Razavi Int Med. 2022 September; 10(3):e1141 doi: 10.30483/RIJM.2022.254311.1141

Published online 2022 September **Original Article**

Efficacy of Cognitive Behavioral Therapy on Body Image, Psychological Distress, and Eating Disorder Beliefs in Patients with Anorexia Nervosa

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Received 2021 August 08**; Accepted** 2022 May 23

Abstract

Background: Anorexia nervosa is a refusal to maintain the lowest normal body weight, a severe fear of weight gain, and a significant impairment in body image.

Objectives: The purpose of this study was to evaluate the impact of cognitive behavior therapy on anorexic patients' psychological distress, body image, and eating disorder beliefs in anorexic patients.

Methods: This was a semi-experimental study based on a pre-test, post-test, and follow-up design with a control group. The statistical population of the study included patients with eating disorders who were referred to obesity treatment centers in Tehran, from whom 30 patients were selected using a purposeful sampling method and were randomly assigned to two groups of experiment and control. Before the intervention, the Eating Disorder Beliefs Questionnaire was used as a pre-test. After then, the experimental group received the intervention (no intervention was carried out on the control group). The Body Image Concern Inventory, Psychological Distress Questionnaire, and Eating Disorder Beliefs Questionnaire were used to gather the data. Multivariate covariance analysis was used to examine the data using the SPSS program (Version 22).

Results: According to the findings, cognitive behavior therapy helped anorexic patients with their psychological distress ($P<0.001$), body image issues ($P<0.001$), and eating disorder beliefs ($P<0.001$), respectively.

Conclusion: It is evident that cognitive behavior therapy helps anorexic patients by lowering psychological discomfort, issues with their bodies, and ideas about eating disorders.

Keywords: Cognitive behavioral therapy, anorexia nervosa, body image, eating disorders

Introduction and Objectives

Eating disorders are chronic mental illnesses (1). The prevalence of anorexia nervosa among women are about 2% (2). Anorexia and neuroticism can cause premature death and raise the risk of psychopathological and medical issues (3). The origin of eating disorders has been linked to a number of variables, including biological factors (4), sociocultural factors (5), personality disorders and streaks (6), cognitive schemas and fundamental beliefs (7), and family dynamics variables (8)

One can mention body image and how these people view their bodies among the many elements that influence anorexia nervosa (9). Body image issues are prevalent in women and girls. A person with a negative body image may feel unattractive and dissatisfied with their appearance. In the end, it may lead to a dysfunctional obsession with a bodily part's appearance. Body image issues can lead to both physical and mental health issues for the person (10). Dissatisfaction with body image is a good sign for the prediction of the likelihood of a long-term eating disorder. Dissatisfaction with one's body image is an essential prerequisite of eating disorders. Negative emotions including despair, loneliness (isolation), low self-esteem, and an obsession with weight loss are more common in those who have a poor opinion of their bodies and a negative mental image (11). According to research, women are already quite susceptible to developing eating disorders (12).

One of the key factors in anorexia is psychological distress. Psychological distress is a distressing mental condition that includes despair, anxiety, and stress along with emotional and physical symptoms (13). Research has shown that people with higher psychological distress are exposed to stressful situations and do not express their avoidance behaviors or feelings. They persist in their avoidance behaviors to rapidly reduce their distress and present them as physiological experiences, thoughts, and memories (14).

There are many theories about the development of the eating disorder. Cognitive-behavioral method is one of the most effective therapeutical method for eating disorders (15). According to Ellis's intellectual-emotional pattern, behaviors and cognitions create negative body image in patients with eating disorders. Distress about body image is a result of irrational thoughts, unrealistic expectations, and misinterpretations (16). This approach assumes that non-functional beliefs and psychological concerns come from the individual's early experiences. A cognitive model of eating disorders

suggests that self-loathing beliefs are the key to the development of an eating disorder and are the results of childhood experiences, such as parental negligence or indifference (17). Core beliefs and schemas have a crucial role in the emergence and persistence of eating disorders, according to cognitive-behavioral theories of eating disorders. These convictions develop as a result of early or later life experiences. Although this issue can be examined from a variety of perspectives and areas, self-related ideas are frequently believed to be crucial to psychopathology (18).

