

# The Effectiveness of Acceptance and Commitment Therapy on Improving Self-concept, Depression, and Anxiety in Obese Women

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## Abstract

**Aims:** Obesity can be considered as one of the most complex causes of psychological disorders. Various treatments have been performed to reduce the severity of the disorders in people with obesity. The aim of this study was to evaluate the effectiveness of acceptance and commitment therapy (ACT) on improving self-concept, depression, and anxiety in obese women. **Materials and Methods:** The present study was a quasi-experimental (pretest and posttest design with control group). The statistical population of the study included all obese women referred to psychological clinics in Mashhad in 2019. Twenty-four obese women were evaluated. Twelve women in the experimental group received eight sessions of ACT and the other 12 women in the control group (waiting list) did not receive any intervention. The results of Beck's self-concept, depression, and anxiety scales were analyzed by multivariate analysis of covariance (MANCOVA). **Findings:** The results of MANCOVA showed that ACT on the level of self-concept and its components (assessment of mental ability, job efficiency, attractiveness, and social skills) as well as reducing the severity of depression and anxiety is effective ( $P < 0.001$ ). **Conclusion:** The ACT can be effective as an appropriate intervention to increase the positive assessment of self-concept and reduce the severity of depression and anxiety in obese women. The implications of the study are discussed.

**Keywords:** Acceptance and commitment therapy, anxiety, depression, self-concept obesity

## INTRODUCTION

According to the World Health Organization, obesity or overweight is considered as an excessive accumulation of fat in the body, which can be associated with health risks.<sup>[1]</sup> Recent studies examining the prevalence of obesity show that one-third of the world's population is obese or overweight.<sup>[2]</sup> Also in Iran, a review study showed that approximately 12.3% of the population are obese and this case is more common in women (14%) than men (10.7%).<sup>[3]</sup> Other studies have shown that in Iran, the prevalence of women with obesity is higher than men. Less physical activity and cultural restrictions are the most important reasons for this gender difference.<sup>[4]</sup>

Obesity is known as the sixth risk factor for various physical and

psychological disorders.<sup>[5]</sup> Several psychological consequences such as depression, anxiety, low self-esteem, and motivation problems are among the factors that seriously damage the self-concept of these people.<sup>[6]</sup> Self-concept is related to how one perceives one's characteristics physically, psychologically, and socially. According to Beck's theory, negative knowledge about oneself, the world and the environment determine one's psychopathology. Beck developed the concept of self-concept to evaluate one's attitudes about oneself.<sup>[7]</sup> Self-concept as a dynamic concept can affect how values are perceived.<sup>[8]</sup> In

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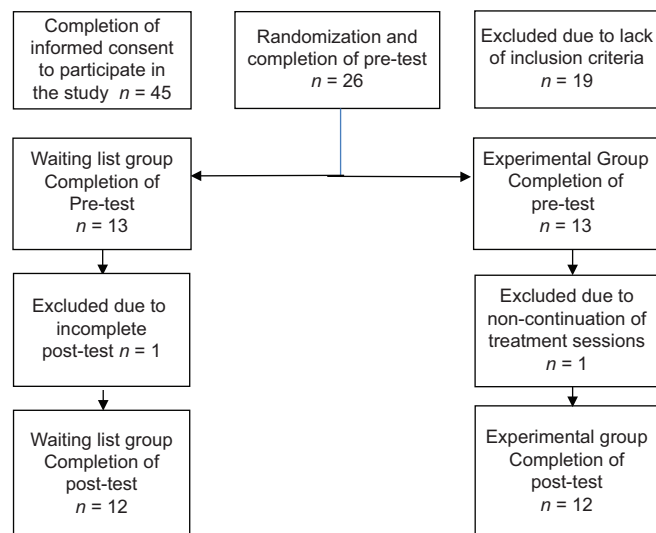
this regard, if the self-concept of people with obesity can be improved, we can expect to see other positive psychological consequences and improve the quality of life of these people. Various psychological interventions have been performed to improve the problems experienced by people with obesity, including cognitive behavioral therapy,<sup>[9]</sup> transdiagnostic treatment,<sup>[10]</sup> and compassion-based group interventions.<sup>[11]</sup> Performing different treatments for people with obesity is very challenging because the treatments used to solve one problem may exacerbate another.<sup>[12]</sup>

