

The Effectiveness of Acceptance and Commitment-Based Therapy on Anger, Anxiety and Hostility for Heart Surgery Patients

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Abstract

Aims: The purpose of this study was to evaluate the effectiveness of Acceptance and Commitment-Based Therapy (ACBT) on anger, anxiety and hostility in heart surgery patients. **Materials and Methods:** The present study was quasi-experimental (pre-test, post-test) with experimental and control groups. A follow-up test was conducted two months after the post-test. The statistical population consisted of all patients referring to Vali-e-Asr Hospital in Ghaemshahr during January-February 2017 having a heart surgery and medical record (N = 112). According to the research method, which is a quasi-experimental design, 30 persons were selected through "available sampling" and randomly were assigned to the intervention and control group (15 participants in each group) by inclusion and exclusion criteria. The tools used in this study include Spielberger's Anger Scale (1988), Redford - Williams Hostility Inventory (RWHI) (1981), Beck anxiety (1988), which were provided to the groups for pre-test. After pretest, treatment for the heart surgery patients was performed in the intervention group by a trained psychiatrist doctor student based on ACBT protocol, and the control group did not receive any treatment. We collected data directly after the intervention (first posttest) and 2 months later (second posttest) in both groups. For the research hypotheses test, covariance analysis and SPSS-21 software were used. **Results:** The results of covariance analysis indicated that ACBT had a significant effect on all three psychological variables studied in the post-test. **Conclusion:** ACBT has decreased the anger, anxiety and hostility of heart surgery patients in the intervention group.

Keywords: Acceptance and Commitment-Based Therapy (ACBT), Anger, Anxiety, Hostility, Heart Surgery Patients.

Introduction

Heart disease is the second most commonly occurring disease in developed and developing countries that compels patients to seek treatment. And heart failure is one of the most common cardiovascular disorders and raised as a chronic, progressive and debilitating disorder (Alizadeh, et al. 2018). Cardiovascular diseases affect life expectancy and damage the quality of life (Marzangi, et al. 2018). Among the proposed surgical

treatments in Iran, coronary artery bypass grafts are common and account for more than 50% to 60% of all cardiac surgeries. The necessity of doing this for the patient on the one hand and the compulsion to accept it on the other hand causes serious changes in his life and sometimes leads to unwanted and common problems in different stages of treatment and after treatment of these patients (Basampour, 2009). One of the variables that threatens to improve the quality of life of patients undergoing heart surgery is "anxiety." Anxiety is an invisible form of energy that is mentally conceived by the person who experiences its effects (Eastwood et al., 2010). In diseases and surgeries, anxiety can be observed directly or indirectly, especially if surgery is associated with many dangers and poor prognosis, such as open heart surgery (Gallagher and McKinley, 2007). Annually in Iran, 300,000 open heart surgeries (coronary artery bypass graft) occur in different treatment centers (Basampour, 2009). More than 60% of these patients are over the age of 45, which is a period of their dynamism and social mobility. The patient undergoing open heart surgery has anxiety for various reasons, including severe chest pain and fatigue resulting in anxiety and distress in the patient. Fear of death and disability and the continuation of symptoms of the disease, despite surgical treatment contribute to this anxiety (Gallagher and McKinley, 2007). Previous studies also suggest that anxiety can predict the incidence and recurrence of coronary heart disease. Izadi (2012) showed that by controlling the effect of pre-test, the difference between the moderated averages of 3 groups (ACBT and cognitive-behavioral therapy groups along with waiting group) in the variables of cognitive flexibility and anxiety Both post-test and follow-up stages were statistically significant ($P > 0.05$). Ossman et al. (2006) concluded in their study that the avoidance and anxiety symptoms in ACBT group significantly decreased compared with the control group and this effect continued during the three-month follow-up period. In another study, Eifert and Heffner (2003) showed that adherence and commitment therapy reflects positive changes in clients (avoidance and increase in admission and mindfulness skills), increase in quality of life and a significant reduction in anxiety and depression. In recent years, researchers have found that in addition to medical and clinical variables, mental variables such as behavioral type (A), aggression, hostility and anger can also play a role in the incidence and prevalence of coronary artery disease. Hostility, by definition, is a psychological construct that

