

## Effects of obesity center group intervention on eating disorders and maladaptive eating attitudes

The effects of obesity center group intervention

Ayşe Gökçen Gundoğmuş<sup>1</sup>, Zeynep Tasyurek<sup>1</sup>, Yasemin Kocyyigit<sup>1</sup>, Pelin Cibik Buyuk<sup>2</sup>, Harun Karabacak<sup>3</sup>, Sibel Orsel<sup>1</sup>, Kadir Ozdel<sup>1</sup>

<sup>1</sup> Department of Psychiatry, Etlik City Hospital

<sup>2</sup> Department of Psychiatry, Ankara Atatürk Sanatoryum Training and Research Hospital

<sup>3</sup> Department of Surgery, Etlik City Hospital, Ankara, Turkey

### Abstract

**Aim:** The inability to reach the desired results despite different treatments for obesity stresses the necessity of a multidisciplinary approach. Psychosocial interventions are one component in this regard, particularly fund of knowledge on the efficiency of cognitive behavioral therapy increases. This study investigated the efficiency of obesity center group interventions that included cognitive psycho-education programs.

**Material and Methods:** People admitted to the obesity center were included in the study and participated in 12-session programs within four months. The sessions included diet programs, physiotherapist interventions, and cognitive behavioral therapy-based psycho-education programs. A psychiatrist examined individuals before and after the program and evaluated them with self-report measures. Primary outcome measures included maladaptive eating behaviors and eating disorders, the secondary outcomes included depression, anxiety, body dissatisfaction levels, and efficiency of psycho-education.

**Results:** Individuals (n=68) lost weight after psycho-education, yet the change in the body mass index was not statistically significant. In the pre-intervention period, 66.17% of individuals had a psychiatric diagnosis, which significantly decreased to 39.70% in the post-intervention period. Individuals' depression and anxiety scores significantly decreased (p=0.032; p=0.018, respectively), body satisfaction and restrained eating levels increased (p<0.001), while emotional and external eating behaviors decreased post-intervention (p<0.001).

**Discussion:** There was a decrease in general psychopathology, maladaptive eating behaviors, and eating disorders besides weight loss through interventions and a multidisciplinary approach in our center. Obesity is a growing and important public health concern, which should be handled through multidisciplinary approaches. Follow-up studies on the long-term efficacy of cognitive behavioral therapy-based approaches should be conducted.

### Keywords

Obesity, Cognitive Behavioral Therapy, Psycho-Education, Eating Disorders, Depression

DOI: 10.4328/ACAM.21597 Received: 2023-01-17 Accepted: 2023-03-27 Published Online: 2023-06-09 Printed: 2023-07-01 Ann Clin Anal Med 2023;14(7):581-585

Corresponding Author: Ayşe Gökçen Gundoğmuş, Department of Psychiatry, Etlik City Hospital, 06010, Ankara, Turkey.

E-mail: gokcengonen@gmail.com P: +90 532 740 50 33

Corresponding Author ORCID ID: <https://orcid.org/0000-0002-1594-7542>

This study was approved by the Ethics Committee of Ankara Diskapi Yildirim Beyazit Training and Research Hospital (Date: 2022-05-23, No: 138/15)

## Introduction

Obesity causes various complications such as metabolic, cardiovascular and psychiatric complications and increases the risk of early death, osteoarthritis, cancer, stroke and dementia [1]. The etiology of obesity is multifactorial, and genetic, environmental and psychological factors play a role in its development [2, 3]. There is a growing literature regarding its relationship with diseases like depression and anxiety [4]. Besides, obesity has a relationship with some eating disorders such as binge eating and night eating, and maladaptive eating attitudes such as emotional eating and grazing [5-7]. All of these maladaptive eating attitudes not only cause obesity but also cause patients, who have lost weight due to medical treatments or obesity surgery, to gain weight or lose less weight than targeted during the follow-up period [4, 8].

