

WOMEN'S SEXUAL HEALTH

Changes in Sexual Function and Positions in Women With Severe Obesity After Bariatric Surgery



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ABSTRACT

Introduction: Severe obesity is most effectively treated with bariatric surgery. The resulting weight loss is expected to improve a variety of obesity-related conditions, including sexual dysfunction.

Aim: To analyze changes in the sexual function of women with obesity following bariatric surgery.

Methods: A prospective study was conducted between April 2015 and April 2016 involving 62 women with obesity who underwent Roux-en-Y gastric bypass. The Female Sexual Function Index (FSFI) was used to evaluate sexual function. Sexual dysfunction was defined as an FSFI score below 26.55. Patients' clinical and demographic data were recorded. Sexual frequency of 12 different sexual positions was also evaluated.

Main Outcome Measure: Sexual dysfunction prevalence and the frequency of sexual positions before and 6 months after surgery.

Results: The prevalence of sexual dysfunction decreased from 62% before surgery to 19% 6 months after the procedure. There was a 19.2% improvement in the mean overall FSFI score ($P < .01$). 6 months after surgery, the mean overall FSFI score had improved in all patients, with a statistically significant change being found in all 6 domains of the questionnaire ($P < .05$). There was an increase in the frequency of 3 of 12 sexual positions evaluated.

Conclusion: Sexual function in women with obesity effectively improves after bariatric surgery. Favorable changes following weight loss included a significant reduction in the prevalence of sexual dysfunction and an increase in the frequency of different sexual positions during intercourse. **Oliveira CFA, dos Santos PO, Oliveira RA, et al. Changes in sexual function and positions in women with severe obesity after bariatric surgery. Sex Med 2019;7:80–85.**

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Key Words: Sexual Dysfunction; Obesity; Bariatric Surgery; Female Sexual Function Index; Body Mass Index

INTRODUCTION

The prevalence of obesity has increased significantly around the world. The World Health Organization estimates the number of individuals with obesity to have more than doubled worldwide, exceeding 600 million in 2014.¹ It is estimated that

60% of the world population will be overweight or obese by 2030.² This panorama is accompanied by an increase in morbidity and mortality from various diseases caused or aggravated by obesity, such as cardiovascular disease, diabetes, certain types of cancer, as well as depression and low self-esteem resulting from psychosocial inadequacy.^{2–4}

Over the past decades, the frequency of severe obesity among women has increased by 44%.² The high rates of comorbidities associated with obesity and the potential physical and psychological limitations related to this condition might contribute to the occurrence of sexual dysfunction. The prevalence of sexual dysfunction in women with obesity is high and varies according to social and cultural factors, reaching up to 80% in some populations.^{5–8}

Some of the most frequent presentations of sexual dysfunction in women with obesity are common to normal-weight

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individuals and include reduced sex drive, poor sexual performance, and reduction in the frequency of, or even resistance to, sexual encounters, all of which negatively affect the individual's sex life.⁹ Furthermore, certain positions during intercourse common for non-obese individuals could be challenging for those with extreme obesity.

Obesity is intricately associated with female sexual functioning, usually through changes in sex hormones, related comorbidities such as depression and diabetes, and psychosocial factors.¹⁰ About 50% of women with severe obesity are dissatisfied with their sex life before bariatric surgery, especially older women, those with severe depressive symptoms, or those taking antidepressants.¹¹ Bariatric surgery as opposed to non-surgical intervention is the most effective treatment for obesity and related comorbidities.¹² Recent studies have evaluated the impact of weight reduction on women's sexual function both through lifestyle modifications¹³ and surgery^{11,14,15} by using validated tools to assess overall sexual function, which showed both treatments to be beneficial. In addition, improvement in psychosocial status and body image following bariatric surgery have been postulated to be one of the most important factors promoting better sexual function.^{10,16}

The main objective of the present study was to analyze the changes in the sexual functioning of women with obesity who had undergone bariatric surgery. Evaluation of different sexual positions during intercourse and women's ability to adopt different positions after surgery was secondarily performed, also investigating whether the degree of improvement in sexual function was proportional to the reduction in body mass index (BMI). According to previous research in both men and women, it is possible to hypothesize that bariatric surgery and weight loss will have a positive effect on the sexual function of women with severe obesity. To the best of our knowledge, no other study has looked into the changes in female sexual positioning patterns following weight loss after bariatric surgery.

