

# Effects of Educational Program Based on Self-Esteem Enhancement on Weight Status in Obese Women

## Abstract

**Background:** Most obese people do not have high self-esteem. This study was conducted to evaluate the effect of self-esteem education on the weight status of obese women. **Methods:** This Randomized Clinical Trial (RCT) was performed on 46 obese women (BMI >30) in Hamadan during 2021–2022. By simple convenient sampling and block randomization, the samples were divided into two equal groups. In both groups, routine lifestyle and diet recommendations were prescribed. In the intervention group, eight sessions of self-esteem training were performed specifically. In two groups BMI was measured and the Cooper-Smith Self-Esteem Inventory (CSEI) was filled out before and after the intervention. SPSS 20 was used to analyze the data. Statistical significance was considered at  $p < 0.05$ . **Results:** The mean age of the participants in the intervention and control groups was 27.95 (5.02) and 30.25 (5.46) years respectively ( $t_{38} = 1.39$ ,  $p = 0.17$ ). BMI was comparable in two groups before the study (32.47 vs. 33.13 in the intervention and control group respectively, ( $t_{38} = 1.02$ ,  $p = 0.31$ ), but decreased significantly in the intervention group at the end (30.38 vs. 32.90,  $t_{38} = 3.76$ ,  $p = 0.001$ ). The mean self-esteem scores of the two groups were similar at the beginning (27.10 vs. 27.60 in the intervention and control group respectively, ( $t_{38} = 0.52$ ,  $p = 0.60$ ) but increased significantly in the intervention group at the end (30.10 vs. 27.35,  $t_{38} = 2.99$ ,  $p < 0.001$ ). **Conclusions:** The findings suggest that self-esteem educational programs can increase the self-esteem score and decrease BMI in obese women and should be considered as a treatment modality in these women.

**Keywords:** Obesity, self-concept, weight loss, women

## Introduction

It is estimated that approximately one-third of the world population is obese or overweight<sup>[1]</sup> and by 2040, more than 50% of the population will be obese or overweight.<sup>[2]</sup> Due to changes in lifestyle and diet, the prevalence of obesity in Iran has increased in recent decades. Studies show that the prevalence of overweight and obesity among Iranian adults is 22.7% and 59.3%, respectively.<sup>[3]</sup> In general, women have higher rates of overweight and obesity than men due to pregnancy and childbirth issues and also a more sedentary lifestyle and compared to men, are more exposed to the complications of obesity and overweight.<sup>[4]</sup> Unfortunately, the rates of overweight and obesity among women are increasing in low-income and middle-income countries.<sup>[5]</sup> Obesity results from a combination of genetic and environmental factors, including low

physical activity, age, gender, diet, and behavioral, cultural, physiological, and socioeconomic conditions.<sup>[6]</sup> In addition to the important complications of obesity, including cardiovascular disease, diabetes, hypertension, different cancers, and lung, liver, and skeletal disorders, several studies suggest that obesity may be associated with mental disorders and the relationship may be reciprocal.<sup>[7,8]</sup> There are different therapeutic methods for the treatment of obesity, but the best treatment is always prevention through lifestyle education and behavioral change programs and there is a general agreement on the role of exercise and diet in weight loss.<sup>[9]</sup>

Psychological problems are one of the basic problems of obese people, and among them, obese women are more prone to social discrimination and therefore more prone to mood disorders such as depression.<sup>[10]</sup> Self-esteem is one of the

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topics that is often studied in psychology and behavioral sciences and is defined as an individual's subjective evaluation of their worth as a person.<sup>[11]</sup> Low self-esteem can lead to obesity and overweight and obese patients usually have lower levels of self-esteem than other people and several studies have emphasized the relationship between a lack of self-esteem and obesity.<sup>[12,13]</sup> Also psychiatric disorders such as depression, social isolation, and eating disorders are common in these people.<sup>[14,15]</sup> Low self-esteem and an unpleasant image of the physical condition caused by weight gain can cause mental health problems, eating behavior disorders, use of wrong methods of weight loss, and subsequent weight gain.<sup>[16]</sup> However, one of the main reasons for the failure of weight loss programs is the lack of attention to self-esteem in addition to other therapeutic recommendations.

Considering the negative mental, physical, and psychosocial problems of obesity and limited studies on self-esteem and obesity and their reciprocal effects in the Iranian population especially in women, this study investigated the effect of self-esteem enhancement on improving self-esteem, physical health, and weight loss in Iranian obese women.

