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Impact of bariatric surgery on depression and anxiety symptons, bulimic behaviors and quality of life

O impacto da cirurgia bariátrica nos sintomas depressivos e ansiosos, comportamento bulímico e na qualidade de vida

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A B S T R A C T

Objective: To assess psychiatric symptoms, substance use, quality of life and eating behavior of patients undergoing bariatric surgery before and after the procedure. **Methods**: We conducted a prospective longitudinal study of 32 women undergoing bariatric surgery. To obtain data, the patients answered specific, self-administered questionnaires. **Results**: We observed a reduction in depressive and anxious symptoms and also in bulimic behavior, as well as an improved quality of life in the physical, psychological and environmental domains. There was also a decrease in use of antidepressants and appetite suppressants, but the surgery was not a cessation factor in smoking and / or alcoholism. **Conclusion**: a decrease in psychiatric symptoms was observed after bariatric surgery, as well as the reduction in the use of psychoactive substances. In addition, there was an improvement in quality of life after surgical treatment of obesity.

Key words: Bariatric surgery. Morbid obesity. Depression. Quality of life.

INTRODUCTION

Obesity is a disease of epidemic proportions, representing a major public health problem [1-6]. According to the World Health Organization, there are at least 300 million obese people in world [7]. Its prevalence has increased alarmingly, leading more and more people to seek bariatric surgery (BS) as a treatment option due to the difficulty in obtaining good results in clinical treatments for weight reduction [1,2,5,8,9].

Obesity is objectively classified by the body mass index (BMI), calculated as the ratio between the weight and the square height of the individual, and obesity is defined when the patient has a BMI > 40kg/m^2. Currently, BS is indicated for patients with BMI > 40Kg/m^2 or above 35Kg/m^2 associated with life-threatening comorbidities [10]. Many patients show improvement or even cure of the comorbidities associated with obesity after surgery [5,11]. Typically, BS promotes quality of life benefit, mitigating the psychiatric symptoms, improving social sphere, self-esteem and even the financial condition of the patient [5,9,12-19].

There is no consensus on the criteria for psychiatric assessment of applicants for BS. There are no precise data adequately studied and / or proven on the influence of BS on the psychological behavior of patients [12,16,20]. Thus, as the number of patients undergoing BS increases, so does the need to understand how psychiatric symptoms may influence the results of the operation [8,9,17].

The aim of this study was to evaluate the psychiatric symptoms (depressive and anxious), substance use, quality of life and eating behavior of patients seeking bariatric surgery as a treatment for morbid obesity, and to compare the results of the evaluation conducted pre- and postoperatively.

METHODS

The research protocol was approved by the Ethics in Research Committee of the ABC Faculty of Medicine, under No 088/2009. Patients included in the study were informed about the research objectives, as well as the voluntary nature of their participation, and signed the Instrument of due consent.

We conducted a prospective, longitudinal study of 32 women who underwent BS in the period between January 2008 and November 2011 at the Department of General Surgery, ABC Faculty of Medicine.

Inclusion criteria were adult patients with BMI e" 40kg/m^2 or BMI e" 35kg/m^2 associated with comorbidities; stable obese for at least five years; absence

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of illicit drugs or alcohol abuse (for alcoholism we used the criteria for substance abuse and dependence of DSM-IV) [21]; absence of moderate or severe psychosis or dementia; understanding by the patient and their families of the risks and changes inherent to major surgery and the need for postoperative follow-up with a multidisciplinary team throughout the patient's life. These criteria are in accordance with the resolution in 1942/2010 of the Brazilian Federal Council of Medicine. Only female patients were selected due to the higher frequency of psychiatric symptoms observed in this population and aiming at sample homogenization [2,8,22-24]. Illiterate patients and / or the presence of prior severe psychiatric disorder were exclusion criteria.

The evaluations were performed in two stages. The first one three months to one month before the procedure, and the second, between six and ten months after the operation. To obtain the data, the patients responded to five self-administered questionnaires that were completed without an interview and without the assistance of researchers, through reading and self-reporting.

