

Exploring the Relationship Between Obesity and Social Anxiety Disorder: A Cross-sectional Study on Quality of Life Impacts in Adults Aged 18-45

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Abstract

Objective: Obesity and social anxiety disorders (SADs) are prevalent conditions that significantly impact individuals' quality of life. Understanding the relationship between these conditions is crucial for effective healthcare interventions. This study aimed to investigate the presence of SADs among obese and non-obese individuals aged 18-45 years and assess their impact on quality of life.

Methods: Participants were evaluated using a sociodemographic information form and the Liebowitz social anxiety scale (LSAS). Measurements of height, body mass, hip circumference (HC), and waist circumference (WC) were also performed to assess obesity status.

Results: Analysis revealed that as body mass index increased, LSAS scores significantly increased ($p=0.008$, $r=0.223$), indicating a strong correlation between obesity and social anxiety levels. Among the obese and non-obese groups, obese participants showed a significantly higher likelihood of having SAD [Liebowitz social anxiety disorder (LSAD)] ($p=0.026$). This trend was particularly pronounced among women; obese females had significantly higher LSAD scores than non-obese females ($p=0.023$). Furthermore, LSAD scores significantly increased with waist and HCs ($p=0.018$, $p=0.031$, respectively), with a notable gender difference where increased WC was associated with higher LSAD scores in women ($p=0.035$).

Conclusion: The findings underscore the importance of psychological support in obesity treatment and advocate for comprehensive psychiatric evaluations for all patients. Addressing gender-specific challenges through targeted interventions could improve overall mental and physical health outcomes. Incorporating psychological support is vital for achieving sustained weight loss and enhancing quality of life.

This study highlights the integral role of mental health support in treating obesity, emphasizing the need for gender-specific approaches to address the intertwined issues of obesity and social anxiety. A multidisciplinary strategy that includes psychological care is essential for effective treatment and long-term success.

Keywords: Obesity, social anxiety disorder, waist-to-hip ratio, waist circumference, hip circumference

INTRODUCTION

Obesity is defined as excessive or abnormal fat accumulation that jeopardizes health, embodying a complex condition with multifactorial origins. The World Health Organization (WHO) classifies an adult with a body mass index (BMI) of 25 or higher as overweight and 30 or above as obese. Globally, 39% of adults

were overweight or obese in 2016, a figure that rose to 66.8% within our nation (1,2). Data from the Turkish Statistical Institute in 2022 highlighted a higher prevalence of obesity among women (23.6%) than among men (16.8%) in Turkey (3).

The epidemic of overweight and obesity is acknowledged as a chronic disease, significantly contributing to the global surge in



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chronic, non-communicable diseases (4). Obesity is implicated in at least 13 types of cancer and is associated with numerous conditions affecting various body systems. Its adverse health consequences stem from mechanical, metabolic, and mental health issues, including musculoskeletal disorders, increased cardiovascular risk, type 2 diabetes, and psychological effects such as depression and low self-esteem due to societal stigma (2,4,5).

Social anxiety disorder (SAD), or social phobia, is characterized by intense, persistent fear or anxiety in social settings (6). Those afflicted experience severe discomfort and avoidance of situations where they might be judged or scrutinized, which impacts personal, academic, and professional life, leading to isolation and diminished quality of life (7).

The confluence of obesity and social phobia markedly diminishes individuals' well-being and quality of life. The bidirectional influence where SAD potentially alters eating behaviors, and conversely, where eating habits may signal the presence of SAD, underscores the complexity of these conditions (8).

This study was designed to explore the intricate relationship between obesity and social phobia, specifically investigating the presence and impact of social phobias on the quality of life among obese and non-obese individuals aged 18-45 years. Our aim is to shed light on these interactions to enhance healthcare delivery, raise awareness, and alleviate the stigma associated with these prevalent conditions.

METHODS

Research Setting and Participants

This descriptive study was conducted at University of Health Sciences Turkey, Şişli Hamidiye Etfal Training and Research Hospital, focusing on a single-center approach. We included 140 individuals aged 18-45 years who sought care at family medicine outpatient clinics for various reasons from November 15, 2022, to January 16, 2023. The participant count was determined on the basis of a 95% confidence level from 443 visits by this age demographic in the preceding three months to our clinic. The exclusion criteria were any psychiatric diagnoses, communication impediments, or refusal to participate in the research.

