

Longitudinal assessment of the quality of life of patients after gastric bypass

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Gastric bypass, Bariatric surgery, Obesity, Quality of life, SF-36

Abstract

Background

Bariatric surgery is currently considered an effective way to lose weight after failure in the clinical treatment over a 2-year period. Severe obesity is associated with a wide range of serious health complications and reduced health-related quality of life and throughout its context has a significant impact on the health, longevity and quality of life of individuals. The objective of this study was to monitor the impact of weight reduction, induced by bariatric gastric bypass surgery, on the quality of life of pre and post-operative patients at 1, 2 and 6 months.

Methods

Longitudinal observational study conducted from December 2016 to October 2017 in southern Brazil. The convenience sample consisted of 104 obese individuals eligible to undergo bariatric gastric bypass surgery. The quality of life evaluation was performed using the SF-36 self-administered questionnaire (The Medical Outcomes Study Short Form Health Survey).

Results

Obese patients presented significant weight loss after surgery and in the evaluation of quality of life the mean scores of the 8 domains of the SF-36 obtained a significant improvement ($p < 0.001$) between time 0 and 6, as well as the components of mental health (vitality, social aspects, emotional aspects and mental health) and physical health component (functional capacity, physical aspects, pain and general state of health).

Conclusions

Patients who underwent gastric bypass bariatric surgery had significant improvements in quality of life during the 6 postoperative months.

Background

Bariatric surgery is currently considered an effective way for sustainable weight loss, improving comorbidities associated with obesity, health and well-being of patients [4], especially when the conservative treatment fails [5].

Since the 1990s, bariatric surgical procedures have become increasingly common as a surgical option

to deal with morbid obesity. In this context, the gastric bypass has been considered the gold standard with its established long-term results. However, the vertical gastrectomy procedure is rapidly overtaking the gastric bypass because of its simplicity and rapid initial weight loss [6].

The World Health Organization points to obesity as one of the greatest public health problems in the world. According to data from VIGITEL 2016 (Surveillance of Risk Factors and Protection for Chronic Diseases by Telephone Inquiry) [8] the prevalence of obesity in Brazil (BMI ≥ 30.0 kg/m²) increased from 2006 (11.8%) to 2016 (18.9%), and the projection is that by 2025, about 2.3 billion adults will be overweight and over 700 million will be obese [7].

According to the latest research by the Brazilian Society of Bariatric and Metabolic Surgery (BSBMS), 105,642 thousand surgeries were performed in 2017 in the country, or 5.6% more than in 2016, when 100,000 people underwent the procedure in the private sector. Brazil is considered the second country in the world in number of bariatric surgeries performed and women represent 76% of patients [21].

In order to evaluate the success of the surgical treatment, periodic follow-up after bariatric surgery is necessary, including the analysis of weight loss, changes in comorbidities and quality of life, complications and reoperations, and Quality of Life is a crucial result metric [22].

The objective of this study was to monitor the impact of weight reduction, induced by bariatric gastric bypass surgery, on the quality of life of pre and post-operative patients at 1, 2 and 6 months.

Methods

Longitudinal observational study conducted from December 2016 to October 2017 in a private bariatric surgery clinic in the central region of the state of Rio Grande do Sul, Brazil.

The convenience sample consisted of 104 obese individuals eligible to undergo gastric bypass bariatric surgery (through videolaparoscopy) after clinical evaluation. The loss to follow-up was 34 patients after 6 months of study.

Inclusion criteria were: age above 18 years of age, BMI of 35 kg/m² and presence of associated comorbidities, or BMI > 40 Kg/m² regardless of the presence of comorbidities. Exclusion criteria were: patients with some cognitive limitation, since the questionnaire is self-administered and may

compromise responses.

Data collection was performed after consultations with a multidisciplinary team in the pre- and postoperative periods at 1, 2 and 6 months, and the research is in continuity.

The quality of life evaluation was performed through the completion of the SF-36 (The Medical Outcomes Study Short Form Health Survey), translated and validated in Brazil by Ciconelli et al., 1999 [9].

The anthropometric data of the patients (weight, height, BMI), were obtained by analyzing their medical records, as well as the characteristics of the sample (age, gender and physical activity self-reported, and comorbidities through exams and clinical evaluation).

BMI was assessed according to the World Health Organization International Classification of obesity, which divides adiposity into grades or classes [3]. Overweight was calculated preoperatively, using the following formula: $\text{current weight} - \text{ideal weight (BMI 25 kg/m}^2) = \text{overweight}$.

The percentage of excess weight loss (%EWL) was calculated using the formula: $\frac{\text{preoperative weight} - \text{current weight} \times 100}{\text{preoperative weight} - \text{ideal weight}}$.

