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Research / Araştırma

Evaluation of Depression and Social Anxiety Symptoms in Obese Children

Esra Akyuz Ozkan[1], Ali Irfan Gul[2], Zeynep Tuba Ozdemir[3], Hasim Husrevsahi[4], Zehra Yildirim[5], Esra Domur[1], Ummugulsum Aliye Gecit[1]

[1]Bozok University, Faculty of Medicine, Department of Pediatrics, Yozgat - Turkey
[2]Bozok University, Faculty of Medicine, Department of Psychiatry, Yozgat - Turkey
[3]Bozok University, Faculty of Medicine, Department of Internal Medicine, Yozgat - Turkey
[4]Bozok University, Faculty of Medicine, Department of Pediatrics and Pediatric Cardiology, Yozgat - Turkey
[5]Bozok University, Faculty of Medicine, Department of Dietary, Yozgat - Turkey

ABSTRACT

Evaluation of depression and social anxiety symptoms in obese children

Objective: The present study aimed to assess depression and social anxiety symptoms in obese children.

Methods: The Children's Depression Inventory (CDI) and the Social Anxiety Scale for Children - Revised (SASC-R) were administered to 80 obese children and 82 controls.

Results: The obese group consisted of 42 male and 38 female children, mean age 12.48±2.70 years (range 7-17 years), mean body mass index (BMI) was 27.47±3.72 kg/m^2; controls were 43 male, 39 female children, mean age 12.93±2.32 years (range 9-17 years), mean BMI was 16.92±5.17 kg/m^2. Mean social anxiety scores were higher in the obese group than in the control group. Mean depression scores were significantly higher in the obese group than in the control group. The mean depression scores were higher in obese females compared to control females as well as in males. The mean social anxiety scores were higher in obese females than in controls as well as in males. There was no correlation between BMI and depression and social anxiety scores in obese males and females. Among obese childeren 21.5% and among the control group 14.3% had a value of CDI above the cut-off point, and this was statistically significant. Among obese childeren 15.2% of females and 10.4% of males had a value above the cut-off point, but the difference between sexes was not statistically significant.

Discussion: Depression and social anxiety symptoms were more common in obese children and did not relate to the degree of obesity. The prevention of childhood obesity is important in both sexes for reducing the risk of psychological disorder in adulthood.

Keywords: Children, depression, obese, social anxiety

ÖZET

Obez çocuklarda depresyon ve sosyal anksiyete belirtilerinin değerlendirilmesi

Amaç: Bu çalışma ile obez çocuklarda depresyon ve sosyal anksiyete belirtilerinin değerlendirilmesi amaçlanmıştır.

Yöntem: Çocukluk Çağı Depresyon Envanteri (ÇÇDE) ve Çocuklar için Sosyal Anksiyete Ölçeği- Gözden Geçirilmiş (ÇESAÖ-GG) 80 obez ve 82 kontrol grubuna uygulanmıştır.

Bulgular: Obez grupta 42 erkek ve 38 kız çocuk mevcut olup ortalama yaş 12.48±2.70 yıl (7-17 yıl), ortalama vücut kitle indeksi (VKİ) 27.47±3.72 kg/m^2 idi. Kontrol grubunda ise 43 erkek 39 kız çocuk mevcut olup ortalama yaş 12.93±2.32 yıl (9-17 yıl), ortalama VKİ 16.92±5.17 kg/m^2 idi. Ortalama sosyal anksiyete skoru obez grupta kontrol grubuna göre daha yüksekti. Ortalama depresyon skoru obezlerde kontrollere göre anlamlı derecede yüksekti. Ortalama depresyon skoru obez kızlarda ve aynı zamanda erkeklerde daha yüksekti. Ortalama sosyal anksiyete skoru obez kızlarda ve erkeklerde kontrol grubuna göre daha yüksekti. Depresyon ve sosyal anksiyete skorları ile VKİ arasında obez erkek ve kızlarda korelasyon bulunamadı. Obez çocukların %21.5'i, kontrol grubunun %14.3'si (ÇÇDE) kesme değerinin üzerinde idi ve istatistiksel olarak anlamlıydı. Obez kızların %15.2'si, obez erkeklerin %10.4'ü kesme değerinin üzerinde idi ve cinsiyetler arasındaki bu fark istatistiksel olarak anlamlı değildi.

Tartışma: Depresyon ve sosyal anksiyete belirtileri obez çocuklarda daha yaygındır ve obezite derecesi ile ilişkili değildir. Çocukluk çağı obezitesini önlemek yetişkinlikteki psikiyatrik bozuklukların azaltılmasında her iki cinsiyet için de son derece önemlidir.

