

# Investigation of Efficacy of Cognitive-Behavioral Group Therapy in Reducing Symptoms of Depression in Patients with Coronary Heart Disease

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## Abstract

Although the adverse impacts of depressive symptoms after myocardial infarction (MI) on prognosis of heart disease are known, the link between efficacies of cognitive-behavioral group therapy in changing symptoms of depression in patients with coronary heart disease is unclear. The aim of this study has been to determine the relationship between efficacies of cognitive-behavioral group therapy in reducing depressive symptoms. In a cross sectional study, 30 patients admitted to the CCU following coronary heart disease in a hospital in Khorramabad city. They were selected using convenience sampling according to inclusive and exclusive criteria. Data were gathered using the Beck depression questionnaire. They were put in two group control and experimental group (participate in courses cognitive - behavioral therapy) Experimental subjects participated in 12 sessions of treatment periods. Both before and after completion of periods, the questionnaire is presented two groups and the results of two periods were compared. The findings indicated that 40% of patients had depressive symptoms. The results of Covariance showed significant difference between two experimental and control groups. Also, the results of covariance indicated significant differences between two groups in depression, ( $F=44/89$ ,  $P=0.01$ ). Levels of depression play an important role in cardiac patients. The results of this study indicate that group CBT training can lead to a significant reduction in coronary heart disease.

**Keywords:** Cognitive-behavioral Therapy, Depression, Coronary Heart Disease

## INTRODUCTION

Depression is a common psychological problem among patients with cardiovascular diseases having negative impact on prognosis of heart diseases (Spijkerman et al., 2005a). Depression symptoms appear in 15 (Creed, 1999) to 25 (Spijkerman, et al. 2005a) percent of patients suffering heart attacked during hospitalization, and 20 (Spijkerman, et al. 2005a) to

38 (Blumel, et al. 2005) percent of these patients are diagnosed with such symptoms after being discharged from the hospital.

Research findings reveal that patients with depression symptoms suffer from depression for some time after heart attack (Spijkerman, et al. 2005b). According to studies, depression after a heart attack is recognized as an independent dangerous factor for increased fatality (Bush, et al. 2001a) and it comes along with some disorders in left ventricle so that no treatment would be sufficient (Welin, 2000). Patients are in danger of death even up to 18 months after a Myocardial Infarction (Bush, et al. 2001b).

Studies offer that depression and overcoming techniques are of the major problems patients with heart diseases face. There is though no finding to be cited as to such problems (Chiou et al., 1997). According to the research findings, as a major stress, heart diseases maximize the danger of depression (Pedersen et al., 2004).

Alonzo and Reynolds (1998) claimed that after myocardial infarction, patients may experience a wide range of post-traumatic stress disorders, causing maladaptive coping. Maladaptive coping, however, would later bring forth psychological stresses. No sufficient research has been conducted with regard to treatment (such as cognitive behavioral therapy) and the relation between coping techniques after heart attack and depression.

The commonest methods of therapy include pharmacology, family therapy, relation therapy, light therapy, cognitive therapy, behavior therapy, couples therapy, electroshock, and a combination of them.

Regarding the side effects and restrictions of antidepressants and since patients and therapists prefer non-pharmacologic treatments, effective psychotherapies matching with patients' symptoms and social culture seem necessary. There are yet some major research challenges as to the effectiveness of psychotherapy. On the other hand, applying various methods of treatment is considered as of therapeutic requirements. When a therapy is acknowledged as an unsuccessful technique, therapists can change their methods and try another one, because studying various methods and properly applying them may increase the probability of remedy and improvement. Besides studies done in terms of the effectiveness of various methods, there are contrasting results naturally cannot be a definite response to the efficiency of therapeutic methods. Concerning the importance of psychological factors in recurrence of heart

diseases and insufficient studies on the influence of psychotherapy over patients' depression, the present research was conducted.

Psychological therapy has been mostly compared with pharmacology. There is not sufficient study on the effectiveness of cognitive behavioral therapy, indeed. This is, thus, to study the influence of CBT (Cognitive Behavior Therapy) over reduced depression in patient with heart diseases.

### Theoretical Framework

According to the cognitive theory, depression arises from particular cognitive distortions in people prone to depression. These distortions are called depressive schemas.

Aaron Beck assumes three cognitive models for depression:

1. Approach to self: Negative self-views;
2. Approach to environment: Natural inclination to aggressively experience the world; and
3. Approach to future: waiting for grief and failure.

According to Beck, regular errors, also, develop depression. Beck believes that any depressed individual commits five logical errors in thinking, any of which would darken his/her experiences:

Arbitrary Perception: refers to a conclusion for which there is partial or no supporting evidence.

Optional Abstraction: is to concentrate on an unimportant matter and at the same time to ignore more important parts.

Extreme Generalization: General conclusions about value, ability, or performance are drawn by understanding realities.

