

Relation of Depression and Anxiety Disorders in Choosing Obesity Management in Obese Patients

Abstract

Background: Obesity is a chronic medical illness with a higher risk of physical and mental cascade. People who seek obesity treatment were reported to have some psychiatric disorders affecting their disease and selection of management. **Aims of the Study:** This study aims to estimate the prevalence of depressive and anxiety disorders in obese patients seeking obesity management and explore the relationship between common psychiatric disorders (depression and anxiety disorders) and selection of the type of obesity management (surgical or non-surgical). **Methods:** Patients were recruited from Alazhar University hospitals, Egypt, and the total number completing the study was 1115 patients. All subjects underwent psychiatric interview through Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders (SCID-5 for DSM-5) for diagnosis of psychiatric disorders and completed two questionnaires, Hamilton Rating Scale for Depression (HRSD) and Hamilton Rating Scale for Anxiety (HRSA). **Results:** The prevalences of depressive and anxiety disorders were 29.23% and 25.56%, respectively, in all subjects. The most prevalent diagnoses were dysthymic disorder (20.7%), general anxiety disorder (16.95%), major depressive disorder (13.04%), and social phobia (12.4%). Our sample was divided into two groups (surgical and non-surgical). Dysthymia was more common in the surgical group (21.4% versus 19.8% $P = 0.560$), whereas major depressive disorder was more common in the non-surgical group (7.4% versus 5.4% $P = 0.593$); also, the non-surgical group was more likely to have “anxiety disorders” (29.23% versus 22.4%, $P = 0.840$), but severity of anxiety was higher in the surgical group according to HRSA score with a highly significant difference. **Conclusions:** A high prevalence of depression and anxiety disorders was found among patients who sought obesity treatment. Severity of anxiety was higher in the surgical group according to HRSA score with a highly significant difference, which may affect selection of treatment, so psychiatric evaluation and management are needed before and after obesity management to improve the outcome.

Keywords: Anxiety, bariatric surgery, depressive disorder, obesity

Introduction

Obesity is a chronic illness that has a negative impact on one's quality of life and causes 4% of years of life lost (YLL) and is implicated in disability-adjusted life years (DALYs) for at least 35.8 million worldwide.^[1] Every year, approximately 2.8 million people die as a consequence of obesity. Since 1975, global obesity has nearly tripled. In 2016, more than 1.9 billion adults were overweight, and 650 million of them were obese.^[2] Obesity is defined by the World Health Organization (WHO) as a body mass index (BMI) of 30 or higher, whereas overweight is defined as a BMI of 25–29. Also, obesity is sub-divided according to BMI into (Class 1: BMI of 30 to <35; Class 2: BMI of 35 to <40; Class 3: BMI of 40 or higher).^[3]

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The rate of overweight people in the Mediterranean region has reached alarming proportions. Obesity was found to be more common in women (35–75%) than in males (30–60%) in adulthood. Obesity in this region is caused by a variety of variables, including changes in eating choices, socioeconomic conditions, and inactivity.^[4]

Egypt, Bahrain, Jordan, Kuwait, Saudi Arabia, and the United Arab Emirates have the highest rates of overweight and obesity, according to data. Women's rates vary from 74 to 86%, whereas men's rates range from 69 to 77%. Adult women are more likely to be obese, whereas adult men are more likely to be overweight.^[5]

According to the WHO figures released for the year 2017, Egypt is one of the top 10 most obese countries, ranking seventh.

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Moreover, 35% of Egyptians are overweight.^[6] According to WHO figures, females were more likely than males to be overweight or obese (76 and 64.5%, respectively).^[6] Egypt's obesity rate has risen significantly in the past 30 years. According to the Egyptian Medical Association for the Study of Obesity in early 2010, 15% of Egyptian adolescents are overweight, compared to only 6% in 1990.^[7]

Increased obesity in Egypt is linked to junk food and fast food outlets as well as sedentary lifestyles. Furthermore, inherited variables may have a role in obesity risk.^[8]

Obesity should be considered as a public health problem that requires specific interventions.

