

# The Effectiveness of Cognitive-Behavioral Stress Management Training on Quality of Life and Clinical Symptoms of Cardiovascular Patients

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<http://dx.doi.org/10.13005/bpj/1109>

(Received: February 16, 2017; accepted: March 02, 2017)

## ABSTRACT

Heart failure is one of the most prevalent cardiovascular disorders, which imposes hard side effects on individuals. One of the main issues with key role at the current societies is stress that has affected all people. Stress can cause mental and physical problems for people. Majority of people face decline of quality of life after heart surgery and clinical symptoms of some mental disorders appear in such people. According to importance of this issue, this study has investigated effectiveness of stress management training in quality of life and clinical symptoms of cardiovascular patients. this study is an empirical research and the research design is semi-empirical design with pretest-posttest and control group. For this purpose, among the patients with experience of heart surgery, 32 patients have been selected using simple random sampling method and have been placed in two experimental and control groups. Firstly, pretest was performed and then after training stress management using cognitive-behavioral approach, two groups passed posttest and 2 months follow up was also performed. Collected data was analyzed using SPSS-20 software. according to intergroup comparison of clinical symptoms, significance level of F value is below 0.005 ( $F(1, 15) = 9.322$ ;  $p=0.001$ ), which shows that the difference of mean values of clinical symptoms between experimental and control groups is significant. In field of measuring clinical symptoms, significance level was high in posttest and pretest for control group. It should be mentioned that in follow up step, no significant difference was observed in obtained results in experimental group and this was a reason for stability and reliability of this test. According to intergroup comparison of quality of life, significance level of F value is below 0.001 ( $F(1, 15) = 12.844$ ;  $p=0.001$ ), which shows that the mean difference of total values of quality of life is significant between two groups. For experimental group compared to control group in field of test of quality of life, the results showed that quality of life of experimental group in posttest and follow up step is significantly higher than control group. according to obtained results from the study, cognitive-behavioral stress management training can affect increase in quality of life and reduction of clinical symptoms of patients with heart surgery.

**Keywords:** Cognitive-behavioral stress management, quality of life, clinical symptoms, cardiovascular.

## INTRODUCTION

Heart failure is one of the most prevalent cardiovascular disorders and is considered as a chronic, progressive and debilitating disorder. Prevalence of the disease is increased with ageing,

so that about 1% of people over 50 years old and about 10% of the elderly people over 80 years old suffer from heart failure in America. On the other hand, advancement in therapeutic and surgical operations has made patients survived from death as a result of myocardial infarction suffering from

heart failure (Jaarsma *et al*, 2014). About 32million cases of Heart Attack and Stroke happen at the world every year and lead to death of more than 17million people. Proportion of cardiovascular diseases in this field is more than 48%, so that more than 20million cases out of 64million deaths in 2015 have been related to cardiovascular diseases (Samvat *et al*, 2013). Majority of patients get mental disorders, depression and anxiety after heart attack or coronary artery bypass graft and losing job and fear of returning to work and ordinary life can intensify worry and anxiety of the patients (Homayuni, Khosropanah, 2005).

According to statistics of Iran Center for Disease Control published by 2001, number of patients with heart failure in 18 provinces is reported to 3337 people out of 100000 people. In a study by September of 1998 in Iran, 0.25% of patients hospitalized in Cardio Care Units have had heart failure (Rahnavard *et al*, 2006). With the increase in cardiovascular diseases day by day and development of coronary artery bypass graft surgeries and heart transplantation, number of heart patients needing specific attention to return to ordinary life is also being increased. Majority of patients get mental disorders, depression and anxiety after heart attack or heart surgeries and losing job and fear of returning to work and ordinary life can intensify worry and anxiety of these patients. On the other hand, majority of these patients need continuous control of risk factors of heart to prevent progress of the disease and repeat of cardiac events (Homayuni and Khosropanah, 2005).