MATERIAL AND METHODS

This is a prospective study involving heterosexual women with severe obesity who were sexually active. Patients were submitted to Roux-en-Y gastric bypass done by only 1 experienced surgeon (R.A.) between April 2015 and April 2016 at a reference center in bariatric surgery. Sexual activity was defined as self-reported partnered sexual intercourse occurring 6 months before bariatric surgery. No minimal frequency of sexual encounters was used as a cutoff for being considered sexually active. Social and clinical patient data were recorded. The degree of obesity was defined according to BMI. All evaluations were conducted before and 6 months after surgery.

The exclusion criteria were previous or ongoing surgery or pelvic radiotherapy, history of neurologic diseases, absence of sexual activity 6 months before surgery, or unsuccessful postoperative follow-up for ≥ 6 months.

The Female Sexual Function Index (FSFI) questionnaire was used to evaluate sexual function.¹⁷ The FSFI assesses female

sexual function through 19 questions graded from 0 to 5 points, which encompass 6 domains: desire (questions 1–2), arousal (questions 3–6), lubrication (questions 7–10), orgasm (questions 11–13), satisfaction (questions 14–16), and pain (questions 17–19). The sum of each individual domain score is obtained, and then the values of each domain are assigned different weights to obtain a maximum final score of 36. Scores below 26.55 indicate sexual dysfunction. All questionnaires were self-administered in a private consulting room.

An instrument containing figures depicting sexual positions (Figure 1) was used to assess the frequency of each position before and after surgery. This tool was developed to evaluate sexual function in patients undergoing total hip arthroplasty.¹⁸ The authors based this frequency chart on the 12 most common sexual positions reported by healthy volunteers and other reports in the literature.^{19,20}

Statistical Analysis

Continuous variables with a normal distribution, according to the Shapiro-Wilk test, were described as means and standard deviations. When distribution was asymmetrical, medians and interquartile ranges were used. The Wilcoxon test was used to compare the mean overall FSFI scores and the mean scores for each domain before and 6 months after bariatric surgery; it was also used to compare the total number of sexual positions adopted before and after surgery. The McNemar's test for paired dichotomous variables was used to compare the frequency of each sexual position before and after bariatric surgery. *P* values $< .05$ were considered statistically significant. A paired *t*-test was used to compare BMI before and after surgery. Spearman's test was used to evaluate the correlation between FSFI increase and preoperative and postoperative variables. The SPSS statistical software package for Windows, version 21.0 (SPSS Inc, Chicago, IL, USA), was used to perform statistical testing.

Ethical Considerations

The institute's internal review board approved the study. All patients agreed to answer the proposed questionnaires and a signed informed consent form was obtained.

RESULTS

During the study period, 73 women with severe obesity were submitted to a Roux-en-Y gastric bypass procedure. Of these, 11 patients were not included in the present analysis: 1 refused to participate in the study and 2 did not meet the inclusion criteria; an additional patient died, and another 7 failed to comply with the required follow-up. 62 patients were therefore included in the final analysis.

Mean age was 36.8 ± 9.5 years (\pm SD). Mean BMI decreased from 42.0 ± 3.9 before surgery to 30.7 ± 5.4 following surgery ($P < .001$). Clinical and demographic characteristics are shown in Table 1.

