# The Effectiveness of Cognitive-Behavioral Therapy on Depression in Thalassemia Patients of Pasteur Hospital in Bam

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#### Abstract

One of the most important health challenges in the present age is the chronic diseases and paying attention to both physical and mental aspects of life quality. This study tries to investigate the effect of group therapy on the rate of depression in patients of Beta Thalassemia by considering the complications of this genetic disease including depression, lack of treatment, inclination to death and suicidal thoughts, imposing high costs to the families and health system of the country, the effect of group therapy in such diseases, the sensitivity of this disease and the lack of extensive research. The statistical population of this study consisted of 30 thalassemia patients referring to the special diseases center of Pasteur Hospital in Bam that were voluntarily interviewed. The Beck Depression Inventory (BDI-II) was available to all volunteers. The participants were randomly divided into two groups. The first group received cognitive-behavioral therapy and the second group did not receive treatment. Both groups took pre-test and post-test. Data were analyzed using SPSS and variance analysis. The results of this study showed that depression scores of the two groups were not significantly different before the intervention, but there was a significant. The depression scores before and after the intervention decreased significantly. While there was no significant difference in the control group (based on Fisher's exact test). The two groups of intervention and control were similar in terms of the distribution of depression severity before the intervention, and the test showed that the two groups were matched together. In addition, the intervention.

Keywords: Thalassemia, Cognitive-behavioral therapy, Depression

#### Introduction

Thalassemia is known as an abnormality due to incomplete hemoglobin production and severe cell death. Hemoglobin consists of four proteins, two of which are  $\alpha$  and the other two are  $\beta$ . The genetic mutation in the encoded gene of  $\beta$  in the protein results in a reduction or incompleteness of the  $\beta$  globin chain composition, leading to an abnormal hemoglobin or even a lack of  $\beta$  hemoglobin. This defect causes the abnormal development of red blood cells and ultimately anemia, which is known as thalassemia (Mazzone et al., 2009).

Thalassemia is a common genetic and chronic disorder that is associated with a wide range of serious psychological and clinical challenges and, like any chronic disease, affects the person's psychological state. There are currently around 3 million defective gene transducers in Iran, as well as about 25,000 people with Beta thalassemia, with the highest prevalence in the Caspian Sea and the Persian Gulf. Thalassemia is abundant in all parts of the country, with 10% in the Caspian and southern edges of the country and 4% -8% in the other parts of the population carrying the thalassemia gene (Naderi et al., 2013). Thalassemia is a chronic disease that causes a wide range of physical, mental and psychological problems in patients. The effect of thalassemia on physical health, such as physical changes, growth retardation, and delayed in sexual maturation, will cause many problems in these patients and may change their self-image (havorncharoensap et al., 2010). The chronicity of thalassemia is a great emotional problem that intensifies in every stage of growth. The complications of this disease are aggravated by age the patients become tired of it. There is a direct relationship between increased despair and increased pain and fatigue caused by chronic diseases in patients with cancer. The probability of having a specific pattern is

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the psychological and mental problems of thalassemia patients with the development of their disease over time (Shamsi et al., 2017; Rafii et al., 2016).

This disease has many limitations in the lives of patients and is potentially life threatening and causes significant disorders in patient's social and educational activities. Today, the disease has become a chronic disease and life expectancy has increased in these patients by using existing therapies and new drugs to improve iron control and early treatment (Caocci et al., 2012). However, repeated and prolonged use of drugs has had an impact on other aspects of the life of these patients and significantly effects on their general and mental health, and the life quality of these patients and their families (Kaheni et al., 2013).

Limitations in social activities, fears, pains, and concerns about diagnostic processes that are always stressful to thalassemia patients are a source of depression. Patients with thalassemia, as well as other chronic and debilitating diseases that require permanent and lifelong treatment, are associated with a variety of psychosocial, social and economic problems. Concerning mental health problems, researches have shown that there is concern and depression in 47% of patients, which has caused problems in self-care and psychosocial condition (Pakbaz et al., 2005).

Unfortunately, in recent years, despite the development of therapeutic methods of treatment and increased longevity of these patients, experts have diminished the psychosocial dimension of the disease, so that the assistance to these patients is largely limited to the provision of basic medical services for the preservation of life, and the psychological problems of patients have largely been ignored. While without complete understanding of the psychological factors involved in the disease, it is not possible to provide suitable treatment and rehabilitation to patients (Borgna-Pignatti, 2010).