Anahtar kelimeler: Çocuk, depresyon, obez, sosyal anksiyete

Address reprint requests to / Yazışma adresi:
Esra Akyuz Ozkan,
Bozok University, Faculty of Medicine, Department of Pediatrics, Adnan Menderes Bulvari, No: 44, 66200/Yozgat, Turkey

Phone / Telefon: +90-354-212-7060

Fax / Faks: +90-354-214-0612

E-mail address / Elektronik posta adresi: esra.akyuz@mynet.com

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INTRODUCTION

Obesity is an increasing medical problem affecting children and adolescents in many countries around the world (1-3). It is defined by a body mass index (BMI) at or above the 95th percentile for age and sex (4). Childhood obesity has a wide range of serious complications and increases the risk of early illness and death in later life. It is considered as a psychosomatic illness by some researchers (5,6).

Obesity is related both socio-economic disadvantage and low physical activity, which are associated with the depression (7). Obese people think themselves as overweight; stamped on these issues and are often discriminated against in society and therefore feel worthless and carry themselves with a sense of guilt; they have low self-esteem (8). It has been shown in studies that; obesity can be influential in development of depression and weight loss is associated with decreased depression; and again depression is related to failure to weight loss (9). In many studies; obesity and depression is reported to be differences in terms of gender; and some studies have shown that obese women are more prone to psychiatric and psychological disorders (10).

Social anxiety is characterized by fear of negative evaluation and distress in social situations. It may occur as a primary condition or can be seen secondary to conditions such as stuttering and obesity (11). It is reported that anxiety level and anxiety disorders are seen more commonly in obese individuals (12). People with social anxiety are very sensitive to criticism and negative thoughts and try to avoid them (13). Liebowitz et al. (14) revealed that although low levels of social anxiety can be seen in most people, diminishing every day, in pathological conditions reduction in social anxiety is not observed. The obesity epidemic highlights the need to increase prevention and intervention efforts, possibly by targeting younger and less overweight children. Thus, it is critical to identify factors that are associated with increased weight in childhood.

The presence of symptoms of anxiety and depression may be thought of as a result of psychosocial effects of obesity, and a follow-up of patients displaying these symptoms is important for early diagnosis of psychiatric disorders that may occur.

The present study aimed to assess depression and social anxiety symptoms in obese children aged 7-18 years compared with a control group to emphasize the importance of obesity in children with regard to their psychology.

METHOD

The study was carried out between January and June 2014 at the Department of Pediatrics, Medical Faculty of Bozok University in Yozgat. After approval by the institution's ethics committee and having received informed consent forms signed by the parents, the patients and a control group of otherwise normal individuals were selected randomly from the outpatient population of our department. After measuring body weight and height, the body mass index (BMI) of all children was calculated. Obesity was defined as a BMI exceeding 95th percentile (15).

A total of 80 exogenous obese patients (aged 7-17 years) and 82 healthy controls (aged 9-17 years) were included in the study.

Inclusion criteria for this study was to have sufficient education to fill out self-report scales appropriately. Patients with known pre-existing psychotic disorder and physical illness were excluded. The severity of depression and social anxiety symptoms were evaluated with the Children's Depression Inventory (CDI) and the Social Anxiety Scale for Children - Revised (SASC-R).

Children's Depression Inventory (CDI): One of the commonly used scales of depression in childhood. CDI was developed in 1981 by Kovacs (16,17). It can be applied to children aged 6-17 years and adolescents. The scale consists of 27 items. There are three statements in each item. These statements are based on the presence and severity of symptoms found, which are scored as 0, 1, or 2. The score of the scale ranges from 0-54 (16,17). Cut-off

point was 19. Reliability and validity of the scale in Turkey were confirmed by Oy (18).

Social Anxiety Scale for Children - Revised (SASC-R): This scale is based on the improved self-report by La Greca et al. (19) and was published in 1988. This scale consisted of 10 questions; it was revised in 1993 and transformed into a new scale with 18 questions (20). In the preparation of materials, the authors report that their results meet both of the two components of social anxiety: the fear of negative evaluation and distress/discomfort in the social environment. All of the ten questions in the first form are used in the second version, too. Scores obtained from the scale are between 18 and 90. The validity and reliability of this scale was tested in Turkey and it was concluded that SASC-R was a reliable and valid tool to measure social anxiety in children and adolescents (21).