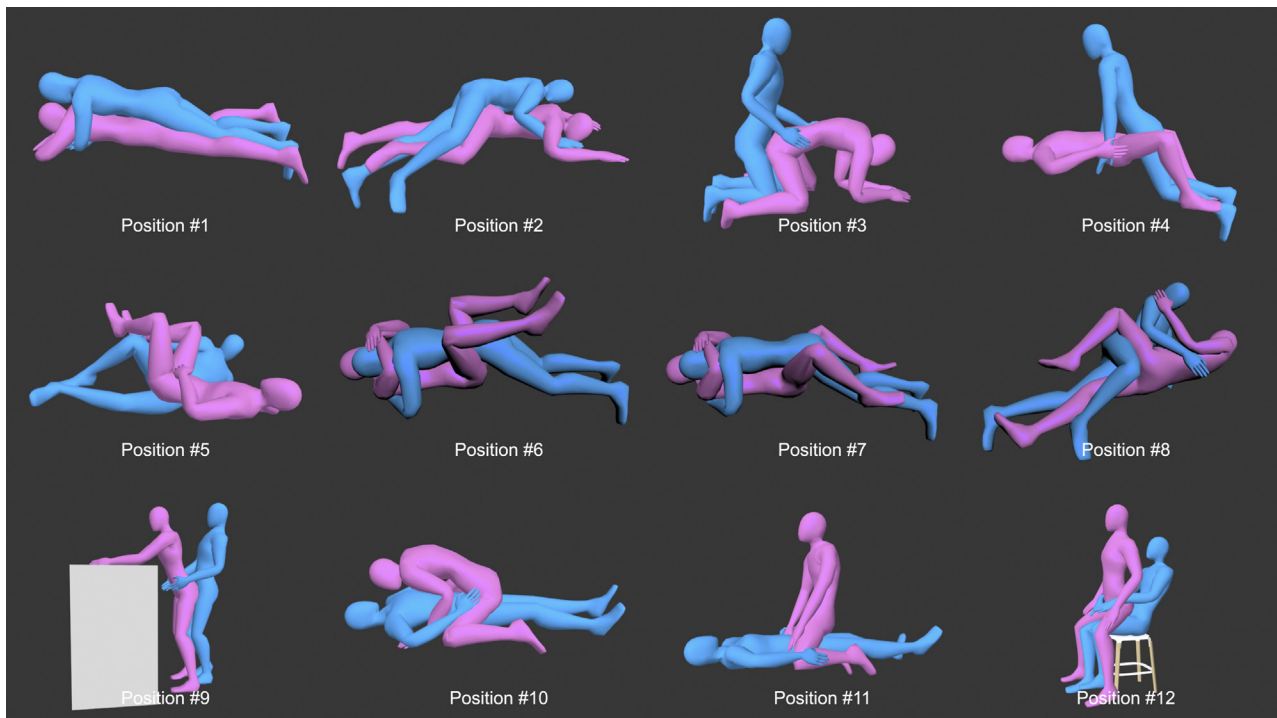


Figure 1. Questionnaire evaluating different sexual positions during intercourse.

Before surgery, sexual dysfunction was identified in 62% of the patients, with a mean overall FSFI score of 22.8 (15–28). 6 months after surgery, the prevalence of sexual dysfunction decreased to 19%, whereas the mean overall FSFI score increased to 27.2 (25.4–30.8). An improvement in sexual function was evident not only from the significant increase in the mean overall FSFI score ($P < .01$), but also from the statistically significant improvement in each of the included domains. Evaluation of each individual domain showed 16.7% of women reported an improvement in desire, 25% in arousal, 17% in lubrication, 29.4% in orgasm, 33.3% in satisfaction, and 8.3% in pain, with all these changes being statistically significant (Table 2).

Improvements in the frequency of sexual positions were significant for numbers 7, 8, and 12: 35% for position 7 ($P = .04$), 82% for position 8 ($P = .04$), and 95% for position 12 ($P = .001$), which are illustrated in Figure 2. Despite the significant change in BMI following surgery, no proportional relationship was observed between weight loss and the improvement in sexual function as evaluated by the FSFI ($r = 0.049$, $P = .706$). Moreover, we demonstrate the most substantial increases in FSFI occurred in women with preexistent sexual dysfunction, 9.4 (5.6 to 16.8), whereas a modest benefit was observed for women who were already sexually satisfied, 1.2 (–4.7 to 3) ($P < .001$). For the women with preoperative sexual dysfunction, a strong negative correlation between the baseline FSFI score and the increase of scores was observed ($r = -.91$ [–0.94 to –0.86] 95%, $P < .001$).

Table 1. Sociodemographic and clinical characteristics

Characteristics	Women (n = 62)
Age (years) (mean ± standard deviation)	36.8 ± 9.5
Body mass index (mean ± standard deviation)	42.0 ± 3.9
Marital Status	n (%)
Single	15 (24.2)
Married / Stable relationship	43 (69.4)
Separated / Divorced	4 (6.5)
Religion	
Catholic	35 (57.4)
Protestant	23 (37.2)
Spiritualist	1 (1.6)
Other	2 (3.3)
Ethnicity	
White	17 (27.4)
Mixed ethnicity	31 (50.0)
Black	14 (22.6)
Educational Level	
Incomplete elementary school	1 (1.6)
Elementary school	8 (12.9)
Incomplete high school	4 (6.5)
High school	21 (33.9)
Incomplete university/college	10 (16.1)
University/college degree	18 (29.0)
Comorbidity profile	
Hypertension	26 (42.6)
Type 2 diabetes mellitus	9 (15.3)
Dyslipidemia	10 (16.7)
Snoring or sleep apnea	17 (27.9)

