

Comparison of the Effectiveness of Cognitive Behavioral Therapy and Emotion-Focused Therapy on Anxiety and Distress Tolerance in Women with Coronary Artery Disease

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Abstract

Introduction: Cardiovascular disease is one of the most common heart complications and is known as a chronic, progressive and debilitating disorder. This study aimed to compare the effectiveness of cognitive behavioral therapy and emotion-focused therapy on anxiety and distress tolerance in women with coronary artery disease.

Methods: This was a semi-experimental study with a pre-test-post-test design with a control group and a follow-up stage. The statistical population included all women suffering from coronary artery disease referring to the specialized center of Shahid Lavasani Hospital in Tehran in summer 2021. A total of 45 people were selected voluntarily and randomly and were divided into two experimental groups (n=30) and control groups (n=15). Measurement tools included Beck et al Anxiety Inventory and Simons and Gaher's distress tolerance scale. One experimental group received cognitive behavioral intervention and the other group received emotion-focused intervention. The first experimental group underwent intervention in ten 90-minute in person sessions in ten weeks and the second experimental group in nine 90-minute in person sessions in nine weeks and the control group received the conventional intervention. SPSS 16 and repeated measures intergroup ANOVA were used at the significance level of $\alpha=0.05$ to analyze the data.

Results: Results showed that the effectiveness of cognitive-behavioral and emotion-focused therapy in reducing anxiety was not significantly different and their effect was identical ($p<0.05$). However cognitive behavioral therapy was more effective in distress tolerance component ($p<0.05$).

Conclusion: Results of this research can become the basis for interventions to help coronary artery disease patients.

Keywords: anxiety, Coronary Artery Disease, Cognitive Behavioral Therapy, distress tolerance, Emotion-Focused Therapy

Received: 31/ December/ 2022

Accepted: 12/ March/ 2023

Citation: Aliyari Khanshan Vatan F, Ahadi H*, Kalhornia Golkar M, Sedaghat M. Comparison of the Effectiveness of Cognitive Behavioral Therapy and Emotion-Focused Therapy on Anxiety and Distress Tolerance in Women with Coronary Artery Disease, Family and health, 2023; 13(3): 130-146

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Introduction:

Cardiovascular diseases (CVDs) are the most common cause of human death in the world. According to World Health Organization, these diseases have caused the death of sixteen and a half million people in the world in 2022. It is estimated that in 2020, about twenty five million people will die due to these diseases (1). In Iran, CVD, including acute coronary syndrome, are the most common cause of death, and about 46% of deaths are due to these diseases. According to the emphasis of the American Heart Association, CVD includes chest pain in the central part, a feeling of fullness and spreading pain to the arm, back, neck, lower jaw and stomach area, sweating and lightheadedness (2), but research has shown that this pain pattern can be different in women and men, so that heart pain is less intense in women but other symptoms appear more severe. In addition to these findings, unusual symptoms such as weakness, fatigue, heart palpitations, dizziness, indigestion and heartburn are among the factors that have a significant effect on the treatment process (3). In Iran, the very first cause of death is CVD, accounting for 35% of deaths (4). Cardiac patients experience many problems such as chest pain, activity intolerance, shortness of breath, ineffective adaptation to the disease, and psychological problems (5). These patients are exposed to various types of stress, anxiety and depression due to the changes in their lifestyle, hospitalization, lack of knowledge about the treatment and recovery process, and the need to observe restrictions in their lifestyle (6).

Heart failure is known as a debilitating disease with feelings of weakness and increased anxiety (7). Moreover, experiencing economic pressures, frequent hospitalizations and poor prognosis of this disease lead to anxiety (8). Anxiety is also defined as a psychological problem, as preliminary responses of an organism to contexts in which a threatening event may occur (9). Anxiety is an unpleasant feeling, concern or pressure existing in different areas of human life and is an inhibiting, destructive and reducing factor of patients' resistance to the treatment process, which increases the serious consequences of the disease (10). Anxiety increases psychological and physiological activities like heart rate, breathing rate and blood pressure (5), which are very harmful for heart patients. In this regard, Lett et al., showed in their review research that depression and anxiety are risk factors for the development and progression of CAD and can accelerate the occurrence of this disease as a risk factor through various mechanisms (11).

