



Evaluation of Sociodemographic Characteristics, Psychiatric Comorbidities, and Self-Esteem in Adolescents Diagnosed with Obesity and Comparison with Control Group

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Abstract

Aim: The primary objective of this research was to investigate the sociodemographic profiles, prevalence of psychiatric comorbidities, and self-esteem levels among adolescents diagnosed with obesity, and to contrast these findings with those of a control group.

Material and Method: This study employed a cross-sectional design involving 30 obese adolescents and 28 age- and gender-matched participants without obesity, all between the ages of 11 and 18. Data collection instruments included a structured sociodemographic questionnaire, the Schedule for Affective Disorders and Schizophrenia for School-Age Children–Present and Lifetime Version (K-SADS-PL), and the Rosenberg Self-Esteem Scale (RSES). Group comparisons were made using independent samples t-tests and chi-square tests, with statistical significance defined as $p < 0.05$.

Results: No statistically significant differences were identified between the groups regarding age, sex distribution, school grade level, or academic achievement. However, the body mass index (BMI) was markedly elevated in the obese group compared to controls ($p < 0.001$). Psychiatric diagnoses were significantly more frequent in the obesity group (60%) relative to the control group (32.1%) ($p = 0.034$), with mood disorders and multiple psychiatric diagnoses being notably prevalent. Despite this, there were no significant group differences in mean RSES scores or self-reported self-esteem levels ($p = 0.290$ and $p = 0.793$, respectively).

Conclusion: The findings underscore a higher rate of psychiatric comorbidity among adolescents living with obesity, suggesting that mental health evaluation and psychological support should be integral components of adolescent obesity prevention and intervention strategies.

Keywords: Adolescent obesity, psychiatric comorbidity, self-esteem

INTRODUCTION

Obesity is recognized as a long-standing medical condition marked by an abnormal accumulation of body fat, which occurs when energy consumption surpasses energy expenditure (1). The most frequently utilized metric to assess and categorize obesity is the body mass index (BMI), calculated by dividing an individual's weight by the square of their height in meters (kg/m^2) (2). According to the World Health Organization's classification, a BMI under 18.5 indicates underweight status, a value between 18.5–24.9 reflects normal weight, 25–29.9 is considered overweight, 30–34.9 defines class 1 obesity, 35–39.9 corresponds to class 2 obesity, and a BMI of 40 or more is classified as class 3 or morbid obesity (3).

Beyond its well-documented adverse effects on physical health, both obesity and overweight are linked to the emergence of psychiatric conditions. These weight-related issues have also been shown to negatively influence the quality of life in pediatric and adolescent populations (4). Extensive research has demonstrated that obesity in youth is strongly associated with reduced levels of perceived well-being and life satisfaction (5). Adolescents with obesity tend to report a greater number of somatic complaints (6), higher susceptibility to sleep-related difficulties (7), and an increased frequency of symptoms such as headaches, backaches, and gastrointestinal disturbances (8-10). Behavioral challenges are also more common, with studies

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indicating a higher prevalence of both internalizing symptoms (e.g., emotional withdrawal, anxiety) and externalizing behaviors (e.g., aggression, rule-breaking) in obese and overweight adolescents. Furthermore, it has been well documented that these individuals experience more peer-related difficulties compared to adolescents with a healthy body weight (11).

The psychological implications of obesity and excess weight in youth are broad, encompassing both general psychosocial difficulties and more clearly defined psychiatric diagnoses. Children and adolescents affected by obesity are known to be at heightened risk for a variety of mental health concerns, such as distorted body image, diminished self-esteem, social exclusion, interpersonal difficulties, weight-based discrimination and bullying, decreased health-related quality of life, depressive symptoms, and disordered patterns of eating (including binge eating, eating without hunger, and loss of control over intake), along with heightened anxiety and a marked increase in both internalizing and externalizing problems (12-16).

This study is designed to evaluate the sociodemographic profiles of adolescents clinically diagnosed with obesity, to identify co-occurring psychiatric disorders, and to explore how obesity may influence self-esteem levels within this population.