Obesity is a major risk for cardiovascular diseases, diabetes, stroke, and other chronic diseases; it is also associated with an increase in the risk of morbidity and mortality.^[9] The patient's mental and social health is also affected; obesity is closely linked to mental health problems, especially anxiety and depression.^[10] In addition, lifetime diagnoses of major depression, bipolar disorder, panic disorder, and agoraphobia were more frequent in obese patients.^[11]

Several studies have assessed the prevalence of psychiatric illnesses in obese persons seeking weight loss. According to the findings of a study financed by the National Institute of Mental Health, approximately one out of every four cases of obesity is linked to a mood or anxiety illness, although the causative linkage and interplay between them is complicated and yet unknown.^[12] Another systematic review study indicated a clear bidirectional link between depression and obesity and vice versa, particularly among women, but only a mild link between anxiety and obesity.^[13] Obesity has been linked to adjustment depressive symptoms, according to a study, with obese people having a 55% increased risk of developing depression over time and depressed people having a 58% increased risk of becoming obese. The pre-operative incidence of mood disorders was 15–33%, whereas anxiety disorders were 24–30%.^[14]

Obesity was shown to affect 22.31% of mentally ill individuals in an Egyptian study, with the highest frequency among bipolar disorder patients (41.38%), depression patients (37.93%), schizophrenia patients (10.34%), anxiety disorder patients (6.9%), and substance abuse disorder patients (6.9%).^[15] Many varieties for obesity management include behavior modification, diet control, medication, and intra-gastric balloon and bariatric surgery used with obesity of different severities. Choosing the treatment may be affected by psychological factors, so psychiatric evaluation of obese patients became mandatory.^[16]

Psychological factors may have a role in the bariatric surgery outcome, and bariatric surgery may affect the outcome of psychiatric disorders. Some studies have found obese people with depression or anxiety improved by operation, but others find no relationship or even an increase in the psychiatric pathology.^[17]

Although depressive and anxiety disorders are more prevalent in obese patients and may have a role in selection of the type of obesity treatment, this factor is still under-studied. No known studies discuss the relationship between psychopathology and overweight and choose the manner of management. Therefore, our study aimed to evaluate the impact of depressive and anxiety disorders among obese patients in selection of the type of treatment (surgical and non-surgical) in a sample of Egyptian patients.

Methods

It is a cross-sectional study done in Al-azhar University hospitals, Faculty of Medicine, Al-Azhar University in Cairo and Demmita, Egypt, during 6 months' duration (January 2019 to the end of June 2019). As our samples were recruited through referral of all patients attending clinics with BMI ≥ 35 (Class 2 and 3 obesity) asking for obesity management for psychiatric evaluation, the total number of patients during that period was 1330 and the number of patients who completed the study was 1115 patients seen in four psychiatric clinics working for 5 days per week, with patients seen by expert consultants. The hospitals have a multi-disciplinary team, including internal medicine, surgery, psychiatry, endocrinology, urology, obstetrics and gynecology, nutrition, and physiotherapy specialists. All obesity management facilities are available, so patients can discuss and share with the team in selection of convenient treatment. (All procedures performed in this study were in accordance with the ethical standards of the Damietta Faculty of Medicine, Al-Azhar University, and National Research Committee and meet the ethical standard outlines in the Helsinki Declaration of 1975 as revised in 2000).

All patients participating in this study were evaluated psychologically with study tools including psychiatric interview through Structured Clinical Interview for DSM Disorders (SCID-5 for DSM-5) for diagnosis of psychiatric disorders and also to exclude substance abuse, mental disability, psychotic symptoms, body image distortion, or somatic delusion;^[18,19] also, Hamilton Rating Scale for Depression (HRSD) and Hamilton Rating Scale for Anxiety (HRSA) were used to confirm diagnosis and severity of depressive and anxiety disorders.^[20]