Studies have shown that psychological distress is associated with an increased risk of CAD (13, 12). Distress is a common construct in emotional disorder research, which is expressed as a trans-emotional construct and as a person's ability to experience and resist negative emotional states. This construct, which may be created as a result of cognitive or physical processes in a person, is an emotional state often characterized by practical tendencies to reduce the negative effects of emotional experience. Hence, distress tolerance is necessary as the ability to tolerate distressing physiological states and the individual's ability to continue engaging in directed behavior in the face of emotional, cognitive, or physical disturbance (14). Distress tolerance also has a multidimensional nature with several dimensions, including 1. Ability to tolerate, 2. Assessment and capacity of accepting the emotional state, 3. How a person can regulate emotion, 4. The amount of attention attracted by negative emotions and the amount of its contribution to

the emergence of dysfunction (15), which has a multidimensional nature including several dimensions, such as the ability to bear emotional distress, assessment and capacity to accept emotional state, the way to regulate emotions by the individual and regulate efforts to relieve distress, the amount of attention attracted by negative emotions and the amount of its contribution to the occurrence of dysfunction (16). People with a low level of distress tolerance find negative psychological states unbearable, do not have the ability to manage them, usually deny them and feel ashamed and are confused about their existence (17). Distress tolerance affects the assessment and consequences of experiencing negative emotions, so that people with lower distress tolerance strongly react to stress and anxiety (18).

Nurses use pharmacological and non-pharmacological methods (psychotherapy) to control anxiety and improve the physiological indicators of patients (19). One of the effective treatment methods in improving many psychological characteristics is cognitive behavioral therapy (CBT) (20). This treatment method is based on the assumption that false and disappointing beliefs, ineffective coping behaviors and negative moods are effective in the formation and continuation of problems (21). CBT is based on the structured narrative education model and emphasizes the role of homework (22). This treatment has unique features that include both cognitive strategies including discovering cognitive distortions and anxiety-provoking thoughts, cognitive restructuring and strengthening effective coping self-talk, and behavioral strategies including role modeling, confrontation, role playing, muscle relaxation, coping skills training, and increasing self-control and self-efficacy (23). Researches on the effect of cognitive behavioral stress management training on the anxiety level of men with CAD (24), indicate the effectiveness of CBT on reducing the anxiety of coronary artery patients (25), the effectiveness of short-term group cognitive behavioral intervention on the anxiety and tension of chronic coronary artery patients (26), the effect of cognitive behavioral group therapy on reducing the anxiety of patients suffering from heart attack (27). Also, studies on the effect of CBT on reducing the distress of patients with chronic pain (28) have confirmed the effect of well-being therapy on increasing the distress tolerance of CAD patients (29), the effect of acceptance and commitment group therapy on improving the distress tolerance of elderly women with CADs (30), the effectiveness of CBT on the distress tolerance of women with bulimia nervosa (31) and the effectiveness of CBT in improving vital signs in the psychological well-being of CAD patients (32). Distress tolerance affects the assessment and consequences of experiencing negative emotions, so that people who have less distress tolerance show a stronger reaction to stress than others. In addition, these people show weaker coping abilities against distress and as a result, they try to avoid such emotions by using strategies that aim to reduce negative emotional states (33). On the other hand, one of the short-term treatment strategies to help heart patients in dealing with communication emotional disorders is emotion-focused therapy (EFT). Dealing with emotions is one of the recent movements of family therapy and among the activities and services of psychotherapy. EFT was proposed in the early 1980s in response to the lack of active and effective emotional interventions. This deficiency was more felt in the field of humanism, because in those days behavioral interventions were considered the dominant element of

treatment. In EFT, emotions are seen as tendencies related to action and form the basis of social communication and always give us signs of the nature of our social bonds (34). Emotions direct people toward their needs, organize attachment responses and behaviors, and activate basic cognitions about self, others, and the nature of relationships. Also, emotion is an early warning system in relationship defining interactions. Emotion expression leads the other party towards certain responses and is the basis of organizing interactions (35). That is why they named the approach emotion-focused therapy, to emphasize the key role and vital importance of emotion and dialogues arising from emotions in organizing interactive patterns. According to the founders of this approach, the contribution of emotions in creating important experiences that people have in intimate relationships has been severely neglected (36). In their study, Sanagoei Moharrer et al. (37) showed that EFT was effective on anxiety and depression in patients with MS. Khosravi Asl (38) also concluded in his research that EFT was effective on anxiety and depression of female guardians.

