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Original Article

Effectiveness of acceptance and commitment therapy on the quality of life and resiliency in cardiac surgery patients

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This study is intended to evaluate the effectiveness of acceptance and commitment therapy on the quality of life and resiliency of cardiac surgery patients. This quasi-experimental (pretest-posttest) study was performed on an experiment and a control group. Follow-up test was taken two months after pretest. Study statistical society included all cardiac surgery patients in Valieasr Hospital, Ghaemshahr, in January and February 2018 and have a medical record (n=112). Due to the quasi-experimental nature of the study, 30 patients were considered as sample size and selected via convenient sampling. These patients were assigned to experiment and control group (15 patients in each group). WHO quality of life questionnaire (1996) and Connor-Davidson Resilience Scale (2003) were data collection tools in this study. Both experiments and control groups answered these questionnaires. After performing the pretest, Acceptance and Commitment Therapy (ACT) was performed for cardiac surgery patients in the experiment group by trained psychology Ph.D. students while patients in control group received no treatment. 8 ACT sessions were performed for experiment group. Afterward, posttest of questionnaires was completed by both groups. Subsequently, collected data of posttest were collected and analyzed. Moreover, these questionnaires were taken once again (2 months after posttest) in the follow-up step and the collected data were analyzed. Results of covariance analysis showed that ACT significantly affects both assessed psychological variables in the pretest and posttest. Acceptance and commitment therapy improved the quality of life and resilience in cardiac surgery patients in experiment group.

Keywords: Commitment therapy, Quality of Life, Cardiac surgery

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Introduction

Cardiac disease is the second common disease in both developing and developed countries for which patients seek medical care. Coronary artery bypass graft (CABG) is the most commonly performed cardiac surgery in Iran accounting for 50 to 60 percent of cardiac surgeries. The necessity of this surgery on the one hand and the obligation of its acceptance, on the other hand, results in major alterations in patient life sometimes leading to numerous unwanted complications in different treatment stages [1]. In recent decades, quality of life is assessed to determine the effectiveness of interventions in the treatment of coronary artery diseases [2]. The physical morbidity of the disease affects patient's quality of life [3]. Quality of life is a multidimensional concept including physical, mental, and social aspects. Feeling of being good is affected by satisfaction or dissatisfaction of an individual from different aspects of life which are important to a person. Quality of life is known as an important outcome and the response of patient to disease, treatment or response to a known specific process [1]. During last two decades, the attention to evaluation and improvement of quality of life has markedly increased and improvement of daily function and quality of life of patients with chronic diseases is considered as an objective. Many studies have been performed in the recent decade to determine the quality of life of patients with cardiac diseases; decrease of quality of life in these patients is proved [4]. Nasiri, Ghorbani [3] found in their study that ACT significantly affects quality of life of patients in

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experiment group (patients with functional gastrointestinal problems). Other studies including current study, insist on the significant effect of ACT on the quality of life of different statistical populations such as patients with diabetes type II [5], patients on dialysis [6], depressed and anxious patients [7]. Goodwin, Forman [4] showed in their study that ACT significantly affects quality of life, lifestyle modification and adherence to the changes. Consistent with the current study, Sperry et al. proved in their study that ACT exerts significant effects in quality of life and decreasing high-risk behaviors in patients with obesity and hypertension [8].

Resilience is an effective factor on coronary cardiac diseases which attracted attention of researchers in the last decade. Coronary cardiac diseases are among disorders in which–besides biological backgrounds and physical risk factors-stresses and distresses, inefficient coping strategies, stressful life events, and low resilience play an important role [9]. Resilient is a positive adaptation in response to adverse condition [10]. In other words, resilience is a successful resistance against threatening and challenging conditions. Resilient individuals can attenuate the inappropriate aspects of chronic stress and tensions and maintain their mental health. Researchers believe that resilience is the process of ability with the outcome of successful compatibility in threatening situation [11]. Self-resilient individuals do not show self-defeating behaviors, are emotionally relaxed and have the capability of dealing with stressful situations. On the other hand, in Werner [12] study on the positive effect of resilience in dealing with stress, individual's resilience was considered as cause of their ability in positively dealing with unpleasant outcomes and maintain their health [12]. Mohammadi Khashouei, Ghorbani [13] proved in their study that the resilience of experiment group (patients with type II diabetes) significantly increased compared with control group after ACT and this improvement was maintained in follow-up level. Other studies, as well as this study, proved the significant effect of ACT on patient resilience including ACT on patients with multiple sclerosis [14], nurses in treatment section [15], mothers of children with therapeutic issues [14]. Wicksell et al. on their study on evaluation of resilience against pain and pain damage, self-efficacy, pain severity, catastrophizing and movement fear, as mediators of change in ACT in pain damage, concluded that beliefs on pain and resilience against pain were the only variants which predicted significantly distinctive treatment outcomes in the follow-up [16].

