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# Eating habits, nutritional status and quality of life of patients in late postoperative gastric bypass Roux-Y

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## Abstract

**Objective:** To characterize the food habits, nutritional status and quality of life of patients in the postoperative period of bariatric surgery to Fobi-Capella.

**Methods:** Analytical cross-sectional study was conducted with 66 patients underwent bariatric surgery and monitoring by the staff of the Hospital Universitario Oswaldo Cruz (HUOC), in northeast Brazil. A questionnaire was applied in which was covered sociodemographic characteristics, and demographic information related to eating habits, and also evaluated the quality of life by the method BAROS.

**Results:** The tolerance to food, the category “hardly eaten” were reported food such as meat, chicken, rice, raw salad and corn meal and that “not eaten” were corn meal, followed by sweets, meat and chicken. There was a reduction of total body weight and BMI and, consequently, the increase in PEP% over time. Regarding quality of life, it can be observed which is classified as “good” for most patients in both groups of 6-18 months and ≥ 18 months.

**Conclusions:** Our results demonstrate that bariatric surgery showed satisfactory effects in this population, however the need for continuous nutritional education work, especially in groups of more than 18 months post-operatively.

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Key words: *Bariatric surgery. Eating habits. Eating behavior. Quality of life. Morbid obesity.*

## HÁBITOS ALIMENTICIOS, ESTATUS NUTRICIONAL Y CALIDAD DE VIDA EN PACIENTES EN EL POSTOPERATORIO DE CIRUGÍA BARIÁTRICA A FOBI-CAPELA

### Resumen

**Objetivo:** Caracterizar los hábitos alimenticios, el estado nutricional y la calidad de vida de pacientes en el periodo posoperatorio de la cirugía bariátrica de Fobi-Capella.

**Métodos:** Se realizó un estudio analítico transversal en 66 pacientes sometidos a cirugía bariátrica y monitorizados por el personal del Hospital Universitario Oswaldo Cruz (HUOC), en el noreste de Brasil. Se aplicó un cuestionario que contemplaba características sociodemográficas e información demográfica relativa a los hábitos alimenticios, y también se evaluaba la calidad de vida por el método BAROS.

**Resultados:** En la tolerancia a los alimentos, en la categoría de “difícil de comer” se notificaron alimentos tales como carne, pollo, arroz, ensalada cruda y maíz y en la “no ingeridos” estaban maíz, seguido de caramelos, carne y pollo. Hubo una reducción del peso corporal total y del IMC y, en consecuencia, un aumento del PEP% con el tiempo. Con respecto a la calidad de vida, se pudo observar que la mayor parte de los pacientes la clasificaron como “buena” en ambos grupos de 6-18 meses y de > 18 meses.

**Conclusiones:** Nuestros resultados demuestran que la cirugía bariátrica produjo unos efectos satisfactorios en esta población; sin embargo, existe la necesidad de una educación nutricional continuada, especialmente en el grupo de más de 18 meses tras la cirugía.

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Palabras clave: *Cirugía bariátrica. Hábitos alimenticios. Conducta alimenticia. Calidad de vida. Obesidad mórbida.*

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## Introduction

Obesity is defined by the World Health Organization (WHO) as the excess fat in the body,<sup>1</sup> raising the risk of various health problems,<sup>2</sup> and because it is a multifactorial disease, the same treatment should be multidisciplinary. Several types of treatment have been used from the food guide to surgical treatment, through the use of anorectic drugs and psychotherapy.<sup>3</sup>

Conservative treatment is based on behavioral changes, such as low-calorie diet combined with physical exercise and use of appetite suppressants. Such treatment is ineffective in producing significant weight loss and has a recurrence rate of 98% in one year and 100% in five years.<sup>4</sup> Surgery is currently the most effective treatment for weight reduction and maintenance of this loss in severely obese patients.<sup>5</sup>

Gastric Bypass Roux-en-Y is the type of Bariatric Surgery (CB) most commonly performed and is considered the “gold standard”,<sup>6</sup> to result in abrupt loss of excess weight (30% in the first year)<sup>7,8</sup> and promote considerable reduction in food intake.<sup>9</sup> It is important to note that surgery is justified only when the risks of remaining obese outweigh the risks in the medium and long term, the surgery itself.<sup>10,11</sup> To evaluate the actual results of the surgery we should take into account the quality of life that includes parameters such as physical, mental and social well-being, plus the ability to eat and enjoy different kinds of food.<sup>12</sup>

The success of the surgery should not only be measured by weight loss, since this loss is directly influenced by the quality of food readjustment,<sup>3</sup> since some types of food can not be tolerated, representing a significant risk of changes in nutritional status.<sup>13,14</sup> Therefore, this study aimed to characterize the food habits, nutritional status and quality of life of patients in the late postoperative CB.