The following questionnaires were employed: 1) Beck Depression Inventory (BDI): a self-report instrument, validated in Portuguese, which focuses on symptoms and attitudes such as: sadness, sense of failure, lack of satisfaction, feeling of guilt, feelings of punishment, self-deprecation, auto-accusations, suicidal ideas, crying spells, fatigue, loss of appetite, weight loss, somatic concerns, and decreased libido. Although void of diagnostic purposes, it allows to reliably classify depressive symptoms, measuring not only the "general psychopathology" (here the term used by the authors with no sense of semiotics science), but also specific aspects of depression. It consists of 21 items, including symptoms and attitudes, whose intensity varies from 0 to 3 according to severity of symptoms, with the following groups according to the cutoff points: (1) 0-9 = no or minimal depression; (2) 10-18 = mild to moderate depression; (3) 19-29 = moderate to severe depression; (4) 30-63 = severe depression [25]; 2) State-Trait Anxiety Inventory (STAI): a questionnaire consisting of two distinct scales designed to measure two concepts of anxiety, i.e., anxious state (STAI State) and anxious trait (STAI Trait). Each scale consists of 20 statements in which the volunteers indicate the intensity at the moment (STAI State) or the frequency with which they occur (STAI Trait) by means of a four-point scale (1-4), with the following groups according to the cutoff points: (1) < 33 = no anxiety or low anxiety; (2) 33-49 = average anxiety; (3) > 49 = high anxiety [26]; 3) Bulimic Investigatory Test, Edinburgh (BITE): a survey of 30 question that identifies individuals with behaviors and symptoms of bulimia nervosa, with responses of yes or no [27]. In this study we used only the Symptomatic scale that assesses the degree of present food symptoms. It returns the following groups according to the scores: (1) d" 9 = minimum or absent bulimic behavior; (2) 10-19 = unusual eating pattern (moderate bulimic behavior); (3) e" 20 compulsive eating behavior with a high possibility of bulimia nervosa (severe) [28]; 4) Quality of Life Scale (WHOQOL): used to assess quality of life in adult populations, contains 26 questions, 24 of which are divided into four domains: physical, psychological, social relationships and environment. The domains are represented by various facets and their questions were formulated for Likert-type scale responses, with intensity scale (nothing-extremely), capacity (nothing-completely), frequency (never-always) and evaluation (very dissatisfied-very satisfied; very bad-very good). Besides the four domains, the instrument features two general questions: one refers to the perception of quality of life, and the other to satisfaction with health [29]; 5) Inventory on substance use: the profiling of the patients regarding the use of psychoactive substances was performed by structured interview, based on the evaluation criteria of the DSM-IV for the use of different substances [21].

Values obtained of each continuous variable are presented as mean and standard deviation and categorized by absolute and relative frequencies. Distributions were defined as non-parametric by the Kolmogorov-Smirnov test. Comparisons of the frequency of a phenomenon among groups of qualitative variables were performed by applying the chi-square and McNemar tests for binary dependent variables. Comparisons between continuous dependent variables were carried out with the Wilcoxon test.

RESULTS

The group was initially composed of 32 women undergoing surgical treatment for obesity. The mean age was 41 ± 11.6 years, most were married, without comorbidities, white, Catholic, with completed high school. We observed a significant reduction in body weight and also in body mass index after the surgery (Table 1).

The application of the questionnaire in the postoperative period was possible in only 23 patients (71.9%); two (6.2%) were lost to postoperative follow-up, two (6.2%) were not found to new interview, four (12.5%) declined to respond to questionnaires after the operation, and one (3.1 %) gave up surgical treatment. There was a reduction in depressive symptoms classified as severe or moderate, from 78.2% preoperatively to 43.5% after surgery (p = 0.043). Similarly, we found a reduction in moderate or severe anxiety symptoms from 87.0% preoperatively to 56.5% postoperatively (p = 0.014). We also identified a reduction in bulimic behavior from 78.3% before surgery to 21.7% postoperatively (p = 0.022); there was no case of severe bulimic behavior after surgery. We observed a significant increase in quality of life in the physical, psychological and environmental domains

Table 1 - Epidemiological data from patients enrolled in the study (n = 32).