Biopsychosocial approaches play potential role in the evaluation of the range of physical, psychological, and social features due to chronic diseases which the reason behind the psychological interventions in these disorders. Psychological interventions insist on emotional and behavioral aspects of disease such as conception of pain security, anxiety, and stress [17].

Among third wave psychological approaches, ACT considers person's contact with thoughts, emotions, and behaviors as the main factor in pathology of psychological disorders. The main structure and concept in ACT are that psychological sufferings are formed through experience avoidance, cognitive fusion, failure to meet behavioral needs, and inconsistency with basic values. In ACT, the objective of the therapist is not to reduce symptoms, but this is achieved as in ACT process as a byproduct. ACT changes the relation between thoughts and troublesome emotions so that the person does not perceive the symptom as morbid symptoms and even learn to consider them as harmless symptoms (even if painful or unpleasant) [18]. The main message of ACT is acceptance of something which is out of control and commitment to performing the things which are in control [19]. In this approach, treatment through acceptance, cognitive dissonance, itself as a background, forms the relationship between informed attention to the present time, values, and commitment to action. In fact, ACT is a textural approach which challenges the refereed person so that the individual accept thoughts and emotions and get committed to required changes. The main core of changes in ACT is the change in external and verbal behaviors. This method believes that engaging with emotions worsens them [16]. ACT does not mean asking the referred person to accept any situation, though some situations should be accepted since nothing can be done about them; the first step in treatment is detecting changeable and unchangeable areas [20]. For example, cardiac surgery and related pains are unchangeable situations which should be accepted. Therapeutic interventions in ACT can be effective in avoidance patterns, improving acceptance, clarifying values and goals, improving quality of life, and resilience against problems. In this regard, ACT gets to increase the level of being informed of internal experiences, accepting them, and lack of judging them and showing reactions to these experiences and helps patients who have undergone cardiac surgery to identify their life values and start doing their valuable life behaviors despite presence of

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unpleasant thoughts, emotions, and physical feelings, on the contrary to their previous avoiding behaviors. Performed studies in this field demonstrate that ACT improves function of patients with chronic pain [15]. Moreover, studies have shown that ACT has been effective in many areas such as depression [21], psychosis [22], substance abuse [23], occupational exhaustion [24], and pain reduction [25].

Paying attention to psychological treatment methods attract more attention due to problems of cardiac patients after surgery caused by longtime treatment, observance of lack of complete recovery in other patients, taking medications for many years, and hopelessness of absolute results of treatment and psychological effects of this belief. Additionally, since limited studies are performed on the efficacy of ACT on features of quality of life and resilience in these patients, investigator tried to answer this crucial question in the current study that 'Is Acceptance and Commitment Therapy effective on the quality of life and resilience of cardiac surgery patients?'

Materials and Methods

This quasi-experimental (pretest-posttest) study is performed to evaluate the effectiveness of ACT on anger, anxiety, and hostility in cardiac surgery patients. Follow-up test was taken 2 months after posttest. Study population included all patients who have undergone cardiac surgery in January and February 2018 in Valieasr Hospital, in Ghaemshahr (N=112). Since this is a quasi-experimental study, sample size was considered 30 patients which were chosen by 'convenient sampling method' according to inclusion and exclusion criteria and divided into experiment and control groups (each group consists of 15 patients). After taking pretest, patients in experiment group received according to ACT protocol [26] by trained Psychology Ph.D. students while patients in control group did not receive any treatment. After 8 sessions of treatment for experiment group, posttests were taken from both experiment and control groups. Results of the questionnaires were collected and evaluated. The tests were taken in another time (2 months after posttest) in the follow-up stage and analyzed.

Inclusion and exclusion criteria: Age between 30 to 60 years, sex (women), mean educational degree: diploma (due to active and cooperative nature of therapy method as well as homework, an amount of willingness and energy and ability to recognize thoughts and emotions is required.), negative history of psychological diseases, negative history of other physical diseases. Undergoing cardiac surgery, lack of chronic and high-risk diseases such as cancers, multiple sclerosis, respiratory diseases, renal failure, diabetes, and spinal cord injury

Moreover, eight 1.5-hour sessions of instruction based on ACT protocol [26] were provided for experiment group. A summary of these sessions is presented in Table 1. SPSS ver. 21 software was used for data analysis.

