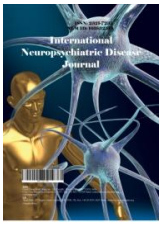

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Study on Psychiatric Evaluation of Morbidly Obese Patients

Asmaa Reda Elsayed Elshazly[1*], Mohammad Abdelhakeem Seleem[1,2], Mohamed Hamdy Abo-Ryia[1,2] and Adel Abdel-Kareem Badawy[1,2]

[1]Neuropsychiatry Department, Faculty of Medicine, Tanta University, Tanta, Egypt.
[2]G.I.T. Surgery Department, Faculty of Medicine, Tanta University, Tanta, Egypt.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: Obesity is becoming an important issue for health promotion. The World Health Organization estimated that around 1.5 billion adults were overweight (body mass index (BMI) ≥25 kg/m^2) and about 500 million people were obese (BMI ≥30 kg/m^2) in 2008. The relationship between obesity and mental health is also considered important. In a community-based study, obesity was positively associated with several mental disorders, especially mood disorders and anxiety disorders. The aim of the study is the assessment of current and lifetime psychiatric disorders among morbidly obese patients.
Methods: This case control study was conducted on 60 participants from outpatient clinic of GIT surgery unit and community. All participants were subjected to: Body weight and body mass index, Psychiatric interview for diagnosis of psychiatric disorders by Arabic version of MINI, Scale for diagnosis of Bulimia nervosa by Shokeer, Scale for diagnosis of Anorexia Nervosa by Shokeer, Binge Eating Disorder Screener-7, Eating attitude test, Hamilton Depressions Rating Scale and Hamilton anxiety scale.
Results: There was a significant increase in anxiety in patients with morbid obesity compared to control group. There was a significant difference between both groups showing the high prevalence of depression in patients with morbid obesity. Based on EAT test, there was a significant

**Corresponding author: E-mail: drpsychiatrist9@gmail.com;*

prevalence of abnormal eating behaviors in patients group compared to none of control group. A screening test for the presence of Binge eating symptoms revealed significant increase of symptoms in patients' group.
Conclusions: Psychiatric disorders are prevalent in morbidly obese patients and are associated with significantly worse quality of life. In addition, morbidly obese patients had significantly worse physical and mental health relative to control group from general population. High rates of psychiatric disorders among morbidly obese patients seem to be the rule rather than an exception.

Keywords: Psychiatry; evaluation; morbidly obese.

1. INTRODUCTION

Obesity is becoming an important issue for health promotion. The World Health Organization estimated that around 1.5 billion adults were overweight (body mass index (BMI) ≥25 kg/m^2) and about 500 million people were obese (BMI ≥ 30 kg/m^2) in 2008 [1].

Obese and overweight people have a higher risk of chronic physical illness, such as cardiovascular disease [2], stroke, diabetes mellitus, and hypertension, [3].

The relationship between obesity and mental health is also considered important. In a community-based study, obesity was positively associated with several mental disorders, especially mood disorders and anxiety disorders [4].

Eating disorders and obesity are part of a range of weight-related problems. These problems include anorexia nervosa, bulimia nervosa, anorexic and bulimic behaviors, unhealthy dieting practices, binge eating disorder, and obesity. It is important to understand this range of weight-related problems in order to avoid causing one disorder, such as bulimia, while trying to prevent another, such as obesity [5].

The rates of both eating disorders and obesity are increasing nowadays. Evidence shows that the rate of eating disorders among obese people is increasing rapidly. Body size and eating disorders are interrelated. Larger body size is both a risk factor for developing an eating disorder and a common outcome for individuals with bulimia nervosa (BN) and binge eating disorder (BED). More than one-third of obese individuals in weight-loss treatment programs report difficulties with binge eating [6].

People with BED have an increased likelihood of weight gain and related complications, and experience a higher rate of medical and psychological problems than people in larger bodies who do not have BED as this type of eating behavior contributes to feelings of shame, loneliness, poor self-esteem, and depression [7].

Conversely, these kinds of feelings can cause binge eating problems. A person may binge or overeat for emotional reasons, including stress, depression, and anxiety [8].

So, in light of the considerable overlap between conditions, there is an urgent need for greater collaboration between the obesity treatment and eating disorders sectors, from clinical practice through to public health policy. The aim of the present study is the assessment of current and lifetime psychiatric disorders among morbidly obese patients (whose BMI>40).

2. PATIENTS AND METHODS

This case control study was carried out at Tanta University Hospitals, both Neuropsychiatry Department & outpatient clinic of Gastrointestinal (GIT) surgery unit at General Surgery Department, during a time interval from November 2018 to March 2020.

