



The Effectiveness of Acceptance and Commitment Therapy on Depression, Alexithymia and Hypertension in Patients with Coronary Heart Disease

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Abstract

Background: According to recent studies, cardiovascular diseases have been the most prevalent cause of death and disability worldwide, one of the most hidden types of which is coronary heart disease. Coronary heart disease is mainly psychosomatic in nature and the role of psychological (especially personality) and social factors in its occurrence is very important. We aimed to evaluate the effectiveness of acceptance and commitment therapy (ACT) on depression, alexithymia, and hypertension in patients with cardiovascular diseases.

Methods: This was a quasi-experimental study with a pretest-posttest design, with a control group and baseline assessment after intervention and three-month follow-up. The statistical population included all patients with cardiovascular diseases referred to Imam Reza hospital in Amol city from July to December 2020. 24 patients were selected as the sample using purposeful sampling and assigned to equal experimental and control groups randomly. The study tools were a researcher-made demographic questionnaire (2019), Toronto Alexithymia Scale (1994), Beck Depression Inventory (1990), and acceptance and commitment treatment protocol (Hayes, 2012). Data were analyzed by repeated measures analysis of variance.

Results: We found that ACT had a significant effect on reducing depression, alexithymia, and hypertension.

Conclusion: Patients who participated in ACT sessions had lower rates of depression, alexithymia, and hypertension.

Keywords: Acceptance and Commitment Therapy, Alexithymia, Depression, Hypertension, Cardiovascular Diseases

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Published online May 31, 2022



Citation: Rahnama Zadeh M, Ashayerih H, Ranjbaripour T, Kakavand A, Meschi F. The effectiveness of acceptance and commitment therapy on depression, alexithymia and hypertension in patients with coronary heart disease. Clin Neurosci J. 2022;9:e15. doi:10.34172/icnj.2022.15.

Introduction

According to recent studies, cardiovascular diseases have been the most prevalent cause of death and disability worldwide, one of the most hidden types of which is coronary heart disease.¹ This disease, as a chronic illness, leads to decreased physical strength, disrupted interpersonal relationships, occupational dysfunction, financial problems, and reduced quality of life.^{2,3}

Mood disorder (alexithymia) is associated with general health indicators and physical problems such as underlying hypertension, pain dimensions, and heart distress.⁴ Emotional malaise exacerbates the vulnerability of the vulnerable to physical illness. The theory that disability in the emotional and cognitive process exacerbates susceptibility to disease is consistent with the basis of psychiatry.⁵ Since mood dyslexia reflects a defect

in the cognitive processing of emotions, it can lead to psychological and physical symptoms, thereby reducing the health-related quality of life in cured patients.^{6,7}

Depression is among the factors that has been proposed as a predictor of cardiovascular disease and hypertension and has been widely studied.⁸ Depression, anger, and hostility may play an important role in the development and maintenance of hypertension.⁹ In studies that have examined psychological disorders in patients with cardiovascular disease, it has been repeatedly observed that this disease is associated with depression, anxiety, and stress.⁸ Some researchers believe that symptoms of anxiety and depression can act as a risk factor for heart disease and reduce the duration, prognosis, and quality of life of patients.⁹

It has been claimed that symptom of depression has a

strong effect on quality of life, poor prognosis, and risk of death in patients with coronary heart disease.¹⁰ However, people with chronic diseases, including heart disease are at greater risk for anxiety and psychological stress due to the lack of adaptive defense mechanisms and the use of inefficient coping strategies.¹¹

Currently, the third generation of these therapies is more popular, which can be called general “models based on mindfulness and acceptance”, such as mindfulness-based cognitive therapy, mindfulness-based stress reduction awareness, dialectical behavior therapy, and acceptance and commitment therapy (ACT), which Hayes pointed to as the third wave of cognitive and behavioral therapies.¹² Acceptance and commitment-based therapy has six central processes: acceptance, cognitive diffusion, being present, self as a context or context, values, and committed action.¹³ The main goal of this treatment is to create psychological flexibility, that is, to create the ability to make practical choices between different options that are more appropriate, rather than just to avoid disturbing thoughts, feelings, memories, or desires, or to be forced.¹⁴

Researchers in and out of the country have found that research that examines the effects of ACT on emotional malaise, depression and hypertension in patients with cardiovascular diseases has been neglected. We aimed to assess whether ACT affects depression, emotional malaise, and hypertension in patients cardiovascular disease.