Table 1. Acceptance and Commitment Therapy protocol

1st session	Introducing members, performing pretest, a brief explanation of therapy method
2nd session	Explanation of creative helplessness, current approaches and providing willingness for changing them to new approaches
3rd session	Introducing control as problem, identifying common ways to control behaviors and emotions and evaluation of the effectiveness of this method
4th session	Understanding the importance of living based on value, understand the function objectives in producing a healthy life, making a chart of values in main areas
5th session	Acceptance and commitment, instruction of mindfulness
6th session	Weakening of dependency on conceptual self, formation of awareness of onlooker self, differential between conceptual self and onlooker self
7th session	Attention to the limited role of language in understanding direct experiences, instruction of mindfulness, weakening of the mixture of self and time
8th session	A summary of previous sessions, formation of commitment, performing posttest

Tools

WHO quality of life questionnaire

WHO quality of life questionnaire (1996) is designed to assess quality of life of individuals consisting of 26 questions. First question evaluates quality of life and general health status of the individual and the other 24 questions evaluate the 4 main dimensions of the questionnaire: physical health, mental health, social relationships, and environmental health. Subjects answered the question based on a 5-degree Likert scale. Reliability and validity of the test: to assess the reliability, internal consistency based on Cronbach's alpha was used and the following values were reported: Physical health 0.87, mental health 0.74, social relationship 0.55, and environmental health 0.74. These coefficients show appropriate reliability of the test. In addition, the ability of short form of WHO quality of life questionnaire in differentiating patients form healthy individuals prove validity of this test. Results of exploratory factor analysis indicate appropriate structural validity of this test [27]. According to table 1, Cronbach's alpha is reported in two healthy and diseased samples.

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Table 1. Cronbach's alpha coefficients

Area	Healthy individuals	Patients
Physical health	0.70	0.72
Mental health	0.73	0.70
Social relationship	0.55	0.52
Environmental health	0.84	0.72

Connor-Davidson Resilience Scale (2003)

This scale was designed by Connor and Davidson [28] by reviewing articles on resilience. They believe that this scale can differentiate resilient and non-resilient individuals in clinical and non-clinical group and can be used in both in clinical and research cases. This scale consists of 25 statements with a Likert scale ranging from zero (completely false) to five (always true). Higher scores indicate higher resilience of subjects [29]. Connor and Davidson [28] reported Cronbach's alpha of this scale to be 0.89. Additionally, validity coefficient of retest method in a 4-week interval was 0.87. Mohammadi Khashouei, Ghorbani [13] standardized this scale in Iran. Moreover, correlation matrix and KMO index, and Bartlett's test of sphericity were measured both of which indicated sufficiency of evidence for factor analysis [28].

Results

In Table 2, just Group×pretest row is intended in which the measured F Ratio (Fm=0.122) at 95% confidence level and 0.05 significance level is less than F ratio in critical table (Fc=22.4); this indicates homogeneity of regression slope for both experiment and control groups; i.e. the relation between dependent variable and auxiliary random variable (pretest score) is the same for both groups.

Table 2. Results of (interactive) effect of auxiliary variable (pretest) and independent variable (group)

Source	Sum of squares	Degree of freedom	Mean of squares	F	Signific ance
No intervention	243.169	1	243.169	22.575	0.000
Group	2.478	1	2.478	0.23	0.635
Pretest	1000.467	1	1000.467	92.878	0.000
Group× pretest	1.316	1	1.316	0.122	0.729
Error	280.067	26	10.772		
Total	126332.0	30			
Corrected total	1653.467	29			

*R square = 0.831 (Adjusted R square=0.811)

In Table 3, measured F ratio for group factor (Fm=39.867) at 95% confidence level and 0.05 significance level is more than F ratio in critical table (Fc=22.4) indicating the significant effectiveness of instruction of life skills on the quality of life on cardiac surgery patients in experiment group; in other words, hypothesis 0 is rejected and study hypothesis is accepted.

Table 3. Results of covariance analysis for quality of life (dependent variable)

Source	Sum of squares	Degree of freedom	Mean of squares	F	Significance
No intervention	241.863	1	241.863	23.208	0.000
Pretest	1011.550	1	1011.550	97.063	0.000
Group	415.481	1	415.481	39.867	0.000
Error	281.383	27	10.442		
Total	126332.0	30			
Corrected total	1653.467	29			

*R square = 0.830 (Adjusted R square=0.817)

Based on Table 4, just Group×pretest row is intended in which the measured F Ratio (Fm=2.709) at 95% confidence level and 0.05 significance level is less than F ratio in critical table (Fc=4.11); this indicates homogeneity of regression slope for both experiment and control groups; i.e. the relation between dependent variable and auxiliary random variable (pretest score) is the same for both groups

Table 4. Results of (interactive) effect of auxiliary variable (pretest) and independent variable (group)

