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Nutritional impact of bariatric surgery: a comparative study of Roux-en-Y Gastric Bypass and Sleeve gastrectomy between patients from the public and private health systems.

Impacto nutricional da cirurgia bariátrica: estudo comparativo do Bypass gástrico em Y de Roux e do Sleeve entre pacientes dos sistemas público e privado de saúde.

Natália M. M. Souza[1]; Ana Célia O. Santos[2]; Fernando Santa-Cruz[3]; Henrique Guimarães[3]; Lucas M. L. Silva[4]; Denise Sandrelly C. de-Lima[5]; Álvaro A. B. Ferraz, TCBC-PE[6]; Flávio Kreimer, TCBC-PE[6]

ABSTRACT

Purpose: To compare the nutritional status follow up of patients who underwent Roux-en-Y gastric bypass (BGYR) and Sleeve gastrectomy (SG) in hospitals of the private and public health systems, in Pernambuco. **Methods:** This study included patients who underwent bariatric surgery in the public and private health systems, in Pernambuco, from 2008 to 2016. Anthropometric and biochemical (hemoglobin, B12, iron and ferritin) data were evaluated in the preoperative period and at 3, 6 and 12 months after the operation. **Results:** There were no significant difference between patients seen at the two health systems regarding the levels of hemoglobin, iron, anemia and vitamin B12. Patients who underwent the RYGB, presented with iron deficiency which was significantly lower for those in the private system, but only at the 3 month evaluation. Low levels of ferritin were observed at the 6 month evaluation, and patients in the private health system presented with the highest ferritin deficiency. The rate of surgical success was significantly higher in those patients undergoing the RYGB at the private system. **Conclusions:** After a 12-month bariatric surgery follow-up, there was no statistically significant difference regarding micronutrient deficiency between patients followed up at the private and public health systems.

Headings: Bariatric Surgery. Deficiency Diseases. Nutritional Requirements. Nutritional Status. Supplemental Health. Public Health.

INTRODUCTION

The number of obese patients has exponentially grown, and bariatric surgery is considered as an efficient therapy, both for excess weight loss and for the resolution of comorbidities. Despite its several health benefits, the procedure has some potential complications, such as nutritional and metabolic disorders, which vary according to the degree of restriction and malabsorption of nutrients, depending on the performed technique[1].

In the Brazilian Healthcare system, it is known that the public and private represent two distinct realities regarding the social conditions. The population who rely on the private health system has a higher financial situation, in the majority of the cases. Among the elderly patients at the Unified Health System (SUS), approximately 6% of them have an income higher than three minimum wages per capita, while this proportion increases to 42.8% among those in the private healthcare, mostly covered by insurance companies[2]. On the other hand, according to national surveys, those people with the lowest incomes have better markers of diet quality when compared to the population with higher incomes[3].

Considering this scenario, the objective of this study was to assess whether there are relevant differences between the nutritional status, specifically of micronutrients, of patients who underwent bariatric surgery at the public and private healthcare system, in the state of Pernambuco.

1 - Universidade Federal de Pernambuco (UFPE), Surgical post-graduation program, Recife, PE, Brasil. 2 - Universidade Federal de Pernambuco (UFPE), Nutrition Department, Recife, PE, Brasil. 3 - Universidade Federal de Pernambuco (UFPE), School of Medicine, Recife, PE, Brasil. 4 - Universidade Federal de Pernambuco (UFPE), Genetics department, Recife, PE, Brasil. 5 - Hospital das Clínicas, Universidade Federal de Pernambuco (HC/UFPE), Nursing Department, Recife, PE, Brasil. 6 - Universidade Federal de Pernambuco (UFPE), Department of surgery, Recife, PE, Brasil.

We hypothesized that, given the higher economic status, patients at the private healthcare system would tend to have a better nutritional status when compared to those at the public service.