MATERIAL AND METHOD

Study Design and Sample

Ethical clearance for this research was granted by the Non-Interventional Clinical Research Ethics Committee of Karabük University, Republic of Türkiye (Approval No: 2025/2226; Approval Date: April 16, 2025). Prior to participation, written informed consent was secured from all adolescents and their legal representatives. This investigation employed a cross-sectional study design and was carried out within the Department of Child and Adolescent Psychiatry at Karabük Training and Research Hospital. The research commenced in March 2025, with participant enrollment occurring between March and April of the same year. Adolescents who met the clinical criteria for obesity, were making their initial visit to the Pediatric Outpatient Clinic during this timeframe, consented to take part, and were subsequently referred to the psychiatry department were enrolled in the study group. A control group was established using volunteers without obesity and who were age- and gender-matched to those in the obesity cohort.

The study population included adolescents aged between 11 and 18 years who had been referred from the pediatric outpatient services to the child and adolescent psychiatry outpatient clinic. Those in the control group were individuals with no diagnosis of obesity and were matched to the study group participants based on both gender and age.

Inclusion criteria:

- Presentation to the Pediatric Outpatient Clinic with a BMI over 30,
- Sufficient mental capacity to comprehend the study and cooperate,
- Voluntary participation and provision of written informed consent.

Exclusion criteria:

- Presence of a physical or mental disability that would interfere with comprehension or cooperation,
- Refusal to give informed consent for participation in the study.

During the study period, a sociodemographic data form was administered to collect descriptive information about the participants. Psychiatric diagnoses were assessed using the Schedule for Affective Disorders and Schizophrenia for School-Age Children–Present and Lifetime Version (K-SADS-PL). The Rosenberg Self-Esteem Scale (RSES) was also administered to the adolescents.

Data Collection Tools

Schedule for Affective Disorders and Schizophrenia for School-Age Children–Present and Lifetime Version (K-SADS-PL)

The original version of this semi-structured diagnostic interview, known as K-SADS-P, was developed by Chambers and colleagues in 1984 (17). Later, it was updated and refined by Kaufman et al. in 1997 to assess psychiatric conditions in both children and adolescents (18). The instrument is specifically intended for use with both the young individual and their caregiver. It encompasses five primary diagnostic domains—mood disorders, psychotic disorders, anxiety disorders, behavioral disorders, and substance-related disorders—along with additional submodules and a global functioning evaluation scale tailored for pediatric populations (18).

The assessment of the scale's reliability and validity within the Turkish context was carried out by Gökler and colleagues in 2004. The first section collects sociodemographic information, health status, current complaints, history of psychiatric treatment, and information about school performance, hobbies, and social relationships. In the second section, approximately 200 specific symptoms and behaviors are assessed through a diagnostic screening interview. The severity of symptoms is rated on a scale from 0 to 3. If positive symptoms are identified during the screening, follow-up questions related to the specific diagnostic domain are administered to confirm the diagnosis. Each supplemental symptom checklist includes screening items and criteria for evaluating the most severe current and past episodes, with additional scoring (19).

Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) diagnostic criteria are used for each diagnosis. The third section, known as the general assessment scale for children, is used to evaluate the present functional status of the child. Regarding a study executed by Gökler et al., diagnoses established by child and adolescent psychiatrists (based on DSM-IV) showed statistically significant agreement with diagnoses obtained via K-SADS-PL interviews. Kappa values indicated excellent agreement for externalizing disorders, good agreement for attention deficit hiperactivity disorder (ADHD) and tic disorders, and moderate agreement for mood disorders, anxiety disorders, and obsessive-compulsive spectrum disorders (19).

Sociodemographic Data Form

A brief questionnaire was developed specifically for this study to assess variables such as age, gender, family structure, educational background, and history of psychiatric consultations.

Rosenberg Self-Esteem Scale

The RSES was employed in this study to assess the self-esteem levels of participating adolescents. Initially introduced by Morris Rosenberg in 1963 (20), the scale gained recognition for its psychometric robustness following validation and reliability testing in the United States and has since been extensively utilized in psychological research. The Turkish adaptation of the RSES underwent a validity and reliability assessment by Çuhadaroğlu, documented in his specialization thesis at the Hacettepe University Faculty of Medicine, Department of Psychiatry in 1986 (21). For this study, the assessment focused solely on the first 10 items of the self-esteem dimension, as adopted by Önder and colleagues in their research examining psychopathological indicators, quality of life, and parental behaviors in obese youth (22). According to the scoring criteria for the "Self-Esteem" subscale, a total score between 0 and 1 signifies high self-esteem, a score between 2 and 4 denotes moderate self-esteem, and a score from 5 to 6 indicates low self-esteem (21).