Source	Sum of squares	Degree of freedom	Mean of squares	F	Significa nce
No intervention	194.614	1	194.614	18.631	0.000
Group	59.121	1	59.121	5.66	0.023
Pretest	2617.086	1	2617.086	250.55	0.000
Group× pretest	28.301	1	28.301	2.709	0.108
Error	376.041	36	10.446		
Total	1400561.0	40			
Corrected total	3085.375	39			

*R square = 0.878 (Adjusted R square=0.868)

In Table 5, measured F ratio for group factor (Fm=18.046) at 95% confidence level and 0.05 significance level is more than F ratio in critical table (Fc=4.11) indicating the significant effectiveness of dialectic behavior therapy on improvement of resilience of cardiac surgery patients in experiment group; in other words, hypothesis 0 is rejected and study hypothesis is accepted.

Table 5. Results of covariance analysis for resilience (dependent variable)

Source	Sum of squares	Degree of freedom	Mean of squares	F	Significance
No intervention	203.636	1	203.636	18.634	0.000
Pretest	2599.808	1	2599.808	237.9	0.000
Group	194.244	1	194.244	18.049	0.000
Error	404.342	37	10.928		
Total	140561.0	40			
Corrected total	3085.375	39			

*R square = 0.869 (Adjusted R square=0.862)

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Discussion

This study was intended to evaluate the effectiveness of acceptance and commitment therapy on the quality of life and resilience of cardiac surgery patients. Results of this study demonstrated that ACT based group therapy was effective in improving quality of life in cardiac surgery patients in posttest and follow-up stages. Results of this study are consistent with results of other studies [3-8]. In the explanation of how ACT affects quality of life of cardiac surgery patients and continuity of this effect, it should be stated that in this method, on the contrary to many other therapeutic methods, no specific value of life style is imposed to the patients. Instead, patients make decision to change based on their own value system. For example, when a referred individual considers reputation and people's words important, the therapist does not insist on the irrationality of this idea but lets the referred individuals make better decision based on their own culture, tradition, and life situation. Another insisted process in ACT which plays an outstanding role in the treatment protocol is insisting on committed acting. Persuading patient to clarify values, determine objective, predict limitations and finally encouraging performing acts in order to receive the goals and mover towards values despite the disease, not only fulfills the objectives but also improves patient's quality of life and prevents from getting stuck in a cycle of negative thoughts [4]. Generally, effectiveness of ACT in improving quality of life of cardiac surgery patients is based on principles such as being in the present time, observing without judgment, acceptance and improving awareness of experience and producing compatible reaction. Instruction of observation of confusing thoughts and emotion and accepting them without judgment instead of avoidance or mental engagement leads to enhancement of awareness of unpleasant experiences and emotions in cardiac surgery patients. Continuity of practices of ACT leads to acceptance of the disease by patient and formation of behavioral changes in order to improve quality of life and remove psychological limitations of controlling the disease.

Moreover, ACT improves resilience in cardiac surgery patients and its effectiveness lasts in the follow-up. Results of this study are consistent with the findings of others [3, 13, 21]. In the explanation of how ACT affects resilience of cardiac surgery patients and continuity of this effect in the follow-up, it should be stated that ACT guarantees the awareness of emotions and unconditional acceptance of problems, leads to improvement of problem-solving skills. Since patients with chronic diseases experience cognitive distortions and chronic inefficient thought, activation of these thoughts not only leads to concentration on themselves and being worthless and hopeless to future and thus decreasing resilience, but also highly affects the symptoms. Instruction of different methods for challenging with irrational thoughts and choosing appropriate approach to the problem, which is called cognitive fault in ACT, can lead to improvement of resilience by affecting these aspects. Additionally, it can be stated that in ACT process, patients learn to confront disease symptoms by increasing their psychological mental acceptance for internal experience such as thoughts, emotions when present or speaking in groups and dealt with their disease symptoms, instead of intellectual and practical avoidance in stressful situations. In fact, active and effective encountering with thoughts and emotions, prevention from avoidance, changing relative to themselves, reviewing values and objectives in life and finally commitment to more social objective results in enhanced resilience when encountering inefficient lifestyle of patients.

Conclusion

According to the results of this study, acceptance and commitment therapy is effective in improvement of quality of life and resilience in cardiac surgery patients. Thus, this method is purposed as an effective interventive treatment to be added to routine medical treatment to reduce psychological symptoms, improve quality of life, and increase resilience in cardiac surgery patients. Moreover, it is suggested that more extensive controlled studies be performed in this field so that similarities and differences of these methods with other methods be evaluated; another suggestion is conduction of studies to identify beneficial methods in physical and mental rehabilitation of cardiac surgery patients

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Conflicts of interest

Present study has no conflicts of interest to declare.

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