## Materials and methods

A cross-sectional analytical study was conducted, during the period September-November 2010. The sample consisted of adults of both sexes, who underwent gastric bypass Roux-Y. These patients were evaluated and followed by the multidisciplinary team at the Clinic's Bariatric Surgery Program of the Oswaldo Cruz University Hospital/University of Pernambuco (HUOC/UPE) in Northeast of Brazil. About 300 patients enter in the program annually, and remain in follow-up by the multidisciplinary team for an indefinite period. Exclusion criteria were pregnant women, patients who underwent reoperation and those who had medical conditions that prevented the measurement of weight or the capability of answering the questionnaire.

Interviews were applied to the patients, in an individual questionnaire, with socio-demographic characteristics and information about the feeding habits as the number of daily meals, fluid intake and ability to

consume or tolerate specific food such as meat, chicken, corn meal, rice, raw salad, sweets and others. This tolerance was assessed by the classification of food such as “easily eaten”, “hardly eaten” and “not eaten”.

The quality of life was assessed by applying a specific questionnaire, the method BAROS (Bariatric Analysis and Reporting Outcome System),<sup>15</sup> which includes questions about self-esteem, physical status, social interaction, ability to work and/or study, sexual performance, percentage of loss of excess weight and dissatisfaction with side effects and complications of surgery.

The anthropometric assessment in the postoperative period was held during the consultation and nutritional anthropometric data of the preoperative period were recovered from patient charts. These were weighed in the standing position, wearing light clothes and barefoot, a digital scale platform type of Filizola®, with a maximum capacity of 300 kg and a variation of 100 grams. The height was determined by anthropometric metal ruler 2 meters long, with fractions of 1 centimeter, attached to the platform of digital scales.

Patients were kept standing, barefoot in the center of the platform, feet together, upper limbs hanging over the body and in apnea. The classification of nutritional status in the postoperative period was performed using the Body Mass Index (BMI), according to the criteria of the World Health Organization (WHO, 1997).<sup>21</sup> The percentage of weight loss (% PP) and loss of excess weight (% PEP) were calculated according to the formulas proposed by Toneto.<sup>22</sup>

Statistical analysis was performed using SPSS (Statistical Package for Social Sciences) version 13.0. In order to evaluate the behavior of the variables according to the criterion of normality, it was used the Kolmogorov Smirnov test. All continuous variables were tested showed Gaussian distribution, and is therefore presented as mean and standard deviation. For comparison, groups were categorized according to the postoperative period (6-18 months and greater than 18 months). The Student t test was used to compare means between two independent variables.

Categorical variables were presented in simple frequency, and compared using the chi-square or Fisher's exact test when necessary. The significance level used in the decision of the statistical tests was 5%.

The study was approved by the Ethics Committee on Human Research of the Oswaldo Cruz Hospital Complex/PROCAP-UPE, in the opinion No. 128/2010. Patients were interviewed individually during nutritional consultation, which received clarification as to the purposes and procedures of the study, being urged to signing the consent form.

## Results and discussion

66 patients have been interviewed within an average age of  $42 \pm 10.3$  years, predominantly female, the

Variables	N	%	IC 95%*	p**
<b>Gender</b>				
Male	06	9,1	3,4-18,7	0,000
Female	60	90,9	81,3-96,6	
<b>Age Range (years)</b>				
20-39	31	47,0	34,6-59,7	0,622
≥ 40	35	53,0	40,3-65,4	
<b>Level of Schooling</b>				
Pre-school	04	6,1	1,7-14,8	0,000
Elementary School	24	36,4	24,9-49,1	
High School	33	50,0	37,4-62,6	
Higher education	05	7,6	2,5-16,8	
<b>Family Income (MW***)</b>				
Até 1	15	22,7	13,3-34,7	0,004
> 1 até 3	33	50,0	37,4-62,6	
>3	14	21,2	12,1-33,0	
Were unable to refer	04	6,1	1,7-14,8	
<b>Post operatory period</b>				
6 a 18 months	30	45,5	33,1-58,1	0,460
≥ 18 months	36	54,5	41,8-66,8	

\*Confidence interval 95%.

\*\*Chi-square test.