Measurement of quality of life, especially in chronic diseases, is a very important issue, since in such diseases, not only physical health but also mental and social health of people is seriously endangered and many patients live with no hope. Many scholars have emphasized necessity of increasing quality of life of patients and caregivers with long background of caring after these patients (Boom & Segerstome, 2004). Cardiovascular diseases are generally among chronic diseases and hence, evaluation of quality of life of these patients is important for therapeutic decisions (Kolahoo *et al*, 2005). Quality of life is subjective understanding based on happiness or individual satisfaction by factors affecting welfare or

preservation of ability of individuals for the best performance and situation with existence of disease (Schultz, Winsted-Fry, 2001) and includes physical, psychological, independence and social relations, environmental relationship and spirituality dimensions (Boom and Segerstome, 2004). Social dimension is depended on isolation, dependence of family relations and social environments and mental dimension is related to mental and social welfare with subfields of depression and happiness (Kahn and Akrons, 1997). Various studies have investigated and demonstrated effectiveness of cognitive-behavioral stress management training in reduction of clinical symptoms and improvement of quality of life of different patients (Lencher *et al*, 2003; Penedo and Dahn, 2004; Penedo *et al*, 2007; Salehzadeh *et al*, 2011).

The patients may suffer from specific psychological deprivations because of nature of the disease and their personal, interpersonal, job and social functions may be declined and they may get clinical psychological symptoms, which can affect their quality of life. Reduction of interpersonal relations, sleep disorders, depression, lack of life expectancy, suicide, aggression and feel guilty are main clinical psychological symptoms, which may make individual involved (Jamilian *et al*, 2013). In order to reduce clinical symptoms and to increase quality of life in patients, various approaches are suggested. One of these approaches is cognitive-behavioral therapy, which has been confirmed since 1970 to treat types of patients and its usefulness is also confirmed in various studies (Martel, Edis and Jacobson, 2011).

Using cognitive-behavioral therapy includes different methods of respiratory muscle relaxation, cognitive restructuring, biofeedback, systematic desensitization, behavioral training and stop thinking and dare training can be suggested by many researchers as one method to cope with mental disorders while medication (Kerek Howeton *et al*, 1997). Cognitive-behavioral therapy is a combination of cognitive and behavioral approaches. In this type of treatment, the patients would be helped to recognize intact thinking patterns and dysfunctional behaviors. To change these thoughts, regular discussions and organized behavioral tasks are used (Sadock, 2003).

Cognitive-behavioral therapy can act more successful than any other treatment that is just focused on manner of thinking or behavior of individuals, since it considers both dimensions of symptom and thought (Heinberg, Becker, 2002). Unfortunately, a few studies are available about effectiveness of different types of therapy such as cognitive-behavioral stress management training in reduction of clinical symptoms and mental and mental health problems of heart patients. Moreover, no comparison is performed between efficiency of these methods to use the most efficient method for these patients. Obtained results from studies of Kahrzaei *et al* (2001), Liden (2005), Bower, Segerstom (2004), Bower *et al* (2011) have shown that cognitive-behavioral therapy can affect quality of life of patients. In researches, use of cognitive-behavioral therapy in reduction of depression, anxiety and pain of the disease is reported. Dunlop (2010) and Hopko and Lejues (2008) have mentioned that number of these interventions on chronic patients is considerable; although they emphasize use of cognitive-behavioral therapy because of potential usefulness of this approach compared to other methods used for these patients (Martel *et al*, 2001; Hopko and Lejues, 2008).

In cognitive model, the main importance is related to beliefs and assumptions of individuals, which is considered as the main factor playing role in perception and interpretation of the event and formation of emotional and behavioral reactions (Heinberg and Becker, 2002). Cognitive-behavioral stress management is formed of elements such as raising awareness about stress, relaxation training, identify dysfunctional thoughts, cognitive restructuring, problem solving, assertiveness skills training, anger management and planning activities (Liden, 2005). Studies have shown that stress management training using cognitive-behavioral method can result in change in interpersonal relations in interaction with friends and family members and can also raise sense of sympathy in patients (Bower and Segerstom, 2004). Expression of emotions and processing thoughts about stressful events of life can facilitate emotional adjustment and can change attitude of patients to life, goals and priorities (Bower *et al*, 2003). According to the mentioned issues and as no integrated study is conducted in this field till now, the main purpose of

this study is to investigate effectiveness of cognitive-behavioral stress management training in quality of life and clinical symptoms of cardiovascular patients.