Data Collection Instruments

Data were gathered using a sociodemographic questionnaire developed by the researchers alongside the Liebowitz social anxiety scale (LSAS) through direct interviews after obtaining the consent of the participants. Measurements of height, body weight, hip circumference (HC), and waist circumference (WC)

were conducted with precision up to 0.1 kg for weight and 0.1 cm for height and circumference, using standardized methods and equipment (9). Obesity was classified according to BMI based on WHO standards (1). WC and HC measurements were taken with a flexible, non-stretch tape measure to the nearest 0.1 cm, under minimal clothing conditions, with the WC measured midway between the lower rib and the iliac crest, and HC at the buttocks' widest point. Waist-hip ratios (WHR) calculations followed WHO guidelines, categorizing ≥ 0.90 cm in men and ≥ 0.85 cm in women as elevated (10).

Liebowitz Social Anxiety Scale

The LSAS, introduced by Michael Liebowitz in 1987, is an extensively validated instrument for quantifying the severity of SAD symptoms (11). This 24-item questionnaire evaluates fear and avoidance of social situations over the previous week, including 13 items on public performance and 11 on social interaction. Each item is rated on a 4-point Likert scale for fear (0-3) and avoidance (0-3), with subscale scores derived from the sum of these ratings. The Turkish adaptation of LSAS by Dilbaz (12) has confirmed its reliability. A threshold score of 30 was identified to optimally discriminate between individuals with and without SAD, offering high sensitivity and specificity (13). Consequently, our analysis considered scores of 30 or higher on the LSAS as indicative of potential SAD.

Statistical Analysis

IBM SPSS version 25.0 (SPSS Inc., Chicago, Illinois, USA) was used for all statistical analyses. Continuous data are presented as mean \pm standard deviation, whereas categorical data are displayed as frequency (N) and percentage (%). The independent samples t-test and one-way ANOVA were used to assess differences across two or more groups regarding scale scores and other participant data. Student's t-test and Mann-Whitney U test were applied based on the normality of data distribution. Chi-squared tests examined the variation in categorical data across groups, with the Sidak test pinpointing significant differences when they arose. A p-value of ≤ 0.05 was considered statistically significant.

The study received approval from the Clinical Research Ethics Committee of University of Health Sciences Turkey, Şişli Hamidiye Etfal Training and Research Hospital (approval number: 3724, date: 15.11.2022).

RESULTS

The analysis encompassed 140 participants aged between 18 and 45 years, with a mean age of 32.27 ± 7.90 years. Of these, 94 (67.1%) were female. Detailed sociodemographic characteristics and family obesity history are presented in Table 1.

Of the participants, 69 (49.3%) were classified as obese. Heights averaged 167.77 ± 8.45 cm (range: 150-190 cm), while weights were on average 79.82 ± 18.55 kg (range: 46-130 kg). The mean waist and HCs measured were 91.82 ± 14.27 cm (range: 62-132 cm) and 110.27 ± 11.87 cm (range: 90-143 cm), respectively.

A comparative analysis of sociodemographic data against obesity status revealed significant findings, as detailed in Table 2.

Notably, individuals without a family history of obesity showed a higher tendency to be non-obese ($p=0.000$).

Within the cohort, 104 participants (74.3%) were identified with Liebowitz social anxiety disorder (LSAD), comprising 71 females (75.5%) and 33 males (71.7%). The distribution of LSAD across various BMI categories is depicted in Graphic 1.

