*group				
Variable	Group	Time	Mean	Standard deviation
Positive cognitive regulation	CFT	Pre-test	35.66	1.25
		Post-test	43.33	1.13
		Follow up	43.46	1.13
	Mindfulness therapy	Pre-test	35.53	1.25
		Post-test	42.93	1.13
		Follow up	43.00	1.13
	Control	Pre-test	34.93	1.25
		Post-test	34.60	1.13
		Follow up	34.40	1.13
Negative cognitive regulation	CFT	Pre-test	44.80	1.35
		Post-test	33.46	1.47
		Follow up	32.53	1.36
	Mindfulness therapy	Pre-test	44.93	1.35
		Post-test	32.80	1.47
		Follow up	32.66	1.36
	Control	Pre-test	44.26	1.35
		Post-test	44.20	1.47
		Follow up	43.60	1.36

CFT: Compassion-focused therapy

difference between the effectiveness of CFT and group mindfulness training on cognitive emotion regulation in patients with coronary heart disease; however, their effectiveness continues in the follow-up period.

Discussion

This study aimed to compare the effectiveness of CFT and mindfulness-based stress reduction (MBSR) on cognitive emotion regulation in patients with coronary heart disease. The results of the present study showed that both CFT and MBSR were effective on cognitive emotion regulation in patients with coronary artery disease. To explain the effectiveness of CFT on cognitive emotion regulation, it can be said that biological evolution forms the basis of compassion. In humans, at least three types of emotion regulation systems have evolved, namely the threat-protection system, the driver system (source search), and the soothing system. The emphasis of compassion is on the relationship between cognitive patterns and these three emotion regulation systems. Through the use of such techniques as compassionate mind training and cognitive behavioral therapy, patients are taught to effectively manage each of these systems and respond more appropriately to situations and conditions.

According to the self-compassionate approach, external soothing thoughts, factors, images, and behaviors must be internalized, and therefore, the human mind, as it reacts to external factors, it becomes calm in the face of internal factors (19). As a result, self-compassion helps patients develop a non-judgmental, non-blameful view. When these individuals experience problems associated with the feeling of "self-attack," their compassion can help them find the possible uses and roots of these attacks (16).

Heart disease patients, that are more compassionate toward themselves, experience less negative emotions, pessimistic thoughts, and rumination in experiencing unpleasant events, and are better able to balance their emotions (16). When such individuals are judged harshly, their self-awareness becomes more intense and leads to a greater sense of isolation. People who cannot increase self-compassion in themselves feel more distant from the ideal state and their rumination process increases (19). In addition, self-compassion can be considered an emotion regulation strategy, in which the experience of annoying and undesirable emotions is not prevented; rather, it is tried that feelings be accepted kindly, negative emotions and feelings be changed into positive emotions, and the person finds new ways to deal with them. In other words, self-compassion not only

has the ability to sustain hurtful and stressful feelings but also provides the ability to confront difficult situations and welcomes stressful issues and events with a warm embrace (16).

Based on the results, training of such techniques as compassionate mind and cognitive behavioral therapy seemed to help heart disease patients to stay away from self-blame and rumination and regain their consciousness. They also gained the ability to effectively manage each of these systems and respond more appropriately to situations and conditions, and consequently, balance their emotions and achieve appropriate emotional regulation. These results are consistent with those reported in other studies (19-22). Furthermore, it was found that mindfulness therapy increased emotion regulation skills in patients with coronary heart disease. To explain more, although mindfulness is not a method of mood management or relaxation, one of its side results is achieved through its effect on the action of the sympathetic nervous system since the implementation of its exercises forms new patterns of self-regulation.

The obtained results associated with the health of mindfulness in many fields include the improvement of safety performance, reduction of hypertension, reduction of headache and muscle tension, and reduction of cholesterol and blood levels (23). It has been revealed that at the neurobiology level, mindfulness causes the interaction between the two hemispheres and between the limbic system and the cerebral cortex. Apparently, part of the therapeutic effect on such conditions as anxiety and depression is caused by the stimulation of the left hemisphere and reduction of the right hemisphere activity.