Considering the increasing number of people suffering from cardiovascular diseases and the role of psychological issues in the recovery of these patients, and because of the expansion of effective psychological treatments for chronic diseases, including cardiovascular diseases, and lack of direct research on the effect of CBT on anxiety and distress tolerance of CAD patients and the line of research in this field, the present study is conducted to compare the effectiveness of CBT and EFT on anxiety and distress tolerance of women with CAD.

Methods:

This is a semi-experimental study with a pre-test-post-test design with a control group and a follow-up stage. The statistical population include all women with CAD referring to the specialized center of Shahid Lavasani Hospital in Tehran in summer 2021, who only had a history of coronary artery occlusion and did not include patients who underwent open-heart surgery. From the target population, 45 qualified people who volunteered to participate in the research, and the number of the research sample was selected based on the effect size of 0.25, alpha of 0.05, and power of 0.80 (15 people were obtained for each group), using purposive sampling method and they were divided into two groups of test ($n = 30$) and control group ($n = 15$) randomly using a coin toss. The inclusion criteria were no history of heart attack, having a diploma or a higher degree, age between 40 and 70 years, no history of psychological services in the last three months and not using other psychological treatment methods at the same time. Exclusion criteria included refusal to continue cooperation and absence of more than two intervention sessions. The research tools included the following questionnaires:

1. Beck Anxiety Inventory (BAI): This 21-question self-report questionnaire was designed by Beck et al., in 1988, which specifically measures the severity of clinical anxiety symptoms in people. In each subject, the subject chooses one of the four options that indicate the intensity of anxiety. The four options of each question are scored in a four-part range from 0 to 3. The scores are in the range of 9 to 63, where a score of 0 to 7 indicates no anxiety, a score of 8 to 15 indicates mild anxiety, a score of 16 to 25 indicates moderate anxiety, and a score of 26 to 63

indicates severe anxiety. And higher scores indicate more anxiety (39). Beck et al., reported the content validity of this test as favorable and reliability using its internal consistency coefficient (alpha coefficient) of 0.92. Also, its reliability was reported as 0.75 with a retest method after one week (35). In Iran, Kaviani and Mousavi's study (40) showed that the test has good validity ($r=0.72$), reliability ($r=0.83$) and internal consistency ($\text{Alpha}=0.92$). In the present study, the reliability of the research sample group was obtained using the internal consistency method (Cronbach's alpha) of 0.85.

2. Distress Tolerance Scale (DTS): It is a 15-question self-report instrument developed by Simons and Gaher in 2005, which includes four components: tolerance (questions 1-3 and 5), attraction (questions 2-4 and 15), assessment (questions 6-7-9-10-11 and 12) and regulation (questions 13-14-8) on a five-point Likert scale from one (completely agree) to five (completely disagree) (37). Therefore, the range of scores is between 15 and 75, and a higher score in this scale indicates high distress tolerance (13). Simons and Gaher obtained Cronbach's alpha coefficients of tolerance, assessment, attraction, and regulation subtests as 0.73, 0.66, 0.74, and 0.87, respectively. They also reported that this scale has criterion validity and good initial convergence, and its validity coefficient was reported as 0.61 (41). Shams, Azizi and Mirzaei (42) obtained the correlation of distress tolerance scale with problem-oriented, emotion-focused, less effective and ineffective coping methods as 0.213, 0.278, and 0.337 and -0.196, respectively. Also, correlations of 0.543, 0.234, and -0.653 have been obtained between distress tolerance scale with positive emotion, negative emotion and smoking dependence. The reliability of this questionnaire was reported as 0.79 using the test-retest method, and the reliability using the Cronbach's alpha coefficient method was 0.81 for the whole scale and 0.71, 0.73, 0.69 and 0.77 for the subscales of tolerance, attraction, assessment and regulation, respectively (42). In the present study, the reliability of the internal consistency method (Cronbach's alpha) for the subscales of tolerance, attraction, assessment and regulation was obtained as 0.76, 0.74, 0.73 and 0.77, respectively.