Finding one's basic ideas and cognitive schemas is a controversial but crucial idea when it comes to the function of cognition in eating disorders. According to what was claimed, the purpose of this study was to evaluate the impact of cognitive-behavioral therapy on anorexic patients' psychological distress, body image, and eating disorder beliefs.

Objectives

The purpose of the current study was to evaluate the impact of cognitive behavior therapy on psychological distress, perceptions of one's body, and beliefs about eating disorders in anorexic patients.

Methods

This study was semi-experimental and used a control group, pre-test, and post-test design. Patients with eating problems who were referred to obesity treatment facilities in Tehran made up the statistical population of the study. From this group, 30 patients were chosen using a purposive sampling technique and randomly assigned to two groups: experiment and control. Following the initial sampling, patients were screened for body mass index (BMI) since nerve anesthetics was one of the inclusion criteria in this study. It should be noted that anorexia nervosa patients are in the category of BMI≥17kg/m^2<19kg/m^2. The sampling method was purposeful so that by referring to the obesity treatment centers and receiving the records of patients, those with anorexia disorder were nervous. According to DSM-5, that is the criteria for the diagnosis and classification of mental disorders, anorexia neurological patients were classified into four groups in terms of body mass index, including mild (BMI>17kg/m^2), moderate (BMI>1 kg/m^2), severe (BMI>15-99.15kg/m^2), and very severe (BMI>15kg/m^2). In this study, patients with BMI>17kg/m^2 were considered for anorexia nervosa. Inclusion criteria in this study include the existence of an eating disorder based on relevant criteria mentioned in DSM-5 and the age range of 16-23 years. However, patients with other psychiatric disorders associated with eating disorders and those older than 23 years were excluded from the study. The experimental group participated in 12 weekly sessions of cognitive-behavioral therapy with a focus on eating disorders. The post-test was performed after the end of the treatment sessions, and a follow-up test (re-run of the test) was carried out three months after the end of the treatment.

Ethical Considerations

This article took all ethical standards into account. The participants were informed of the study's objectives and its implementation phases. The participants gave their signed agreement after being promised that their information would be kept confidential. Additionally, participation in the study was voluntary, and individuals were free to discontinue at any time. Participants would have access to the study's findings upon request. This piece was taken from a psychology doctoral dissertation at Ahvaz, Iran's Islamic Azad University. The study protocol was approved by the Ethics Committee in the Islamic Azad University of Ahvaz, Ahvaz, Iran (IR.IAU.AHVAZ.REC.1398.014).

Eating Disorder Beliefs Questionnaire (EDBQ): Cooper et al. created this questionnaire in 1997 as a self-evaluation tool for analyzing one's fantasies and ideas about eating disorders. This instrument's English version includes four subscales and 32 items: Weight and shape acceptance by others (9 items), weight and shape acceptance by oneself or self-acceptance (6 items), poor self-confidence (11 items), and binge control are the top four (6 items). The options of this questionnaire determine the attitude of individuals on each question based on a scale that is scored from zero (not at all) to 100 (completely true). The results of the psychometric analysis confirmed the high internal consistency of this questionnaire. Moreover, the correlation of the subscales of this questionnaire (0.74 to 0.17) with each other and the whole scale indicated the appropriate validity of this tool. The validity of this test was obtained by Cronbach's alpha coefficient method for each factor that was between 0.86 and 0.94. There was a significant correlation between eating disorder beliefs questionnaire and Rosenberg self-esteem test (correlation range from 0.36 to 0.71) (19). The internal consistency coefficient of this questionnaire was obtained at 0.88, based on Cronbach's alpha method.

Psychological Distress Questionnaire: This 10-item questionnaire, which assesses the mental state of the patient during the last month, was developed by Kessler et al. in 2003. This questionnaire was scored based on a 5-point Likert scale (from 0=no time to 4=all times up), and the minimum and maximum total scores were 0 and 40, respectively. One example of the questions in this scale is: "Did you often feel tired for any good reason in the last four weeks?". Lotfi Kashani et al. (20) reported the reliability of this questionnaire at 0.80, using Cronbach's alpha method. The internal consistency coefficient of this questionnaire was obtained at 0.79 using Cronbach's alpha method.