Acceptance and Commitment Therapy (ACT) with changes in some concepts of cognitive behavioral therapy is one of the third wave psychological therapies derived from the new theory of cognition and language.<sup>[13]</sup> The main purpose of ACT is to increase psychological flexibility and reduce experiential avoidance.<sup>[14]</sup> In this treatment, experiential avoidance is identified as an effective factor in self-concept and psychological disorders, which in people with obesity can also be a maintenance factor for negative self-concept and psychological problems.<sup>[15]</sup> A study showed that people with obesity have less psychological flexibility than people with balanced weight.<sup>[16]</sup> Findings Berman *et al.* suggest that self-acceptance intervention (Accept yourself!) can significantly improve depression and the quality of life associated with obesity, even up to 3 months after the end of the intervention (follow-up phase) was also permanent.<sup>[12]</sup> Dokaneheefard showed that ACT can be effective in motivating to lose weight and improve the body image of people with obesity.<sup>[17]</sup> These cases suggest that ACT may be effective in the self-concept and psychological problems of these people.<sup>[18]</sup>

A review of the research literature shows that many studies in the field of psychopathology and effective interventions have been conducted in different countries for people with obesity, but few studies have shown the effect of ACT on self-concept and the psychological disturbances of obese Iranian women. Therefore, the aim of this study was to evaluate the effectiveness of ACT on improving self-concept and severity of depression and anxiety in a population of obese Iranian women.

## MATERIALS AND METHODS

The present study is a quasi-experimental (pretest and posttest design with a control group). This study is a randomized controlled trial with an experimental group receiving ACT and a control group receiving no intervention (Waiting list). The statistical population of the study included all obese women referred to psychological clinics in Mashhad in 2019. Sampling method of this study was convenience. According to the formula of sample size and target variables (mean and standard deviation for Beck's Depression Inventory) in a recent study,<sup>[19]</sup> the sample size of each group should be selected by at least seven people. Twenty-four women referred to "The Doostkam Clinic" in Mashhad who were willing to participate in the study were evaluated [see the diagram of the participants in Figure 1].



**Figure 1:** Diagram of participants in the pretest and posttest stages

First, through a clinical interview, the inclusion criteria were examined. Inclusion criteria: body mass index (BMI) >30, self-concept score <50 based on Beck's self-concept inventory (BSCI), informed consent, no severe psychiatric disorders based on clinical interview results, healthy physical condition, and ability reading and writing. Exclusion criteria were participating in another psychotherapy, the individual's desire not to continue the protocol for any reason or the absence of more than two sessions of treatment, no history of drug and substance abuse from at least 1 year prior to the study, and a desire to participate in research, drug use or medication without a physician's prescription (during the study). After assessing the competence and willingness of the participants, they were invited to a session to introduce and explain the goals of treatment. In this session, after completing the informed consent form, initial evaluations (through questionnaires) were received from patients. At the same meeting, the process of random placement of individuals in groups was determined based on the selection of an envelope in which the words "first group" or "second group" were written. The first group ( $n = 12$ ) received 8 90-min sessions of ACT<sup>[20]</sup> and the control group ( $n = 12$ ) did not receive any intervention (waiting list). At the end of the treatment period, posttest was taken. In order to comply with ethical issues, treatment sessions were continued for patients who requested continuation of sessions (if necessary). Participants in the control group also entered the treatment sessions voluntarily after the end of this study.

## Research instruments

### *Beck's self-concept inventory (BSCI)*

A self-report measure of negative self-concept that developed by Beck *et al.* in 1990 has 25 items.<sup>[21]</sup> In this questionnaire, the respondent is asked to compare himself with people who know, not with vague standards. Its score range is between 25 and 125. Therefore, higher scores indicate a more positive self-concept and lower scores indicate a more negative self-concept.<sup>[22]</sup> Mental ability, job efficacy, attractiveness, and social skills

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are the subscales of this questionnaire.<sup>[23]</sup> In the study of Thastum *et al.* in 2009, the internal consistency coefficient of Beck's self-concept inventory was calculated from 0.87 to 0.92 using Cronbach's alpha.<sup>[23]</sup> In Iran, the validity of this questionnaire was calculated to be approximately 0.78, and the reliability of this questionnaire 0.8.<sup>[22]</sup> Reliability in the present study was 0.77.

**Beck's anxiety inventory**

This inventory is a self-report instrument for measuring anxiety symptoms developed by Beck *et al.* in 1990.<sup>[24]</sup> This scale has 21 questions and its scoring is on a continuum from 0 (none) to 3 (severe) and the range of scores is between zero and 63. Studies conducted by Beck *et al.* show that this questionnaire has a high validity and a homogeneity coefficient of 0.92. Its reliability with a 1-week interval test method of 0.75 and the correlation of its items from 0.3 to 0.76.<sup>[25]</sup> In Iran, Kaviani and Mousavi estimated the validity coefficient of the Persian version of this questionnaire 0.72 and its reliability 0.83.<sup>[26]</sup> Reliability in the present study was 0.84.