METHODS

This is a retrospective cohort study, with information collected from medical records and databases on the nutritional assessment of patients, followed at the gastroplasty nutrition clinic at the University Hospital – Universidade Federal de Pernambuco and a private Bariatric Surgery clinic, in the city of Recife, from 2008 to 2016. Anthropometric and biochemical data were evaluated at 3, 6 and 12 months after surgery. Adult patients of both sexes who had data pertaining the nutritional status follow-up and who underwent bariatric surgery by the Roux-en-Y gastric bypass (RYGB) or Sleeve gastrectomy (SG) techniques were included. Pregnant women, patients with Chronic Kidney Disease, Chronic Liver Disease and Human Immunodeficiency Virus were excluded.

To assess the incidence of anemia, we considered the normal hemoglobin levels =13.0-17.0g/dL for adult men and 12.0-15.0g/dL for women[4].

Vitamin B12 levels were considered low when the levels were between 200 and 400 pg/mL[5]. Low serum iron was considered when <50µg/mL. The cut-off point for ferritin, when iron stores are considered low, is <15µg/L[6,7,8]. The low concentration of hemoglobin (Hb) in a patient with a serum ferritin <30g/L is a diagnosis of iron deficiency anemia[9].

The cut-offs for adult BMI (Body Mass Index) were those established by the World Health Organization (WHO)[10]: 18.5-24.99kg/m^2 for eutrophy, >25.00kg/m^2 for excess weight, 30.00-34.99Kg/m^2 for grade I obesity; 35.00-39.99Kg/m^2 for grade II obesity and >40.00Kg/m^2 for grade III obesity.

Surgical success was considered when there was an excess weight loss (% EWL) of at least 50%[11]. The BMI of 24.9kg/m^2 was used to determine the ideal weight since this index is the maximum considered within the normal range, according to the WHO[10].

The study was approved by the Research Ethics Committee of the Health Sciences Center of the Universidade Federal de Pernambuco (CEP/CCS/UFPE), under CAAE 5807016.4.00000.5.5208.

Statistical analysis

Data were analyzed descriptively and inferentially. The descriptive statistics techniques were absolute and percentage frequencies for the categorical variables, and mean, standard deviation and median for the numerical variables. Inferential statistics techniques corresponded to the statistical tests and confidence intervals. The tests were: Chi-squared to compare percentages between categories, Fisher's exact test when the condition for using the Chi-squared test was not adequate, in the case of categorical variables. The confidence intervals were used for the means of the numerical variables and the OR in the Chi-square or Fisher's exact test. The margin of error used in the decision of the statistical tests was 5% and the intervals were obtained with 95.0%. The data were entered into the EXCEL spreadsheet and the data were analyzed with the aid of SPSS, version 23.

RESULT (S)

Table 1 indicates the demographic characteristics of the patients. It is highlighted that: the age group 30 to 39 years was the most prevalent corresponding to 37.6% of the sample; the majority were female (75.1%), and had grade III obesity (67.9%); almost half of the sample (54.9%) had arterial hypertension and approximately ¼ (25.3%) had diabetes *mellitus*; 54.6% were operated in the private system and the remaining in the public. The majority (84.2%) underwent RYGB surgery and 15.2% underwent *Sleeve*. The preoperative BMI was 43.3 ± 6.1 kg/m² and, among the patients who were evaluated at one year (final evaluation), 93.8% were considered as surgical success (weight loss equal to or greater than 50% of the overweight). There was a significant difference between the percentages for patients in all the categories (p<0.001).

RYGB surgery was the most performed, however, it was more common among the private system patients (93.2% versus 73.2%); p<0.001, according to the results indicated in Table 2.

Anemia defined by hemoglobin levels, no statistically significant differences were observed between patients (public and private systems) at any of the evaluation periods (3, 6 and 12 months), neither between surgical techniques (Table 3).

Regarding iron deficiency, it was observed that at three months, patients who underwent the RYGB and users of the public healthcare system had a higher prevalence of deficiency (p=0.003). There were no significant differences in any of the other iron follow-ups (Table 4).