Body Image Concern Inventory (BICI): This questionnaire has been developed by Littleton et al. in 2005 (21). This is a 19-items questionnaire and the respondents should respond to its items on a 5-point Likert scale ranging from 1 to 5. The validity and reliability of this questionnaire were calculated on

Samples of students. The reliability of this questionnaire was obtained at 0.93 using Cronbach's alpha method and the correlation was between 0.32 and

0.73. This correlation indicates the acceptable reliability level of this test. By evaluating the correlation between the body image scale and the self-reporting scale of physical dysmorphic disorder (r=0.83), the validity of this questionnaire was validated (21). Using the Cronbach's alpha approach, the reliability of this questionnaire in Iran was reported to be 0.93 for males, 0.95 for females, and 0.95 overall (22). Using Cronbach's alpha, the internal consistency coefficient for this questionnaire was calculated to be 0.83.

The cognitive behavior treatment program for eating disorders, which is presented in Table 1, served as the basis for the sessions' content.

Table 1. Summary of cognitive-behavioral therapy

Session	Content
1-3	Establishing therapeutic relationships, teaching cognitive-behavioral principles, investigating the type of concern
4-5	Helping patients understand the relationship between compensatory weight-loss behaviors and identifying unavoidable binge eating situations
6-8	Cognitive restructuring (as the session objective)
9-10	Improving orientation toward problems and training in the problem-solving process
11	Addressing the persistent factors of eating disorder
12	Reviewing the previous sessions and preparing to face real-life problems at the end of treatment

Multivariate covariance analysis was used to analyze the inference. The above analysis was carried out using SPSS software (version 22).

Results

The mean±SD age in the experimental and the control groups was 19.53±2.72 and 20.13±2.55, respectively. There was no significant difference between the two groups in terms of gender, education, and marital status (Table 2).

Table 2. Frequency distribution and comparison of demographic characteristics

Demographic Variables		Cognitive behavior therapy		Control		P-value
		Frequency	Percentage	Percentage	Frequency	
Gender	Male	8	53.3	8	53.3	**0.37**
	Female	7	46.7	7	46.7	
Education	Under diploma	3	20	2	13.3	**0.12**
	Diploma and Associate	7	46.7	4	26.7	
	B.A.	5	33.3	5	3.3	
	M.A.	0	0	4	26.7	
Marital status	Married	8	53.3	4	26.7	**0.26**
	Single	7	46.7	11	73.3	

The two groups of experiment and control are the same in terms of gender distribution and education, as indicated by the significance level higher than 0.05 (Table 2).

Table 3. Mean (SD) of study variables in the experimental and control groups

Variable	Group	Pre-test		Post-test		Follow-up	
		M	SD	M	SD	M	SD
Eating disorder beliefs	CBT	52.66	5.10	47.20	4.60	46.46	4.54
	Control	54.13	5.50	53.93	5.41	53.93	5.41
Psychological distress	CBT	16.80	1.65	14.80	1.14	15.13	1.30
	Control	15.40	1.45	14.60	1.12	15.13	1.40
Body image concerns	CBT	45.13	7.72	42.00	7.46	41.46	7.52
	Control	41.46	4.29	42.13	4.54	41.60	4.50

The inferential findings of the study were analyzed using Leven's test, Kolmogorov-Smirnov test, and multivariate covariance analysis test with an error level of 0.05 and presented for all variables studied in Table 4 and Table 5. Therefore, the distribution of data related to research hypotheses was normal and the default

Normality of the data was confirmed. Subsequently, the variance analysis test was conducted as well. The

results also showed that the F value of Leven's test (equality of variances) for all variables was not significant at 0.05. Accordingly, there was no significant difference between the variances of the scores of the study variables in both experimental and control groups and homogeneity of the variances of the scores of study variables was confirmed in both experimental and control groups. M box test was used to investigate the default homogeneity of dependent variable quartets (i.e., post-test scores and follow-up scores) in both groups. As can be seen above, the default homogeneity of covariance was established for the research variables.