Variable*	Result
Age (years)	41 ± 11.6
Weight before the operation (kg)	117.2 ± 18.1
Weight after the operation (kg; n = 23)	87.1 ± 18.9
BMI before the operation (kg/m^2)	45.7 ± 6.7
BMI after the operation (kg/m^2; n = 23)	33.6 ± 7.0
Marital status	16 (50.0%)
Married/stable	6 (18.7%)
Single	3 (9.4%)
Divorced	
Widow	7 (21.9%)
Current spouse	
Yes	22 (68.7%)
No	10 (31.3%)
Comorbidities (HT and/or DM)	
Yes	15 (46.8%)
No	17 (53.2%)
Color	
White	22 (68.7%)
Brown	8 (25.0%)
Black	2 (6.3%)
Profession	
Casual employment	1 (3.2%)
Formal employment	13 (40.6%)
Housewife	18 (56.2%)
Level of education (education)	
Incomplete junior school	2 (6.3%)
Complete junior school	6 (18.7%)
Incomplete high-school	8 (25%)
Complete high-school	16 (50%)
Religion	
Catholic	16 (50%)
Evangelical	11 (34.4%)
Spiritualist	2 (6.2%)
Agnostic	1 (3.2%)
Not informed	2 (6.2%)

BMI (body mass index), HT (hypertension) and DM (diabetes mellitus)

($p < 0.0001$, $p = 0.001$ and $p = 0.009$, respectively), but not for the social one ($p = 0.081$) (Table 2).

Studying the use of psychoactive substances in the lives of these patients before surgery and comparing them with their use within six months after the procedure, we observed a decreased use of antidepressants and appetite suppressants. However, the operation was not a determining factor for the decreased use of tobacco or alcohol (Table 3).

There was no significant difference between the preoperative use of substances and scores presented in the scales of psychiatric symptoms; between preoperative BMI and the domains of quality of life (WHOQOL). Likewise, there was no difference between BMI and substance use prior to surgery.

DISCUSSION

Currently, obesity is the most common preventable chronic disease in society, as its prevalence has increased alarmingly. However, we note that about 20% of patients fail to lose significant amount of weight after the operation and this event is often attributed to psychological factors and not necessarily to operative technical factors [5,12,18,30]. Thus, it is important to study the changes of behavior that this procedure can generate on patients [1-3,6,8,17,18].

Approximately 15-30% of patients who apply to BS exhibit clinically significant symptoms of depression, and most bariatric surgery centers consider their presence a contraindication for the operation [3,4,13,18,20]. It has been shown that these patients have higher risk of developing symptoms of anxiety and depression than the general population and that BS can lead to significant reduction of such symptoms [2,3,8,13,14,16]. In the present study we observed that patients seeking the operation had characteristics of severe depression. Moreover, after the procedure, these patients showed improvement in depression score, which goes against the findings of the literature on this parameter [2,13,18,30].

We also noted that patients had symptoms of anxiety in moderate levels before operation and decreased to lower scores postoperatively. Wadden *et al.* [13] reported that morbidly obese patients are at increased risk for developing symptoms of anxiety, depression and bulimia in relation to the general population and that bariatric surgery can lead to significant reduction of such symptoms, which was also observed in this study.

Changes in feeding behavior should also be studied for this group of patients, since it can bring postoperative complications and jeopardize surgical outcome [2,12,31]. Approximately 30-50% of morbidly obese patients have altered feeding behavior [4,12,31]. In the concept of "addiction transfer", food is replaced by another substance as an alternative strategy, which could lead to increased use of psychoactive substances, particularly alcohol, in the postoperative period [5]. This event, however, was not identified in the study, since there was no significant difference between the use of alcohol and tobacco before and after the operation, and the use of antidepressants and appetite suppressants decreased after surgery. We found that the use of alcohol and tobacco in the sample of the present study is lower than that of the population at large; the use of antidepressant and anorectics, on its turn, was much higher than that of the Brazilian population [31,32].

There is limited information about the predictors of psychiatric symptoms in patients who will undergo surgical treatment of obesity and BMI was considered a poor

Table 2 - Pre- and postoperative Comparison of questionnaires Beck, STAI, BITE and WHOQOL (n = 23).