Regarding ferritin levels, for the group who underwent the RYGB, 6 months after the operation, patients at the private healthcare system had a higher incidence of deficiency than those in the public system (p=0.006) (Table 5).

In the assessment of B12 deficiency, there were no statistically significant differences between users of the two healthcare systems. There was a significant difference in vitamin levels between the types of surgery at the six and 12-month assessments, with patients undergoing RYGB presenting a higher incidence of deficiency (Table 6).

Table 1. *Baseline characteristics and the success of bariatric surgery comparing patients treated in the public and private healthcare systems, Pernambuco.*

Variable	n	%	P-value
Age range			$p^{(1)} < 0.001$*
20 to 29	153	22.1	
30 to 39	260	37.6	
40 to 59	278	40.2	
Mean ± Standard deviation	37.6±9.3		
Sex			$p^{(1)} < 0.001$*
Male	172	24.9	
Female	519	75.1	

continue...

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Variable	n	%	P-value
BMI Classification - Pre			$p^{(1)} < 0.001$*
Overweight	4	0.6	
Grade I obesity	16	2.3	
Grade II obesity	202	29.2	
Grade III obesity	469	67.9	
TOTAL	691	100.0	
AH			$p^{(1)} < 0.001$*
Yes	378	54.9	
No	310	45.1	
TOTAL	688	100.0	
DM			$p^{(1)} < 0.001$*
Yes	174	25.3	
No	513	74.7	
TOTAL	687	100.0	
System			$p^{(1)} < 0.001$*
Public	314	45.4	
Private	377	54.6	
Type of surgery			$p^{(1)} < 0.001$*
Bypass	582	84.2	
Sleeve	109	15.8	
TOTAL	691	100.0	
Surgery success			$p^{(1)} < 0.001$*
Yes	335	93.8	
No	22	6.2	
TOTAL	357	100.0	

(*) Significant difference at 5.0%. (1) Chi-square test to compare proportions in a sample.

Table 2. *Evaluation of the type of surgery according to where the patients were treated, Pernambuco (2008 to 2016).*

	System							
Type of surgery	**Public**		**Private**		**Total group**		**OR (CI at 95%)**	**P-value**
	n	**%**	**n**	**%**	**n**	**%**		
Bypass	230	73.2	352	93.4	582	84.2	1.00	p(1) < 0.001*
Sleeve	84	26.8	25	6.6	109	15.8	5.14 (3.19 a 8.28)	
TOTAL	314	100.0	377	100.0	691	100.0		

(*) Significant difference at the level of 5.0%. (1) Pearson's Chi-square test.

Table 3. *Evaluation of hemoglobin according to the type of surgery and the healthcare system where the patient was treated*