Statistical Analysis

Descriptive analyses were performed for all variables included in the study. Categorical data were summarized using frequencies (n) and corresponding percentages (%). Assessment of whether data conformed to a Gaussian distribution was conducted via the Kolmogorov–Smirnov procedure. Categorical comparisons across cohorts employed Pearson chi-square analyses, with Fisher's exact test substituting when expected cell counts were low. For interval data exhibiting normality, group means were contrasted using the independent-samples t-test. Statistical significance was defined at $p < 0.05$. All computations were executed in IBM SPSS Statistics for Mac (version 26.0; IBM Corp., Armonk, NY).

RESULTS

Sociodemographic and clinical data comparisons between the obese and control groups are displayed in Table 1. In the obesity group, there were 15 males and 15 females, while the control group consisted of 11 males and 17 females. The average age in the obesity group was 15.05 ± 2.21 years, and 14.35 ± 2.27 years in the control group. There were no statistically meaningful differences in gender or age distribution between the two cohorts ($p = 0.242$ and $p = 0.419$, respectively). As expected, BMI was markedly elevated in the obese group ($p < 0.001$). Educational level and school performance did not differ significantly between the groups ($p = 0.198$ and $p = 0.844$, respectively). Although higher rates of coexisting physical illnesses and medication usage were observed among the obese adolescents, these trends did not reach statistical significance ($p = 0.070$ and $p = 0.052$, respectively). Psychiatric diagnoses were found in 60% of the participants in the obesity group, while the prevalence was 32.1% in the control group, as illustrated in Figure 1. The difference in psychiatric comorbidity rates between the groups was significant ($p = 0.034$). No significant differences were noted between the groups in terms of RSES scores or levels of self-esteem ($p = 0.290$ and $p = 0.793$, respectively).

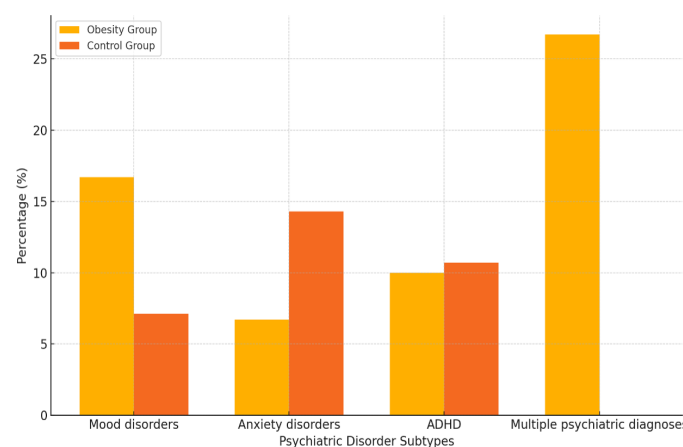


Figure 1. Psychiatric comorbidities in adolescents with and without obesity

Table 2 presents the comparison of family characteristics between the obesity and control groups. There were no statistically significant differences between the groups in terms of family type ($p = 0.187$), parental marital status ($p = 0.257$), number of siblings ($p = 0.601$), place of residence ($p = 0.732$), or family income level ($p = 0.355$).

Table 3 presents the comparison of parental sociodemographic and clinical characteristics between the obesity and control groups. No statistically significant differences were found between the groups in terms of maternal or paternal survival status, employment status, age, presence of psychiatric or organic illness, smoking or alcohol use, or education level.