Table 2. Female Sexual Function Index scores before and 6 months after bariatric surgery

Median FSFI Scores			
Domain	Baseline	After 6 months	P value
Desire	3.6 (1.8–4.2)	4.2 (3.6–5.4)	< .01
Arousal	3.6 (2.4–4.5)	4.5 (3.8– 5.4)	< .01
Lubrication	4.1 (2.7–5.1)	4.8 (3.8–5.7)	< .01
Orgasm	3.4 (2.0–5.2)	4.4 (4.0–5.6)	< .01
Satisfaction	3.6 (2.0–4.8)	4.8 (4.3–6.0)	< .01
Pain	4.8 (2.4–6.0)	5.2 (4.0–6.0)	< .01
Total	22.8 (15.9–28.5)	27.2 (25.3–30.8)	< .01

DISCUSSION

The results of this study corroborate previous findings that bariatric surgery improves sexual function in women with severe obesity.^{10,20,21} In addition, to the best of our knowledge, this is the first study to evaluate this population with respect to potential changes in sexual positions.

Patients who have undergone bariatric surgery are expected to achieve significant weight loss, with an improvement in several physical variables and health status, general well-being, and quality of life.¹² As in the present study, some other studies have shown a high prevalence of sexual dysfunction in women with severe obesity and an improvement in sexual function following surgical treatment.^{14,21–27} Nevertheless, this is the first study to evaluate this aspect in Brazil.

There was an overall increase in engagement in sexual activity with a higher variety of reported sexual positions. Although sexual positions 3, 6, 7, and 12 were the most common ones, the increased frequency was only statistically significant for positions 7, 8, and 12 after bariatric surgery. This is an important feature that has never been appreciated in previous studies on female sexual dysfunction in obese women. Excess

weight and adipose tissue are expected to hinder the adoption of certain sexual positions. Weight loss, reduction in waist circumference, and in thigh adiposity are expected to provide better mobility, which might facilitate vaginal penetration by the male partner and might also give the couple more options when trying to find comfortable positions during sex. However, such improvement could be the result of increased frequency of sexual activity alone, because it is only natural that partners try different positions as the number of sexual encounters increases. A descriptive analysis of the most common positions during intercourse nonetheless adds to the current understanding of sexual dynamics in this population. We hypothesize weight loss not only improved the individual’s perception of her sexual functioning but also gave her better body dynamics, allowing different sexual positions that were difficult before surgery. This greater freedom in adopting different positions may be because of greater mobility or easier vaginal penetration following weight loss after surgery. Some of these changes may also be related to an improvement in psychological factors, including improved self-image, which would allow women to reveal themselves more fully to their partners; however, these issues were not evaluated in the present study. Although our findings regarding increased frequency of sexual positions were significant, cultural issues, including social or religious conventions, are expected to have had some influence on the fact that not all the participant women achieved significant improvement. Further investigation is necessary to estimate the effect of body dynamics on patient and partner sexual satisfaction, although bariatric surgery has already been shown to improve self-esteem, body image, and quality of life.^{21,28}

The high prevalence of sexual dysfunction as assessed by the FSFI score observed in women with severe obesity before surgery followed by a significant improvement in sexual function 6 months after surgery has also been reported in other studies.^{14,21,24–26,29} However, some studies have failed to demonstrate consistent improvements in all FSFI domains