The study included 60 participants from outpatient clinic of GIT surgery unit and community, divided in to 2 groups. Group I (patients' group): included 40 patients with morbid obesity diagnosed by BMI≥40. Group II (control group): included 20 healthy control, recruited from the community, matched with patients age, gender and socioeconomic standard.

2.1 Inclusion Criteria

- Both males and females
- Age above 18 years
- Body mass index ≥ 40

2.2 Exclusion Criteria

- Endocrinal disorders e.g. hypothyroidism, diabetes,

- Metabolic disorders e.g. renal failure, hepatic failure

All patients and control group were subjected to:

1. Body weight and body mass index which was measured by dividing their weight in kilograms by their height in meters squared. Patient with morbid obesity is diagnosed if their body mass index is equal or more than 40.
2. Psychiatric interview for diagnosis of psychiatric disorders by Arabic version of MINI
3. Scale for diagnosis of Bulimia nervosa, by Shokeer,
4. Scale for diagnosis of Anorexia Nervosa, by Shokeer,
5. Binge Eating Disorder Screener-7 (BEDS)-7 for use with adults.
6. Eating attitude test, Arabic version
7. Hamilton Depressions Rating Scale
8. Hamilton anxiety scale

2.3 Statistical Analysis

All statistical assessments were done by SPSS 22 (Statistical Package for Social Sciences). Differences in baseline characteristics between the patients and control group were assessed with t-test and chi-square test. Also, comparisons between both groups as regards scores and results were assessed by t-test (for scores and quantitative variables), chi-square test and Fisher Exact test (for qualitative values). The correlation coefficient was use to study the correlations between the used measures and basic data of both groups. P value <0.05 was considered significant.

3. RESULTS

The Demographic data (age and gender) of participants were insignificantly different between both groups. The body weight and BMI was significantly higher in patients' group compared to control group [Table 1].

The number of participants with anxiety (Hamilton anxiety scale) were significantly higher in patients group compared to control group [Table 2].

The age in years of patients with anxiety were insignificantly different compared to patients without anxiety. The female patients with anxiety were significantly higher compared to male patients with anxiety [Table 3].

Table 1. Comparison between the studied groups regarding demographic data

		Patients group	Control group
Age			
Range		23 – 59	19 – 65
Mean ± SD		39.7 ± 11.8	34.5 ± 13.7
t		1.45	
P. value		0.16	
Gender			
Females	No	26	9
	%	65%	45%
Males	No	14	11
	%	35%	55%
x^2		2.19	
P. value		0.14	
Body Weight			
Range		92 – 150	54 – 100
Mean ± SD		116.4 ± 17	77.9 ± 15
t		8.93	
P. value		≤0.001	
BMI			
Range		40 – 64.4	20 – 30.6
Mean ± SD		44.42 ± 4.87	27.01 ± 3.44
t		16.00	
P. value		≤0.001	

The number of participants with depression (Hamilton depression scale) were significantly higher in patients group compared to control group [Table 4].

The age in years of morbidly obese patients with depression were significantly higher compared to patients without depression. The morbidly obese female patients with depression were significantly higher compared to male patients with depression [Table 5].

The number of participants with abnormal eating behaviors (EAT) were significantly higher in patients group compared to control group. [Table 6].

The age in years of Patients with eating disorders were significantly lower compared to patients without eating disorders. The morbidly obese female patients with eating disorders were significantly higher compared to male patients with eating disorders [Table 7].

Table 2. Anxiety in studied groups (Results of Hamilton anxiety scale)

	Patients group		Control group	
	No	%	No	%
No anxiety	23	57.5%	17	85%
Mild anxiety	10	25%	1	5%
Moderate anxiety	5	12.5%	2	10%
Severe anxiety	2	5%	0	0%
x2	4.54			
P. value	0.033			

Table 3. Comparison of patients with anxiety and patients without Anxiety as regards age in years and gender

	Patients with anxiety (n=17)	Patients without anxiety (n=23)
Mean age ±SD	35.6 ± 12.6	42.7 ± 10.4
t	1.88	
P. value	0.069	
Females	12 (70.5%)	14 (60.8%)
Males	5 (29.5%)	9 (39.2%)
x2	5.13	
P. value	0.015*	

Table 4. Depression in studied groups after assessment by Hamilton depressions scale

	Patients group		Control group	
	No	%	No	%
No depression	22	55%	16	80%
Mild depression	15	37.5%	3	15%
Moderate depression	2	5%	1	5%
Severe depression	1	2.5%	0	0%
X^2	31.4			
P. value	≤0.001			