\*\*\*Minimum Wage: R\$ 545.00 reais.

majority with level of education of high school and 50% of the sample had family incomes between 1 to 3 minimum wages. There were no statistical differences regarding age and post-operative period (table I).

Similarly to the study of Menéndez et al.,<sup>18</sup> in which results showed 83% of women and age average was also similar (41 ± 12 years old).

The fact that a higher frequency of obesity was found in females can be justified by the demand for health services by women, as reported by Ribeiro.<sup>19</sup> For this reason, the number of women treated when compared with the number of men seeking treatment is considerably larger. Table II shows the reduction of total body weight and BMI and, consequently, the PEP% increases over time. Although the PP% was higher in the postoperative period exceeding 18 months, no statistically significant difference was obtained.

After bariatric surgery, patients have an average weight loss of 40% as described by Oria and Morehead<sup>15</sup> in 1998. In this study, the average percentage weight loss of patients achieved a number very close to this value, in both groups between 6 and 18 months as an equal and above 18. Regarding eating habits, it appears that there was no statistical difference between all variables between the two patient groups (6-18 and ≥ 18 months postoperatively). However, the majority reported an increase in chewing time in relation to pre-operative (89,4%). The average time spent on each meal within 15 to 30 minutes was more frequent in both groups. As for fluid intake during meals, it was found that most do not consume them during meals, which can be justified by the low tolerance for large volumes (table III).

Regarding to reduction of stomach capacity is important to emphasize the need to avoid the concomi-

Variables	6-18 months		≥ 18 months		p*
	N	Mean ± DP	N	Mean ± DP	
Current weight (kg)	30	81,8 ± 16,2	36	73,3 ± 16,6	0,040
Current IMC (kg/m <sup>2</sup> )	30	31,0 ± 4,9	36	28,3 ± 4,0	0,016
% PEP	30	54,7 ± 9,4	36	60,7 ± 13,1	0,042
% PP	30	37,5 ± 6,9	36	40,9 ± 9,5	0,098

\*Student t test for two independent samples.

**Table III**  
Chewing frequency, time of meals, fluid intake at meals and snacks numbers according to the postoperative period

Variables	6-18 months		≥ 18 months		Total		P
	N	%	N	%	N	%	
<i>% Chewing</i>							
Increased	26	86,7	33	91,7	59	89,4	0,693*
Did not increase	04	13,3	03	8,3	07	10,6	
<i>Meal Time (minutes)</i>							
< 15	05	16,7	07	19,4	12	18,2	0,339**
15-30	20	66,6	18	50,0	38	57,6	
> 30	05	16,7	11	30,6	16	24,2	
<i>Liquids during meals</i>							
Yes	12	40,0	17	47,2	29	43,9	0,556**
No	18	60,0	19	52,8	37	56,1	
<i>Snacks</i>							
0-2	16	53,3	20	55,6	36	54,5	0,857**
≥ 3	14	46,7	16	44,4	30	45,5	

\*Fisher's exact test.

\*\*Chi-square test.

tant intake of liquids at meals, so that there is a further decrease in the amount of food consumed, and thus a depletion of nutritional status.<sup>14</sup>

An important point to note is the frequency of complications in the postoperative period, in which the most commonly complication cited by patients were dumping syndrome (DS), affecting 39 (59%) patients. However, when evaluating the frequency of SD according to the periods after surgery, there was no statistically significant difference ( $p = 0.385$ ). According to tolerance to specific foods, the most reported in the category "hardly eaten" were meat, chicken, rice, raw salad and corn meal. The food listed as "not eaten" were corn meal, followed by sweets, meat and chicken (fig. 1).

Bariatric surgery involves changes which are difficult to adapt and adhere, especially in the long run. The non-adherence can be the cause of several complications, and may thus aggravate various specific nutrient deficiencies or malnutrition,<sup>9</sup> inherent in the postoperative period.<sup>14</sup>

The emergence of food intolerance is quite common in patients undergoing bariatric surgery in the late postoperative period.<sup>9</sup> However, there are few studies that evaluate the feeding tolerance in this group of patients. In the literature, there is record of a validated questionnaire to evaluate the feeding tolerance in the group in question, presented by Suter in 2007<sup>20</sup> which has not yet been validated in Brazil and does not include regional food, particularly those that are typical in the Northeast.