Materials and Methods

This study was a quasi-experimental with a pretest-posttest design, with a control group and baseline assessment after intervention and three-month follow-up. In This Study, based on purposeful sampling 24 people (n = 12 for each group, 0.5 = volume of effect, $\alpha = 0.50$ [Stevens, 2007]) was selected from all patients with coronary heart disease referred to Imam Reza hospital in Amol in the months of August to January 2016. Inclusion criteria in this study were: Diagnosis of premature coronary heart disease and hypertension by a cardiologist based on the criteria of the World Health Organization (WHO) in patients to be confirmed. Having at least a ninth grade educational degree, being 30-50 years old, no substance abuse, ability to participate in group therapy sessions, and willingness to cooperate. The exclusion criteria for the experimental group was not attending intervention sessions for more than two sessions, there was a reluctance to continue attending the intervention sessions. Participants in the experimental group received group treatment in eight sessions once a week for two hours, but for the control group, no treatment was provided. Due to the ethical principle of justice in research and also due to the effectiveness of ACT on depression, emotional malaise and blood pressure of the experimental group participants, after conducting research and follow-up phase, ACT sessions were also held for the control group.

Data analysis with repeated-measure analysis of variance (ANOVA) was done using SPSS software, version 21.

Tools

Demographic Questionnaire

Due to the influence of contextual factors and biological characteristics on clients' moods and quality of life, a researcher-made demographic questionnaire was prepared. This questionnaire included questions about age, education, economic status, treatment performed to reduce blood pressure and weight, alcohol and smoking by the patient, and a history of mental illness.

Emotional Dysfunction Questionnaire (Toronto Alexithymia Scale)

The original Toronto Emotional Discomfort Scale was developed by Taylor and colleagues in 1985. It has 20 items and three subscales: difficulty in recognizing emotions (including 7 items), difficulty in describing emotions (including 5 items), and objective thinking (including 8 items). This questionnaire is scored based on a 5-point Likert scale from a score of 1 for “totally unhappy” to 5 for “totally agree”. In this scale, by summing the scores of the 20 items, an overall score is obtained. Items 4, 10, 18, and 19 are scored in reverse. The minimum and maximum scores for this scale are 20 and 100, respectively.¹⁴ The results of one study showed a significant relationship between subjects' scores on the scale of total emotional malaise with emotional intelligence, psychological well-being and psychological helplessness. The results of confirmatory factor analysis also confirmed the existence of three factors in the difficulty of describing emotions, difficulty in identifying emotions, and objective thinking in the Persian version of the Toronto Emotional Dysfunction Scale.¹⁵ The validity and reliability of Emotional Dysfunction Questionnaire have been reported acceptable in the Iranian population.¹⁶

Beck Depression Inventory

This Inventory was first compiled by Beck and colleagues (1961) and revised by Beck colleagues (1996). The list is a self-report tool for measuring the severity of depression in people 13 years of age and older. It has 21 items that are used to assess depressive symptoms (such as sadness, failure, guilt). reported internal consistency coefficients of 0.90 and 0.89 in non-clinical and clinical samples, respectively. The retest coefficient in the non-clinical sample was 0.94, and the validity coefficient of the inventory was 0.86. Ghasemzadeh and colleagues¹⁷ reported a total validity coefficient of 0.87 and a retest coefficient of 0.74.

Acceptance and Commitment Therapy: The protocol used in the present study was derived from Izadi and Abedi Acceptance and Commitment Therapy protocol¹⁸ which is performed in groups for 8 hours once a week for

two hours for the participants of the experimental group.

Summary of ACT Sessions¹⁸

Session 1: Introducing the group members and conducting the pre-test, discussing the behavioral limits and explaining the rules, principles and rules governing the counseling sessions.

