

Cognitive behavior therapy for overweight and obese adolescents with psychiatric symptoms: a pilot study

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ABSTRACT

Objective: The aim of this study is to investigate whether cognitive behavioral therapy intervention lead to improvement in psychological parameters and obesity parameters. **Methods:** Ten participants, nine females and one male, were assigned to two different cognitive behavioral therapy (CBT)-based groups. The adolescents' mean age was 14.10 ± 1.79 years and their mean body mass index was $29.95 \pm 4.18 \text{ kg/m}^2$. The CBT comprised of nine sessions followed by one parent session. The participants also received lifestyle interventions which include weekly weight checks, diet, and exercise. **Results:** The evaluations of the nine CBT sessions showed a significant reduction in depressive symptoms, social anxiety, social phobia, and a significant improvement in self-esteem, but the BMI scores remained unchanged which was a deviation from our expectation. **Discussion:** This is the first study in Turkey to evaluate the impact of group-based CBT on depressed adolescents. The results demonstrate that further researches are needed, with the objective of developing cognitive-behavioral interventions that help patients to lose weight and maintain their weight at a healthy level. (*Anatolian Journal of Psychiatry* 2020; 21(4):417-422)

Keywords: obesity, adolescence, cognitive behavioral therapy

Psikiyatrik belirtileri olan fazla kilolu/obez ergenler için bilişsel davranışçı terapi

Öz

Amaç: Bu çalışmanın amacı bilişsel davranışçı terapi müdahalesinin ruhsal ve obezite parametrelerinde iyileşmeye yol açıp açmadığını araştırmaktır. **Yöntem:** On katılımcı (dokuz kadın ve bir erkek) iki farklı bilişsel davranışçı terapi (BDT) gruplarına atanmıştır. Ergenlerin yaş ortalaması 14.10 ± 1.79 yıl, beden kitle indeksi ortalaması $29.95 \pm 4.18 \text{ kg/m}^2$ dir. Bu çalışmada, dokuz BDT oturumunun ardından bir anne-baba oturumu yapıldı. Katılımcılara haftalık ağırlık kontrolleri, diyet ve egzersizler içeren yaşam tarzı müdahaleleri uygulandı. **Bulgular:** Dokuz BDT oturumunun değerlendirmelerine göre depresif belirtilerde, sosyal anksiyetede, sosyal fobide anlamlı bir düşme; öz saygıda anlamlı bir yükselme saptanmıştır. Beden kitle indeksinde herhangi bir değişme saptanmamıştır. **Tartışma:** Bu çalışma Türkiye'de depresif belirtileri olan ergenler üzerinde grup BDT oturumlarının etkisini değerlendiren ilk çalışmadır. Elde edilen bulgulara göre, hastaların kilo vermesine ve mevcut kilolarını sağlıklı bir düzeyde koruyabilmelerine yardımcı olabilecek bilişsel-davranışçı müdahaleler geliştiren daha fazla çalışmaya gerek vardır. (*Anadolu Psikiyatri Derg* 2020; 21(4):417-422)

Anahtar sözcükler: Ergenlik, fazla kilo ve obezite, bilişsel davranışçı terapi

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INTRODUCTION

Weight loss and gain remain serious public health problems, and global factors such as the rapid industrialization and urbanization of the last decades have significantly increased the prevalence of obesity worldwide. According to the National Childhood Obesity Survey, the obesity prevalence is 21%; 6% among girls and 23.3% among boys in Turkey.