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is associated with a number of phenomena such as aggression, anger, distress, irritability, suspicion, hatred, verbal and physical aggression, and a sense of distrust (Barefoot, 1992). On the other hand, anger is defined as an emotional state, which includes emotions that range in intensity from mild stimulation or anger to madness and rage (Bach and Hayes, 2002). Researchers believe that hostility and anger are of the risk factors independent of the clinical factors for coronary artery disease. In one of Bretner's first studies, using structured interviews on "Western-group study" examples and during the first four years of follow-up, the component of hostility/anger was one of the most promising predictors of heart disease Coronary arteries. This finding was confirmed in the next study on the larger group during eight and a half years of follow-up (Hecker et al., 1988). In Dembroski et al. (1985) and MacDougall et al. (1985) studies, it was shown that talent of hostility (the tendency of individuals to respond to unpleasant situations, along with responses that include anger, frustration, irritability, and suspicion) and anger to inside (lack of ability or willingness to express direct anger towards the subject) had a significant relationship with the severity of coronary artery disease after the risk of traditional factors (Dembroski et al., 1985). Also, many epidemiological studies have shown that talent or experience of anger increases the risk of coronary heart disease independently of social, demographic, and biological risk factors (Gallagher and McKinley, 2007; Ossman et al., 2006; Eifert and Heffner, 2003; Barefoot, 1992; Bach, P., & Hayes, 2002; Hecker et al., 1988; Dembroski et al., 1985). Several epidemiological studies focused on the future that measure anger by using psychological tests such as Spielberger's anger feature has shown a significant relationship between anger and coronary heart disease (Bleil et al., 2004). Dosti et al. (2016) found that ACBT in experimental group reduced physical aggression, verbal aggression, anger and hostility of the subjects ($p < 0.05$), but not in control group. Bleil et al. (2004) also found that mindfulness interventions were effective in the treatment of anger problems. This means that mindfulness helps to reduce the emotional reactions triggered by anger triggers (without prejudice and without trying to escape or avoid them), and through mindfulness exercises, the individual's ability to withstand angry situations and the ability to deal with them improves. Jahangirpour et al. (2013) also examined the effect of mindfulness on the reduction of psychopathology in coronary patients and concluded that there was a significant difference between the two groups in the post-test scores of depression, anxiety and hostility, and the score Hostility has been significantly reduced in the experimental group. As can be observed, heart surgery, in addition to physical complications, has significantly reduced the individual and social function, the level of psychological and behavioral adjustment of these patients, which leads to hostility, anger and anxiety. The necessity of this research is due to the wide range of problems of heart patients both in physical and psychological matters. The rise in age and experience of many years of heart disease can have a negative effect on the psychological well-being of heart patients. High psychological well-being in cardiac patients can help them adapt, accept and resist the problems. Since a similar study in Iran has not been conducted in this regard, such a study seems necessary and in the future its results in counseling centers,

mental health clinics and medical centers can be used to better serve patients used. Therefore, we aim to examine the effectiveness of ACBT on anger, anxiety and hostility in patients with heart surgery.

Materials and Methods

The purpose of this study was to evaluate the effectiveness of ACBT on anger, anxiety and hostility in cardiac patients. A quasi-experimental design (pre-test and post-test) with an intervention group and a control group was used. The follow-up test was conducted two months after the post-test. The statistical population consisted of all patients referring to Vali-e-Asr Hospital in Ghaemshahr during January-February 2017 having a heart surgery and medical record ($N = 112$). Considering the nature of the research as part of the quasi-experimental design, 30 individuals were selected as the sample size and selected as "available sampling" and randomly assigned to intervention and control groups (15 participants each group) by inclusion and exclusion criteria. After pretest, treatment for the heart surgery patients was performed in the intervention group by a trained psychiatrist doctor student based on ACBT protocol, and the control group has not received any treatment. We collected data directly after the intervention (first posttest) and 2 months later (second posttest) in both groups. Inclusion and exclusion criteria: Age of 30 to 60 years old, gender (female) and minimum degree of diploma (depending on the active nature of the species and participation in the treatment and homework assignments to the extent necessary), not having a history of mental and physical illness except for the case study, having a history of heart surgery, lack of other chronic and high-risk diseases, such as cancer, multiple sclerosis, respiratory diseases, kidney failure, diabetes and cessation of spinal cord before heart surgery. An 8-session ACBT (1.5 hours each session) was implemented in the intervention group based on the Hayes et al. (2004). Table 1 shows summary of the sessions. For data analyses, SPSS-21 software were used.