Among the treatment options for obesity are lifestyle changes such as changing eating habits, diets, increase in physical activity, exercises as well as medication, surgical treatments and psychological interventions; and bariatric surgery is deemed the most effective treatment [2, 4]. The approach to the rehabilitation of obesity should be multi-disciplinary. Nursing services should be integrated with diet, physical/functional rehabilitation, psycho-education and rehabilitation [1, 9].

Among psychological interventions for obesity are psycho-education, behavioral therapy, cognitive behavioral therapy, and motivational therapy [2, 4]. Although recent behavioral therapies for obesity treatment have been effective in weight loss, they have been criticized because most of the individuals regain weight in the long term and treatments cannot be individualized, and it has been argued that cognitive behavioral therapy may be more effective [2, 10]. A comparison of group cognitive behavioral therapy, performed in addition to standard diet therapy, a physical activity program, and educational activities showed that the weight loss rate was higher in the cognitive behavioral therapy group [1]. Though there are positive research outcomes on the effectiveness of nutritional psycho-education, motivational therapy and cognitive behavioral therapy-based interventions in obesity treatment, there are also results showing that negative effects are observed, the effects are lost over time, or there is no effect at all [2, 3, 11, 12].

Our study primarily aimed to determine the effect of cognitive psycho-education, physical activity and diet treatment program created through a multi-disciplinary approach in the obesity center on eating disorders and maladaptive eating attitudes of individuals with obesity. The study secondarily investigated whether there was any change in depression, anxiety levels and body satisfaction of individuals. Our hypothesis has suggested that interventions reduce eating disorders, maladaptive eating attitudes, and mental symptoms and positively affect body satisfaction.

## Material and Methods

### Design and Setting

The study included individuals with obesity who admitted to the obesity center of Ankara Diskapi Yildirim Beyazit Training and Research Hospital, affiliated with the Health Sciences University of Turkey, between December 2020 and January 2022 to lose

weight. The local ethics committee approved the study protocol (23.05.2022-138/15). A practitioner, general surgeon, dietitian, physical therapist, physiotherapist, psychiatrist, psychologist and endocrinologist worked together in a multi-disciplinary approach in the center. Each department made suggestions to the patients based on the examination results, started medical treatment if necessary and/or regulated their ongoing treatments.

### Treatment Groups

Separate sessions were held by the psychologists, physical therapists and dietitians in the group work at the obesity center. In total, 12-session psycho-education was completed in four months. Dietitians taught healthy nutrition/diet and physical therapists taught patients appropriate exercises. The physical therapist taught exercises (strengthening, stretching, balance, active, active-assistive, passive, etc.) specific to the status of each patient.

Psycho-education groups may include up to 10-12 patients, and each session lasts 60-90 minutes. Group trainings are provided interactively using slides and motivational and cognitive behavioral techniques, minding verbal participation of each patient in every session. The content of psycho-education sessions is given in Figure 1.

### Patients

All patients admitted to the center were invited to take part in the study, and forms were distributed to those who accepted after providing informed consent. The inclusion criteria were age between 18 and 65 years, body mass index (BMI)  $\geq 30$  and being literate. Those with mental disabilities (dementia, intellectual disability, etc.) or physical handicaps (having a vision-hearing problem that prevents interviews or filling out forms, etc.) were not included in the study. In addition, individuals with ongoing physical illnesses or ongoing medical treatment that could explain obesity were excluded. Individuals were required to have participated in at least nine sessions out of 12 to be considered to have completed the psycho-education program. Their height-weight measurement was done before and after the psycho-education program. Seventy-four individuals out of 93 met the criteria and were included in the study. The data of 68 individuals were included in the analysis due to the incomplete parts in the scale forms of the rest (Figure 2).