Variable*	Preoperative	Postoperative Period	p**
Beck Score			
1- Minimal or none	2 (8.8%)	5 (21.7%)	0.043
2- Slight	3 (13.0%)	8 (34.8%)	
3- Moderate	7 (30.4%)	8 (34.8%)	
4- Severe	11 (47.8%)	2 (8.7%)	
STAI Score			
1- Low	3 (13.0%)	10 (43.5%)	0.014
2- Moderate	11 (47.9%)	11 (47.8%)	
3- High	9 (39.1%)	2 (8.7%)	
BITE Score			
1- Minimal or none	5 (21.8%)	18 (78.3%)	0.022
2- Moderate	15 (65.2%)	5 (21.7%)	
3- Severe	3 (13.0%)	-	
WHOQOL (domains)			
- Physical	40.54 ± 18.97	70.49 ± 22.28	<0.0001
- Psychological	48.18 ± 18.87	70.28 ± 17.91	0.001
- Social	56.15 ± 23.33	68.11 ± 27.93	0.081
- Environmental	48.23 ± 12.91	58.28 ± 13.67	0.009

** Qualitative variables expressed in percentage (%), absolute frequency (n) and quantitative variables expressed as mean ± standard deviation*
*** Chi-square test for questionnaires of Beck, STAI and BITE, and Wilcoxon test for analysis of the domains of the WHOQOL*

Table 3 – Substance use preoperatively and postoperatively (n = 23).

Substance *	Preoperative	Postoperative	p**
Tabacco	9 (39.1%)	4 (17.4%)	0.180
Alcohol	12 (52.2%)	6 (26.1%)	0.109
Appetite suppressants	20 (87.0%)	0 (0.0%)	NA
Antidepressants	12 (52.2%)	3 (13.0%)	0.022

** Variables expressed in absolute frequency and percentage.*
*** McNemar's test.*
NA: not applicable (the non-use of appetite suppressants postoperatively was a constant).

predictor for the presence of anxiety and depressive symptoms in these patients [2,5,12,13,16,30]. We found no correlation between BMI and psychiatric symptoms, which is consistent with the literature 16. Likewise, there was no relationship between BMI and impairment of quality of life in any of the domains, unlike what was found by Wadden *et al.* [13].

Morbidly obese patients seem to have an impaired quality of life, and for most of these patients, BS improved the physical domain and other aspects of quality of life [9,12,13,17,19,31,33]. In the present study we observed improvement of physical, psychological and environmental parameters of quality of life after surgical treatment. However, there was no change in the social domain, confirming that the changes, physical or mental, caused by the operation do not interfere in the social activities of these individuals [9].

The results of this study should be seen cautiously, as they represent the reality of one service and a small sample. However, the study sought to include an overview of the psychological and behavioral implications of these patients through the application of five specific questionnaires.

Therefore, we conclude that there was decrease in psychiatric symptoms (depressive, anxious and bulimic), reduced substance use and improved quality of life of patients after surgical treatment of obesity.

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RESUMO

Objetivo: *avaliar a sintomatologia psiquiátrica, o uso de substâncias, a qualidade de vida e o comportamento alimentar de pacientes submetidos a cirurgia bariátrica antes e após o procedimento.* ***Métodos:*** *estudo longitudinal prospectivo com 32 mulheres submetidas à cirurgia báriatrica. Para a obtenção de dados, as pacientes responderam a questionários específicos, autoaplicados.* ***Resultados:*** *foi identificada uma redução na sintomatologia depressiva e ansiosa e também no comportamento bulímico, bem como uma melhora na qualidade de vida nos domínios físico, psíquico e ambiental. Houve diminuição do uso de antidepressivos e de moderadores de apetite, porém a cirurgia não foi um fator determinante na cessação do tabagismo e/ou etilismo.* ***Conclusão:*** *foi observada uma diminuição da sintomatologia psiquiátrica após a cirurgia bariátrica, bem como redução do uso de substâncias psicoativas. Além disso, houve melhora na qualidade de vida após o tratamento cirúrgico da obesidade.*

Descritores: *Cirurgia bariátrica. Obesidade mórbida. Depressão. Qualidade de vida.*

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