In our country, there is no exact data on the prevalence of depression in adolescents with chronic diseases. In Turkey, in 2008, depression was reported in 27% of adolescents with chronic diseases.

Mohammadi et al. Showed that 18.8% of thalassemia patients suffer from depression and 94% suffer from anxiety and insomnia and 87.5% suffer from social impairment. This study showed that 87.5% of patients had mental disorders and 72.5% reported moderate quality of life (Zeighami et al., 22014). Other studies also found that patients with major thalassemia had more depression and mental disorders and had a poorer quality of life than healthy people (Ansari et al., 2014; Stallard et al., 2014).

One of the approaches to treatment of mood disorders and depression in cognitive-behavioral therapies has been introduced since the 1970s to treat a variety of depressed patients and its usefulness has been reported in several studies. The cognitive-behavioral approach emphasizes on central axis of recognition and it is a determinant factor in the processing information. Cognitive therapists involve patients intelligently and logically, and ask individuals to look at the assumptions that lead to depression and anxiety disorders. Cognitive behavior is the most standard intervention in treatment groups. The group has a similar problem and each has a role in the success and failure of the group. The criteria for entering the group include sufficient motivation and the capacity for empathy with the patient and sufficient personal power to suffer the disadvantages of others and the potential of self-esteem and disclosure. In these studies, their therapeutic effect has been or is reported to be superior to anti-depressant drugs (Beck, 1979, Blackburn, 1981, Tysdale, 1984). Other studies have identified the effect of cognitive therapy as equal or superior to treatment behavior (Zees, 1979; Wilson, 1983). Further studies have shown that cognitive-behavioral therapy is more effective than psychotherapy and analytical psychotherapy (Shipley and Fazio, 1973). This method can be effective in the treatment of anxiety, depression, fear, phobia (fear of crowded places and social fear), stress, overeating, obsessive-compulsive disorder, post-stress disorder, bipolar disorder and insanity. It can also be effective in cases where the person is experiencing problems such as lack of control over anger or nausea and even physical problems, such as fatigue and chronic pain (Kelleher et al., 2015).

Regarding the prevalence of depression disorder, which is a major component of hospital admissions in mental hospitals, individual psychotherapy cannot respond to this problem. Therefore, the experts of this approach have tried to use group therapy instead of psychotherapy that is more cost effective and time-consuming with cognitive-behavioral group therapy or rational-emotional group therapy (Yaeghoobi et al., 2003).

In this regard, various studies of cognitive-behavioral group therapy have been effective in decreasing the symptoms of depression and increasing self-esteem and has introduced it as a non-pharmacological effective way to increase self-esteem and improve its positive image in different people (Ermes et al., 2008; Gholami et al., 2017).

Aziznejad and his colleagues had a research on comparing the rate of depression in adolescents with thalassemia and healthy samples in Babol city. The test population consisted of 100 adolescents with thalassemia and the control group included 100 healthy adolescents who were randomly selected. Demographic characteristics and Beck depression test were used for collecting data. The findings showed that there was no significant difference between depression in adolescents with thalassemia and healthy adolescents. In addition, there

was a significant relationship between the degree of depression and the level of education and economic situation but there was no significant relationship with sex. They concluded that lack of significant difference could be due to their lack of knowledge about thalassemia and its consequences.

Although many studies on quality of life are available in patients with major thalassemia, most of these studies examine the quality of life or the differences between the quality of life of these patients and the control group and less attention is paid to psychological parameters such as depression, Anxiety and stress, which have an impact on the quality of life of patients (Ansari et al., 2011).

The findings of Gholami et.al studies about the effect of group training on the life expectancy and general competence of girls aged 15 to 18 years with  $\beta$ -thalassemia showed an increase in life expectancy and their general health (Gholami et al., 2017).

Mazzone et al., Arguing that cognitive-behavioral family therapy (CBFT) can be an effective psychological tool for children with  $\beta$ -thalassemia, increase the compatibility with the disease, improve the psychological burden of the illness and improve the quality of life of the infected ones. The thalassemia patients were evaluated for this purpose. 28 children with  $\beta$ -thalassemia and 28 healthy children were included in the intervention. The intervention group was tested under CBFT program for one year and by using the children's behavioral checklist (CBCL), the Children's Depression (CDI), Multidimensional Anxiety Scale for Children (MASC) and emotional scale, activity, sociability and shyness scale (EAS) was specifically evaluated by focusing on behavior, states and mood characteristics, and adaptation to the treatment process (Mazzone et al., 2009; Yengil et al., 2014).