### Method

This study is an empirical research and the research design is semi-empirical design with pretest-posttest and control group. For this purpose, among the patients with experience of heart surgery, 32 patients have been selected using simple random sampling method and have been placed in two experimental and control groups. First, members of two groups fulfilled written consent form to participate in the study and expressed their consent. The inclusion conditions in this study included age range over 19 years old; literacy of reading and writing at least to 5 grades and background of heart surgery. Participants in both groups were matched based on education level and marital status. Firstly, pretest was performed and participants fulfilled Clinical symptoms and quality of life questionnaire. After the end of cognitive-behavioral stress management training, both groups took posttest and 2 month follow up was also performed. The data analysis was performed using SPSS-20 software.

### Instrument

Quality of Life Questionnaire (QOL): this questionnaire is used to measure quality of life of individuals over the two weeks and is made by World Health Organization with the cooperation of 15 international centers by 1989. The instrument contains 24 items in 4 fields. Two first questions are related to no one of these fields and measure health status and quality of life generally. Therefore, the questionnaire includes totally 6 items with following fields:

**1)QOL includes 4 subscales in following fields: A-physical health, b- psychological field, c- social relations and d- living environment (Young *et al*, 2006)**

The value of each item is ranged from 1 to 5 respectively with options of at all, low, average, high or totally dissatisfied, dissatisfied, partially dissatisfied, satisfied and totally satisfied. In the results reported by makers of WHO's QOL scale

made in 15 international centers of the said organization, cronbach alpha coefficient is reported from 0.73 to 0.89 for 4 subscales and entire scale. In Iran, Nasiri (2006) has used 3 retest methods with interval of 3 weeks, split half and cronbach alpha to 0.67, 0.87 and 0.84 to test reliability of the scale. In a study, Yusefi and Safari (2009) have used correlation of total score of each dimension with each item to measure validity of the scale. Range of obtained correlation coefficients was from 0.45 to 0.83 and all coefficients were significant at the level of 0.01. Each item also showed highest correlation with relevant dimension (Nejat, 2006).

#### **Symptom Check List – 90 – Revised (SCL-90-R)**

Applied instrument in this study to measure clinical symptoms is Symptom Check List – 90 – Revised (SCL-90-R). this checklist is suitable for quick measurement of type and severity of symptoms of mental disorders through personal report of individuals and is an instrument to measure current level of symptoms experienced by patients and includes 90 descriptive items about symptoms of disease ranged based on severity by

individuals (ranged from none=0 to severe=4) and includes also Likert 5-point scale ranging (Karami, 2011).

This checklist contains 90 items with 5-point scale (0 = Not at all, 1= little, 2 = some, 3 = very, 4 = severe). Scoring is as follows:

1. Single disorder symptomatology or Discomfort index: in this section, summation of obtained values from relevant items of each disorder is divided to number of items related to same disorder. Hence, mean value of each disorder could be obtained.

2. General symptomatology or the overall symptom index: in this section, all values obtained from responses of participants are summated with all items of said checklist and are divided to total number of items and the result is multiplied in 100 (Karami, 2011).