Food intolerance, if intense, may be the reason why some patients turn to drink or eat food in a soft consistency and high calorie, with negative effect on weight loss.<sup>21</sup> Such tolerance varied widely among the patients interviewed. Intolerance of beef is expected due to resection of a large part of the stomach with consequent change in the production of pepsin, primarily responsible for the digestion of proteins.<sup>22</sup> As for the difficulty in accepting the rice, this stems from impaired digestion by hydration and gelatinization process that it undergoes when subjected to cooking associated with low enzymatic activity of amylase.<sup>23</sup>

Regarding quality of life, it can be observed, which is classified as "good" for most patients in both groups of 6-18 months as an equal and greater than 18 months. However, patients with "bad" and "very good" ratings of quality of life are observed only in the group ≥ 18 months (fig. 2).

Regarding the analysis of quality of life as measured by questionnaire BAROS, it was observed that the results differ somewhat from those found by Oria and Moorehead,<sup>15</sup> in which 88.8% of patients in the quality of life was considered very good or excellent, and only 3.7% rated themselves as fair or poor at the end of 12 months. Martínez et al.,<sup>24</sup> also using the BAROS criteria, had an outcome considered "very good" for 20% of the group whereas 60% was considered good.

According to the study by Prevedello et al. 2009,<sup>25</sup> 21.9% of patients were classified as excellent, 50% as

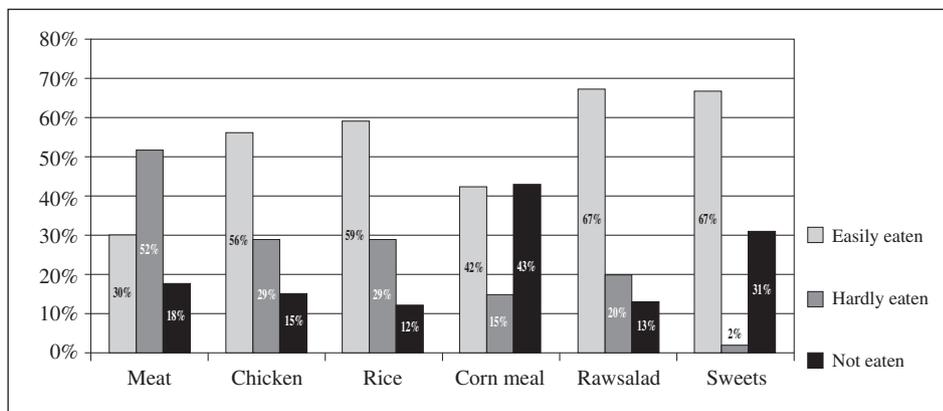


Fig. 1.—Tolerance to specific foods in the sample.

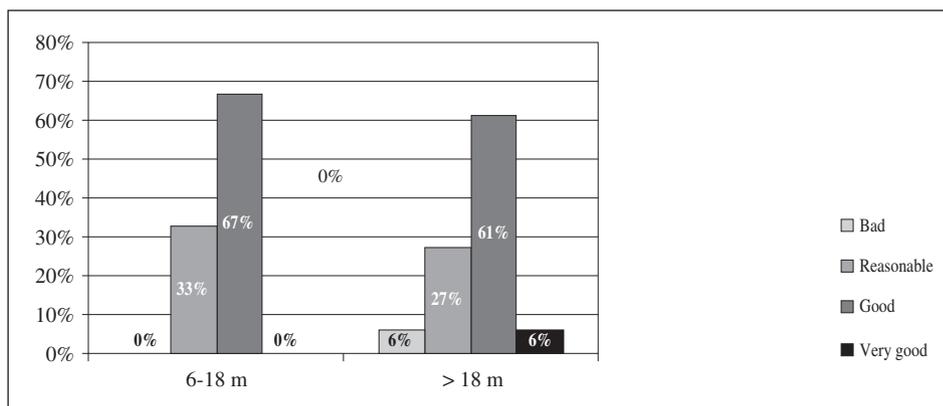


Fig. 2.—Quality of life of patients according to the postoperative period.

very good and 28.1% as good, where none of the patients had acceptable or insufficient progress within 30 months after surgery.

## Conclusion

The evolution of weight loss and loss of excess weight was satisfactory in all postoperative periods evaluated. The results of the method BAROS in this study showed the effectiveness of surgery in this population, since the patients had “good” rating in most patients in both groups of 6-18 months as an equal and greater than 18 months. However, patients report quality of life in the classification “bad” only in the period  $\geq 18$  months, showing thus the importance of multidisciplinary monitoring, stimulating compliance dietary guidelines and the guidelines from other specialties, to achieve a satisfactory level of well being and quality of life, both ultimate goals of the patient in question.

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