In his research, Kazemian et.al examined the effect of cognitive-behavioral therapy on the reduction of aggression in thalassemia patients. In this research, pretest, posttest and control group were checked. The sample consisted of 30 patients in Bojnourd, which was randomly selected among volunteers. Participants were randomly divided into two groups. The first group received cognitive-behavioral therapy and the second group did not receive treatment. Both groups had pre-test, post-test and one-month follow-up. The instrument was Bass Perry's (1992) aggression questionnaire. The results indicated that there was a significant correlation between the test group receiving the treatment and the control group that had not been treated for aggression reduction. The results showed that the highest scores of aggression (110.75) were in the test group in the pretest, while the mean aggression score in this group was lower (66.12) in posttest (Kazemian et al., 2017). As previous studies have shown, cognitive-behavioral group therapy sessions have a positive effect on reducing anxiety, depression and increasing hope. The results of this study show the necessity of using psychological therapies along with commonly used drug treatments for patients.

One of the most important health challenges in the present age is chronic diseases and attention to quality of life in terms of their physical and mental characteristics. It is worth considering the complications and results of genetic disease of major thalassemia, including depression, followed by non-adherence to treatment, inclination to death, the effects of group therapy on some chronic diseases, and the sensitivity of this disease and the lack of extensive research in this regard, this study attempts to investigate the effect of group therapy on the rate of depression.

#### **Materials and Methods**

The present study was an experimental study - a clinical trial. The research population consisted of all thalassemia individuals referring to the special centers of the special diseases of Pasteur Hospital in Bam who referred to the center for receiving health care services.

The statistical population of this study was thalassemia patients referred to the specialist hospital of Pasteur in Bam and voluntarily interviewed. The Beck Depression Inventory (BDI-II) was available to all volunteers. They were filled up the checklist and then were included in the study according to entry criteria (with Major Thalassemia or Intermedia on the basis of medical diagnosis and tests in the case, living in Bam or the surrounding villages, having more than 13 years of age, having reading and writing skills, being able to cooperate and participate at all sessions of the treatment group) and exit criteria (having no entry criteria, earning a score of over 31 from Beck Depression inventory, a history of admission to psychiatric centers due to psychiatric disorders such as addiction, general anxiety, etc., as well as lack of cooperation and unbridled participation in educational sessions).

Samples were randomly divided into two experimental and control groups and the test group received training in group therapy for 8 sessions of 90 minutes. Meetings were delivered in a lecture, a question and answer, and at least 10 minutes in a group discussion. The training team included a senior clinical psychologist and therapist, and Filled by them after the training sessions of the Beck Depression Questionnaire. At the same time, the second group who had not received any training filled out the Beck Depression Inventory again and eventually the effect of group therapy on the depression of thalassemia patients in the first group who trained were compared to the second group without training. The effect of group therapy on the level of depression in patients with thalassemia and its relation with demographic factors in terms of gender, age, education and so on job, place of residence and marital status were compared.

In this research, taking into account the loss of samples, 30 of the referring patients to the special center of such diseases in Pasteur Hospital were selected using a sampling method. For the admission of this study, the questionnaires of thalassemia patients referring to the special center for the diseases in Pasteur hospital were to be consulted, followed, treated and filed. The number of participants who gained a score of 31-8 were selected by random sampling and were divided into test and control groups. In this study, the Beck Depression Inventory (BDI) questionnaire were used:

The Beck Depression Inventory (BDI) was first developed in 1961 by Aaron Beck, Becquard, Mendelssohn, Marc and Arbab. Validity of this questionnaire was reviewed and documented respectively in 1971, 1979, 1985, 1986. The Beck Depression Scale is a self-report scale. The questionnaire describes cognitive, emotional, and behavioral symptoms of depression and its defined symptoms of depression, including sadness, guilty feelings, loss of interest, social deprivation, and social responsibility (30, 31) and includes 21 questions of four options that are based on Likert scale (3-0), the zero score means mental health and score 3 means acute and severe disorder. The total score of an individual from all questions is a range of (0-57). Table 1 shows the classification of depression according to the Beck questionnaire score.