### Measures

Structured Clinical Interview Tool (SCID-5-CV) was used to determine the presence of psychiatric diagnosis in individuals [13]. The socio-demographic data form included data about the participants' age, sex, height, weight, education status. Weight measurement of the individuals was repeated after the group interventions were completed. Psycho-education information form was developed by psychiatrists and psychologists working at the obesity center in line with the content of the psycho-education program, consisting of 29 questions evaluating individuals' knowledge about obesity, its causes and treatment options. The Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI) are self-assessment scales that aim to measure the depression and anxiety levels [14, 15]. A higher score of Body Image Scale (BIS) shows higher level of body satisfaction [16]. Every item of the scale is related to an organ or region of the body (arm, leg, face, etc.) or function of the body (sexual

activity level, etc.). The Dutch Eating Behavior Questionnaire (DEBQ) consists of three subscales that evaluate emotional eating behaviors, external eating behaviors and restricted eating behaviors [17]. The Turkish reliability and validity of all the scales were conducted [18-21] (Hovardaoglu, 1990, unpublished master's thesis, University of Ankara).

**Statistical Method**

Experimental design was used with a single group pre-test and post-test. This design is practical although it is weaker compared to other designs, because it is difficult to find a second group in health practices in general. In the data analysis, descriptive statistical measures (frequency and percentages) and McNemar x2 test were used for the pre- and post-training differences of individuals' eating behaviors. For repeated measures of the scale scores, paired sample t-test was used. Normality tests (Kolmogorov-Smirnov and Shaphiro-Wilk) were used for the normality of the measuring tools. The data were analyzed using SPSS (v 25) software. For statistical significance level, 0.05 alpha was used.

**Ethical Approval**

Ethics Committee approval for the study was obtained.

**Results**

The study group consisted of 68 participants with obesity. The mean age of the participants was 43.81 (± 10.18), and 79.4% of them were female. Of them, 29.4% stated that they wanted bariatric surgery at the time of their admission to the center. Of them, 72.1% received high school and higher education. Paired sample t-test was used for the BMI and weight loss of the individuals before and after the program (Table 1). After the program, individuals weighed less, and the difference was found to be significant (p<0.05). Their mean weight loss was found to be 5.72±12.54 kg. Also, their BMI values were lower, compared to the first assessment, yet the difference was not significant.

**Table 1.** Results of the paired sample t-test regarding comparison of weight and BMI scores of individuals with obesity before and after psycho-education.

Measurement Tools	Before the program		After the program		sd	t	p	d
	X'	S	X'	S				
Weight (kg)	112.68	18.50	106.96	17.88	67	3.76	0.000*	0.174***
BMI	42.25	5.1	41.04	8.80	67	1.33	0.188	--

\*p<0.05, d\* = small impact size, d\*\* = moderate impact size, d\*\*\* = large impact size.

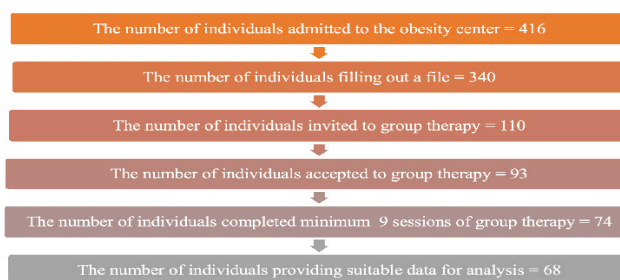
**Table 2.** Frequency, percentages and McNemar test results of the participants regarding their DSM diagnosis before and after the program.

Variables	Before		After		p-value-value for McNemar (x <sup>2</sup> ) test
	f	%	f	%	
Major depressive disorder	9	13.2	5	7.4	0.289
Generalized anxiety disorder	7	10.3	1	1.5	0.070
Obsessive compulsive disorder	1	1.5	0	0.0	--
Adjustment disorder	2	2.9	0	0.0	--
Panic disorder	1	1.5	1	1.5	1.000
Avoidant/restrictive eating	2	2.9	1	1.5	1.000
Binge eating disorder	18	26.5	10	14.7	0.039*
Night eating	18	26.5	5	7.4	0.002*
Emotional eating	25	36.8	17	25.0	0.096
Grazing	26	38.2	8	11.8	0.000*

\*p<0.05



**Figure 1.** Contents of psycho-education sessions.



**Figure 2.** Participant flow through enrollment.

**Table 3.** Results of paired sample t-test regarding comparison of individuals with obesity scores before and after the psycho-education program.