Session 2: Introduction to the concepts of ACT therapy (Acceptance, Cognitive Diffusion, Being in the Present, Self as Context, Values, Committed Action)

Session 3: Critique of the previous task: Individuals' response in the method of their control strategies, control as a form (control is control, not solution) (teaching that any direction to implement or control unwanted mental experiences is ineffective),

Session 4: Performance Test; Review the person's experiences from the previous session; Check homework

Session 5: Differentiating self-conceptualization from self-observation, measuring the therapist's ability to break thoughts and feelings, continuing mindfulness experiences, and continuing to clarify values

Session 6: Identifying the patients' life values and measuring values based on their importance

Session 7: Helping group members to recognize that their self-efficacy is not in line with the individual's values. One must constantly understand one's values as a source of commitment and apply them in the implementation of the concept (desire) and in the service of behavioral activation and personal goals.

Session 8: Summarizing the concepts studied during the sessions, asking members to explain their achievements to the group, and their plan for the future

Results

The mean \pm SD age of participants in the experimental and control groups were 39.66 ± 6.29 and 38.48 ± 7.36 , years respectively; In terms of education, in the experimental group, 8 people had diplomas, 2 people had bachelor's degrees, 2 people had master's degrees, and in the control group, 7 people had diplomas, 3 people had bachelor's

degrees and 2 people had 2 master's degrees.

Table 1 shows the mean and standard deviation of emotional malaise, depression and hypertension in experimental and control groups.

First, to check the normality of the data Kolmogorov-Smirnov test was used. The results of Kolmogorov-Smirnov test showed that the variables of emotional malaise ($Z=0.85$; $P=0.16$), depression ($Z=0.91$; $P=0.24$) and blood pressure ($Z=0.76$; $P=0.33$) had a normal distribution ($P<0.05$). Also, to test the assumption of homogeneity of variance matrix, covariance box test was used. The results of Box test (Box's $M=3.75$; $P=0.418$) showed that the significance level was greater than 0.05. Therefore, the assumption of homogeneity of variance matrices was established. In addition, Levene's test was used to investigate the assumption of homogeneity of error variances and the results showed that the assumption of homogeneity of variance for emotional variability variables ($F=2.36$ and $P=0.138$), depression ($F=0.93$ and $P=0.345$). And blood pressure ($F=3.01$ and $P=0.96$) were maintained.

The results of the intergroup effect test in Table 2 showed that there was a significant difference between the experimental and control groups in term of emotional numbness ($P<0.001$, $F=7816.8$), depression ($P<0.001$, $F=8327.2$) and blood pressure ($P<0.001$, $F=3083.4$). The results of intragroup effect test showed that the effect of time factor for the variables of emotional malaise ($P<0.001$, $F=43.16$), depression ($P<0.001$, $F=7451.9$) and blood pressure ($P<0.001$, $F=25.35$) is significant. These results indicate that in the experimental group compared to the control group ACT decrease emotional malaise, depression and blood pressure.

As shown in Table 3, pre-test and post-test scores differed significantly with respect to the three variables of emotional malaise, depression, and blood pressure ($P<0.001$), confirming the effect of the intervention. There was also a significant difference between pre-test and follow-up in all three variables ($P<0.001$), confirming the time effect.

Table 1. Mean and Standard Deviation of Emotional Malaise, Depression and Blood Pressure by Control and Experimental Groups

The Dependent Variable	Location	Examination Group		Control Group	
		Mean	Standard Deviation	Mean	Standard Deviation
Alexithymia	Pre-exam	67.48	1.54	69.66	5.90
	Post-test	39.80	2.52	65.40	8.48
	Follow up	46.14	4.15	60.91	5.70
Depression	Pre-exam	54.77	0.17	56.92	0.50
	Post-test	35.87	0.36	56.70	0.24
	Follow up	45.40	0.41	56.82	0.26
Blood pressure (systolic)	Pre-exam	149.09	2.9	147.28	2.46
	Post-test	129.37	2.01	157.95	3.36
	Follow up	120.8	1.94	166.42	1.21

Table 2. Test Results to Compare the Effect Within and Between Groups in Experimental and Control Groups