Multivariate quartet analysis was used to investigate the difference among the scores of psychological distress, body image, and eating disorder beliefs in both groups of the experiment (cognitive-behavioral therapy) and control. The results of the M box and Leven's tests were evaluated before the conduction of the multivariate covariance analysis test to observe the study assumptions. The homogeneity of matrix-variance-covariance was correctly established because the M box test did not show any significance for any of the research variables (Box's M=23.98; df=20, P<0.05). Additionally, Levene's test's insignificance of all variables showed that the requirement of equality of intergroup variances was satisfied and that the variance of the dependent variable error was the same across all groups.

Table 4. Results of multivariate analysis of covariance test

Effect	Test	Value	F	Df hypothesis	Df error	P	Eta2
Group	Pillai's Effect	0.92	10.90	6	76	0.001	0.46
	Wilks Lambda	0.07	31.77	6	74	0.001	0.72
	Hotelling Effect	11.74	70.49	6	72	0.001	0.85
	Roy's largest root	11.74	148.76	3	38	0.001	0.92

Based on the data presented in Table 4, the significance levels of all tests were statistically significant at the significance level of 0.001, suggesting that there is a statistically significant difference between the cognitive-behavioral groups and the control group in terms of psychological distress, body image, and eating disorder beliefs. The Wilks Lambda test indicated a significant difference between the two groups of experiment and control in terms of psychological distress, body image, and eating disorder beliefs (P 0.001) with a value of 0.07 and F=31.77.

Table 5. Multivariate covariance analysis for the comparison of pre-test and post-test in the experimental and control groups

Source of effect	Variables	SS	df	MS	F	P	η^2
Group	Psychological distress	564.19	1	564.19	52.47	0.001	0.61
	Body Image	311.25	1	311.25	18.84	0.001	0.29
	Eating disorder beliefs	74.82	1	74.41	7.88	0.001	0.12

The results of Table 5 indicate that cognitive-behavioral therapy was effective on one's psychological distress (F=52.47, P<0.001), body image (F=18.84, P<0.001), and eating disorder beliefs (F=7.88, P<0.001). The results of the Bonferroni test for the investigation of the difference between pre-test, post-test, and follow-up stages suggested that there was a significant difference between pre-test and post-test stages in the group of experiments in terms of psychological distress, body image, and eating disorder beliefs. Furthermore, there was a significant difference between the pre-test and follow-up stages. However, the difference between post-test and follow-up stages was not statistically significant, indicating the persistence of the effect of cognitive-behavioral therapy after three months of its implementation.

Discussion

In this study, it was determined whether cognitive-behavioral therapy for anorexic patients reduced psychological distress, negative body image, and views about eating disorders. Cognitive-behavioral therapy improved psychological distress in anorexic patients. The results obtained in this study were in line with the results of the studies conducted by Frostad et al. (23), Jenkins et al. (24), and Fairburn et al. (25).

Based on the obtained results, it can be said that the adoption of a cognitive-behavioral approach for the treatment of patients with anorexia, who often suffer from cognitive errors as well as irrational and destructive beliefs in their lives, leads to patients' increased awareness of irrational beliefs. Moreover, the application of training sessions and assignments outside the sessions can correct the wrong beliefs that reduce self-care behaviors, well-being, and hope indicators and increase psychological distress in patients with anorexia. Correction of irrational beliefs, and unreasonable expectations in patients with anorexia nervosa increased self-care behavior, well-being, and hope indicators and increased recognition of positive aspects of each other's behavior (26). The effectiveness of the cognitive-behavioral approach on increasing psychological distress in patients with anorexia nervosa can be explained by the fact that the skills of patients' caring behaviors are the result of their beliefs, thoughts, behaviors, and actions and is related to their past decisions and practices. Cognitive-behavioral training has its emphasis on the importance of acquiring skills and using these skills during training, in addition to working on negative

thinking and learning effective behavioral methods as valuable resources and tools in life. Disapproval provides them with some kind of self-awareness (27). Followers of the cognitive-behavioral approach believe that some common mental errors can impair one's interpretation and perception of reality and lead to inappropriate moods and behaviors. Therefore, the application of the cognitive-behavioral training method on patients with anorexia can be effective in the reduction of their psychological distress, depending on their ability to clarify, modify, and convey their thoughts, feelings, needs, and desires effectively. Cognitive-behavioral therapy can enhance the communication skills of anorexic patients, such as their verbal and nonverbal skills. The improvement of social skills and self-efficacy increases positive self-confidence in the person and decreases negativity which in turn leads to a decrease in the patient's psychological distress.