The research was approved by the research ethics committee of the Universidad Franciscana, nº 1.830.670. All individuals invited to participate signed the Free and Informed Consent Term after receiving clarification on the research.

The SF-36 quality of life assessment instrument was created with the purpose of being a generic health assessment questionnaire, easy to administer and understand. It is a multidimensional questionnaire consisting of 36 items, distributed in 8 domains: functional capacity (10 items), physical aspects (4 items), pain (2 items), general health status (5 items), vitality (4 items), social aspects (2 items), emotional aspects (3 items), mental health (5 items) and a comparative evaluation question between the current health conditions and that of a year ago. It assesses both the negative aspects of health (illness or disease) and the positive aspects (well-being) [9].

The score is calculated and the final score is obtained through a raw scale (0-100), the closer to 100, the better the quality of life perception. The scores of the 8 domains are calculated individually and then combined to calculate 2 components: physical health component (PHC), composed of functional

capacity, physical aspects, pain and general health; and mental health component (MHC) that includes vitality, social aspects, emotional aspects and mental health.

Data were analyzed using version 23 of the SPSS program. To verify the normality of data distribution, the Kolmogorov-Smirnov test was used. The correlation between the variables body mass index, domains and components of physical and mental health of the SF-36 instrument, in the pre (time 0) and postoperative periods at 1, 2 and 6 months (times 1, 2 and 6), was evaluated through Spearman's Rho (not normality) and Pearson's r (normality) and the values of the correlation coefficient were classified according to Hopkins (2000) [13], where: 0.0 to 0.1 very low; 0.1 to 0.3 low; 0.3 to 0.5 moderate; 0.5 to 0.7 high; 0.7 to 0.9 very high; and 0.9 to 1.0 near perfect. In the analysis between the sexes the Mann-Whitney test was used. The Friedman 2-way ANOVA test by ranks was used to compare the means of the 8 SF-36 domains among the times.

Results

A total of 104 patients, with a mean age of 38.59 (\pm 9.98) years, the majority of them female (81.7%), self-declared white skin color (97.1%), and with associated comorbidities (98.1%). Among the most common comorbidities, depression was the most prevalent, present in 62.5% of the patients. The other characteristics of the sample in the preoperative period can be seen in Table 1.

Obese patients presented significant weight loss after bariatric gastric bypass surgery. The mean values of %EWL and %TBWL of the patients were respectively 30.92 (\pm 19.74) and 11.60 (\pm 4.7) in the first month, 42.33 (\pm 20.27) and 16.29 (\pm 4.9) in the second month and 77.35 (\pm 16.70) and 29.64 (\pm 6.9) in the 6th postoperative month.

In the preoperative period, the mean BMI of the individuals was 42.31 kg/m², of these, 75% of the sample classified as grade III obesity. After 6 months, a significant change in the classification was observed, and half of the individuals (50%) were classified as overweight, out of the obesity range. The classification of the nutritional status of the patients in the 4 times of evaluation according to the BMI can be seen in Table 2.

In the evaluation of the quality of life, the mean score of the 8 domains of SF-36 obtained a significant improvement ($p < 0.001$) between time 0 and 6, as well as mental health components (vitality, social

aspects, emotional aspects and mental health) and physical health component (functional capacity, physical aspects, pain and general state of health) that combine the related domains. These results can be seen in table 3.

The mean scores of the eight domains and the physical health component and mental health component of the SF-36 of patients during follow-up can be seen in Fig. 1.

During the follow-up period, the physical health components (PHC) correlated with the BMI of the patients presented correlation values (r_s) of -0,039, -0,138, -0,335 and - 0,153 respectively at times 0, 1, 2 and 6. The correlation values (r_s) between mental health components (MHC) and the BMI of the patients were 0,067, -0,112, -0,115 and - 0,083 respectively at times 0, 1, 2 and 6.

The behavior of body weight, body mass index and mental and physical health components of patients during follow-up can be seen in Fig. 2.

Regarding the gender, only in the 6th postoperative month a significant difference in the results of the mean PHC and MHC scores of the quality of life was observed, when the MHC showed significantly greater improvement in the male sex ($p < 0.001$) as shown in Table 4.

Discussion

This study described the impact of weight reduction on the quality of life of patients submitted to gastric bypass surgery during the 6 months postoperatively, the findings showed that there was a significant improvement in quality of life after bariatric surgery.

The quality of life after surgery is proportional to the amount of weight lost. Being the percentage of excess weight loss greater than 50% within one year after surgery one of the main success criteria for bariatric surgery [11].

In the present study, the mean values of the %EWL of patients was 50.19%, period referring to a significant improvement in the quality of life of the patients studied. In a retrospective study conducted by Silva et al [12], 82 patients underwent bariatric surgery and obtained a mean of %EWL of 51.25% in the postoperative period of 6 months, corroborating with the results found.