Statistical Analyses

The statistical analyses were carried out using the Statistical Package for Social Sciences (SPSS) 18. Before performing the Student t test, the data were checked for normality of distribution by Kolmogorov–Smirnov test. Variables were expressed as mean±SD and percent. Comparisons of variables were performed using unpaired Student t test for continuous variables and chi-square tests for dichotomous variables. Bivariate associations of the variables were assessed using Pearson's correlation coefficients, and a p value <0.05 was considered to indicate statistical significance.

RESULTS

The obese group consisted of 42 males and 38 females, mean age 12.48±2.70 years (range 7 to 17 years), mean body mass index (BMI) was 27.47±3.72kg/m^2. In the control group, there were 43 males and 39 females with a mean age of 12.93±2.32 years (range 9 to 17 years), mean BMI was 16.92±5.17kg/m^2. There was no significant difference in mean age and gender between the two groups (p>0.05). Mean social anxiety scores were significantly higher in the obese group than in the control group (58.43±9.27 versus 36.36±5.92, p<0.001). Mean depression scores were significantly higher in the obese group than in the control group (19.86±3.12 versus 15.13±5.62, p=0.025) (Table 1).

Table 1: Comparison of demographic variables, depression and social anxiety scores in obese children and control group

	Obese group n=80	Control group n=82	t	χ^2	p[a]
Male/Female	42/38	43/39		0.122[b]	0.386[b]
Age (years)	12.48±2.70	12.93±2.32	1.13		0.259
Body mass index (kg/m^2)	27.47±3.72	16.92±5.17	12.99		<0.001*
Depression score	19.86±3.12	15.13±5.62	9.51		0.025*
Social anxiety score	58.43±9.27	36.36±5.92	17.95		<0.001*

[a]Student's t test, [b]Chi-square test, *Statistically significant (p<0.05)

Table 2: Comparison of age, body mass index, depression and social anxiety in obese children and control group according to gender

	Male				Female			
	Obese	Control	t	p	Obese	Control	t	p
Age (years)	12.55±2.49	12.17±1.86	0.79	0.429	12.40±2.94	12.22±1.72	0.82	0.123
Body mass index (kg/m^2)	28.34±3.70	17.27±4.17	10.01	<0.001*	26.54±3.56	17.18±4.02	8.41	<0.001*
Depression score	21.85±2.64	16.53±5.69	8.43	0.023*	22.87±3.58	17.84±5.61	7.21	0.025*
Social anxiety score	58.00±9.05	35.36±6.61	13.15	<0.001*	58.90±9.60	37.50±5.65	12.17	<0.001*

*Statistically significant (p<0.05).

The mean depression scores were higher in obese females than in control females (22.87±3.58 versus 17.84±5.61, p=0.025) as well as in males (21.85±2.64 versus 16.53±5.69, p=0.023). The mean social anxiety scores were higher in obese females than in controls (58.90±9.60 versus 37.50±5.65, p<0.001) and in males (58.00±9.05 versus 35.36±6.61, p<0.001) (Table 2).

There was no correlation between BMI and depression and social anxiety scores in obese children (r=0.056, p=0.620 and r=0.037, p=0.745, respectively). Depression and social anxiety scores in females (r=0.086, p=0.645 and r=0.185, p=0.260, respectively) and males (r=0.036, p=0.821 and r=0.230, p=0.142, respectively) were not correlated with BMI. On the CDI, 21.5% of obese children and 14.3% of the control group had a value above the cut-off point, and this was statistically significant (p=0.032). Among obese children 15.2% of females and 10.4% of males had a value above the cut-off, but there was no statistical difference between males and females (p=0.257).

DISCUSSION

Obesity is a public health problem that has a negative impact on physical health and psychological well-being. This study investigated depression and social anxiety symptoms in obese children and also assessed if there was a relationship between the degree of obesity and childhood depression and social anxiety symptoms. Studies investigating the relationship between childhood obesity and psychological problems have produced mixed results. Castelnuovo-Tedesco and Schievel (22) reported that, while mild and moderate depression and personality disorders are more common in obese individuals, severe psychopathology such as severe psychosis and neurosis were observed rarely. The present study demonstrates that depression and social anxiety scale scores were higher in obese children than in controls. In consultation with their families, psychiatric support was given However, the psychiatric diagnosis of the patient and distribution were not followed. Oyekcin et al. (23) showed that obese patients had moderate anxiety signs as well as depressive symptoms, and they also considered that anxiety and depressive symptoms were due to psychosocial effects of the obesity itself. Eren et al. (24) found higher rates of depression and social anxiety in obese adults. They reported social anxiety at a rate of 22.6% and major depressive disorder in 81.3% of obese individuals. Dallar et al. (25) showed that depression and self-esteem deficiency ratios were significantly higher in the obese group.