**Beck's depression inventory**

This questionnaire is a 21-item self-report instrument designed by Beck *et al.* in 1996 to measure the symptoms of clinical depression.<sup>[27]</sup> This scale is scored from zero to 3 based on the 4-point Likert scale, and its minimum and maximum scores are zero and 63. Beck *et al.* in their research showed that this questionnaire has good validity and reliability.<sup>[28]</sup> Its internal consistency was equal to 0.90 and its validity by double halving method was 0.88.<sup>[28]</sup> In Iran, the reliability of this scale was reported by Cronbach's alpha method from 0.87 to 0.91 and its validity was confirmed.<sup>[29]</sup> Reliability in the present study was 0.84.

**Data analysis**

Analysis of covariance used to measure the effect of intervention with pretest control and also independent *t*-test used to compare demographic characteristics and mean of target variables by SPSS-IBM. v21 (American multinational technology company headquartered in Armonk, New York).<sup>[30]</sup>

**RESULTS**

Based on demographic variables, the mean age of study participants was 26.14 + 3.59. One person from each group was excluded from the study due to incomplete assessments and failure to attend treatment sessions. According to the independent *t*-test, there was no significant difference between the mean age, years of education, BMI, and target variables (pretest) of participants in the experimental and control groups except for the severity of depression. More information on demographic variables is provided in Table 1.

The mean and standard deviation of the variables in different research conditions are shown in Table 2.

In this study, the effectiveness of ACT was investigated. The research hypothesis is designed according to the research topic. To measure them, covariance analysis was used. In using parametric

**Table 1: Comparison of demographic characteristics and target variables of experimental and control groups**

Parameter	Experimental group	Control group	P
Age (years)	26.08±3.71	26.22±3.8	0.08
Education (years)	9.99±1.12	10.21±1.27	0.09
BMI	34.77±0.23	35.01±0.44	0.13
Self-concept (total)	40.88±4.15	41.01±4.72	0.1
Depression	22.13±2.15	20.91±3.07	0.03
Anxiety	20.01±1.98	19.87±2.15	0.06

BMI: Body mass index

**Table 2: Mean and standard deviation of pretest and posttest variables of self-concept, depression, and anxiety**

Variable	Experimental group		Control group	
	Pretest	Posttest	Pretest	Posttest
Self-concept	40.88±4.15	67.01±5.22	41.01±4.72	42.04±4.99
Depression	22.13±2.15	14.78±2.44	20.91±3.07	20.49±3.16
Anxiety	20.01±1.98	16.9±2.83	19.87±2.15	20.1±2.44

statistical methods, test assumptions must first be approved in order to use the covariance; Therefore, the most important assumptions of the analysis of covariance were investigated. The results of Levene's test to examine the homogeneity of variances in the variables of self-concept ( $F = 0.88, P = 0.15$ ), depression ( $F = 0.69, P = 0.31$ ), and anxiety ( $F = 0.7, P = 0.22$ ) showed that the level of significance in the dependent variables is  $> 0.05$  ( $P > 0.05$ ). Therefore, it can be concluded with 95% confidence that the scores of the variables of self-concept, depression, and anxiety in the pretest stage are not significantly different. The normality of the data was evaluated and confirmed ( $P > 0.05$ ) based on the KolmogorovSmirnov test in the variables of self-concept ( $Z = 0.92, P = 0.29$ ), depression ( $Z = 0.99, P = 0.22$ ), and anxiety ( $Z = 1.02, P = 0.15$ ). Furthermore, the homogeneity of regression slopes was examined and confirmed. In order to evaluate the difference between the mean scores of the experimental and control groups, Wilks lambda (statistics equal to 0.43 and  $F = 5.88$ ) was used. The results showed that by eliminating the covariate variables, the difference in the effectiveness of the treatment period, at least in one of the dependent variables is statistically significant ( $P < 0.05$ ). Therefore, all assumptions were confirmed and the analysis of covariance can be used.

Table 3 shows that the highest effect of treatment is related to the component of assessing the mental ability of self-concept ( $\text{Eta} = 0.79, P < 0.001$ ) and the lowest is related to the severity of anxiety ( $\text{Eta} = 0.44, P < 0.001$ ). Self-concept subscales also had significant changes. Mental ability ( $\text{Eta} = 0.85, P < 0.001$ ) and job efficacy ( $\text{Eta} = 0.74, P < 0.001$ ) were most and least affected, respectively.