## Methods

This Randomized Clinical Trial (RCT) (IRCT20220924056026N14)) was performed on 46 obese women (BMI >30) from October 2021 to March 2022 in the Preventive Medicine Clinic of Educational Heart Hospital in Hamadan, Iran. A simple convenient sampling was used for selecting the participants. With the assumption of  $\alpha$  of 0.05 and  $\beta$  of 0.20, using *G* power software, a total of 46 people were included in the study (23 in each group).<sup>[17]</sup> The allocation process of the participants in the study groups is shown in diagram 1. Before entering the study, written consent was obtained from all of the study participants.

The participants with BMI >30, age >18 years, and no history of hypothyroidism, diabetes, cancer, or mental disorders were enrolled in the study, and pregnant women, those who were under medical treatment for the underlying disease or took corticosteroids were excluded. To measure BMI, the weight was measured after 8 hours of fasting with minimal clothing by using a Seca digital scale with an accuracy of 100 g. Also, the height was measured with a Seca height gauge with an accuracy of 0.5 cm without shoes in a standing position.

Before and after the study, BMI was measured and the Persian version of the Cooper-Smith Self-Esteem Inventory (CSEI) was completed by participants, and supervised by the psychologist of the research team. CSEI consists of 50 questions to make an overall score from 0 to 50 with higher scores reflecting higher self-esteem.<sup>[18]</sup> Previous studies have shown a good reliability score for the Persian version of this questionnaire (Cronbach's alpha

coefficient = 0.86).<sup>[19]</sup> The participants were divided into two groups intervention and control based on block randomization with blocks of size 4 (2 for the intervention and 2 for the control group). The randomization sequence was created using Stata 9.0 (Stata Corp, College Station, TX, USA) with a 1:1 allocation. A total of 12 blocks of 4 were created and placed in closed envelopes to prevent researcher bias. In both groups, common recommendations such as lifestyle change, medication (if necessary), and diet, were prescribed by a community medicine specialist and a nutritionist respectively. In the intervention group, in addition to the control group's actions, eight consecutive sessions of self-esteem training over four months (once every two weeks) were performed in the preventive medicine clinic of the hospital by a psychologist focusing on increasing self-esteem. In this study, due to the educational nature of the intervention, it was not possible to blind the researchers, but the intervention and control groups visited on different days to get their related interventions so that they would not be exposed to the process of the other group. A summary of the educational content for the intervention group is presented in Table 1.

Data were analyzed by SPSS version 20 (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp). To compare qualitative variables between two groups, Chi-square or Fisher's exact test was used and quantitative variables were compared by the independent *t*-test (between groups comparison) and paired *t*-test (within group comparison). The Pearson correlation test was used to examine the relationship between quantitative variables. In all comparisons, statistical significance was considered at  $p < 0.05$ .

## Ethical considerations

The researcher started to conduct the research after introducing himself explaining the objectives and obtaining written informed consent from the research units. Participants have been assured that their names as well as all their information will be kept confidential and they can withdraw from participating in the research whenever they want. The study was approved by the Ethics Committee of Hamadan University of Medical Sciences with the ethical code: IR.UMSHA.REC.1398.984. The Consolidated Standards of Reporting Trials (CONSORT) guideline was followed in all stages of our study.