Table 1. The ACBT intervention sessions

Session	Subject
1	Participant introduction, pretest, a brief description of treatment
2	Explain creative helplessness, acquiring current strategies and motivating them to make new choices
3	Introducing control as a problem, identifying common ways of controlling behavior and emotions and examining the effect of this method
4	Understanding importance of life based on value, understanding performance of goals in producing a healthy life, providing charts of values in main domains
5	Awareness and acceptance, mindfulness training
6	Weakening dependence to self-concept, creating self-observing awareness, distinction between self-conceptual and self-observing

7	Paying attention to the limited role of language in understanding direct experiences, self-awareness training, weakening of mix between itself and time
8	Summary of previous sessions, commitment creation, post-test

Measures

Redford - Williams Hostility Inventory (RWHI)

This 12-question questionnaire was prepared by Redford, director of behavioral research at Duke University. He has developed this questionnaire to investigate the relationship between feelings of hostility and heart attacks, and questions like the Friedman and Rosenman questionnaire questions about type A. Its responses are "Yes-No", with grades 3 and less indicating that there is no hostility, with 4 to 8 more indications of maximum hostility and the risk of heart attacks. The Persian validity of the questionnaire was obtained 0.82 and 0.85 by using a re-test and two half-way tests, performed on a group of 20 people, and its validity, using the content validity method, showed a correlation of 0.90 between the experts' view of the compatibility of the test questions with the feeling of hostility.

Beck Anxiety Inventory (BAI)

The questionnaire was designed to measure anxiety levels and includes 21 items. Each phrase is one of the symptoms of anxiety that is usually experienced by people who are clinically disturbed or who are disappointed with anxiety. Scoring: the person must read the list of symptoms and grade each mark in the last week and mark his assessment in columns (never), (mild), (moderate), and (severe). These four options get zero points, 1, 2, 3, respectively. The total score of experienced anxiety is obtained from the total points of each mark. Scores range from 0 to 63, which high scores represent severe anxiety. Validity and reliability: this scale has gained high internal stability, and the solidity of its materials together ranges from 0.30 to 0.71 (averaging 0.60). This test was performed on 83 patients with a one-week interval for retest, with a high correlation (0.75). The validity and reliability of the questionnaire were evaluated by Kaviani and Mousavi (2008) and the results showed that the validity ($r = 0.72$), reliability ($r = 0.83$) and internal stability ($\alpha = 0.92$) are appropriate. BAI correlations with the results of several clinical trials were quite significant. The correlation between BAI and HARS-R and HRSD-R was approximately 0.51 and 0.25. The correlation between BAI and BDI was 0.48.

Spielberger's State-Trait Anger Expression Inventory-2 (STAXI-2)

The 57-material Spielberger's (1985) State-Trait Anger Expression Inventory-2 (STAXI-2) contains six scales, five subscales, and an expression indicator of anger that provides a general measure of expression and anger control. In STAXI-2, three scales of the five main scales of the first version of the

questionnaire have been preserved in the same way as anger attribute, outsourcing anger and internalizing anger, and two subscales of anger attribute have not been altered: mood Angry and angry reaction. Reliability of the questionnaire: To standardize and validate the STAXI-2 psychometric properties, this questionnaire was performed by Spielberger et al on 1644 normal adults and 276 psychiatric patients. Based on the collected data, mean, standard deviation, alpha coefficient, Percentage ratings and standard grades for the STAXI-2 scales and subscales are calculated and reported in its practical guide. The summarized information in the practical guide shows that the alpha coefficients for the scales and subscales of anger mood and anger attribute are equal to 0.84 or higher, and for the scales and subscales of anger expression, anger control, and the general index of anger expression are equal to 0.73 or higher. Therefore, Cronbach alpha coefficients as internal coordination measures are generally satisfactory for the various components of STAXI-2, and the sex and disease of the subjects have no significant effect on the alpha coefficients (Spielberger et al., 1985). Validity of the questionnaire: The simultaneous validity of the scale of anger attribute in this questionnaire was carried out by conducting a study on 280 undergraduate students and 270 soldiers from the Navy. Participants answered the STAXI questionnaire, hostility questionnaires, and hostility, and apparent hostility and the MMPI questionnaire. Then, correlation coefficients of the scale anger attribute were calculated with three dimensions of hostility, these coefficients for male students ranged from 0.32 to 0.71 and for soldiers from 0.31 to 0.66, and all coefficients were statistically significant (Farahani et al., 2008).

Results and Discussion

As can be seen in Table 2, the post-test scores of anger, anxiety and hostility variables have decreased compared to the pre-test, which shows the effectiveness of ACBT on anger, anxiety and hostility in patients with heart surgery, but in the control group, there is less change.

Table 2: Comparison of pre-test and post-test for anxiety, anxiety and hostility variables in experimental and control groups

Indicator	Group	Pretest	Posttest
Anger	Intervention	133.53	117.87
		15	15
		22.6	24.83
	Control	131.47	128.33
		15	15
		25.86	21.81
Anxiety	Intervention	37.8	31.87
		15	15
		9.50	8.44
	Control	37.07	36.33
		15	15
		8.28	7.48
Hostility	Intervention	6.53	5.33
		15	15
		1.64	1.95
	Control	6.53	6.33
		15	15

		1.68	1.63
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Klamography test was used to determine the normal distribution of scores.