Mindfulness pays attention to body signals of anxiety (e.g., heart rate, sweating, fast breathing, and tightening the shoulders), functions of the cerebral cortex (e.g., empathy, intrapersonal and interpersonal compatibility, ability to respond more flexibly to situations, stress response regulation, and fear regulation). To elaborate on these results, it can be said that they are a set of physical senses that are accompanied by thoughts and images. Since awareness of the physical indicators of emotions is important for emotion regulation, mindfulness seems to increase adaptive physical awareness, which in turn, serves as a mechanism for creating more mindfulness, increasing positive emotional experiences, enhancing positive and neutral emotion appreciation, and increasing emotional regulation.

Mindfulness applies techniques to change individuals' point of view toward the methods of confronting their thoughts and emotions, and lead them to experience the corrected form of

unpleasant emotions and accept them; therefore, they can feel self-control, dominance, and ultimately, emotional self-regulation in the face of their emotions. In other words, mindfulness allows a person to maintain their emotional stability and not to pay too much attention to disturbing thoughts in the face of spontaneous thoughts that disrupt emotional regulation if they have an emotional load, rather watch the thought pass through their mind. This ability prevents spontaneous thoughts and negative emotions from preoccupying too much of an individual's mind as used to do and does not disturb emotional regulation.

The implementation of MBSR techniques prevents emotional regulation disorders from the beginning. Eventually, heart disease patients are more likely to have secondary negative responses to negative emotions or reject one's anxious reactions. However, if they lack emotional awareness and have limited access to appropriate emotional strategies, they will have difficulty in dealing with situations that require emotional regulation, concentrating and completing tasks, and controlling impulses when experiencing negative emotions. These issues lead individuals to face problems in regulating negative emotions and feelings in such cases, which increase the level of cortisol in the body. As a result, individuals who experience negative emotions are more prone to increased blood pressure from heart disease. These findings are consistent with those reported in other studies (25, 26). Therefore, the identification of the problems existing among people with coronary artery disease facilitates the elimination of mental and physical damages. Since psychological status is influential in causing or exacerbating the disease in such patients, the adoption of a better procedure in the clinical field to choose effective treatment strategies and use appropriate preventive strategies for patients with coronary heart disease highlights the importance and necessity of the present study.

Cardiovascular diseases are one of the most common diseases in developed countries and are increasing rapidly in other countries. Due to the acute condition of patients with heart disease, the adoption of the preferred treatment or combination of therapies to be more effective for the mental condition of such patients are important issues that should be further investigated.

One of the limitations of the present study was related to its population which consisted of only the patients who were willing to cooperate voluntarily in this research due to their conditions and problems and the ethical considerations of the study. Therefore, the motivation of these patients

can be a factor that differentiates them from the target community to some extent. The other limitation was regarded to the data collection technique, which was conducted using the convenience sampling method reducing the generalizability of the results. Due to the limited sample of research to patients in the Shahid Rajaei Hospital, who were investigated cross-sectionally, it is necessary to be cautious in generalizing the results.

It is suggested that similar research be performed in hospitals in other provinces and compare the results, and other chronic diseases be evaluated regarding this domain. It is also recommended that physicians, nurses, and other members of the medical and healthcare staff pay attention to both the physical and psychological characteristics of patients with cardiovascular disease. They can prevent the severity of the disease and re-attacks, accelerate the recovery process, and improve general health and long-term adaptation of such patients through educational as well as medical interventions. Experts are advised to increase the mental health of these cases to reduce the complications of heart disease through administering medical treatments and creating self-compassion in them.

Conclusion

It was revealed that CFT and MBSR both affected cognitive emotion regulation in patients with coronary heart disease. It is recommended that therapists and healthcare professionals use the training of these two methods to improve the mental and physical health of patients with coronary artery disease.

Acknowledgments

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Conflicts of interest

The authors declare that there is no conflict of interest.

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