Table 5. Comparison of patients with depression and patients without depression as regards age in years and gender

	Patients with depression (n=18)	Patients without depression (n=22)
Mean age ±SD	45.4 ±10	34.7 ±11.3
t	3.16	
P. value	0.003*	
Females	14 (77.78%)	12 (54.55%)
Males	4 (22.22%)	10 (45.45%)
x2	4.310	
P. value	0.038*	

Table 6. EAT testing in studied groups

	Patients group		Control group	
	No	%	No	%
Normal	27	67.5%	20	100%
Abnormal (Score >20)	13	32.5%	0	0%
x2	24.545			
P. value	≤0.001			

Table 7. Age and gender distribution in patients with and without eating disorders

	Patients with eating disorders (n=13)	Patients without eating disorders (n=27)
Age ±SD	30.9 ±10.3	43.6 ±10.6
t	3.60	
P. value	0.001*	
Females	10 (76.92%)	10 (37.04%)
males	3 (23.07%)	17 (62.96%)
x2	5.58	
P. value	0.018*	

Table 8. Results of Binge Eating Disorder Screener-7 (BEDS-7) in studied groups

	Patients group		Control group	
	No	%	No	%
Binge eating symptoms	27	67.5%	1	5%
Normal	13	32.5%	19	95%
x2	20.926			
P. value	0.00			

Table 9. Correlations between age, body weight in kilograms, BMI, score of anxiety, score of depression, score of bulimia and score of EAT-26

	Age	B W	BMI	Anxiety	Depression	Bulimia Nervosa
B W	0.038*					
BMI	-0.072	0.875				
Anxiety	-0.218	-0.124	-0.097			
Depression	-0.05*	0.038*	0.028*	0.262		
Bulimia	-0.049*	0.531	0.568	-0.178	0.306	
EAT	0.044*	0.317	0.226	0.079	0.364	0.686

The number of participants with Binge eating symptoms (Binge Eating Disorder Screener-7) were significantly higher in patients group compared to control group [Table 8].

On studying the correlations between age, body weight in kilograms, BMI, score of Hamilton anxiety scale, score of Hamilton depression scale, score of Bulimia Nervosa and score of Eating attitude test (EAT-26), There was negative correlation between score of depression and age. There was also negative correlation between Score of Bulimia Nervosa and age in years. On the other hand, there was positive correlation between the scores on depression and body mass index which reflected the impact of obesity as a risk factor for depression. There was also positive correlation between Eating Attitude Test-26 score and age in years [Table 9].

4. DISCUSSION

Obesity has become an epidemic problem worldwide, and in the Eastern Mediterranean Region, the status of overweight has reached an alarming level. Morbidly obese patients display many physical and psychological symptoms, with a higher preference for psychiatric disorders [9].

Although the relationship between health problems and morbid obesity is clear, the relationship between mental health problems and morbid obesity is not as clear. There is little agreement in the research literature concerning the prevalence, severity, or type of mental disorders found among morbidly obese individuals [10].

In our study, age of patients group ranges from 23 to 59 years old. The mean was 39.7±11.8. Our results are in agreement with Musaiger et al., [11], who found that the obesity in The Eastern Mediterranean region was found to be more prevalent in people who were young (30–50 years). On the other hand, the prevalence of overweight and obesity among schoolchildren aged 7–14 years in Rabat were 5.1% and 3.7%, respectively [12].

The differences between countries might be due to differences in period, gender, the targeted age groups and methods [13].

Males and females were included in our study. Males represent 35% of patients and females represent 65%. This finding comes in agreement with Lin HY et al. [14], Rosenberger et al. [15], Mühlhans et al. [16], and Mauri M [17] who all agreed that morbid obese females are more than males in their studies. But they differ in their findings of the comorbidity rate. Rosenberger et al. [15] found that the comorbidity rate was similar between men and women, and comparable results were found in another study for Duarte-Guerra et al. [18]. Conversely, Muhlhans and colleagues [16] have found that women had more comorbidities than men. Although gender difference in the prevalence of psychiatric disorders was reported in general population, these findings could not replicate in all studies on obesity. However, some studies found gender difference in their rates of psychiatric disorders Rosenberger et al. [15], Mühlhans et al. [16], and Mauri M [17]. Specific disorders also showed differences, for example, eating disorder, major depressive disorder, and anxiety disorders [16]. Explanations for this difference are gender-specific illness behavior and help-seeking habits that might be shaped by societal pressure of thinness.