		System							
Type of surgery	**Evaluation**	**Public**		**Private**		**Total group**		**OR (CI at 95%)**	**P-value**
		n	**%**	**N**	**%**	**n**	**%**		
Bypass	Hb (3 months)								$p^{(1)} = 0.769$
	Altered	33	20.6	60	19.5	93	19.9	1.07 (0.67 to 1.73)	
	Normal	127	79.4	248	80.5	375	80.1	1.00	
	TOTAL	160	100.0	308	100.0	468	100.0		
	Hb (6 months)								$p^{(1)} = 0.776$
	Altered	40	24.1	45	25.4	85	24.8	1.00	
	Normal	126	75.9	132	74.6	258	75.2	1.07 (0.66 to 1.75)	
	TOTAL	166	100.0	177	100.0	343	100.0		
	Hb (12 months)								$p^{(1)} = 0.130$
	Altered	38	36.2	38	27.1	76	31.0	1.52 (0.88 to 2.63)	
	Normal	67	63.8	102	72.9	169	69.0	1.00	
	TOTAL	105	100.0	140	100.0	245	100.0		
Sleeve	Hb (3 months)								$p^{(1)} = 0.444$
	Altered	12	22.2	7	30.4	19	24.7	1.00	
	Normal	42	77.8	16	69.6	58	75.3	1.53 (0.51 to 4.58)	
	TOTAL	54	100.0	23	100.0	77	100.0		
	Hb (6 months)								$p^{(2)} = 1.000$
	Altered	11	23.9	1	20.0	12	23.5	**	
	Normal	35	76.1	4	80.0	39	76.5		
	TOTAL	46	100.0	5	100.0	51	100.0		
	Hb (12 months)								$p^{(2)} = 1.000$
	Altered	6	30.0	-	-	6	28.6	**	
	Normal	14	70.0	1	100.0	15	71.4		
	TOTAL	20	100.0	1	100.0	21	100.0		
P-value between types of surgery in the evaluation 1		$p^{(1)} = 0.803$		$p^{(2)} = 0.278$		$p^{(1)} = 0.334$			
P-value between types of surgery in evaluation 2		$p^{(1)} = 0.979$		$p^{(2)} = 1.000$		$p^{(1)} = 0.846$			
P-value between types of surgery in evaluation 3		$p^{(1)} = 0.595$		$p^{(2)} = 1.000$		$p^{(1)} = 0.816$			

(**) It was not possible to determine due to the null or very low frequencies. (1) Pearson's Chi-square test. (2) Fisher's exact test.

Table 4. *Evaluation of iron according to the type of surgery and the healthcare system where the patient was treated.*

		System							
Type of surgery	**Evaluation**	**Public**		**Private**		**Total group**		**OR (CI at 95%)**	**P-value**
		n	**%**	**n**	**%**	**n**	**%**		
Bypass	Fe (3 months)								$p^{(1)} = 0.003$*
	Low	45	35.7	67	22.0	112	26.0	1.97 (1.25 to 3.11)	
	Normal	81	64.3	238	78.0	319	74.0	1.00	
	TOTAL	126	100.0	305	100.0	431	100.0		
	Fe (6 months)								$p^{(1)} = 0.157$
	Low	26	18.2	21	12.4	47	15.1	1.57 (0.84 to 2.92)	
	Normal	117	81.8	148	87.6	265	84.9	1.00	
	TOTAL	143	100.0	169	100.0	312	100.0		
	Fe (12 months)								$p^{(1)} = 0.755$
	Low	12	12.6	15	11.3	27	11.8	1.14 (0.51 to 2.56)	
	Normal	83	87.4	118	88.7	201	88.2	1.00	
	TOTAL	95	100.0	133	100.0	228	100.0		
Sleeve	Fe (3 months)								$p^{(2)} = 1.000$
	Low	10	21.3	5	21.7	15	21.4	1.00	
	Normal	37	78.7	18	78.3	55	78.6	1.03 (0.31 to 3.45)	
	TOTAL	47	100.0	23	100.0	70	100.0		
	Fe (6 months)								$p^{(2)} = 0.538$
	Low	4	12.5	1	20.0	5	13.5	**	
	Normal	28	87.5	4	80.0	32	86.5		
	TOTAL	32	100.0	5	100.0	37	100.0		
	Fe (12 months)								$p^{(2)} = 1.000$
	Low	1	5.6	-	-	1	5.3	**	
	Normal	17	94.4	1	100.0	18	94.7		
	TOTAL	18	100.0	1	100.0	19	100.0		
P-value between types of surgery in the evaluation 1		$p^{(1)} = 0.070$		$p^{(1)} = 0.980$		$p^{(1)} = 0.416$			
P-value between types of surgery in evaluation 2		$p^{(1)} = 0.441$		$p^{(2)} = 0.496$		$p^{(1)} = 0.802$			
P-value between types of surgery in evaluation 3		$p^{(2)} = 0.689$		$p^{(2)} = 1.000$		$p^{(1)} = 0.705$			

(*) Significant difference at the level of 5.0%. (**) It was not possible to determine due to the null or very low frequencies. (1) Pearson's Chi-square test. (2) Fisher's exact test.