After assigning the groups and placing the sample people in the test and control groups, after preliminary explanations about the questionnaires and the purpose of the test, the way the subjects should answer the tests was explained, and the pre-test was executed in the first session at the conference hall of Shahid Lavasani Hospital in Tehran. The first experimental group underwent intervention in ten 90-minute in person sessions in ten weeks and the second experimental group in nine 90-minute in person sessions in nine weeks and the control group received the conventional intervention. The interventions were carried out by the researcher who is an expert in health psychology supervised by the professors. After the end of the treatment sessions of both experimental groups, the post-test was performed in the last treatment session for both groups. The follow-up period was held two months after the end of the training sessions and the post-test by the researcher in one session. One month after the end of the follow-up period, in order to comply with ethical principles, two treatment sessions were conducted for the control group within two weeks. The CBT sessions were derived from Ellis and Beck's theory,

and the EFT sessions were derived from Johnson's emotion-focused approach. The brief description of the CBT and EFT sessions was according to Table 1 and 2.

Table 1. Cognitive behavioral intervention

Session	Minute
1	Explaining the educational process, treatment, and goals for the participating coronary heart program, clarifying participant expectations, screening, and selecting pre-test eligible individuals
2	Formulating general problems of patients in the form of cognitive behavioral model, integrating cognitive triangle in treatment strategies, using standard techniques of behavioral activation, rescheduling negative spontaneous thoughts and presenting ineffective thoughts recording sheet
3	Continuing to work with spontaneous thoughts, examining patients' ineffective thoughts recording sheets, challenging spontaneous thoughts in the Socratic way
4	Identifying the underlying beliefs and the manner they are activated in certain situations, using the down arrow technique, examining some of the patient's target issues
5	Developing awareness of underlying beliefs, strengthening positive self-talk, using behavioral techniques to replace positive thoughts instead of negative ones
6	Using cognitive behavioral techniques on courage, problem solving and teaching social skills to patients
7	Identifying more unconditional beliefs and core beliefs, weakening unconditional beliefs by questioning them in the Socratic way and rating negative beliefs on a scale of 0 to 100 degrees
8	Developing alternative positive beliefs through developing social and communication skills, developing problem-solving skills and courageous behaviors, rating alternative thoughts, creating readiness to apply learned methods in future life situations
9	Training communication skills, group discussion, presenting supplementary activities, in this session people were taught efficient verbal response style and active listening skills, then people were asked to pay attention to others' reactions to these verbal response styles and at the end of the session, patients concluded an affiliation contract.
10	Formulating patients' general problems in the form of cognitive-behavioral model, post-test

Table 2. Emotion-focused intervention

Treatment steps	Session No.	Target	Mentioned items	Homework
	First	General introduction - introducing the therapist - checking their motivation and expectation from participating in the course - providing a definition of EFT concepts	Investigating people's opinions about the desired concepts - discovering problematic interactions - evaluating their way of dealing with problems - discovering barriers to attachment and interpersonal and intrapersonal emotional conflict	Paying attention to joyfulness, joy, cheerfulness, happiness, etc. and unpleasant situations (anger, hatred, sadness, jealousy and anxiety)
	Second	Determining patterns of interaction	Discovering the insecurity of attachment and the fears of each person - helping to be more open and self-disclosing - continuing the treatment	Accurate identification of emotions and pure feelings
Second step	Third	Link reconstruction	Clarifying the key emotional responses - expanding the emotional experience of each person in the relationship and the emergence of new elements in the experience - coordinating the diagnosis of the therapist with the clients - accepting the negative cycle - examining and revising the relationships	Expressing pure emotions (without controversy)
change	Fourth	Deepening emotional involvement based on attachment	Increasing the identification of attachment needs - deepening personal connection with emotional experience - improving the interactive situation	Expressing pure emotions (without controversy)
	Fifth	Extending yourself in relation to others	Determining the appropriateness of the therapist's framing with	Determining underlying fears and desires

			people's experience - deepening with conflict - more acceptance of people from their own experience - promoting new methods of interaction focusing on the self and not the other	
Sixth Activation			Reconstructing interactions and change of events - more involvement of people with each other – clarifying desires and wishes	Determining the strengths and weaknesses of relationship training
Seventh Finding new solutions to old problems			Reconstructing interactions, changing harmful behavior - creating harmony in the inner sense of self and relationship - changing interactions, overcoming barriers to positive reaction	Discovering new solutions to old problems and arguments
Third step	Eighth	Use of therapeutic achievements in daily life	Intimate engagement - staying on the line of treatment and staying on track - adapting to new situations that the illness has created - identifying and supporting constructive patterns of interaction - building secure attachment - building a happy relationship story	Implementation of techniques in everyday environment
Consolidation	Ninth	Summary and implementation of the post-test	Maintaining the change of interactions in the future - Determining the difference between the negative interaction pattern of the past in the initial sessions and now - Maintaining the emotional conflict to continue to strengthen the bond between them -	Homework

Conducting post-tests

Data analysis was done using SPSS-16 and repeated measure intragroup ANOVA at a significance level of $\alpha = 0.05$.