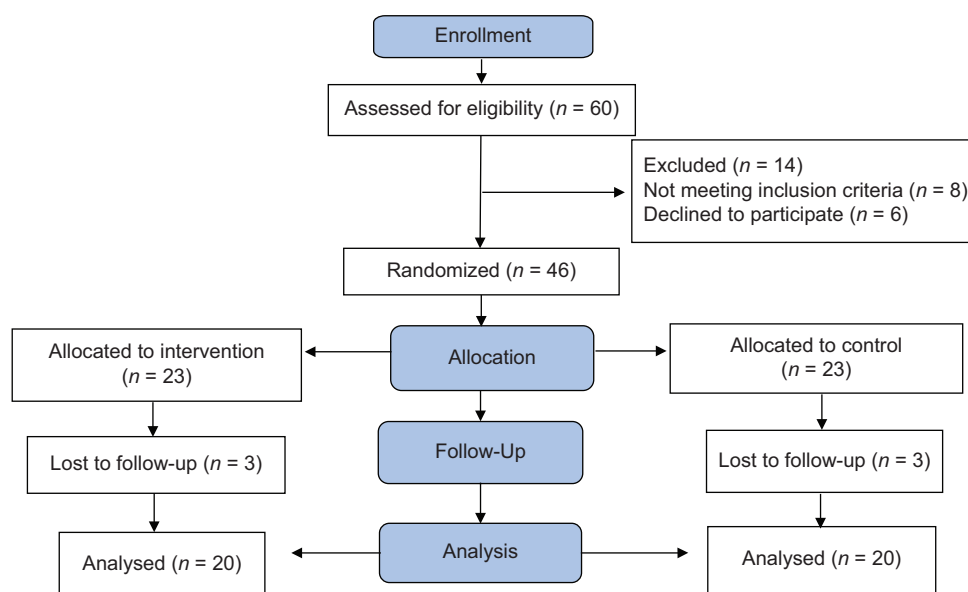
## Results

Forty out of 46 women (20 in each group) completed the study and enrolled in the analysis and six participants (three in each group) were lost to follow-up [Figure 1]. The mean age of the participants in the intervention and control groups was 27.95 (5.02) and 30.25 (5.46) years respectively and most of them (42.5%) had academic education. The baseline characteristics of the two groups are presented in Table 2. Before the intervention, BMI was comparable in

**Table 1: Educational content of self-esteem enhancement in the intervention group\***

Session	Time (hour)	Main topics
First session	2	Definition of self-esteem
Second session	2	Importance of self-esteem
Third session	2	Measurement of self-esteem
Fourth session	2	Ways of improving self-esteem and ways of facing challenges (1)
Fifth session	2	Ways of improving self-esteem and ways of facing challenges (2)
Sixth session	2	Increasing self-esteem and weight loss in obese patients (1)
Seventh session	2	Increasing self-esteem and weight loss in obese patients (2)
Eighth session	4	Summarizing previous sessions, answering questions, referring participants to a psychologist (if necessary) for further care

All the educational contents were selected from the Textbook of Clinical Psychiatry and Behavioral Sciences

**Figure 1: Diagram of the study design**

two groups; 32.47 (2.13) vs. 33.13 (1.96) in the intervention and control group respectively, ( $t_{38} = 1.02$ ,  $p = 0.31$ ) but at the end of the study it decreased significantly in the intervention group; 30.38 (2.30) vs. 32.90 (1.91) in the intervention and control group, ( $t_{38} = 3.76$ ,  $p = 0.001$ ). Regarding self-esteem, the mean score of self-esteem was comparable in both groups before the intervention; 27.10 (2.71) vs. 27.60 (3.29) in the intervention and control group respectively, ( $t_{38} = 0.52$ ,  $p = 0.60$ ). However, at the end of the study, it increased significantly in the intervention group; 30.10 (2.80) vs. 27.35 (3.01) in the intervention and control group, ( $t_{38} = 2.99$ ,  $p < 0.001$ ). The results in each group were independently studied before and after the intervention too, and the results showed that BMI had decreased significantly after the study in the intervention group; 32.47 (2.13) before vs. 30.38 (2.30) after intervention, ( $t_{19} = 8.66$ ,  $p < 0.001$ ), but did not show a significant change in the control group after the study; 33.13 (1.96) before vs. 32.90 (1.91) after intervention, ( $t_{19} = 1.53$ ,  $p = 0.14$ ) [Table 3]. Finally, a significant increase in self-esteem was observed in the intervention group after the intervention; 27.10 (2.71)

before vs. 30.10 (2.80) after intervention, ( $t_{19} = 5.58$ ,  $p < 0.001$ ) but there was no significant difference in the self-esteem score before and after study in the control group; 27.60 (3.29) before vs. 27.35 (3.01) after intervention, ( $t_{19} = 0.75$ ,  $p = 0.54$ ) [Table 4]. Concerning the correlation between BMI and self-esteem, the Pearson correlation coefficient showed an inverse relationship between self-esteem and BMI, but it was not statistically significant ( $r = -0.239$ ,  $p = 0.14$ ).

## Discussion

This study was performed to determine the effect of self-esteem enhancement on weight loss in obese women. The results of this study showed that women who participated in the self-esteem educational programs had more weight loss compared to the other group with routine weight loss programs. There was also a negative correlation between self-esteem and obesity, although the observed relationship was not significant.