#### **Treatment protocol**

Number of training sessions in this study has been equal to 8 sessions with 45 min per session and the summary of sessions is presented as follows:

<b>Session</b>	<b>Session orientation</b>
Session 1	Introducing, discussion on role of stress in beginning and severity of cardiovascular diseases and effect of disease on change in family relations
Sessions 2 and 3	In sessions 2 and 3, strategies to cope with irrational thoughts are discussed such as cognitive restructuring and the relationship between thoughts and emotions, ways to identify irrational thoughts, talk about processing errors, re-evaluate training ideas, challenge irrational thoughts
Session 4	Training anger control
Session 5	Training problem solving and assertiveness
Session 6	Training communication skills and the use of social protection
Session 7	Training strategies to cope with stress and training 3 Passive, assertive and aggressive behavioral styles in communications
Session 8	Review of last sessions and practicing learnt skills

During the performance, the group leader:

- 1- Was active with group members as pattern of coping role
- 2- Encouraged emotional expression and provided required conditions to seek social-emotional supports
- 3- Trained group members to replace doubt by trust and confidence

- 4- Prohibited use of avoidance skills and encouraged reacceptance and reorganization as coping responses.

## **RESULTS**

In table 1, mean value and standard deviation of the values obtained in pretest, posttest

and follow up steps are presented. Obtained results show that mean values of questionnaires have been significantly different from each other after implementation of protocol.

In order to test normality of distribution of research variables, Kolmogorov-Smirnov Test is used. The results in table 2 show that distribution of values in questionnaires is normal and significance level of obtained Z values in distribution of values

**Table 1: Mean value and SD of values of questionnaires in pretest and posttest**

Group	Variables	Pretest		Posttest		Follow up	
		Mean	SD	Mean	SD	Mean	SD
Experimental	Quality of life	29.34	8.50	37.11	9.57	38.75	10.11
Control	Quality of life	29.21	7.75	30.13	8.50	31.44	8.50
Experimental	Clinical symptoms	2.70	0.20	1.30	0.19	1.52	0.45
Control	Clinical symptoms	2.60	0.50	2.50	0.30	2.53	0.31

**Table 2: Kolmogorov-Smirnov analysis to test normality of distribution of research variables**

Variables	Group	Test	Most Extreme Differences			Z	Sig	Status
			Positive	Negative	Absolute			
Quality of life	Experimental	Pretest	0.149	-0.175	0.175	0.521	0.931	Normal
		Posttest	0.143	-0.221	0.221	0.627	0.822	Normal
	Control	Pretest	0.169	-0.148	0.169	0.545	0.935	Normal
		posttest	0.163	-0.174	0.175	0.524	0.942	normal
Clinical symptoms	Experimental	pretest	0.116	-0.130	0.130	0.401	0.987	normal
		posttest	0.255	-0.200	0.255	0.748	0.601	normal
	Control	pretest	0.154	-0.160	0.160	0.513	0.954	normal
		posttest	0.202	-0.211	0.211	0.637	0.788	normal

**Table 3: Results of repeated measure multivariate analysis of variance for quality of life**

Variable	group	pretest		posttest		follow up		F	df	P
		X	SD	X	SD	X	SD			
quality of life	experimental	29.44	8.59	37.82	10.02	39.87	10.22	27.30	2.30	0.001
	control	29.33	7.93	30.19	8.67	31.68	8.72			
intergroup comparison (experimental and control)								12.84	1.15	0.001

**Table 4: Results of repeated measure multivariate analysis of variance for clinical symptoms**

Variable	group	pretest		posttest		follow up		F	df	P
		X	SD	X	SD	X	SD			
clinical symptoms	experimental	2.70	0.20	1.30	0.19	1.52	0.45	12.11	2.30	0.001
	control	2.60	0.50	2.50	0.30	2.53	0.31			
intergroup comparison (experimental and control)								9.322	1.15	0.001

of different dimensions in both pretest and posttest steps for both groups are higher than 0.005 ( $p > 0.005$ ). Hence, it could be found that values of dependent variables have normal distribution. Hence, it is possible to use parametric tests to test research hypotheses.