Results:

In the table below, participants' sex and age are shown separately in three groups.

Table 3. Frequency distribution and percentage of participants in three groups

Variable		Frequency of cognitive behavioral group	Percentage	Frequency of emotion-focused group	Percentage	Frequency of control group	Percentage
Age	40 - 50	2	13.3	2	13.3	3	20
	51-60	7	46.7	8	53.3	6	20
	61-70	6	40	5	33.3	6	40

Table 4. Mean and standard deviation of anxiety scores by measurement stage in groups

Group	Variable	Index	Pretest	Posttest	Follow-up
CBT	Anxiety	Mean	19.33	15.33	16.00
		SD	2.35	2.29	1.65
EFT	Anxiety	Mean	19.53	16.47	16.80
		SD	2.17	2.53	2.46
Control	Anxiety	Mean	19.60	19.33	19.47
		SD	1.88	1.95	2.33
CBT	Distress tolerance	Mean	42.87	57.13	56.67
		SD	5.90	5.21	5.68
EFT	Distress tolerance	Mean	41.67	50.80	51.47
		SD	5.64	4.21	4.37
Control	Distress tolerance	Mean	41.60	39.40	41.13
		SD	4.24	6.97	6.32

Based on Table 4, it can be said that EFT and CBT have reduced the anxiety of women with CAD. Also, EFT and CBT have increased the distress tolerance of women with CAD.

Before performing the repeated measure intergroup ANOVA, the assumption of normality of the data was performed with the Shapiro-Wilk test. This assumption implies that the observed difference between the distribution of scores of the sample group and the normal distribution in

the population is equal to zero. The results of this test showed that all the variables followed the normal distribution in the pre-test, post-test and follow-up. Also, in order to check the assumption of uniformity of covariances or equality of covariances with the total covariance, Mauchly's sphericity test was used. If the significance in Mauchly's sphericity test is higher than 0.05, the sphericity assumption test is usually used, and if it is not confirmed, the conservative Greenhouse-Geisser test is used for repeated measure ANOVA. In this study, the results of the Mauchly test of the research variables were not valid ($p < 0.05$). Therefore, the results of repeated measure ANOVA to compare the two group in the variables of anxiety and distress tolerance in the three stages of pre-test, post-test and follow-up based on the Greenhouse-Geisser correction are reported in Table 5.

Table 5. Mixed variance analysis test of anxiety scores and distress tolerance with the Greenhouse-Geisser criterion

Variable	Statistical index	SS	df	MS	F	Sig	Eta coefficient
Anxiety	Agents	219.36	1.69	129.68	59.46	0.001	0.68
	Within subject	3.36	1.69	1.98	0.91	0.40	0.03
	Within-subject*group interaction	11.38	1.00	11.38	0.98	0.33	0.03
Distress tolerance	Intergroup	2761.40	1.28	2157.16	92.39	0.001	0.77
	Within subject	109.09	1.28	85.22	3.95	0.03	0.17
	Within-subject*group interaction	405.34	1.00	405.34	7.86	0.01	0.22

The results of Table 5 show that the F value calculated for the effect of stages (pre-test, post-test and follow-up) is significant at the 0.05 level for all components ($P < 0.05$) in relation to the intragroup factor. As a result, there is a significant difference between the average scores of pre-test, post-test and follow-up scores of anxiety and distress tolerance in the three stages of pre-test, post-test and follow-up. The results of the post-hoc Bonferroni test were calculated to investigate the difference between the averages in the treatment stages. The results showed that there was a significant difference between the scores of anxiety, distress tolerance in the stages of pre-test and post-test, pre-test and follow-up. Also, there was no significant difference between anxiety and distress tolerance scores in the post-test phase compared to the follow-up phase, so that the anxiety and distress tolerance scores in the follow-up phase did not change significantly compared to the post-test phase.

According to the results of Table 5 regarding the interaction of the stages and group factors, the F value calculated for the stage effect (pre-test, post-test and follow-up) between the two groups of CBT and EFT is significant at the level of 0.05 for distress tolerance scores ($0.05 > P$). As a

result, there is a significant difference between the average scores of the pre-test, post-test and follow-up distress tolerance scores in the two groups. The interactive chart of adjusted average scores of anxiety and distress tolerance in two groups of CBT and EFT in different stages of pre-test, post-test and follow-up is displayed in the graph.