High rates of psychiatric disorders among morbidly obese patients seem to be the rule rather than the exception. Comparing with studies adopting similar methodology, the lifetime rates have shown similar high prevalence of psychopathology. The rates ranged from 36.8% to 72.6% for lifetime disorders in studies reported in USA Rosenberger et al. [15] and Mühlhans et al. [16], and Mauri et al. [17]. Our rate was slightly higher than previous studies. The prevalence of psychiatric diagnoses among our sample is 75% of patients group.

Only the non-western study Lin et al, [14] reported a lower rate of prevalence of psychiatric disorders (54.1%) among morbidly obese patients. Besides methodological differences, ethnicity might partly explain this variation.

In our study, Females had a higher prevalence of mood disorders and eating disorders than males. Similar outcomes were noted in a previous community-based study, an international study in 13 areas worldwide involving 62,277 cases from the World Mental Health Survey Lin et al. [14], found that obesity increased the odds ratio of depression and anxiety, especially in females. The possible mechanism may be that women have more psychological stress from the stigma of obesity, greater dissatisfaction with their body image, and more eating problems. Our finding is similar to that of Mühlhans et al. [16] who found that eating disorders, major depressive disorder, and anxiety disorders are more prevalent in females than males and explained this difference by gender-specific illness behavior and help-seeking habits that might be shaped by societal pressure of thinness.

On the other hand, our results were inconsistent with that of Kalarchian et al. [19] who did not find significant gender difference in rates of psychiatric disorders. This may be attributed to different race, social factors, and study design.

On speaking about anxiety, Obesity is hypothesized to be a risk factor for anxiety disorders. Cross-sectional evidence suggested only a positive association between obesity and anxiety, but evidence supporting a longitudinal association between these two conditions is not clear [20].

In the current study, 42.5% of morbidly obese patients have anxiety of different severities. While in control group, only 15% ($P \leq 0.001$ which reflects the significant difference between both groups showing the high prevalence of anxiety in patients with morbid obesity.

A possible explanation proposed by Hatata et al. [21] who found a significant correlation between

low body image satisfaction and anxiety and stated that these findings were supported by reports of other studies who revealed that high levels of body image dissatisfaction were associated with high levels of anxiety and negative affect particularly among females.

As regard Depression, in our study, we have found that 45% of morbidly obese patients have depression of different severities. Most of them have mild depression (37.5% of total).

In our study, we found that patients with depression are mainly in the middle age group (Mean for age ± SD = 45.4 ± 10). There was also negative correlation between score of Hamilton Depression scale and age in years which came in agreement with Duarte-Guerraet al. [18]. So according to our study, female gender and young age groups are liable to develop depression than males and older age groups.

There was also positive correlation between score of depression and body mass index reflecting the impact of obesity as a risk factor for depression.

Finally, on speaking about Eating Disorders, we should know that the morbidly obese have been thought to be psychologically different, presumably because they cannot discipline their eating habits in the same manner as the rest of the population. Although the presence of morbid obesity does not necessarily indicate psychiatric illness, it may suggest motivational, behavioral, and personality patterns that influence caloric intake and energy expenditure and, consequently, successful weight loss. Identification of these factors, as well as any other that may reasonably suggest a less than optimal outcome, is a clear mission of the psychiatric evaluator.

In our study, 32.5% of patients group had abnormal EAT indicating that they had abnormal eating behaviours. Binge Eating Disorder screener (BED-s) is a screening test for the presence of Binge eating symptoms. Upon applying it on our patients, we found that 67.5% of them had +ve BED-S. Bulimia Nervosa was found in about 27.5% of our patients. This indicates an alteration in their eating behaviors, in agreement with other studies [22,23].

In our study, the percentage of obese females having eating disorders is more than males which comes in agreement with Muhlhans et al. [16].

Also, we found positive association between score of Eating Attitude Test and age in years. This is inconsistent with the results of Duarte-Guerra et al. [18] who found negative correlation between these two variables.

5. CONCLUSIONS

Psychiatric disorders are prevalent in morbidly obese patients and are associated with significantly worse quality of life. In addition, morbidly obese patients had significantly worse physical and mental health relative to control group from general population. High rates of psychiatric disorders among morbidly obese patients seem to be the rule rather than an exception. In light of the growing number of individuals who seek a treatment option for obesity, the potential for psychological problems in those is indeed significant. Altogether, such information is an important first step in establishing how widespread psychopathology is among morbidly obese patients, which in turn will dictate assessment and treatment priorities. Further study is needed to elucidate how pre-operative psychopathology may affect post-operative outcomes across weight loss, quality of life, and psychiatric domains.

CONSENT AND ETHICAL APPROVAL

The study was approved from the Ethical Committee of Faculty of Medicine, Tanta University, in March 2019 and an informed consent was obtained from all participants in this research.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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