Adolescence is considered a period during which individuals are vulnerable to becoming overweight and obese and this obesity is supposed to have a profound effect on the psychosocial development of the individual. The effects of childhood obesity may cause children to have mental health problems when they become an adult. Mounting evidence proposes that overweight adolescents frequently have depressive symptoms and can become the target of weight-based social isolation due to teasing and discrimination, body dissatisfaction, low-self-esteem, depression, and anxiety.^{1,2} The findings of a cohort study illustrated that childhood/adolescent obesity was a strong, independent contributor for adult depression.³

Obesity-related stigma may have a negative long-term effect on individuals' psychological well-being.¹ Children with obesity are rejected more often by their peers and more prone to be socially isolated than their peers who are non-overweight.⁴ Weight-related bullying has been related to lower self-esteem and a higher likelihood of depression among adolescents.⁵ Furthermore, the association of anxiety and pediatric obesity is unclear. While there are a number of researches which found no significant correlation between anxiety and pediatric obesity, there are also researches which found a significant increase of anxiety was observed in boys with obesity in contrast to the control subjects.⁶

Effective treatment methods are necessary to combat obesity in adolescents in order to prevent the increasing prevalence of adult obesity. The etiology of obesity is extremely complex, involving the interaction of biologic and psychological factors with cultural and environmental issues. Therefore, not only medical treatment including nutritional and physical therapy but also psychotherapeutic approaches must be addressed to treat people with this condition.

Cognitive behavioral therapy (CBT) was initially developed by Aaron Beck for the treatment of depression and then applied to the treatment of

a variety of psychiatric disorders such as anxiety, phobias, and somatic symptoms. CBT which adopts both behavioral and cognitive techniques is the first-choice evidence-based treatment for obesity for making lifestyle changes. CBT aims to help people to gain insight into the links between their thoughts, emotional responses, and eating behaviors. CBT strategies intend to mention problems including eating instructions in self-monitoring, cognitive distortions regarding body image, problem-solving techniques, social skills training, motivational issues, psychoeducation, and specific goals in the way to change unhealthy behaviors into healthy behaviors.

We present an uncontrolled pilot clinical trial of group cognitive-behavioral therapy for obese adolescents with psychiatric symptoms. The current study aimed to create better self-esteem and a better mood in terms of less depression in adolescents who were overweight/obese with depressive symptoms. This is the first study in Turkey to assess the effect of group-based CBT on adolescents with obesity and depression.

METHODS

Participants

As part of the usual care, all patients with a major diagnosis of obesity were referred to the Adolescent Outpatient Clinic of Cerrahpaşa Medical Faculty and assessed by means of an anamnesis, physical, and other laboratory examinations. One hundred ninety patients were included in the study. Eighty-four adolescents who were suffer from chronic disease and/or intellectual disability and psychosis were excluded. The final sample, therefore, comprised of 89 patients. Fifty-two patients did attend their monthly visits regularly.

In the current study, the researchers included only the patients who completed 10 weeks' therapy (n=10). The Institutional Ethics Board of Istanbul University Cerrahpaşa Medical Faculty approved the protocol and the procedures of the study. Eligible patients, adolescents who were overweight with depression and/or high risk of emotional problems in the Strength and Difficulties Questionnaire (SDQ) receiving CBT+lifestyle interventions (n=10) and their parents, consented verbally and in writing. They received no medication.

The study group consisted of one male and nine female adolescents. The demographics including the age, sex, weight, and BMI were

collected. The participants' mean age was 14.10 ± 1.79 years and the weight and BMI range were 76.36 ± 17.21 kg, and 29.95 ± 4.18 kg/m², respectively.

Measurements

Body Mass Index (BMI): BMI is frequently used to determine adiposity. It is calculated as weight in kilograms divided by height in square meters (kg/m²). BMI is considered to be a statistically valid measurement when it is assessed within a particular sex and age group. According to the BMI measurement system, it is easy to identify overweight adolescents and children. For that reason, the researchers used growth charts that had been developed in order to determine the percentile of BMI for girls and boys of each age.⁷

Children's Depression Inventory (CDI): The CDI is composed of a 27-item self-report, symptom-oriented scale which is particularly suitable for children of school age as well as adolescents. The scale is a frequently used screening-device within clinical settings. The scale helps to quantify a variety of depressive symptoms. The standardized Turkish version of the CDI was applied and evaluated.⁸