Zoom in/ magnification: refers to obvious errors of evaluation in which partially horrible events are overestimated and important good events are underestimated.

Personalization: an individual wrongly attributes unpleasant events to him/herself.

Despite of noticeable heterogeneity, psychological literature on cognitive approach can be centered on a general hypothesis based on which depressed ones have problem in processing news. A depressed

evaluating the effect of cognitive behavioral group therapy on anxiety and depression, developed in patients with myocardial infraction of Valiasr Hospitan, Birjand.

Sararvedy et al. (2010) concluded that under the theory of attribution, less inclination toward optimistically facing life events is one equivalent for disappointment of coping types, after conducting a study on coping methods for patients with depression symptoms, hospitalized in Isfahan (Bagherian et al., 2010).

In a study, titled "the effect of group therapy on the rate of depression and anxiety in patients with heart attack", Sheykholeslami and colleagues (2002) empirically examined 22 patients with heart attack, hospitalized for the first time in CCU in hospitals of Isfahan Medical Sciences University and were going to be discharged. Results displayed reduced depression and anxiety at the end of group therapy sessions. The disorders were significantly reduced one month after therapy and significant statistical differences were observed.

Saab et al. (2009) studied the effect of cognitive behavioral group therapy over 781 patients with heart attack based on DSM criteria. According to the results, a significant reduction was observed in cognitive behavioral group therapy.

Introducing a specific therapy along with other pharmacologic and non-pharmacologic interventions, the present study is aimed at looking over the effectiveness of cognitive behavioral therapy on depression in patients with heart disease.

## **METHODOLOGY**

Descriptive and deductive statistics were practiced in here. In descriptive statistics, frequency tables, diagrams, means, standard deviations, etc. were calculated. In deductive statistic part, data were analyzed by the analysis of covariance model. This model is exercised whenever we want to eliminate the primary differences subjects have with themselves and have a pre- and post-test. The analysis of covariance enables us to automatically check the differences existing between groups at the same time with statistical controlling another variable. The added variable called covariance is a variable probably affecting the scores of dependent variables. As such, SPSS was applied to test the hypotheses and calculate the tables.

thought originates in a deep cognitive structure appearing as superficial logical mistakes. The shared characteristic of these mistakes is a pessimistic interpretation of life experiences. Such deep structures are activated based on different events such as burial ceremonies, failures, or separations and develop negative thoughts. In processing news, three types of internal variables are placed between stimuli and responses: cognitive schemas, cognitive processes and cognitive events. These three are responsible for selecting and processing environmental stimuli and they correlate with emotions and behaviors.

Based on schemas stored in long-term memory, organism processes stimuli and environmental events (incomes). It turns them by cognitive processes (software) into cognitive events (thought, mental images) and verbal and motion behavior, indicating the ultimate results (outcomes). And finally, the behavior gives feedback on confirmed and rejected schemas. Schemas can be taken as unspecific but organized imagination of previous experiences that facilitate mental recollection and make some organized changes in new mental structures.

The theory of disappointment is another model that the primary version was raised by Seligman as the learned helplessness. The theory was developed according to the tests carried out on dogs, mice and people who are slightly depressed. According to this theory, the reason of depression is waiting for helplessness in future. A depressed one is waiting for bad events and believes that they cannot be prevented. Seligman suggests that when animals learn helplessness in the face of uncontrollable painful stimuli, feeling helplessness makes them perform inefficiently against controllable painful situations. Stressing on disappointment, he studied then this model on human being and modified it based on the theory of attribution. Disappointment is an expectation of 1) unpleasant events which are not going to occur, and 2) not being able to do anything in order to change the situation (Kring et al., 2007). In such revised model, disappointment is raised from negative attribution in finding the reasons. Under the new version of this model, depressed individuals probably attribute the negative outcomes to some internal, constant and general reasons.

Some research is available on the effect of cognitive behavioral group therapy on reduced depression. Some are presented in the following section.

Khodaei et al. (2012) came to this conclusion that cognitive behavioral group therapy had strong impact on anxiety and depression after

The statistical society includes all patients with heart attack, hospitalized in Shahid Madani Hospital, Khorramabad, in 2013. Suitable for the research, thirty patients with depression scores of 12 to 40 were purposefully selected. In the next stage, they were randomly selected and divided into two experimental and control groups of 15. The experimental group was asked to participate in 12 group sessions of one and half an hour (two sessions in a week). The control group was asked not to participate in any class or session therapy. Both groups were received common medical interventions and medication. In the first and last sessions, both were provided with a depression questionnaire. The results were then compared. Any subject could participate in the research in case of having the following conditions:

1. Ability to participate in the therapy sessions
2. Being educated to complete the questionnaires
3. Not consuming antidepressant during therapy

### **Tool for Data Collection**

Beck Depression Inventory II (BDI-II), designed by an American psychiatrist Aaron Beck (1961), was employed to assess the level of subjects' depression. Beck practiced the test on depressed patients to differentiate them from other patients and show the level of depression from low to extremely high. BDI-II includes 21 questions with scores from zero to three (0-3). The maximum score is, thus, 63, indicating the deepest state of depression. Each question refers to an item and a specific symptom of depression. The questions were compiled according to symptoms such as sadness, pessimism, failure, unsatisfied, feeling guilty, self-aversion, self-annoying, isolation, change in perception, difficulty in doing jobs, fatigue, senescence, Anorexia, etc. As a test independent of a recognized culture and the constituent classes, BDI-II is not allocated to a particular social environment and economic or educational class. The level of depression is determined by counting the ticked scores.