HRSA consists of 14 items to measure both psychic anxiety (psychological distress and mental agitation) and somatic anxiety and has 14 items with each item scored on a scale of 0 (not present) to 4 (severe), with a total score range of 0–56.^[21]

We used an Arabic validated form of the scale.^[22]

HRSD is used to assess depression and its severity. It covered symptoms of mood, anxiety, feelings of guilt, insomnia, weight loss, agitation or retardation, somatic symptoms, and suicide ideation. It is formed of 17 items, and a score less than or equal to 7 is normal.^[20] We used an Arabic validated version proved to be reliable in terms

of test-re-test reliability (intra-class correlation coefficient: 0.807; $P < 0.001$). With regard to internal consistency, the Cronbach's α values ranged between 0.607 and 0.756.^[23]

The exclusion criteria include patients younger than 18 years or with BMI < 35 or those who refused to provide consent or to complete the study.

After completion of psychiatric evaluation for all patients through research tools and clinical assessment and also after complete evaluation and investigations by the multi-disciplinary team and participation of patients in discussion with the team for the final decision to select the type of treatment (surgical or non-surgical), we divided our sample into two groups (surgical and non-surgical), and the results were analyzed statistically using the Statistical Package for Social Sciences, SPSS Version 11.0., for categorical variables. Chi-square test was used to compare the differences, and for continuous variables, we used t-test. The level of statistical significance was 0.05.

Results

A total of 1330 subjects were reviewed; 85 subjects were excluded because of refusal of psychiatric evaluation and 130 were excluded because of missed information or incomplete psychiatric evaluation, so the total number of subjects who completed the study was 1115.

According to the psychiatric interview and SCID, the prevalence of depressive disorders in the whole sample was 29.23% and the prevalence of anxiety disorders was 25.56%. The most prevalent diagnosis was dysthymic disorder (20.7%), generalized anxiety disorder (16.95%), followed by major depressive disorder (13.04%), and social phobia (12.4%).

According to selection of the type of management, our sample was divided into two groups (surgical and non-surgical), and the results showed that the prevalence of patients selected for surgical intervention (bariatric surgery) was 54% versus 46% for non-surgical intervention and patients selected for surgical intervention had higher BMI than others, with a high significant difference. About 70% of all subjects were females, and 30% were males without a significant difference between surgical and non-surgical groups. Also, the surgical group was younger in age and single (non-married), and highly educated patients (13–16 years of education) preferred non-surgical intervention with significant differences [Table 1].

Table 2 shows the prevalence of depressive and anxiety disorders and differences in distribution in both groups as follows:

The prevalence of depressive and anxiety disorders in whole subjects was high (about 29.23% and 25.56%, respectively), but there was no significant difference between both groups in distribution of depressive disorders as the prevalence was 29% and also in the mean of depressive HRSD score.

Table 1: Sociodemographic data of patients seeking obesity treatment

Sociodemographic data	Surgical (602) 54%	Non-Surgical (513) 46%	P
Gender			
Male	180 (30%)	168 (32.75%)	0.281
Female	422 (70.0%)	345 (67.25%)	
Age (years) (SD)	34.1	37.2	0.001
BMI mean	43.9	41.2	0.001
Educational years			
>16	31 (5.14%)	25 (4.87%)	0.028
13-16	234 (38.87%)	265 (51.65%)	
10-12	308 (33.8%)	141 (27.48)	
7-9	35 (5.81%)	38 (7.41%)	
1-6	22 (3.65%)	37 (7.21%)	
0	28 (4.6%)	7 (1.36%)	
Marital Status (%)			
Single	335 (55.6%)	201 (39.18%)	0.001
Married	214 (35.54%)	270 (52.63%)	
Divorced	40 (6.6%)	32 (6.23%)	
Widowed	13 (2.15%)	10 (1.95%)	

Also, dysthymia was the most common disorder in whole subjects and more common in the surgical group (21.4% versus 19.8%, $P = 0.560$), whereas major depression disorders were more common in the non-surgical group (7.4% versus 5.4%, $P = 0.593$) but without a significant difference.