According to table 3, it could be observed that in experimental group, total mean value of quality of life has reached from 29.34 in pretest to 37.11 in posttest and 38.75 in follow up test. Moreover, obtained results from repeated measures analysis of variance show that sig level of obtained F value is lower than 0.005 ( $F(2, 30) = 27.30$ ;  $p = 0.001$ ) and hence, the mean difference of values is significant. However in control group, total mean value of quality of life in pretest, posttest and follow up is not significantly different and sig level of F value is also higher than 0.005 ( $F(2, 30) = 1.724$ ;  $p = 0.001$ ). Hence, the mean differences are not significant in control group. According to intergroup comparison, sig level of F value is below 0.05 ( $F(1, 15) = 12.844$ ;  $p = 0.001$ ), which shows that mean difference of total value of quality of life is significant between experimental and control groups. Therefore, it could be mentioned that cognitive-behavioral stress management training can affect quality of life of cardiovascular patients.

According to the data in table 4, it could be observed that in experimental group, total mean value of clinical symptoms has reached from 2.70 in pretest to 1.30 in posttest and 1.52 in follow up test. Moreover, obtained results from repeated measures analysis of variance show that sig level of obtained F value is lower than 0.005 ( $F(2, 30) = 12.114$ ;  $p = 0.001$ ) and hence, the mean difference of values is significant in this group. However in control group, total mean value of clinical symptoms in pretest, posttest and follow up is not significantly different. According to intergroup comparison, sig level of F value is below 0.05 ( $F(1, 15) = 9.322$ ;  $p = 0.001$ ), which shows that mean difference of total value of clinical symptoms is significant between experimental and control groups. Therefore, it could be mentioned that cognitive-behavioral stress management training can affect clinical symptoms of cardiovascular patients.

## DISCUSSION AND CONCLUSION

This study was conducted with the purpose of investigating effectiveness of cognitive-behavioral therapy on quality of life and clinical symptoms of cardiovascular patients. Obtained results from the study showed that cognitive-behavioral stress management training can affect quality of life of cardiovascular patients compared to control group after implementation of treatment. Also, improvement of quality of life even two months after ending the training (follow up) was fixed compared to control group with no psychological training and intervention. This result is in consistence with findings of Naderi *et al* (2011); Ghafari *et al* (2012); Karimian (2012); Jabal Ameli *et al* (2010). In field of explaining this result, it could be mentioned that the main factor affecting increase in quality of life in patients under the training is that these patients are extremely worry and anxious about surgery and their conditions and this issue, along with physical restrictions, has led to formation of negative attitude to life and negative attitude to life. One of the main factors affecting increased quality of life is the manner of behaving people around the patients and to learn some strategies to change negative thoughts and feelings to life and self and reduce many tensions and stresses in living environment and they can generally enjoy their life and perceive sufficient safety. These factors can increase quality of life. Through training stress management, stress of patients could be reduced. Although this factor can't solve problems of these patients by itself, it can at least prevent worsening the conditions. When patients are informed that progress of the disease is stopped or it is being reduced, they will hope to improvement and well-being and disappointment to future will be decreased in them and this can be an effective factor in improvement of quality of life in these patients.

Moreover, obtained results from this study showed that cognitive-behavioral stress management training can reduce clinical symptoms of cardiovascular patients and such change has remained fixed even 2 months of follow up. This result is in consistence with findings of Jamilian *et al* (2013), Khani (2014), Kahrzaei *et al* (2011), Danay Sij *et al* (2013). To explain this result, it could

be mentioned that clinical symptoms are symptoms, through which one can be informed about mental states of a person. It could be mentioned that majority of people with heart surgery are severely affected mentally and if such condition is not controlled, severe problems would be certainly created for the patients and they may be irrecoverable. Such training can teach people that surgery is a step toward improvement and not toward deterioration and damage. These patients need help; although sometimes they feel encumbrance and this can affect conditions significantly. According to this issue, the patients play role independently in many cases to train stress management. Accordingly and as stress

management affects some dimensions of personality of individuals, it could be mentioned that such training can reduce clinical symptoms in patients.

Limitations in this study include limitation in holding training sessions and limitation in time of sessions, which was because of disease and condition of sample individuals. Moreover, according to obtained results from this study, it is suggested to codify and design integrated and comprehensive plan to increase quality of life and manage stress for cardiovascular patients in hospitals.

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