Table 1. Sociodemographic data and family history of obesity of the participants

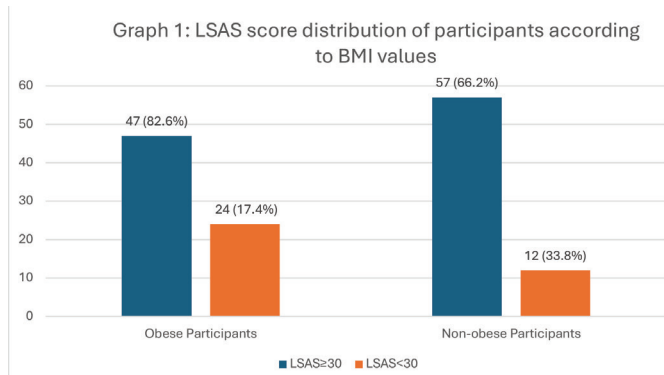
Variables		n	%
Gender	Female	94	67.1
	Male	46	32.9
Marital status	Married	80	57.1
	Not married	60	42.9
Educational status	Below high school	40	28.6
	High school and above	100	71.4
Employment status	Employed	84	60.0
	Unemployed	56	40.0
Income status	Low	71	50.7
	Medium	36	25.7
	High	33	23.6
Is there anyone in your family diagnosed with obesity?	Yes	30	21.4
	No	110	78.6

Table 2. Comparison of sociodemographic data and obesity status of participants

Demographic variables	Non-obese n (%)	Obese n (%)	p-value
Gender			
Female	46 (48.9%)	48 (51.1%)	0.547
Male	25 (54.3%)	21 (45.7%)	
Marital status			
Married	37 (46.3%)	43 (53.8%)	0.222
Not married	34 (56.7%)	26 (43.3%)	
Educational status			
Below high school	18 (45.0%)	22 (55.0%)	0.392
High school and above	53 (53.0%)	47 (47.0%)	
Employment status			
Employed	43 (51.2%)	41 (48.8%)	0.890
Unemployed	28 (50.0%)	28 (50.0%)	
Income status			
Low	36 (50.7%)	35 (49.3%)	0.992
Medium	18 (50.0%)	18 (50.0%)	
High	17 (50.7%)	16 (49.3%)	
Is there anyone in your family diagnosed with obesity?			
Yes	5 (16.7%)	25 (83.3%)	0.000
No	66 (60.0%)	44 (40.0%)	

An investigation into the correlation between BMI values and LSAS scores indicated a significant increase in LSAS scores parallel to an increase in BMI ($p=0.008$, $r=0.223$). Furthermore, when subjects were categorized into obese and non-obese groups, LSAS scores were significantly higher in obese individuals ($p=0.026$). A gender-specific analysis revealed this difference to be significant only among females, with obese women exhibiting higher LSAS scores than their non-obese counterparts ($p=0.023$). When regression analysis was performed according to whether the subjects were obese or not, no significant results were found with gender, SAD, and WHR ($R^2=0.068$).

Examining the relationship between waist and HCs and LSAS scores (Table 3) revealed a significant correlation; higher waist and HCs were associated with increased LSAS scores ($p=0.018$ and $p=0.031$, respectively). Focusing on gender disparities, an increase in WC significantly affected LSAS scores among women ($p=0.035$).



Graphic 1. LSAS score distribution of participants according to BMI values
LSAS: Liebowitz social anxiety scale, BMI: Body mass index

Additionally, participants with elevated WHR demonstrated higher LSAS scores ($p=0.007$), a trend particularly pronounced in women, where those with increased WHR showed significantly higher LSAS scores ($p=0.031$).

DISCUSSION

Our research aimed to illuminate the complex interplay between obesity and social anxiety by assessing participants using the LSAS and examining the correlation between obesity and SAD. Apart from the family history of obesity, sociodemographic comparisons between the obese and non-obese groups revealed no significant differences (2,4). Obesity emerges as a multifactorial condition, shaped by a blend of genetic, environmental, and lifestyle factors, with adult obesity often tracing back to familial and childhood instances, underscoring the role of inherited and environmental influences (14,15).

Moreover, obesity’s ramifications extend beyond metabolic disorders such as diabetes and cardiovascular diseases to encompass mental health issues, including various anxiety disorders and depressive states (16,17). The link between obesity and anxiety disorders, particularly SAD, might stem from obesity-induced body image dissatisfaction, societal stigma, and lowered self-esteem, making obese individuals more susceptible to anxiety disorders than their non-obese counterparts (18,19). Discrimination and reduced social support further intensify the psychological distress of obese individuals, limiting their social and psychological resources (20-22).