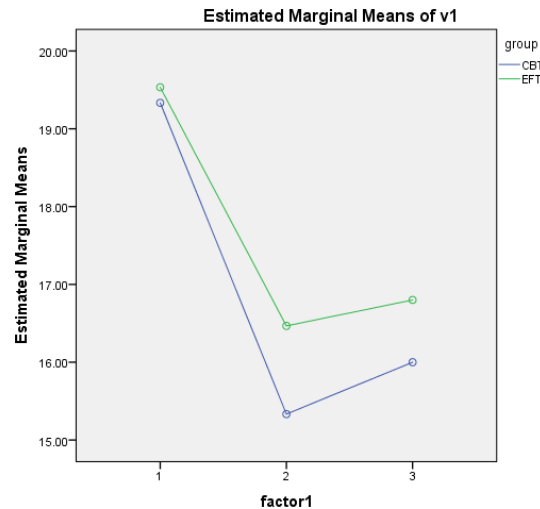


Chart 1. Adjusted averages of anxiety scores in the two groups of CBT and EFT in the pre-test, post-test and follow-up stages

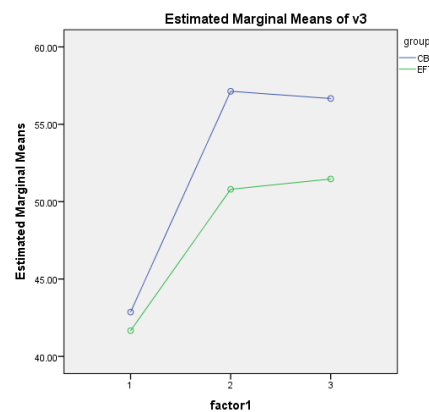


Chart 2. The adjusted averages of distress tolerance scores in the two groups of CBT and EFT in the pre-test, post-test and follow-up stages

According to the results of Table 5, for the intergroup factor, the calculated F value is significant at the 0.05 level for distress tolerance ($P < 0.05$). As a result, there is a significant difference between the overall mean distress tolerance scores in the two groups of CBT and EFT. In general, it can be concluded that CBT had a greater effect on distress tolerance scores than EFT, and there was no significant difference between the two treatments in reducing anxiety.

Discussion and conclusion:

The present study aimed to compare the effectiveness of CBT and EFT on anxiety and distress tolerance of women with CAD. No research was found to compare the alignment and non-alignment of this research result regarding the present hypothesis. However, the results of the present study are consistent with parts of the studies (25-32).

In the explanation obtained, it can be said that cognitive techniques teach clients to identify their anxious thoughts and test them objectively. The therapist tried to expose the patient to new information that he has previously ignored. These techniques help clients adjust and correct their interpretations and misperceptions of environmental events and develop new perspectives. Clients learn that complexity and uncertainty are characteristic of most life situations, so they learn to tolerate this ambiguity and uncertainty and be more cognitively flexible. Finally, clients use these new cognitive perspectives as a different coping response to anxiety events (43). The techniques that target the behavioral component of anxiety are: identification of anxiety safety behaviors, identification and elimination of active and passive avoidance behaviors, mental exposure and coping exercises, lifestyle behavior change and identification of neglected behaviors. These techniques are anxiety safety behaviors and active avoidance and they gradually eliminate the passive through exposure and response inhibition tasks (44). In another explanation, it can be said that participating in cognitive behavioral therapy sessions helped patients to identify their negative thoughts and examine them. This skill was the core of the cognitive behavioral approach, which was mainly based on self-help, and the goal of the therapist was to help clients develop the necessary skills not only to solve current problems, but also similar problems in the future. As a result, acquiring this skill and efficiently considering solutions helps patients to perceive uncertain or ambiguous situations as less stressful and disturbing, so they could respond appropriately to such situations and experience less anxiety.

It can also be said that the cognitive behavioral method makes a person aware that although he cannot change certain events in his life, he can learn to change the way he deals with them. Cognitive-behavioral intervention by teaching behavioral techniques such as relaxation helps patients to reduce their mental tensions by applying these techniques. In addition, patients improve and expand their social activities and relationships by learning communication skills. These relationships help to increase patients' distress tolerance (45).