Table 1. Comparison of sociodemographic and clinical data between the groups			
	Obesity (n=30) n (%) or mean±std	Control group (n=28) n (%) or mean±std	p-value
Gender			0.419
Male	15 (50)	11 (39.3)	
Female	15 (50)	17 (60.7)	
Age, years	15.05±2.21	14.35±2.27	0.242
BMI, kg/m²	32.30±1.79	21.54±2.94	<0.001
Educational status			0.198
Middle school	10 (33.3)	14 (50)	
High school	20 (66.7)	14 (50)	
Academic performance			0.844
Excellent	4 (13.3)	5 (17.9)	
Good	14 (46.7)	12 (42.9)	
Average	8 (26.7)	6 (21.4)	
Poor	3 (10.0)	5 (17.9)	
Irregular attendance	1 (3.3)	0 (0)	
Presence of medical illness	9 (30)	3 (10.7)	0.070
Medication use	11 (36.7)	4 (14.3)	0.052
Psychiatric disorder	18 (60.0)	9 (32.1)	0.034
Mood disorders	5 (16.7)	2 (7.1)	
Anxiety disorders	2 (6.7)	4 (14.3)	
ADHD	3 (10.0)	3 (10.7)	
Multiple psychiatric diagnoses	8 (26.7)	0 (0)	
RSES	1.86±1.25	2.22±1.30	0.290
Self-esteem level			0.793
High	16 (53.3)	12 (42.9)	
Moderate	13 (43.3)	15 (53.6)	
Low	1 (3.3)	1 (3.6)	
The chi-square test and independent samples t-test were used; A p-value of less than 0.05 was considered statistically significant; BMI: body mass index, ADHD: attention deficit hyperactivity disorder, RSES: Rosenberg Self-Esteem Scale			

Table 2. Comparison of family characteristics between the groups			
	Obesity (n=30) n (%)	Control group (n=28) n (%)	p-value
Family type			0.187
Nuclear	29 (96.7)	24 (85.7)	
Extended	1 (3.3)	4 (14.3)	
Parental marital status			0.257
Together	26 (86.7)	21 (75.0)	
Separated	4 (13.3)	7 (25.0)	
Number of siblings			0.601
1	13 (43.3)	12 (42.9)	
2	11 (36.7)	8 (28.6)	
3	6 (20)	5 (17.9)	
4	0 (0)	2 (7.1)	
6	0 (0)	1 (3.6)	
Place of residence			0.732
Urban	24 (80.0)	24 (85.7)	
Rural	6 (20.0)	4 (14.3)	
Family income level			0.355
High	14 (46.7)	9 (32.1)	
Medium	10 (33.3)	9 (32.1)	
Low	6 (20.0)	10 (35.7)	
The chi-square was used. A p-value of less than 0.05 was considered statistically significant.			

Table 3. Comparison of parental sociodemographic and clinical characteristics between the groups			
	Obesity (n=30) n (%) or mean±std	Control group (n=28) n (%) or mean±std	p-value
Mother			1.000
Alive	29 (96.7)	27 (96.4)	
Deceased	1 (3.3)	1 (3.6)	
Mother's employment status	9 (30.0)	12 (42.9)	0.309
Mother's age, years	41.93±5.11	41.50±6.61	0.780
Psychiatric illness in mother	4 (13.3)	1 (3.6)	0.354
Mood disorder	1 (3.3)	0 (0)	
Anxiety disorder	3 (10.0)	0 (0)	
OCD	0 (0)	1 (3.6)	
Organic disease in mother	9 (30.0)	4 (14.3)	0.152
Maternal smoking	10 (33.3)	13 (46.4)	0.308
Maternal alcohol use	2 (6.7)	0 (0)	0.492
Mother's education level			0.292
Illiterate	2 (6.7)	0 (0)	
Middle school	13 (43.3)	10 (35.7)	
High school	12 (40.0)	11 (39.3)	
University	3 (10.0)	7 (25.0)	
Father			0.605
Alive	29 (96.7)	26 (92.9)	
Deceased	1 (3.3)	2 (7.1)	
Father's employment status	24 (80.0)	20 (71.4)	0.446
Father's age, years	47.83±8.20	45.71±6.73	0.289
Psychiatric illness in father	4 (13.3)	1 (3.6)	1.000
Schizophrenia	1 (3.3)	1 (3.6)	
Organic disease in father	9 (30.0)	6 (21.4)	0.456
Paternal smoking	17 (56.7)	20 (71.4)	0.242
Paternal alcohol use	7 (23.3)	3 (11.1)	0.304
Father's education level			1.000
Middle school	13 (43.3)	11 (39.3)	
High school	12 (40.0)	12 (42.9)	
University	5 (16.7)	5 (17.9)	

The chi-square test and independent samples t-test were used. A p-value of less than 0.05 was considered statistically significant. OCD: Obsessive-compulsive disorder.