Remarkably, our study found a 74.3% prevalence of SAD, which is significantly higher than the general population’s estimated lifetime prevalence of 13% (23) and previous findings in obese

		LSAS score <30	LSAS score ≥30	p-value	
		Mean ± SD	Mean ± SD		
Waist circumference		87.69±13.89	107.11±11.56	0.018	
Hip circumference		93.25±14.18	111.36±11.84	0.031	
Waist circumference	Female	84.47±14.54	90.47±13.46	0.035	
	Male	93.38±10.98	99.24±14.03	0.187	
Hip circumference	Female	107.30±12.57	111.49±11.45	0.080	
	Male	106.76±10.00	111.09±12.81	0.322	
		n (%)	n (%)		
Waist circumference / hip circumference	Female	Normal	28 (65.1%)	15 (34.9%)	0.031
		Increased	43 (84.3%)	8 (15.7%)	
	Male	Normal	20 (64.5%)	11 (35.5%)	0.118
		Increased	13 (86.7%)	2 (13.3%)	

LSAS: Liebowitz social anxiety scale, SD: Standard deviation

populations (24,25). This heightened prevalence could be attributed to the post-pandemic context, aligning with studies indicating an increase in social anxiety incidences during and after the pandemic (26,27).

A pivotal discovery was the disproportionate impact of obesity on social anxiety based on gender, with women bearing a greater burden. This disparity likely arises from societal and cultural norms that impose stricter body image standards on women than on men, contributing to increased anxiety and body dissatisfaction among women (28). Studies corroborate this finding, showing a higher prevalence of severe anxiety among obese women compared with their non-obese counterparts (29), and a significant relationship between increased WHRs and social anxiety in women, a pattern not observed in men, indicating that females are more frequently exposed to idealized body images in daily life (30,31).

Pathophysiological explanations for these findings may include hormonal imbalances in obese women that affect mood-regulating neurotransmitters, thereby influencing anxiety levels (32). The societal preference for certain body shapes intensifies body image concerns, potentially leading to behaviors that further entrench obesity (33,34). While societal pressures are undeniable, not everyone is equally affected.

Research on gender differences in body appreciation shows that women are more likely to engage in harmful social comparisons, worsening body dissatisfaction and its psychological effects (35-37). Addressing obesity thus necessitates a holistic approach that includes psychiatric evaluation, acknowledging the interconnection between obesity and mental health (16,17). Although it is important to note that not everyone with social anxiety will be obese, and vice versa, social anxiety and obesity can influence each other through various behavioral, psychological, and social factors. Social anxiety can cause isolation, which may lead to emotional eating, lack of exercise, and low self-esteem (38). Bariatric surgery, despite its effectiveness in weight management, highlights the complex nature of obesity treatment, emphasizing the importance of considering pre-operative factors, eating behaviors, and mental health (39,40).

CONCLUSION

Integration of psychological support is crucial in obesity treatment, underscoring the need for comprehensive psychiatric evaluations before and during treatment. Addressing the psychological aspects of obesity enhances the effectiveness of medical and dietary interventions. Furthermore, recognizing gender-specific challenges can improve both mental and

physical health outcomes, advocating for interventions tailored to address these unique needs. Ultimately, a multidisciplinary approach, including psychological support, is pivotal for achieving sustainable weight management.

Further randomized controlled trials are necessary to confirm these findings and deepen our understanding of the intricate relationship between obesity, social anxiety, and gender.

Ethics

Ethics Committee Approval: The study received approval from the Clinical Research Ethics Committee of University of Health Sciences Turkey, Şişli Hamidiye Etfal Training and Research Hospital (approval number: 3724, date: 15.11.2022).

Informed Consent: Informed written consent was obtained from all participants.

Authorship Contributions

Concept: T.Ç., G.Z.Ö., Design: T.Ç., G.Z.Ö., Data Collection or Processing: T.Ç., G.Z.Ö., Analysis or Interpretation: T.Ç., G.Z.Ö., S.B.A., Literature Search: T.Ç., G.Z.Ö., S.B.A., Writing: G.Z.Ö., S.B.A.

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