### **RESULTS**

**A. Descriptive Findings**

**Table 1:** descriptive findings for depression in experimental group n=15

	Mean	Median	Index	Standard Deviation	Minimum	Maximum
<b>Pre-Test</b>	39.53	38	38	5.97	32	50
<b>Post-Test</b>	29	28	28	4.5	21	35

The above table shows that mean and standard deviation in pre-test are 39.53 and 5.97 respectively and 4.5 and 29 in post-test. On the other hand, the values of central indexes in pre-test are roughly equal. This can be an indicator of normalized data.

**Table 2:** descriptive findings for depression in control group n=15

	Mean	Median	Index	Standard Deviation	Minimum	Maximum
<b>Pre-Test</b>	41.20	43	43	4.97	34	47
<b>Post-Test</b>	38.4	38	38	5.17	27	46

Table 2 displays that mean and standard deviation in pre-test are 41.20 and 4.97 respectively and 38.4 and 5.17 in post-test. On the other hand, the values of the three central indexes in pre-test are roughly equal. This also can be an indicator of normalized data.

**B. Deductive Findings**

To study the homogeneity of pre- and post- test scores, variance test was independently employed for both groups. The results have been presented in table 3.

**Table 3:** variance test for pre-test (both groups)

Group	Variance	Df	F value	Table Value	Level of Significance
<b>Experimental</b>	35.69	14	40%	2.47	5%
<b>Control</b>	24.74	14			

Table 3 shows that the variance of pre-test scores is not significant for both groups. This is an indicator of the homogeneity of groups.

Table 4: analysis of covariance for depression

Source of Change	Sum of Squares	Degrees of Freedom	Mean of Squares	F	Sig	Eta Co-efficient
Covariance of Depression Scores in Pre-Test	363.77	1	363.77			
Effect of Therapy	505.13	1	505.13	44.89	1%	0.62
Residual	3.3/82	27	11.25			
Depression Scores in Pre-Test						

According to table 4, the therapy significantly affects depression. Eta coefficient shows that the effect of therapy defines 0.62 percent of depression variance.

## DISCUSSION AND CONCLUSION

Cognitive behavioral group therapy has a significant impact on reduced depression in patients with coronary heart diseases.

According to the results obtained by table 4, a significant difference is observed between experimental and control groups in terms of the effectiveness of cognitive behavioral group therapy ( $p = 0.01$ ,  $f = 44.89$ ). This means that regarding the mean for the level of depression, cognitive behavioral therapy reduces the symptoms of depression more in experimental group than control group. This hypothesis is, thus, verified that there is a significant difference between groups as to the level of depression after applying the independent variable (cognitive behavioral group therapy).

The research results verify the conclusion obtained by Khodaei et al. (2012) (i.e. cognitive behavioral interventions have strong impact on anxiety and depression in patients after heart attack). As such, results agree with the research results found by Sheykholeslami et al., (2002) (i.e. the effect of group psychotherapy in reduced depression of patients with heart attacks) and Sub's findings on the ground of the effect of cognitive behavioral group therapy on reducing the depression in patients with heart attack based on DSM parameters. The present study confirms the influence of such interventions and introduced this effectiveness established upon a change in patients' recognition, insight and thoughts during interventions



and group discussion and correlation. The results of such studies revealed that cognitive behavioral group therapy can significantly reduce patients' depression.

To explain the results, note also that on the basis of Beck's theory, it can be claimed that less inclination to use optimistic coping techniques resulting from negative cognitive schemas toward the world can be aroused by heart diseases as a threat and a negative cognitive style. Furthermore, lack of optimism, observed in such individuals as a coping method can be regarded as an equivalent of disappointment in the revised theory of learned helplessness. People with such approach are not optimistic toward changes and do not accept others' help and support.

Cognitive behavioral therapy is aimed at reducing depression symptoms. Therapists initially identify patients' wrong and negative thoughts and help them recover from cognitive symptoms, achieve a comprehensive perception of their cognitive structure, and challenge and ultimately change the necessary aspects of their cognitive structure.

Results show that cognitive behavioral group therapy may result in significantly reduced depression in patients with coronary heart disease.

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