To use parametric tests, in small samples (smaller than 30), the distribution of samples should be normal. The Smirnov test

Table 3: Mean and Medium Stats and Z Score and Smirnov Scale and Significance Level

Group	Indicator	Tests	Number	Mean	Middle	Z	Sig.
Intervention	Anger	Pretest	15	133.53	137	0.193	0.14
		Posttest	15	117.87	126	0.213	0.066
	Anxiety	Pretest	15	37.8	38	0.125	0.2
		Posttest	15	31.87	31	0.16	0.2
	Hostility	Pretest	15	6.53	7	0.212	0.069
		Posttest	15	5.33	5	0.101	0.2
Control	Anger	Pretest	15	133.47	136	0.139	0.2
		Posttest	15	128.33	135	0.153	0.2
	Anxiety	Pretest	15	37.07	38	0.163	0.2
		Posttest	15	36.33	38	0.121	0.2
	Hostility	Pretest	15	6.53	7	0.212	0.151
		Posttest	15	6.33	7	0.192	0.143

Table 4: Independent t-test statistics for pre-test scores of variables in two groups

Variable	Group	Mean	S.D.	N	df	t	Sig.
Anger	Intervention	133.53	22.6	15	28	0.233	0.817
	Control	131.46	25.86	15			
Anxiety	Intervention	37.8	9.5	15	28	0.225	0.823
	Control	37.07	8.28	15			
Hostility	Intervention	6.53	1.64	15	28	0.0	1
	Control	6.53	1.68	15			

As can be seen in Table 3, the calculated z value for all pre-test and post-test variables has a significant level greater than 0.05 for two-domain tests, i.e. the distribution of these variables does not have a significant difference with normal distribution. On the other hand, their mean and median are very close to each other, which indicates the normal distribution of variables. In the comparative tests used in the control and intervention groups, there should be two peer groups. To test the similarity of the two groups, t-test was used on the pre-test scores of the control and intervention groups.

According to the results of Table 4, t calculated for the pretest in both groups for anger ($t = 233.3$), anxiety ($t = 0.225$), hostility ($t = 0.1131$) variables, degree of freedom 28 and at a confidence level of 95% ($\alpha = 0.05$) were smaller than the critical level ($t = 2.048$). Therefore, there is no significant difference between the mean of pre-test scores in the two control and experimental groups and the two groups are similar for the variables.

Table 5: Results of Interactive Effects and Dependent Variables

Source (Anger)	Sum of squares	df	Average squares	F	Sig.
Modified model	9923.743	2	4961.871	21.633	0.000
No intervention	558.042	1	558.042	2.433	0.13
Pretest	9102.109	1	9102.109	39.683	0.000
Group	1078.074	1	1078.074	4.7	0.039
Error	6192.957	27	229.369	-	-
Total	470725	30	-	-	-
Total modified	16116.7	29	-	-	-
Source (Anxiety)	Sum of squares	df	Average squares	F	Sig.
Modified model	1456.016	2	728.008	41.409	0.000
No intervention	44.041	1	44.041	2.505	0.125
Pretest	1306.383	1	1306.383	74.307	0.000
Group	189.322	1	189.322	10.769	0.003
Error	474.384	27	17.581	-	-
Source (Hostility)	Sum of squares	df	Average squares	F	Sig.
Modified model	73.801	2	36.9	40.89	0.000
No intervention	0.076	1	0.076	0.084	0.003
Pretest	66.301	1	66.301	73.469	0.000

Group	7.5	1	7.5	8.311	0.008
Error	24.366	27	0.902	-	-
Total	1119	30	-	-	-
Total modified	98.167	29	-	-	-