The negative correlation between self-esteem and obesity has been mentioned in different studies too. In

**Table 2: Baseline characteristics in the intervention and control groups**

Variable	Interventional group n=20	Control group n=20	df	p
Education, Under diploma	5 (25.0)	4 (20.0)	38	0.41*
n (%)				
Diploma	5 (25.0)	9 (45.0)		
Academic	10 (50.0)	7 (35.0)		
Age (yr.), Mean (SD)	27.95 (5.02)	30.25 (5.46)	38	0.17**
BMI (kg/m <sup>2</sup> ), Mean (SD)	32.47 (2.13)	33.13 (1.96)	38	0.31**

\*: Chi<sup>2</sup> or Fisher exact test, \*\*: t-test

**Table 3: Comparison of BMI before and after intervention in two groups**

Body mass index	Interventional group Mean (SD)	Control group Mean (SD)	df	p*
Before	32.47 (2.13)	33.13 (1.96)	19	0.31
After	30.38 (2.30)	32.90 (1.91)	19	0.001
p**	<0.001	0.14		

\*Independent sample t-test, \*\* Paired, t-test

**Table 4: Comparison of self-esteem before and after study in two groups**

Self-esteem	Interventional group Mean (SD)	Control group Mean (SD)	df	p*
Before	27.10 (2.71)	27.60 (3.29)	19	0.60
After	30.10 (2.80)	27.35 (3.01)	19	<0.001
p**	<0.001	0.54		

\*Independent sample t-test, \*\*Paired t-test

KavehFarsani *et al.* study, and Mirhadi *et al.*<sup>[20,21]</sup> study obesity was associated with low self-esteem. In Youssef *et al.*<sup>[22]</sup> study in Saudi Arabia, increasing BMI had a significant relationship with decreasing self-esteem in females, and they concluded that BMI is a predictor factor for self-esteem in females.

Alghawrien *et al.* study in Jordan and AlAhmari *et al.*<sup>[23,24]</sup> A study in Saudi Arabia showed an inverse correlation between obesity and self-esteem There are also studies that suggest a causal relationship between self-esteem and obesity, and among the causal mechanisms, they suggest the lack of resisting temptations of a bad diet and poor exercise.<sup>[25]</sup>

However, there are also other studies that did not find any significant association between self-esteem and obesity, these studies concluded that low self-esteem is likely a minor contributor to the development and maintenance of obesity.<sup>[26,27]</sup>

However, different studies show that weight loss has positive effects on the mental health of obese people.<sup>[28,29]</sup> Abdi *et al.*<sup>[30]</sup> in Sanandaj-Iran, evaluated the effectiveness of a lifestyle training program on obese patients and showed more weight loss and improved self-esteem in the experimental group than in the control group. In

Abdi *et al.*<sup>[30]</sup> study, the control group did not receive any lifestyle change intervention, which can justify the effect of lifestyle intervention training on weight loss in the intervention group, while in our study, both groups received lifestyle intervention training, but the intervention group also received self-esteem training which caused the improvement of the weight loss process in our intervention group compare to the other group.

Numerous studies have investigated the role of behavioral changes in the treatment of obesity. In line with the findings of the present study, Babadi *et al.*<sup>[31]</sup> conducted a quasi-experimental study of cognitive-behavior therapy on BMI and self-esteem among obese women in Esfahan-Iran and showed a significant improvement in self-esteem and BMI at the end of the study. In a study conducted by Agah Heris *et al.*<sup>[32]</sup> both lifestyle and cognitive modification interventions reduced BMI and improved the quality of life and well-being in obese patients. Mirkarimi and Kabir<sup>[17]</sup> compared standard weight loss training and motivational interviews for improving the commitment to weight loss in obese women. The results showed that the intervention group participated more than the control group in the sessions six months after the intervention, and there was a significant difference between the two groups in terms of weight loss.

Among the limitations of the present study were the small sample size and the loss to follow-up of patients (3 patients in each group, a total of 6 patients) which could influence the reported results, especially on the insignificant correlation of some variables (BMI and self-esteem correlation). It is strongly recommended to conduct a study with a larger sample size to clarify more aspects of the issue.

## Conclusion

Self-esteem educational programs can increase the self-esteem score and decrease BMI in obese women. Hence, in addition to the usual treatment options, these simple psychological modalities are recommended for these patients. However, prolonged and sustained sessions might be required to get the best results.

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## Conflicts of interest

Nothing to declare.

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