The Capa Social Phobia Scale for Children and Adolescents (CSPCA): The CSPCA is a 25-item self-report scale which is used for children and adolescents. It measures the responses of children and adolescents by using a 5-point numeric response scale.⁹

Social Anxiety Scale for Children-Revised (SASC-R): The SASC-R involves eighteen items which are rated on a 5-point numeric response scale.¹⁰

Coopersmith Self-Esteem Inventory (CSEI): The CSEI is a 58-item self-report scale which is used for children. For each item, participants are requested to answer whether the statement provided is 'like me' or 'not like me'.¹¹

Strength and Difficulties Questionnaire (SDQ): The SDQ consists of a brief questionnaire, which is usually administered to teachers and parents of children between the ages of 4-16 and adolescents between the ages of 11-16 to assess common areas of behavioral, as well as emotional difficulties. The SDQ also enquires of the informant a variety of problems concerning social impairment and resultant distress.¹²

Interventions

In the present study, the researchers applied two

kinds of interventions which are group-based CBT and lifestyle interventions. Group-based CBT comprised of nine group sessions. There was also a supplementary one parent group session. Mixed sex groups of up to five participants were treated in nine 45 minute sessions over ten weeks, using the adolescent coping with depression course¹³ and Harrington's cognitive therapies of depressions for adolescents.¹⁴ During the study, the researchers repeated these group interventions with additional adolescents using the same protocols. A parallel but separate session for the parents of members of the depressed group was performed. The parents also learned the same communication skills shown during the sessions for the adolescents.

A comprehensive program regarding lifestyle modification is generally considered to be a supportive option to achieve a goal. Lifestyle interventions such as weight control, supported with diet and exercise (recommended but not controlled, relied on the self-reports of the patients and their parents). In a dietary intervention, the subjects first documented their nutrition strictly, for one week, and then the pediatricians modified their daily nutrition. In the beginning, the metabolic and hormonal changes were monitored weekly and then monthly, at the adolescent outpatient clinic.

RESULTS

The CDQ, CSPCA, CSEI, and SASC-R were examined. Table 1 shows the changes in the scales, BMI, and the weight of the participants. In the study, the CDI, CSPCA, CSEI, and SASC-R scores significantly decreased after ten weeks of CBT ($p < 0.05$). Although the BMI of the adolescents improved, as seen in Table 1, there were no differences in weight. Statistical Package for the Social Sciences (SPSS v.22.0) was used to conduct all analyses. The Wilcoxon signed-rank test was performed to compare pre-treatment and post-treatment scores for each group.

DISCUSSION

It was hypothesized that group-based CBT could help us to treat depression in children who were obese/overweight, and indirectly, this improvement in depression would encourage them to obey their dietetic course and support them in losing weight. Our findings demonstrated a significant improvement in depression, social phobia, social anxiety, and self-esteem. However, only a

Table 1. Demographic and clinical characteristics of participants at pre- and post-treatment

	Pretreatment Median (IQR)	Posttreatment Median (IQR)	Wilcoxon signed-rank test z	p
Children's Depression Inventory	20 (16.22)	11.5 (10.17)	-2.56	<0.05
Capa Social Phobia Scale for Children and Adolescents	71.5 (53.75)	47 (33.64)	2.55	<0.05
Coopersmith Self-Esteem Inventory	48 (38.58)	76 (56.92)	2.31	<0.05
Social Anxiety Scale for Children-Revised	55.5 (35.66)	36 (23.49)	2.39	<0.05
Body Mass Index	28 (26.33)	28 (26.33)	-2.31	<0.05
Weight	71 (66.86)	71 (64.89)	-1.84	>0.05

2% weight reduction was observed. The CDI scores showed a significant change among the patients (Table 1).

This result supported our hypothesis about the positive effect of CBT intervention in depressed adolescents, excluding other factors. Furthermore, the 10-week group-based CBT and parent sessions resulted in clinically significant changes between the variables including self-esteem, social anxiety, and social phobia. However, we observed no change in the weight status of the participants.