Discussion

The purpose of this study was to investigate the efficacy of ACBT on the anger, anxiety, and hostility of heart surgery patients. The results showed that ACBT was effective in decreasing anger in cardiac surgeries in post-test and follow up stages. These results are consistent with the results of Dosti's et al. (2016) study. In explaining the result of the above hypothesis test, according to the efficacy of ACBT to reduce anger in patients with heart surgery, can be noted in the features and characteristics of this treatment. ACBT helps people experience different emotional thoughts and emotions, rather than systematic attempts to change or reduce their frequency (Linehan, 1993). Acceptance/commitment therapists believe that the process of changing the function of stimuli should be changed. With this goal, it helps the patients to correct their attitudes toward change. In this treatment, the therapist is taught that any action to avoid or control the unwanted mental experiences (thoughts and feelings) is ineffective or has inverted results and exacerbates them, and must accept these experiences fully without any internal or external reaction to their removal (Hayes et al., 1999). In addition, in explaining the findings of this study, it can be pointed out that avoiding an experience (the unwillingness to experience the unpleasant inner feelings and thoughts) in the long run leads to more symptoms of anger. Another assumption of this research is that when the mind says that it knows everything about a subject, more irrational reactions occur. Faulting in ACBT means a step backward and watchful of thoughts, which prompts thought to be mere thought and reality. Therefore, the absolute reality of not assuming verbal meanings is a great help in reducing severe reactions such as anger. Also, ACBT has reduced the anxiety for heart surgery patients in the intervention group and its effect on the follow-up test remains. These findings are in line with the findings Izadi (2012), Behroz et al. (2016), Alavizadeh & Shakerian (2016), Ale-Yasin et al. (2016), Yasae-Sekeh et al. (2017), Baradaran et al. (2016), Aminvand (2015), Khanjani (2015), Rohi-hir & Gaffari (2014), Annunziata et al. (2015), Graham et al. (2014), Swain et al. (2013), Ossamn et al. (2006), and Eifert & Heffner (2003). In explaining the result obtained from the above hypothesis test, based on the efficacy of ACBT on reducing anxiety in patients with heart surgery, we can say that behavioral commitment exercises, along with fault and admission techniques, as well as detailed discussions around the values and goals of the individual and the necessity of clarifying the values have all reduced the anxiety severity in patients with heart surgery. In this treatment, the goal was to emphasize the inner experience to help them to experience their annoying thoughts as a mere thought and to become aware of the ineffective nature of their present experience, and instead of responding to it, they are going to do what is important to them in life and in line with their values. Here, by replacing themselves as a background, referrals were able to easily experience unpleasant inner events in the present and were able to separate themselves from reactions,

memories, and unpleasant thoughts. The therapeutic approach, as the results showed, resulted in a significant reduction in the anxiety of these patients. In fact, intellectual processes taught people how to abandon the idea of inhibiting thought, ridding disturbing thoughts, strengthening self-reflection rather than conceptualizing themselves, adopting internal events rather than controlling, emphasizing their values, and paying attention to them. In this treatment, people learn to disengage their feelings but to distance themselves from them, and by mindfulness, they focus their thoughts and processes of thinking and lead them to target-oriented activities. Also, ACBT was effective in reducing the hostility of heart surgery patients in the experimental group and its effect on the follow-up test was also maintained. The results showed the effect of ACBT on the reduction of hostility in cardiac surgery patients in post-test and follow-up tests. These results are in line with the results of Dosti et al. (2016) and Jahangirpoor t al. (2013). Dosti et al. (2016) found that ACBT in the intervention group reduced the verbal aggression, anger and hostility of the subjects. But there was no change in the control group. Also, Jahangirpoor t al. (2013) in a study entitled "The Effect of Mindfulness on Reducing Psychopathology in Patients with Coronary Heart" concluded that there was a significant difference between the two groups in the post-test scores of depression, anxiety and hostility, and the score Hostility has been significantly reduced in the experimental group. In explaining how the effect of ACBT on reducing psychological symptoms of hostility in cardiac surgery patients, by reference to the treatment protocol, we can observe that the reason for this effect is the change in the attitude of clients towards the cause of irrational thoughts and the negative and negative cycle of these thoughts and the purpose of treatment, the beginning of awareness-based exercises and the creation of creative distress to the past, from the very first sessions and also welcomed by subjects and acting on values in the treatment of psychological symptoms of hostility in a therapeutic way, as mediators. In other words, it can be said that ACT therapy creates therapeutic changes through "creation and development of mental admission and increasing the practice of values" in patients. The obvious advantage of this psychotherapy is to give the individual a kind of opportunity to learn new and specific skills, such as increased psychological admission and contact with the present, and this also makes it difficult for the individual not only to avoid it, but to face it flexibly. The cognitive separation of mental experiences in a way that a person can act more independently and consciously in the real world, as well as an escape from the extreme concentration on his personal story, which imposes the role of self-creation, allows the person to use the method more efficient, without stress free and out of anger, aggression and hostility.

Conclusion

Stress is a condition or feeling of being burdened or overloaded,

tense, worried, and anxious (Soh & Roy, 2017). According to the findings, it is concluded that ACBT reduces anger, anxiety and hostility in heart surgery patients. Therefore, it is suggested that more extensive controlled studies be conducted in this field to compare the differences and similarities of this treatment with other treatments. It is also recommended that studies be conducted on identifying useful physical and mental rehabilitation methods for heart surgery patients.

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