Regarding quality of life, the scores of the 8 domains obtained a significant improvement when compared between time 0 (preoperative) and 6 (postoperative). Versteegden et al [13] evaluated 518

patients who underwent gastric bypass one year after surgery and observed that all domains related to quality of life improved. Robert et al [20] in a prospective, multicenter French study evaluated the quality of life of 262 patients before and after 12, 18, 24, 30 and 36 months of bariatric surgery through the SF-36. Significant improvement in the quality of life of the patients was observed, mainly up to 1 year postoperatively, where quality of life was strongly related to weight loss.

The SF-36 has been used in several studies to evaluate generic measures in research on obesity, mainly because this instrument is easy to understand, brief and consistent [14, 15, 16, 17, 18, 19].

The intervention study of Swedish obese subjects (SOS) of Karlsson et al [7] who assessed quality of life before treatment and after 0.5, 1, 2, 3, 4, 6, 8 and 10 years, showed that the change in quality of life over the 10-year observation period followed, in large part, phases of weight loss, weight recovery and weight stability. Maximum improvements in the surgical group were observed during the first year of weight loss, while the weight recovery phase (mainly between 1 and 6 years of follow-up) was accompanied by a gradual decline in quality of life. Being the quality of life more related to weight than the modification of BMI.

The correlations between the decrease in BMI and the increase in the quality of life of the patients, were classified as very low to moderate, that is, the reduction of BMI is not strongly related to the improvement of their quality of life.

In Brazil, there are no published studies with follow-up time greater than 2 years of follow-up with patients undergoing bariatric surgery. The data found in this study are consistent with the data found in the world literature published. The research is being followed in order to characterize the long-term quality of life in Brazilian patients.

Conclusions

Patients who underwent gastric bypass bariatric surgery had significant improvements in quality of life during the 6 postoperative months. The improvement in the scores of the 8 domains evaluated was observed in the period in which there was the highest percentage of weight loss of the patients. Follow-up studies are of paramount importance, especially due to the considerably increasing number of bariatric surgeries performed as a form of effective treatment for severe obesity and by changes in

long-term body weight behavior.

Abbreviations

BMI: Body Mass Index; EWL: Excess Weight Loss; MHC: Mental Health Component; PHC: Physical Health Component; SAH: Systemic Arterial Hypertension; SF-36: Short Form Health Survey; TBWL: total body weight loss.

Declarations

Ethics approval and consent to participate

This study was approved by the research ethics committee of the Franciscan University, nº 1.830.670. All individuals invited to participate signed the Free and Informed Consent Term after receiving clarification about research.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

Drafting, data collection, data analysis, and interpretation: DM, LP, NH, RA, GA and AM. Data Analysis and interpretation: DM and CM. Manuscript review: CM. All authors read and approved the final manuscript.

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Study limitations

Associated comorbidities were not assessed post-operatively. The follow-up loss was of 34 patients

after 6 months of study.

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Tables

Due to technical limitations, the tables are only available as a download in the supplemental files section.