The Dependent Variable	Source of changes	Total Squares	df	Mean Square	F	P Value	Effect Size
Alexithymia	Group	4101.03	1	4101.03	7816.8	0.001	0.897
	Time	2559.07	2	1279.53	43.16	0.001	0.662
	Time × Group	2118.68	2	1059.34	35.73	0.001	0.619
Depression	Group	5416.21	1	5414.21	8327.2	0.001	0.923
	Time	1476.17	2	738.08	7451.9	0.001	0.853
	Time × Group	1419.97	2	709.98	7168.2	0.001	0.836
Blood pressure	Group	1240.39	1	1240.39	3083.4	0.001	0.761
	Time	1041.66	2	520.83	25.35	0.001	0.535
	Time × Group	1280.03	2	640.10	31.15	0.001	0.586

Table 3. Results of Bonferroni Post Hoc Test to Evaluate the Effectiveness of Acceptance and Commitment Therapy Over Time

Comparison	Alexithymia			Depression			Blood Pressure		
	Mean Difference	Standard Error	P Value	Mean Difference	Standard Error	P Value	Mean Difference	Standard Error	P Value
Pre-test - post-test	14.60	1.49	0.001	11.06	0.081	0.001	8.13	1.23	0.001
Post-test - follow-up	4.42	1.62	0.001	4.82	0.091		0.13	1.14	0.93
Pre-test - follow-up	7.17	1.59	0.001	6.23	0.099	0.001	8.003	1.42	0.001

Discussion

We aimed to evaluate the effectiveness of ACT on depression, mood dysphoria, and hypertension in patients with coronary heart disease. The results showed that ACT was effective in reducing depression, mood dysphoria and blood pressure. This finding was consistent with previous studies.¹⁹⁻²¹

Explaining this finding, it can be said that one of the factors that reduce the quality of life in patients with cardiovascular disease is the mental occupations that these people have in relation to the disease and its complications. ACT techniques are used to help people with cardiovascular disease avoid engaging in uncontrollable conditions such as high blood sugar, amputation and the thoughts and emotions associated with the disease. These techniques help people achieve a worthwhile life program by accepting inner experiences. ACT and its techniques encourage the observation and description of present experiences without judgment, what is referred to as the process of knowing. This experience now helps clients experience the changes in the world as they are, not as the mind makes them.¹⁹ In fact, using ACT techniques makes people suffer less from disturbing situations and thoughts. Previous research evidence also suggests that mindfulness training alone can increase people's quality of life.²⁰

This treatment was also effective in the field of positive communication with others, while this treatment does not directly teach effective communication methods, but by emphasizing the expression and acceptance of emotions, it facilitated positive relationships with others.¹³

It can be said that this method is less focused on reducing the symptoms and more on increasing the quality of life,

and finally, most clients want to increase their quality of life; But their idea is that in order to do so, they must first change the content of their thinking. In fact, in ACT, acceptance-based interventions want clients to focus their thoughts on creating a meaningful life instead of changing and reducing symptoms of disease. The purpose of acceptance is for the individual to accept all the inner experiences offered, that is, thoughts, feelings, memories, and bodily feelings without the need to defend against them.^{14,22}

This study had some limitations. The first was the small sample size. Although nobody dropped out of the study, the small sample size prevented accurate estimation of the effect size of the program. Another limitation was the use of self-reporting tools. These tools have inherent problems (evaluation error, lack of honesty in answering, etc). Also, this study was done on only male patients with cardiovascular disease, so findings should be generalized with caution. It is suggested that in future studies to control the effect of expectation, quasi-treatment programs (placebo program) should be implemented on the control. It is also recommended to use larger samples to achieve the actual effect size of the program. To develop the findings of this study, it is suggested that researchers apply ACT on similar patients in other hospitals.

Conclusion

Due to the effectiveness of ACT in reducing depression, emotional malaise and hypertension in patients with coronary heart disease, the results of research in this field can be used in practice in counseling centers and medical centers. Workshops and training courses, based on ACT for the counselors of the centers and patients should be

considered in these centers.

Acknowledgments

We would like to thank all the staff of Imam Reza hospital in Amol and the respected patients who have cooperated in this study.

Conflict of Interest Disclosures

The authors declare that they have no conflict of interests.

Ethical Statement

The study was approved by the Ethics Committee of Islamic Azad University, Karaj Branch (code: IR.IAU.K.REC.1398.095). Written consent was obtained from them consciously and the confidentiality of all information of the participants was announced in writing to the subjects.

Finding

The present study is taken from the doctoral dissertation of the first author.

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