DISCUSSION

Obesity in adolescence represents a multifaceted challenge that extends far beyond simple caloric imbalance. Obesity results from excessive caloric intake relative to expenditure. Numerous studies have also demonstrated its profound impact on psychological well-being and psychiatric comorbidity in youth (11-13).

First, epidemiological evidence underscores a strong association between obesity and mood and anxiety disorders. A large systematic review found that obese children and adolescents have significantly higher rates of both depression and anxiety compared to their normal-weight peers. Longitudinal data further suggest a bidirectional link: not only does obesity increase the risk of later depressive and anxiety symptoms, but early mood and anxiety disorders may also predispose to future weight gain (23).

Peer relationships are another domain severely affected by adolescent obesity. Overweight youth experience both overt and relational peer victimization, which leads to social isolation and poorer friendship quality (24,25). This social marginalization reinforces low self-esteem and body dissatisfaction, creating a vicious cycle wherein distress drives maladaptive coping, such as emotional or binge eating (26).

Obese adolescents consistently report lower self-esteem, a critical component of mental health. Meta-analytic data indicate a significant inverse relationship between BMI and RSES scores, with overweight youth reporting markedly lower global self-worth (27,28). Such diminished self-esteem not only contributes to depressive symptomatology but also impairs motivation for health-promoting behaviors, hindering effective obesity interventions.

Somatic complaints and functional impairments are likewise more prevalent among obese adolescents. Studies reveal that headaches, back pain, and gastrointestinal symptoms occur at higher rates in this group, even after controlling for organic pathology (29,30). These somatic symptoms often drive excessive healthcare utilization and may mask underlying psychological distress, complicating clinical management.

Sleep disturbances represent another important intersection of obesity and mental health. Although some studies suggest no baseline association between sleep restriction and obesity (31), others have demonstrated that obese adolescents report higher rates of insomnia, poor sleep quality, and daytime somnolence, which in turn exacerbate mood dysregulation and cognitive difficulties (32). Given the bidirectional links between sleep, mood, and weight regulation, addressing sleep hygiene is a crucial component of holistic treatment.

Behavioral and psychosocial difficulties, including both internalizing (e.g., withdrawal, anxiety) and externalizing (e.g., aggression, conduct problems) profiles, are elevated in obese youth (33). Such behavioral patterns often reflect broader deficits in emotion regulation and social competence, necessitating integrated interventions that target both weight and psychosocial functioning.

Finally, the role of lifestyle interventions in ameliorating both physical and mental health sequelae of obesity cannot be overstated. Emerging evidence from randomized trials indicates that multi-component lifestyle programs yield modest but significant improvements in depressive symptoms and quality of life among overweight and obese children and adolescents, even in the absence of substantial BMI reduction (34). These findings highlight the therapeutic value of combining nutritional guidance, physical activity promotion, and cognitive-behavioral strategies to foster sustainable change.

There are certain limitations associated with this research. Primarily, the cross-sectional methodology used restricts the capacity to determine definitive causal links between obesity and associated psychiatric disorders. Another notable limitation is the modest sample size, which may constrain the applicability of the results to larger, more diverse populations. Moreover, the use of self-administered instruments like the RSES introduces the possibility of bias stemming from participants' tendency to respond in socially acceptable ways. Furthermore, the investigation did not thoroughly explore other potentially influential factors—such as nutritional intake patterns, levels of physical activity, or detailed aspects of family environment—which may have played a role in shaping both psychological well-being and physical health indicators.

In sum, obesity in adolescence is intrinsically linked to a spectrum of psychiatric comorbidities—including mood and anxiety disorders, low self-esteem, peer relationship problems, somatic complaints, and sleep disturbances—

that collectively undermine quality of life and treatment engagement. Effective management requires a biopsychosocial approach that integrates weight-management interventions with targeted mental health support, peer and family involvement, and attention to sleep and somatic symptomatology.

CONCLUSION

In conclusion, this study highlights the increased prevalence of psychiatric comorbidities among adolescents diagnosed with obesity compared to their age- and gender-matched peers, despite no significant differences in self-esteem levels. These findings emphasize the importance of incorporating routine psychological assessment and mental health support into the clinical management of adolescent obesity. Addressing both physical and psychological dimensions is crucial for improving overall health outcomes and quality of life in this vulnerable population.

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