Measurement Tools	Before the program		After the program		sd	t	p	d
	X	S	X	S				
BDI	15.07	9.39	12.79	10.17	67	2.19	0.032*	0.067**
BAI	17.04	12.44	14.03	10.02	67	2.42	0.018*	0.080**
BIS	118.26	24.14	128.19	26.75	67	3.85	0.000*	0.181***
DEBQ restrained eating	28.22	6.86	35.63	13.23	67	4.28	0.000*	0.215***
DEBQ emotional eating	30.06	13.48	23.16	9.63	67	5.17	0.000*	0.285***
DEBQ external eating	27.16	6.53	22.59	5.66	67	6.06	0.000*	0.354***
Psycho-education score	18.49	4.00	19.84	3.87	67	3.07	0.003*	0.123**

\*p<0.05, d\* = small impact size, d\*\* = moderate impact size, d\*\*\* = large impact size. BDI, Beck Depression Inventory; BAI, Beck Anxiety Inventory; BIS, Body Image Scale; DEBQ, Dutch Eating Behavior Questionnaire; BP, Before the program; AP, After the program

According to the normality tests, the scales showed normal distribution, with the exception of depression and anxiety scores. Since there were 68 individuals in the study, the assumption of normality for gap analyses was not a source of concern. In this regard, parametric tests were used.

Forty-five participants had a psychiatric diagnosis or eating disorders according to DSM-V before the program. This number decreased to 27 after the psycho-education. There was a significant decrease in the diagnosis of binge eating, night eating and grazing after the program (Table 2).

Patients' depression and anxiety levels decreased significantly after training and the change had a moderate effect size, while their body satisfaction scores increased with a large effect size (p<0.05). Considering the change in patients eating attitudes, their restrained eating attitude scores increased after the program, while their scores on emotional eating and external eating behaviors decreased. The determined differences were significant and all changes had a large effect size (p<0.05). The scores that individuals obtained from the information form at the end of the program were significantly increased and this difference had a moderate effect size (p<0.05) (Table 3).

## Discussion

Our study aimed to evaluate the efficiency of multidisciplinary obesity center interventions. At the end of the program, individuals lost an average of 5.72±12.54 of weight (kg) and the effect size was large, but the change in BMI was not significant. Before the program, 66.17% of individuals had a psychiatric diagnosis according to DSM-V, which significantly decreased to 39.70% after the intervention. Furthermore, their depression and anxiety levels decreased and the changes had a moderate effect size. Their body satisfaction increased after the program and this change had a large effect size. Restrained eating levels of individuals increased, while their emotional and external eating attitudes decreased after the intervention. All changes determined on eating attitudes had a large effect size. Their knowledge about obesity after cognitive-based psycho-education partly increased.

Outcome measures of CBT studies focus on different areas such as changes in weight, in eating disorders, in eating attitudes, in psychopathology, and quality of life [11, 22]. While the majority of psychosocial interventions, including CBT detected no significant weight loss, there are also study

results reporting weight loss with a longer-term personalized group CBT [4, 11]. The effect size on weight was small and the change was seen as a decrease as a result of our obesity center interventions consisting of a combination of cognitive-based psycho-education, physical activity program and diet treatment. It is not possible to know which factor(s) enable(s) weight loss because the interventions were multidisciplinary, as has been suggested in recent years [1, 9], and medical treatments are conducted concurrently in individuals who are in need.

Similar to the literature, our study found that after the group intervention, eating disorders (binge eating disorder, night eating) [5, 23], maladaptive eating attitudes (grazing, emotional eating, external eating), and depression and anxiety levels decreased [1, 4, 11, 12, 22, 24]. Depression and maladaptive eating attitudes such as grazing and emotional eating have negative effects on weight loss and focusing on emotion regulation interventions instead of diet is recommended in the treatment of emotional eating in particular [7, 8]. There are studies associating restrained eating attitude with more weight loss in follow-ups [11], and accordingly, our study has revealed that it increases through interventions [12, 24].