Figures

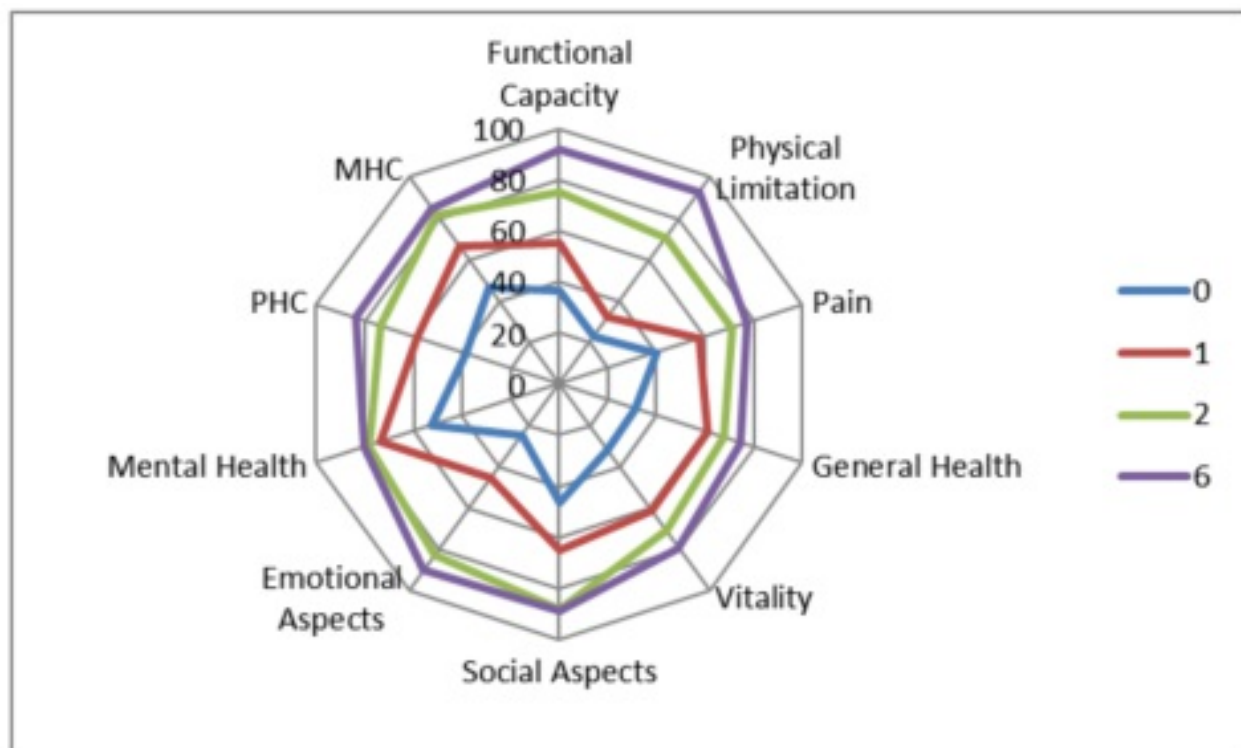


Figure 1

The mean scores of the eight domains and the physical health component and mental health component of the SF-36

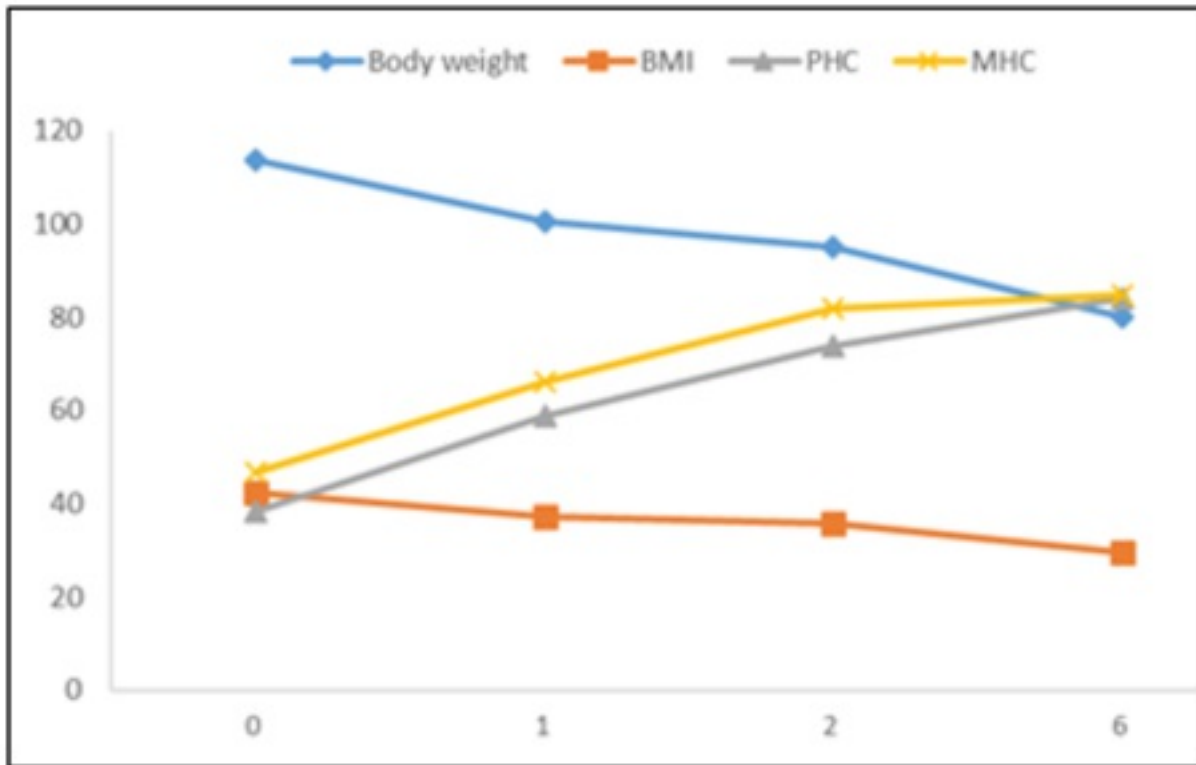


Figure 2

Behavior of body weight, body mass index and mental and physical health. BMI Body Mass Index, PHC Physical Health Component, MHC Mental Health Component

Supplementary Files

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