Depression level	Beck score
natural	0-9
Insignificant	10-14
slight	15-20
medium	21-30
sever	31-40
Very sever	41-57

Table 1. Classification of depression according to Beck questionnaire score

In a research conducted by Rossman, the Beck Dependency Score, as compared with the diagnosis of depression, was 0.87 and 0.75, compared with the Hamilton scores. The specific research was done by tattooing on the internal consistency of the Beck Depression Scale. In studies conducted by Darwishi et al. (35), as well as a study by God et .al, the Beck Depression Scale has been estimated at 0.85 in outpatient psychiatric patients.

In this study, the independent variable of group therapy training were the dependent variable of depression. In addition, demographic characteristics of the sex, age, education level, occupation, place of residence and marital status were investigated. The data of this research were collected, coded and entered into the computer by SPSS software version 20 were used descriptive statistics (percentages, ratio, mean and standard deviation), and statistical tests of independent covariance, independent t- test and paired t-test and data analysis.

# Result

In this study, 30 Patients with major Thalassemia who were referred to the center of special diseases of pasteur hospital in Bam, located in southeastern Iran were studied. the participates were divided into 2 groups of equally. the mean age of the studied units was 22.56 years with a standard deviation of 3.82 years. Minimum age was 17 and maximum was 31 years. In the intervention group, the mean and standard deviation were  $23.4 \pm 4.32$  years and  $21.33 \pm 3.10$  years in the control group. Independent t-test showed no significant difference in age between two groups (t = 1.20, df = 28, p = 0.24, CI = -1.17 to 4.50). Among the units (60%), 18 were female and (40%) were 12 men. The number of men and women in the two groups was the same. In each group, there were 6 men and 9 women. In each group, there were one marital people and the rest were single people. About 80% of the people in each group lived in the village and only two of the participants in each group had jobs.

The results of this study showed that there was no significant correlation between the demographic characteristics (gender, age, education level, occupation, place of residence and marital status..) and scores of any questions before and after the intervention (p > 0.05).

The Comparison of scores before and after depression showed that the depression scores of the two groups did not differ significantly before the intervention (p> 0.05). However, after the intervention, there was a significant difference between the two groups (p <0.05). The difference in the scores of the two groups was statistically significant (Table 2)

Based on the results of obtained, the two groups of intervention and control were similar in terms of distribution of depression severity before intervention. Fisher's exact test also showed that the two groups were similar (p = 0.55).on the other hand, the intervention group had less severity of depression than the control group and Fisher's exact test showed that the two groups were different after the intervention (p = 0.01).

Group	control		intervention		Indopendent T. Test	
Depression score	deviation	mean	deviation	mean	independent i Test	
Before	12.87	26.80	8.12	29.86	t=0.77,df=28, p=0.44	
After	10.46	28.20	8.61	15.00	t=-3.77, df=28, p=0.001	
The difference of score	4.53	1.40	7.73	-14.86	t=-7.02, df=28, p<0.001	
Paired T Test	t=-1.19,df=14, p=0.25		t=7.44, df=14, p<0.001			

Table 2. Comparison of scores before and after depression of two nodes using paired T-test and Independent T- test

Based on the results of the Fisher's exact test also showed that the two groups of intervention and control were similar in terms of distribution of depression severity before intervention However that the two groups were different after the intervention and the results showed the intervention group had less severity of depression than the control group (table 3).

Depression level	Pre Te	est	Post Test		
	control	intervention	control	intervention	
	percentage	percentage	percentage	percentage	
natural	0	0	0	20	
insignificant	13.3	0	0	26.7	
mild	20	13.3	20	33.3	
medium	33.3	40	46.7	13.3	
sever	13.3	33.3	20	6.7	
Very sever	20	13.3	13.3	0	

Table 3. Comparison of severity of depression between two groups before and after intervention

# **Discussion and Conclusion**

The results of the research show that there was no significant correlation between age and scores of any of the subjects before and after the intervention by Spearman correlation test. The results also showed that there was no significant correlation between gender and scores of any one of the subjects before and after the intervention by Spearman correlation test.

The results also show that there was no significant correlation between the marital status and the scores of any one of the subjects before and after the intervention by Spearman correlation test.

The results of the study showed that the depression score of the control group at the beginning of the study was 26.87 with a standard deviation of 12.86. In addition, the depression score of the experimental group after intervention was equal to 20/28 with a deviation of 10.46. If observed, the mean score of depression after intervention was 1.40 in the experimental group, compared with the previous intervention. T-test showed that this difference is statistically meaningless. There was no significant difference between depression scores before and after the intervention (p = 0.44).