Esposito et al. (26) revealed that obese children showed higher depression and anxiety symptoms than controls, and there was a positive relationship between BMI z score and depression and anxiety scores. Roohafza et al. (27) assessed depression in obese children and adolescents aged 10-18 years compared with a control group and reported that there was no statistically significant difference. Rofey et al. (28) investigated the relationship between childhood psychopathology and weight over the course of 3 years and found that both childhood depression and anxiety were associated with increased BMI percentiles. Mustillo et al. (29) showed that chronic obesity was associated with psychopathology in children.

Obesity is characterized by a body image disturbance, and there is also known to be a predisposition to stigmatization. Long glances from people or whispered comments or other factors cause phobic avoidance in obese individuals. To feel excluded from society may contribute to the development of depression, anxiety, and other disorders. Researchers agree that dealing with excessive body weight and distorted body images are among the important features found in obese people (22,30). The emphasis on values such as youth, beauty and elegance in the community leads to feelings of inadequacy and lack of attractiveness in obese individuals. On the other hand, the prevalence of psychiatric disorders is found to be higher in families of obese patients (31). Some findings suggested that psychiatric disorders were seen in obese patients possibly due to genetic predisposition or a broken family environment relating to these disorders. Studies have shown that eating increases with distress and fatigue decreases with fear, tension and pain (32). It is also suggested that obese individuals eat excessively when they become anxious, as eating reduces anxiety (33).

Although the mechanism of anxiety reduction through eating has not been understood sufficiently, the effects of protein and carbohydrate intake on serotonin synthesis have been emphasized.

There is an interaction between eating behavior and neural systems. Eating behavior is under the control of complex neural mechanisms, especially serotonin. At the same time, food intake is effective in controlling the release of serotonin in serotonergic neurons. Serotonin release increases with the increase of plasma tryptophan levels and insulin, whose levels increase with carbohydrate intake but do not change by protein intake (34). It is well known that serotonin is associated with mood, appetite, pain sensation, and blood pressure. Patients' carbohydrate intake, depending on serotonin release, causes them to feel better, with the result of becoming addicted to these foods. Carbohydrate intake lets people feel good about themselves, but it also causes weight gain.

Serotonin is also a neurotransmitter that plays a role in the pathophysiology of psychiatric disorders. Disorders of the serotonin pathway may explain both psychiatric disorders and the development of obesity (34).

Several studies reported that the relationship between obesity and depression in adults differs between men and women. For example, Istvan et al. (35) showed a positive relationship between depression and obesity among women but not among men. Similarly, Faith et al. (36) found a positive relationship between neuroticism and BMI only in women. Additionally, Carpenter et al. (37) indicated a U-shaped relationship such that relatively high and low BMI values were associated with an increased probability of past-year major depression. Anderson et al. (38) found that obese female adolescents were at increased risk for the development of depression or anxiety disorders. In a community-based study, the association of obesity with anxiety, depression, and emotional well-being was investigated in three age groups. It was demonstrated that anxiety, depression, and lower well-being were associated with obesity in females but not in males (39). Other data showed a positive relationship between depression and obesity among females, while lower BMI was associated with major depression among males (37). In the current study, there was no gender difference in obese children regarding depression.

In our study, we could not show any correlation between BMI and depression and social anxiety scores in either female or male obese children. This result suggests that depression and social anxiety symptoms are more related to the presence of obesity rather than to its severity. Eren et al. (24) could not find a correlation between anxiety and depression levels with obesity, similar to our data.

The main limitation of this study was that we did not use a structured scale for evaluating depression and social anxiety.

In conclusion, our results support previously published reports which show a higher ratio of psychopathology among obese children. We revealed that the severity of depressive and social anxiety symptoms were high in obese patients and there were no gender differences. Also, depression and social anxiety symptoms were not related to the degree of obesity. These results suggest that prevention of childhood obesity is equally important in both sexes for reducing the risk of psychological symptoms in adulthood. There is a need for controlled cohort studies in larger groups. Psychiatric help and support will contribute positively to obesity treatment.

Contribution Categories	Name of Author
Development of study idea	E.A.O., A.I.G., Z.Y., U.A.G.,E.D.
Methodological design of the study	H.H., Z.T.O.,E.A.O., A.I.G., Z.Y.
Data acquisition and process	E.A.O., U.A.G., E.D., Z.Y.
Data analysis and interpretation	E.A.O., A.I.G.
Literature review	E.A.O., U.A.G., E.D.
Manuscript writing	E.A.O., Z.T.O., H.H.
Manuscript review and revisation	E.A.O., H.H., Z.T.O.

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