Cognitive-behavioral therapy affects the body image of patients with anorexia. The results were in line with the findings of a study conducted by Frostad et al. (23) and Jenkins et al. (24).

In the explanation of this finding, it can be said that cognitive-behavioral therapy increased one's stubbornness, flexibility, self-repair ability, and triumphant attitude to unpleasant life events which in turn led to the patient's higher sense of value (28). It can be said that cognitive-behavioral group therapy increased the focus on coping skills in patients with anorexia and provided peace of mind to patients in challenging situations. In this type of group treatment, the members of the group play the role of persons who are involved with different problems and this way they strengthen their feedbacks and practice different strategies for handling those problems. Through this approach, patients overcome their fears, find mental relaxation, and grow emotionally and cognitively. Moreover, cognitive-behavioral group therapy increases one's control over stressful events in life and the ability to take responsibility. It also improves the body image of patients with anorexia.

Cognitive-behavioral therapy affected eating disorder beliefs in anorexic patients. The results were in line with the findings of Frostad et al. (23) and Jenkins et al. (24).

In the explanation of this finding, it can be said that patients with anorexia have eating disorder beliefs that affect different aspects of their family, occupational, and social life, and although they know that these thoughts and actions are irrational and useless, they cannot stop them and suffer from eating disorder beliefs. According to self-regulatory executive dysfunction theory, psychological disorders of patients with low hope persist when they start to ruminate in difficult situations, such as situations that require communication with others. However, in this study, it was observed that cognitive-behavioral group therapy is effective in increasing patients' hope (28). This type of treatment was effective in increasing hope in response to physical-psychological threats, negative events, severe depressive symptoms, high stress, impaired low focus. Therefore, patients could avert their attention from disturbing environmental stimuli and negative thoughts, since they had learned how to identify and self-monitor their dysfunctional and irrational beliefs and substitute them with proper and positive beliefs and ideas. Cognitive-behavioral group therapy decreases the irrational reaction of patients to physical and psychological threats; therefore, eating disorder beliefs decrease in anorexic patients, compared to those in the control group (29). Cognitive-behavioral group therapy is effective in improving eating disorder beliefs in patients with anorexia which in turn reduces negative thoughts and emotions and strengthens negative beliefs.

Regarding the limitations of the present study, one can refer to the fact that the results are limited to patients with anorexia. Furthermore, the degree of honesty of respondents in answering the questionnaires' items has been one of the uncontrollable limitations. The test conditions and the fact that participants had to give multiple responses to a questionnaire (pre-test and post-test) may have affected the subjects, their accuracy, and accountability. It is suggested that this study should be conducted in other sample groups, and the results evaluated and compared with the results of the present study. It is suggested that this study be followed up as individual counseling after the group training. Considering the effect of cognitive-behavioral therapy on the psychological distress, body image, and eating disorder beliefs of patients, it is suggested that psychologists use cognitive-behavioral therapy more extensively in groups. Eventually, it is recommended that the Ministry of Health and Welfare organizations, hospitals, and Organization of Psychology and Counseling should implement cognitive-behavioral therapy workshops and this way help psychologists, physicians, and nurses be more familiar with the concepts of cognitive-behavioral therapy.

Conclusion

According to the results, cognitive-behavioral therapy is useful for reducing psychological distress, body image issues, and eating disorder beliefs in anorexic patients. It can also be utilized to address these issues in these patients.

Funding

The authors declare that they received no funds/grants from any institute or organization in the public or private sector.

Conflict of interest

The authors declare that they have no conflict of interest regarding the publication of the present study.

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