The results of the study showed that the depression score of the experimental group before the intervention was 29.86 with a standard deviation of 12.28. The depression score of the experimental group after intervention was equal to 0.15 with a standard deviation of 8.61. If observed, the average depression score after intervention was 14.86 in the experimental group, compared with the previous intervention. The t-test showed that this difference is statistically significant. There is a significant difference between the depression scores of the experimental group before and after the intervention. (p = 0.001).

The results showed that depression scores before and after intervention were significantly decreased in the intervention group (p < 0.05) while there was no significant difference in the control group (p > 0.05).

The results of the research showed that depression scores of the two groups were not significantly different before the intervention (p> 0.05) but after intervention, there was a significant difference between the two groups (p < 0.05). The difference in the scores of the two

groups was statistically significant (P <0.05) the results showed that depression scores before and after intervention were significantly decreased in the intervention group (p <0.05), while there was no significant difference in the control group (p > 0.05).

Based on Fisher's exact test, the two groups of intervention and control were similar in terms of frequency distribution of depression before intervention, and the test also showed that the two groups were similar (p = 0.55). In addition, the intervention group had less severity of depression than the control group and Fischer's exact test showed that the two groups were different after the intervention. (p = 0.01). This study, as well as many previous studies, has been effective in treating cognitive-behavioral group therapy in decreasing depression and increasing self-esteem and introducing it as a non-functional efficacious way of increasing self-esteem and improving its positive image in different individuals.

This research, as well as the research by Kayani et al. (2010), showed that cognitive-behavioral group therapy could be an effective factor in the acceptance of treatment along with continuing education and social activities in thalassemia patients. In a study by Kayani et al. The effect of cognitive-behavioral group therapy on increasing self-esteem, decreasing disappointment and the relationship between reduction of frustration and self-esteem in patients with thalassemia in Bushehr province confirms the results of the present study.

This research investigates the results of Ashrafzadeh's (2007) study that cognitive-behavioral group therapy can change its sense of worth, reduce its negative image in thalassemia patients, and affirm the problems and consequences of depression in thalassemia patients. The results of this study were compared with Hosseini et al. (2008), which compared the mental health of patients with  $\beta$ -thalassemia major with control group and showed that there is no significant relationship between gender and age with depression level.

Also, the results of this research were confirmed by other studies such as the effect of cognitive-behavioral group therapy on the treatment of post-traumatic stress disorder in women (Nagawitz, Vis and Lease, 1996), depressed patients (Patterson and Hallistid, 1998) control of anger disorder after impacting stress (Rayleigh, Clarke, Cooper, Lewis, and Sorensen, 1994), and reducing the anxiety and depression of patients. Mofat et al. (1995) reported it's beneficial.

The results of Pedram et al. (2013) evaluated the effectiveness of cognitive group therapy on anxiety and depression and hope in women with breast cancer. The treatment group significantly reduced depression, anxiety and hopefulness in the experimental group compared with the control group, but no such changes were observed in the control group.

The major limitation of the research is the small size of the sample. Although research in a sample of 30 respondents satisfies the sample size requirements for parametric tests, the generalization of the results of the larger sample will be more accurately taken. Since the use of group cognitive therapy is costly and time-consuming, testing with a larger sample will be difficult. It is also difficult for participants to justify continuation of the study.

The results of this study indicate the necessity of using psychological therapies alongside common drug treatments for patients.

Thalassemia, as it was said, is a chronic disease that causes a wide range of physical, mental and psychological problems in patients. Thalassemia causes many constraints in patient's life and causes significant disturbances in patient's social and educational activities. Most of these patients suffer from mental disorders due to repeated therapies, due to their poor adaptation to the illness and its treatments. In this study, cognitive-behavioral therapy interventions in depressed patients with thalassemia can lead to more adaptation and acceptance of treatment, and by correcting their misconceptions about medical treatment or complications of the disease; it can be difficult to reconcile them. This study suggests that people with chronic diseases, if they have a positive opinion of themselves, find a better filling for the disease and in these patients, if there is a sense of uncertainty about the new identity, the methodology group behavior can be effective in treating depression. Group discussion is an effective factor in improving the mental image of adolescents with thalassemia.

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