Also, in explaining the effectiveness of EFT on anxiety and distress tolerance, it can be said that this method is the most organizing element of emotional processes to distinguish efficient from inefficient relationships. Undoubtedly, cognition, behavior and emotion always interact with each other in complex ways, but emotions are the initial spark – a spark that strongly influences subsequent behaviors. In EFT, emotion is considered to be the most determining factor in shaping disturbing communication dramas. But what is a source of satisfaction is that this agent also has the advantage of being an antidote and has the potential to improve these disorders. It is emotion that organizes attachment-like behaviors. In fact, in EFT, emotions and their role are recognized and then developed. In this approach, the experience and then the expression of positive and negative emotions are known as the goal of treatment and the most important facilitator of change, something that has been neglected in other non-experimental models (46).

Patients participating in research bring with them some hope. They identify ways to help and regroup to achieve goals. Therapists can increase their hope for change and recovery by helping patients find the hope they already have and have already demonstrated in their lives. In the EFT, patients receive more positive views about future health. According to the traditional beliefs and schemas that exist in the culture of cognitive systems in Iran among individuals and families, including the beliefs that refraining from expressing feelings and emotions, whether positive or negative, is considered as positive, and expressing emotions shows weakness and it is a weakness for them (suppression of emotions and feelings is considered a value). By using the interventions used in the EFT, patients are able to be aware of their emotions, touch them and discover their role in creating faulty and positive cycles of communication and reframe their emotions. As a result, it reduces anxiety and distress in them.

In explaining the effectiveness of CBT compared to EFT, it can be said that in other words, CBT taught women with CAD to avoid exaggerated and catastrophic thoughts and replace them with positive thoughts. Fighting and challenging distorted beliefs causes them to develop a stubborn spirit and become more determined to heal themselves and challenge the disease, and as a result, their ability to bear against negative psychological events and states increases (47). In another explanation, it can be said that cognitive behavioral techniques such as thought stopping, interpersonal coping skills, problem solving skills and positive self-talk are used in CBT sessions. After several therapy sessions, on the one hand, the therapist's negative spontaneous thoughts are transformed into purposeful thoughts that are more compatible with objective reality, and their cognitive processing becomes more logical, and the certainty of defective cognitive processes becomes less clear, and the person's reality-checking system gets new life and energy, and on the other hand, the client is equipped with coping skills such as problem-solving skills, behavior management, courage, self-expression, and interpersonal skills (48). In such an atmosphere, the clients achieve cognitive competence and behavioral adequacy and show reasonable behaviors according to the environmental conditions. In other words, their distress tolerance increases in the face of problems.

Research proposals

In general, the results showed that CBT was effective in reducing anxiety and increasing the distress tolerance of patients with CAD. The results of this research can become the basis for interventions to help CAD patients. It is suggested that doctors and psychotherapists take advantage of the intervention of CBT in improving the disorders of CAD patients to witness the improvement of the psychological status of these patients. Therapists and health professionals can use the results of this research as a new perspective to improve features such as reducing anxiety and increasing distress tolerance of CAD patients and even other vulnerable groups. As a result, the use of CBT in preventive, health and treatment policies related to vulnerable groups, including CAD patients, can play an important role in improving their characteristics, especially reducing anxiety and promoting distress tolerance.

Limitations

Among the limitations of the present study was the short follow-up period and the use of self-report questionnaires. Also, the inability to control intervention variables, including demographic variables such as age, sex, economic status, social welfare level, etc. can be considered as one of the major limitations of this research. It is suggested that CBT group sessions for CAD patients be held in hospitals and this program and its related techniques to help the mental state of patients be taught to nurses and medical staff in the form of knowledge-building workshops. It is also recommended that future studies compare the effectiveness of CBT with other treatment approaches, including third wave treatments such as commitment and acceptance. Finally, it is suggested to conduct research on CAD patients in other cities and other chronic patients in future studies to generalize the results.

Ethical considerations

The current research is taken from the doctoral thesis of the first author in the field of psychology at the Islamic Azad University of the United Arab Emirates and has the complete code of ethics under the number IR.IAU.BA.REC.1400.011 from the Islamic Azad University of Bandar Abbas. In addition, in this research, all relevant ethical principles, including the confidentiality of questionnaires, the informed consent of the participants in the research, and the right to withdraw from the research, have been observed.

Conflict of interest

The authors also declare that there is no conflict of interest in the results of this research.

Acknowledgment

We would like to thank all the women who participated in this research and the respected professors who guided and advised.

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