**DISCUSSION**

The primary purpose of this study was to evaluate the effectiveness of ACT on improving the self-concept assessment

**Table 3: Analysis of covariance-based on target variables**

Variable	Mean of squares	F	P	$\eta$	Test power
Depression	488.31	80.13	0.001	0.51	0.91
Anxiety	411.99	70.12	0.001	0.44	0.94
Self-concept (total)	1099.12	112.19	0.001	0.79	0.89
Mental ability	293.77	59.99	0.001	0.85	0.91
Job efficacy	233.87	45.02	0.001	0.74	0.87
Attractiveness	288.09	56.01	0.001	0.81	0.9
Social skills	279.01	53.05	0.001	0.78	0.87

of obese women. The results showed that ACT can be effective in improving people's assessment of mental ability, job efficacy, attractiveness, and social skills and thus strengthen the self-concept of women with obesity. Several other studies have found findings in line with the present study. A study by Sairanen *et al.* showed that ACT can affect the mental ability of obese individuals by mediating psychological flexibility.<sup>[27]</sup> In this study, both women and men with obesity were studied. Since mindfulness is considered as one of the main elements in achieving the goal of psychological flexibility in the protocol of ACT, the consistency of the results of these studies was not unexpected. Awareness of experiences without judging them, which was discussed in the fifth session of treatment, can help people in the areas of mental ability to assess themselves and social skills. Another study showed that mindfulness can affect the athletes' mental ability to positively evaluate their skills.<sup>[31]</sup> Zollars *et al.* also showed that mindfulness can have a positive effect on people's mental well-being and perceived stress about their abilities.<sup>[32]</sup> To assess psychological flexibility in the workplace, Macias *et al.* showed that combining ACT protocol with analytical-functional psychotherapy can help government employees deal with anxiety, distress, and reduce their burnout. People who used this combined protocol performed better in their jobs than the control (waiting list) group.<sup>[33]</sup> Lavender *et al.* conducted a study in the United States to investigate the effect of mindfulness on the appearance evaluation of individuals. The results showed that mindfulness can lead to a positive assessment of the appearance and body mass of each person.<sup>[34]</sup> Various studies have also shown that ACT can be effective in improving the social skills of obese people (e.g.,<sup>[15]</sup>) and people with normal weight.<sup>[35]</sup> In a study examining the effects of self-compassion on the mental stubbornness of Canadian women athletes, Wilson found that nonjudgmental awareness as one of the key concepts of self-compassion can improve their mental toughness to evaluate themselves.<sup>[36]</sup> Coleman's review study in 2018 also showed that nonjudgmental awareness (along with other components of self-compassion) can affect and modify social stigmas associated with obesity.<sup>[37]</sup> In this regard, a study strongly explained that a positive assessment of self-attractiveness and social skills training can be based on the values that obese people learn in ACT.<sup>[38]</sup> The ACT uses value clarification strategies to create behavioral plans that can increase parenting energy levels, intimacy, engaging in activities of interest to friends and acquaintances, and work performance.<sup>[39]</sup>

Another aim of this study was to evaluate the effectiveness of ACT in reducing the severity of depression and anxiety in obese women. The results of analysis of covariance showed that ACT can reduce the severity of depression and anxiety by moderate effect size. The effect of this treatment on the components of depression and anxiety was less than self-concept and its components. Although ACT was not initially designed to reduce emotional problems, various studies have shown the positive effect of this treatment on reducing emotional disturbances.<sup>[13]</sup> In Iran, Yaraghchi *et al.* examined the effect of ACT on weight loss and cognitive emotion regulation problems. The results of their study showed that ACT can reduce the cognitive problems of emotion regulation by relying on acceptance, the concept of defusion, and failure.<sup>[40]</sup> The results of this study are consistent with the present study. The concept of nonjudgmental acceptance has been one of the main influential components in resolving emotional disturbances. As the level of acceptance rises, psychological stimuli become apparent and the person consciously tries to avoid them. Various studies have shown the effect of ACT on improving the severity of anxiety in different populations<sup>[13,41,42]</sup>. Creative hopelessness also helps acceptance so that instead of focusing on negative emotions such as depression and anxiety, one tries to adapt consciously and focus on positive emotional states.<sup>[43]</sup>

The present study had some limitations. The questionnaires were used to survey, as a result, some people may refuse to provide a real answer and give an unreal answer. 2. This research has been done cross-sectionally. Because of this, it makes it difficult to draw conclusions about causality. A large number of questions in the questionnaire led to the prolongation of its implementation time, which did not affect the accuracy of the participants' answers. Due to higher research costs, a limited number of obese women were surveyed and the sampling method was voluntary and purposeful. These cases cautiously generalize the results.

## CONCLUSIONS

In summary, it can be concluded that ACT, relying on the components affecting psychological disturbances, can affect the level of self-concept and severity of depression and anxiety in obese women.

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## Conflicts of interest

There are no conflicts of interest.

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