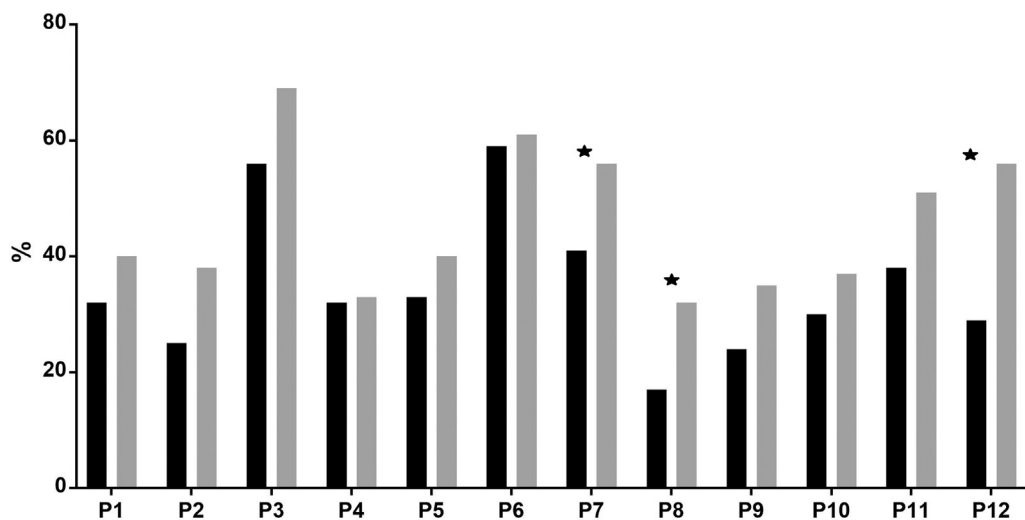


Figure 2. Frequency in % of 12 different sexual positions before and 6 months after bariatric surgery (**P* < .05).

(desire, arousal, lubrication, orgasm, satisfaction, and pain). In a prospective cohort study conducted by Sarwer et al,²¹ the mean overall FSFI score in 106 women (mean age of 41 years) increased from 20.3 before bariatric surgery to 24.8 2 years after the operation. Interestingly, those investigators reported a persistent improvement in almost all the FSFI domains 2 years after surgery except for orgasm and pain. Improvements in FSFI scores were also suggested to result from hormonal changes occurring when weight loss reaches 33% of total body weight. Efthymiou et al²⁴ have also found no statistically significant change in the desire and pain FSFI domains. Goitein et al²⁵ compared FSFI scores before and 6 months after surgery in 34 women with a mean age of 38.4 years and found statistically significant changes in all domains except desire. Likewise, Bond et al¹⁴ evaluated 54 sexually active women with a mean age of 43.3 years and found a high prevalence of sexual dysfunction (63%). In this study, sexual function improved in 68% of the participant women, with only 1 woman reporting worsened sexual function. Conversely, improvements in FSFI domains were only significant for desire and lubrication. Assimakopoulos et al⁷ evaluated 59 women with a mean age of 36 years and found a statistically significant improvement in all domains of FSFI except orgasm. Contrary to all these findings, Oliveira et al³⁰ studied 36 women before and 3 years after surgery and did not find any improvement in the overall FSFI score or in any of the individual domains. A recent long-term analysis has shown that, even though improvements in the overall FSFI scores were observed up until 3 years of postoperative follow-up, none of the changes in any domain remained by the fourth year.¹⁵

The literature has therefore demonstrated the changes in the sexual functioning of women with obesity are variable, regarding both the domains and the magnitude of the effect. The present study has shown improvements in all FSFI domains, but the exact reason for such findings remains unclear. We hypothesize that the smaller samples included in other studies as well as cultural issues might be partially responsible for such controversy.

Interestingly, the present study failed to demonstrate a correlation between absolute weight loss and improvement in FSFI scores, whereas the association of the latter with BMI reduction was significant. A possible explanation for this finding is that BMI might be a more comprehensive measure of significant weight changes, especially in heavier patients. Additionally, women who did not have sexual dysfunction before surgery experienced only mild improvements in the overall FSFI score, which might have contributed to this finding.

There are some limitations to the present study. It involved a convenience sample, restricted to 1 center, and included private patients in the setting of a supplementary health service. The socioeconomic status of the participants was therefore higher than that of users of the public healthcare system and may not represent the general population of women with extreme obesity in Brazil. The evaluation of sexual positions during intercourse

was performed using a non-validated instrument and the statistical analysis could not rule out possible confounding factors, which prevents a more comprehensive understanding of the clinical significance of such findings. Nevertheless, such assessment in patients with obesity has never been performed before and we hypothesize that change in body dynamics may impact one's sexual behavior. It has proved to be relevant in cases of limited mobility in orthopedic patients and might be of interest in other research areas. Postoperative follow-up was limited to 6 months after surgery, which is another limitation. Although the conventional period for ideal weight-loss stabilization is 2 years, most available studies report a more pronounced improvement in sexual function precisely in the first 6 months after surgery. Furthermore, our analysis was based on self-report, and patients may have overreported their engagement in sexual activity, which is common in other research settings. Finally, this study did not include homosexual women or those who have non-penetrative sexual activity.

CONCLUSION

Weight loss enhances sexual function in a significant proportion of patients with obesity 6 months after bariatric surgery, as reflected by the improvements in both the overall FSFI score and each individual domain. Additionally, women reported a greater variety of sexual positions adopted after surgery. The highest increases in FSFI scores were observed in women with the most severe sexual dysfunction.

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