The prevalence of anxiety disorders was more in the non-surgical group (29.23% versus 22.4%, $P = 0.840$) without a significant difference, but severity of anxiety was higher in the surgical group according to HRSA score with a highly significant difference.

Generalized anxiety disorder and social anxiety were the most common anxiety disorders in both groups without a significant difference.

Discussion

This study aimed to explore the prevalence of depressive and anxiety disorders in a sample of Egyptian patients who seek obesity treatment and the impact of depressive and anxiety disorders in selection of the type of treatment (surgical and non-surgical). We selected Class 2 and 3 obesity patients (BMI ≥ 35) as most Class 1 obesity patients do not select surgical intervention, except in some complicated conditions.

As a result of standardized interview and questionnaires for depression and anxiety assessment, we found that 29.23% of the patients had depressive disorders and 25.56% had anxiety disorders without a significant difference between groups, but this prevalence is considered to be higher than the prevalence in the general population as reported in a lot of studies as a recent study in Saudi Arabia showed that the prevalence of depression in the general population was 5.4% among adults.^[24]

Table 2: Difference in distribution of depressive and anxiety disorders in surgical versus non-surgical groups

Psychiatric disorders	Total prevalence	Surgical (602)	Non-Surgical (513)	P
Depressive disorders	326 (29.23%)	175 (29.06%)	151 (29.43%)	0.805
Major depressive disorder	72 (13.04%)	34 (5.64)	38 (7.4%)	0.593
Dysthymic disorder	231 (41.2%)	129 (21.4)	102 (19.8)	0.560
Unspecified depressive disorder	23 (4.14%)	12 (2%)	11 (2.14%)	0.110
HRSD score:Mean (SD)		20.10 (7.31)	19.71 (7.49)	0.79
Anxiety disorders	285 (25.56%)	135 (22.4%)	150 (29.23%)	0.840
General anxiety disorder	189 (34.18%)	92 (15.28%)	97 (18.9)	0.237
Panic disorder	8 (1.19%)	2 (0.3%)	6 (1.16)	0.065
Post-traumatic stress disorder	3 (0.49%)	1 (0.1%)	2 (0.39%)	0.060
Specific phobia	12 (1.925%)	3 (0.2%)	9 (1.725%)	0.357
Social phobia	69 (12.4%)	35 (5.8%)	34 (6.6%)	0.357
Unspecified anxiety disorder	4 (0.68%)	2 (0.3%)	2 (0.38)	0.277
HRSA score:Mean (SD)		17.9 (7.7)	10.6 (9.8)	0.001

*Chi-square test was used for categorical variables; *t*-test was used for continuous variables

An Egyptian study looked at a group of 93 females who were seeking treatment at an obesity clinic. The prevalence of anxiety and social anxiety symptoms among overweight and obese females seeking obesity treatment is rising, and the severity of these symptoms is likely to worsen over time.^[25] A comparison of social anxiety symptoms in obese and morbidly obese participants revealed a large statistically significant difference.^[26] Another recent study assessed the impact of bariatric surgery on developing anxiety and depression symptoms and reported that the prevalence of anxiety and depression is high (18.7% and 31.3%), respectively) after bariatric surgery and recommended pre- and post-operative psychiatric assessment for all bariatric surgery patients.^[27] Obese women were found to have a significantly greater rate of severe anxiety (26.2%) and depression (41.7%) than non-obese women (2.3 and 18.2%, respectively) (*P* 0.001). Furthermore, they showed a much greater distorted body image (77.4%) than non-obese people (42%) (*P* 0.0001).^[28]

Also, western studies such as studies in Canada and the United States showed that the lifetime prevalence of depression was 8.3% and 16.9%, respectively, which are still lower than the result in our study.^[7] Also, the prevalence of anxiety in our obese patients was higher than the prevalence in the general population as reported in a meta-analysis measuring the prevalence of anxiety across cultures, which revealed that the lifetime and the 1-year prevalence of anxiety disorders were 16.6% and 10.6%, respectively.^[29]

In similar studies in obese patients, our result is consistent with the study by Lin *et al.*^[30] that evaluated 841 ethnic Chinese patients, where 42% had at least one psychiatric disorder with predominance of mood and anxiety disorders and reported no significant difference between surgical and non-surgical groups in any mood disorder and any anxiety disorder.