The current study is the pioneer to enable the treatment extension of depression in obese/overweight adolescents using group-based CBT in Turkey, which is an important issue scientifically. In ongoing research, we will compare our results with a control group and improve our research with a follow-up study to check the instability and thus improve our present findings.

During adolescence, depression and obesity are related and we should try to understand their different underlying mechanisms.

The findings support the results of the present study.¹⁵ For example, it is recommended a prospective study design to help distinguish depression as a cause and not an effect of obesity. The findings of a meta-analysis including seventeen researches which investigated the association between obesity and depression in the community clearly revealed that there is a significant correlation between obesity and depression.¹⁶ Some researchers also found that males with chronic obesity had a greater tendency to develop depression compared with non-obese males. On the other hand, it is reported that female adolescents with obesity have a greater tendency to develop depressive symptoms.¹⁷ Moreover, the results of the current study bear comparison to the work which demonstrated that adolescent obesity was not related with the

development of adult depression.¹⁸

People who are overweight and obese may take an advantage of psychological interventions to reduce body weight. CBT is particularly suitable for treatment when combined with physical activity and nutritional education.¹⁹

There are a number of researches mentioned significant improvements in adolescent weight status.¹⁹⁻²¹ In contrast, a study which found that the effects of CBT on weight status did not significantly differ from those of either behavioral therapy or relaxation therapy.²² A model of combined weight management was introduced in the study in which the participants who completed the study lost 114 ± 5 and 9% weight in the first sixteen weeks and the loss of weight was comparable to what was achieved in non-depressed individuals following 16 weeks of lifestyle interventions.²³ The use of CBT is associated with an improvement, rather than a deterioration of depressive symptoms, and the majority of adolescents with obesity and depression achieved acceptable weight loss.

In the current study, the researchers tried to adapt different group-based CBT models for adolescents with obesity and depression. The study applied cognitive and behavioral techniques to enable the adolescents to employ behavioral changes and then evaluated the consequences of change. They focused on faulty cognitive processes and tried to change certain core beliefs and cognitions. They supported the sessions with homework. Every session started with an evaluation of the homework and reporting about the general mood status of the participants.

According to our findings, adolescents who are suffer from obesity and depression had lower self-esteem than non-depressive adolescents with obesity ($p<0.001$) and they self-reported feelings of sadness, anhedonia, and social isola-

tion as the causes of this. At the end of the group sessions, the self-esteem scores of the participants were considerably higher than baseline ($p<0.05$). The results also showed a significant improvement in scores of social anxiety in those receiving group-based CBT. The researchers believe that this achievement is the consequence of the group cohesion within group therapy, which weighs positively on the techniques applied during the sessions. In the current study, the development of group cohesion over the course of the psychotherapeutic session was associated with significant reduction in depressive symptoms and improvements regarding anxiety, stress, depression, and functional impairment. Our results support the work which demonstrated that changes in group cohesion are linked to reduced social anxiety symptoms.²⁴

The study has a number of limitations such as comparatively small sample size and a lack of adequate control and comparison groups. Additionally, a follow-up evaluation of the individuals taken at 6 to 12 months needs to be ensured with new data, which has a notion of durability for changes in both symptoms and weight in de-

pression. The researchers did not have follow-up results for depression, weight reduction, or self-esteem.

All in all, the current study illustrates positive results regarding the treatment of depression in adolescents with obesity. It is important to observe the improvement of self-esteem, social anxiety, and social phobia scores of the participants after the group therapy sessions. It is very important to specify combined cognitive and behavioral strategies and integrate CBT-based lifestyle interventions, motivation, and social support.²⁵

These results suggest that further research is required with the objective of developing cognitive-behavioral interventions that help patients in weight loss and the maintenance of healthy weight.

Limitations of the study

1. Small sample size,
2. The exact details about the diet program received from the pediatric clinic.

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