Our study found that body satisfaction after interventions turned out to be more positive. The literature showed that the shape and weight concerns of individuals with obesity decreased after CBT [12]. This change, detected in body satisfaction despite the slight weight change, can be related to the decrease in changes in eating attitudes and/or depression and anxiety levels as well as direct effects of the interventions.

One of the strengths of our study is that participation rates were high except the shutdown period due to COVID-19, although the treatment discontinuation rates in obesity were high [1]. Another strength is that our study not only used self-report measures, but also included clinician examinations.

## Limitations

The lack of knowledge about medication given simultaneously and the inability to examine its impact are important limitations. In addition, a sample consisting of individuals in search for treatment only and obtaining the data from a single center prevent generalization of the results obtained. Evaluation of emotional eating and grazing made by the clinician is another limitation because it may have differences, as there are no clear diagnostic criteria. Furthermore, the fact that individual's compliance with the diet and exercise programs and the effectiveness of these interventions has not been evaluated is

another limitation of this study.

### Conclusion

When we evaluate our study results with those of many other studies, they suggest that the effect of center group practices, which include cognitive behavioral group therapy, focuses mainly on depressive symptoms, anxiety symptoms, body satisfaction and eating attitudes, while their direct effects on weight change are more controversial. This, in a part, shows that it is difficult to associate psychosocial interventions directly with weight loss, but it is important to discuss psychosocial factors related to obesity. There is a need for follow-up studies regarding the long-term efficiency of the interventions [4].

### Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

### Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

**Funding:** None

### Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

### References

1. Donini LM, Cuzzolaro M, Gnessi L, Lubrano C, Migliaccio S, Aversa A, et al. Obesity treatment: results after 4 years of a Nutritional and Psycho-Physical Rehabilitation Program in an outpatient setting. *Eat Weight Disord.* 2014;19(2):249-60.
2. Castelnovo G, Pietrabissa G, Manzoni GM, Cattivelli R, Rossi A, Novelli M, et al. Cognitive behavioral therapy to aid weight loss in obese patients: current perspectives. *Psychol Res Behav Manag.* 2017;10:165-73.
3. Barrett S, Begg S, O'Halloran P, Kingsley M. Integrated motivational interviewing and cognitive behaviour therapy for lifestyle mediators of overweight and obesity in community-dwelling adults: a systematic review and meta-analysis. *BMC Public Health.* 2018;18(1):1160.
4. David LA, Sijercic I, Cassin SE. Preoperative and post-operative psychosocial interventions for bariatric surgery patients: A systematic review. *Obes Rev.* 2020;21(4):e12926.
5. McCuen-Wurst C, Ruggieri M, Allison KC. Disordered eating and obesity: associations between binge-eating disorder, night-eating syndrome, and weight-related comorbidities. *Ann N Y Acad Sci.* 2018;1411(1):96-105.
6. van Strien T. Causes of Emotional Eating and Matched Treatment of Obesity. *Curr Diab Rep.* 2018;18(6):35.
7. Heriseanu AI, Hay P, Corbit L, Touyz S. Grazing in adults with obesity and eating disorders: A systematic review of associated clinical features and meta-analysis of prevalence. *Clin Psychol Rev.* 2017;58:16-32.
8. Conceição EM, Utzinger LM, Pisetsky EM. Eating Disorders and Problematic Eating Behaviours Before and After Bariatric Surgery: Characterization, Assessment and Association with Treatment Outcomes. *Eur Eat Disord Rev.* 2015;23(6):417-25.
9. Capodaglio P, Donini LM, Petroni ML, Brunani A, Dalle Grave R, Di Flaviano CE, et al. Rehabilitation in obesity with comorbidities: a consensus document from experts of the Italian Society of Physical and Rehabilitation Medicine (SIMFER), the Italian Society of Obesity (SIO) and the Italian Society of Eating Disorders (SISDCA). *Eat Weight Disord.* 2014;19(3):383-6.
10. Dalle Grave R, Sartirana M, Calugi S. Personalized cognitive-behavioural therapy for obesity (CBT-OB): theory, strategies and procedures. *Biopsychosoc Med.* 2020;14:5.
11. Gade H, Friborg O, Rosenvinge JH, Småstuen MC, Hjelmesæth J. The Impact of a Preoperative Cognitive Behavioural Therapy (CBT) on Dysfunctional Eating Behaviours, Affective Symptoms and Body Weight 1 Year after Bariatric Surgery: A Randomised Controlled Trial. *Obes Surg.* 2015;25(11):2112-9.
12. Abilés V, Rodríguez-Ruiz S, Abilés J, Obispo A, Gandara N, Luna V, et al. Effectiveness of cognitive-behavioral therapy in morbidity obese candidates for bariatric surgery with and without binge eating disorder. *Nutr Hosp.* 2013;28(5):1523-9.
13. First MB, Williams JB, Karg RS, Spitzer RL. User's guide for the SCID-5-CV Structured Clinical Interview for DSM-5® disorders: Clinical version: American Psychiatric Publishing, Inc. 2016.p.1-176.