Also, Malik *et al.*^[31] reported that affective disorders and anxiety disorders were the most common Axis I disorders in obese patients.

However, the prevalence was higher in American and German studies, reaching 36.8%, and 72.6%, respectively.^[32,33]

The sum of prevalence of depressive and anxiety disorders was (54.1%) in our sample, which is higher than that reported by Rosenberger *et al.*^[34] (42%) but lower than that reported by Kalarchian *et al.*^[35] (58%).

We found that dysthymic disorders and generalized anxiety disorders were the most prevalent diagnoses, which are the same in previous studies. Also, we found an increase in the prevalence of social anxiety in our sample in comparison with other studies. This difference may be because of race and social factors.^[36-38]

Obesity in women increases the incidence of depression, according to prior research findings,^[39,40] and there is a link between depression and obesity, which is stronger in female teenagers. Females were more common in our sample; about 70% of patients as women have more psychological stress because of obesity and more body image dissatisfaction.^[41] The strong link between anxiety and obesity can be explained by the negative impact of obesity on a patient's self-esteem, especially with poor sociocultural support and awareness about body dissatisfaction and body images, which can lead to a variety of anxiety symptoms such as panic attacks and social phobia. Another link between depression and obesity can be explained by a restricted daily routine, such as low physical activity, relationship problems, marital problems, emotional and physical abuse vulnerability, and the burden of obesity-related physical complications, which cause frustration and stress that is more chronic. Anxiety symptoms have also been linked to an increase in hunger as well as a desire for high-sugar and high-fat foods.^[38] The surgical group had higher BMI and was younger than the non-surgical group without significant differences between the two groups in the prevalence of the depression and anxiety disorders. This elevation

without a significant difference indicates that obese patients had psychopathological disorders despite the type of management. The possible risk factors for weight gain in patients with depression disorders may include comorbid binge-eating disorder and atypical depression (associated with hypersomnia, hyperphagia, and retarded physical activity) and may be because of the weight gain effect of the anti-depressant drugs.^[26,27] The relationship between depression and obesity is a complex relationship. Researchers found that an increased risk of developing depression in obese persons may reach 55% over time, and the prevalence of obesity in depressed patients may reach 58%.^[41] This relationship is also researched through a literature systematic review for 18 articles, and this review found significant associations between obesity and depression. However, the results are contradictory as depression is a risk factor for obesity and obesity is a risk factor for depression, so more studies are needed to evaluate this complex relationship.^[42]

The main finding of our study is the increase of severity of anxiety among patients selected bariatric surgery according to HRSA score with a highly significant difference, which can guide us to give attention and concern about the severity of anxiety of obese patients that may affect their decision in selection of treatment and prefer surgical intervention as one of the rapid solutions to get off stressful factors that precipitate and increase severity of anxiety instead of proper anxiety management, so psychiatric evaluation and management is needed before and after obesity management to improve the outcome.

Last, we need more studies to evaluate the relationship between psychiatric disorders, especially depressive and anxiety disorders, and its impact on selection of proper obesity management, and we emphasize the importance of psychiatric evaluation and management before selection of the type of obesity treatment.

Conclusions

A high prevalence of depressive and anxiety disorders was found among patients seeking obesity treatment. Dysthymia and general anxiety disorders were the most prevalent psychiatric disorders. The type of co-morbid psychiatric disorders may affect the type of management as the surgical group had a higher anxiety score than the non-surgical group. Psychiatric evaluation is an important factor that may affect obesity management prognosis, which requires further studies.

Ethical approval

The protocol was approved by the Ethics Committee, and the consent was provided by the ethical standards of the Helsinki Declaration 2004.

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Conflicts of interest

There are no conflicts of interest.

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