14. Beck AT, Ward C, Mendelson M, Mock J, Erbauch J. Beck depression inventory (BDI). *Arch Gen Psychiatry.* 1961;4:561-71.
15. Beck AT, Epstein N, Brown G, Steer R. An inventory for measuring clinical anxiety: Psychometric properties. *J Consult Clin Psychol.* 1988;56(6):893-7.
16. Secord PF, Jourard SM. The appraisal of body-cathexis: body-cathexis and the self. *J Consult Psychol.* 1953;17(5):343.
17. Van Strien T, Frijters JE, Bergers GP, Defares PB. The Dutch Eating Behavior Questionnaire (DEBQ) for assessment of restrained, emotional, and external eating behavior. *Int J Eat Disord.* 1986;5(2):295-315.
18. Elbir M, Alp Topbaş Ö, Bayad S, Kocabaş T, Topak OZ, Çetin Ş, et al. Adaptation and Reliability of the Structured Clinical Interview for DSM-5-Disorders - Clinician Version (SCID-5/CV) to the Turkish Language. *Turk Psikiyatri Derg.* 2019;30(1):51-6.
19. Hisli N. Beck depresyon envanterinin universite ogrencileri icin gecerliliği, guvenilirliği (A reliability and validity study of Beck Depression Inventory in a university student sample). *J Psychol.* 1989;7:3-13.
20. Ulusoy M, Sahin NH, Erkmen H. Turkish version of the Beck Anxiety Inventory: psychometric properties. *J Cogn Psychother.* 1998;12(2):163-72.
21. Bozan N, Bas M, Asci FH. Psychometric properties of Turkish version of Dutch Eating Behaviour Questionnaire (DEBQ). A preliminary results. *Appetite.* 2011;56(3):564-6.
22. Paul L, van der Heiden C, van Hoeken D, Deen M, Vlijm A, Klaassen RA, et al. Cognitive Behavioral Therapy Versus Usual Care Before Bariatric Surgery: One-Year Follow-Up Results of a Randomized Controlled Trial. *Obes Surg.* 2021;31(3):970-9.
23. Ashton K, Drerup M, Windover A, Heinberg L. Brief, four-session group CBT reduces binge eating behaviors among bariatric surgery candidates. *Surg Obes Relat Dis.* 2009;5(2):257-62.
24. Hjelmesæth J, Rosenvinge JH, Gade H, Friborg O. Effects of Cognitive Behavioral Therapy on Eating Behaviors, Affective Symptoms, and Weight Loss After Bariatric Surgery: a Randomized Clinical Trial. *Obes Surg.* 2019;29(1):61-9.

### How to cite this article:

Ayşe Gökçen Gundogmus, Zeynep Tasyurek, Yasemin Kocycigit, Pelin Cibik Buyuk, Harun Karabacak, Sibel Orsel, Kadir Ozdel. Effects of obesity center group intervention on eating disorders and maladaptive eating attitudes. *Ann Clin Anal Med* 2023;14(7):581-585

This study was approved by the Ethics Committee of Ankara Diskapi Yildirim Beyazit Training and Research Hospital (Date: 2022-05-23, No: 138/15)