Table 5. *Evaluation of ferritin according to the type of surgery and the healthcare system where the patient was treated.*

		System							
Type of surgery	**Evaluation**	**Public**		**Private**		**Total group**		**OR (CI at 95%)**	**P-value**
		n	**%**	**n**	**%**	**N**	**%**		
Bypass	Ferritin (3 months)								$p^{(1)} = 0,203$
	Altered	3	2.5	16	5.3	19	4.5	1.00	
	Normal	119	97.5	287	94.7	406	95.5	2.21 (0.63 to 7.73)	
	TOTAL	122	100.0	303	100.0	425	100.0		
	Ferritin (6 months)								$p^{(1)} = 0.006$*
	Altered	2	1.6	16	9.2	18	6.0	**	
	Normal	126	98.4	158	90.8	284	94.0		
	TOTAL	128	100.0	174	100.0	302	100.0		
	Ferritin (12 months)								$p^{(1)} = 0.409$
	Altered	7	8.3	16	11.9	23	10.5	1.00	
	Normal	77	91.7	119	88.1	196	89.5	1.48 (0.58 to 3.76)	
	TOTAL	84	100.0	135	100.0	219	100.0		
Sleeve	Ferritin (3 months)								$p^{(2)} = 0.109$
	Altered	1	2.2	3	13.0	4	5.9	**	
	Normal	44	97.8	20	87.0	64	94.1		
	TOTAL	45	100.0	23	100.0	68	100.0		
	Ferritin (6 months)								**
	Altered	-	-	-	-	-	-	**	
	Normal	36	100.0	5	100.0	41	100.0		
	TOTAL	36	100.0	5	100.0	41	100.0		
	Ferritin (12 months)								**
	Altered	-	-	-	-	-	-	**	
	Normal	15	100.0	1	100.0	16	100.0		
	TOTAL	15	100.0	1	100.0	16	100.0		
P-value between types of surgery at evaluation 1		$p^{(2)} = 1.000$		$p^{(2)} = 0.141$		$p^{(2)} = 0.542$			
P-value between types of surgery at evaluation 2		$p^{(2)} = 1.000$		$p^{(2)} = 1.000$		$p^{(2)} = 0.145$			
P-value between types of surgery at evaluation 3		$p^{(1)} = 0.590$		$p^{(2)} = 1.000$		$p^{(2)} = 0.378$			

(*) Significant difference at the level of 5.0%. (**) It was not possible to determine due to the null or very low frequencies. (1) Pearson's Chi-square test. (2) Fisher's exact test.

Table 6. *Evaluation of vitamin B12 according to the type of surgery and the healthcare system where the patient was treated.*

Type of surgery	Assessment	System: Public		Private		Total group		OR (CI at 95%)	P-value
		n	%	n	%	N	%		
Bypass	B12 (3 months)								p(1) = 0.495
	Low	8	16.7	62	20.9	70	20.3	1.00	
	Normal	40	83.3	234	79.1	274	79.7	1.32 (0.59 to 2.98)	
	TOTAL	48	100.0	296	100.0	344	100.0		
	B12 (6 months)								p(1) = 0.481
	Low	33	55.0	84	49.7	117	51.1	1.24 (0.68 to 2.23)	
	Normal	27	45.0	85	50.3	112	48.9	1.00	
	TOTAL	60	100.0	169	100.0	229	100.0		
	B12 (12 months)								p(1) = 0.213
	Low	21	48.8	77	59.7	98	57.0	1.00	
	Normal	22	51.2	52	40.3	74	43.0	1.55 (0.78 to 3.10)	
	TOTAL	43	100.0	129	100.0	172	100.0		
Sleeve	B12 (3 months)								p(1) = 0.544
	Low	10	31.3	9	39.1	19	34.5	1.00	
	Normal	22	68.8	14	60.9	36	65.5	1.41 (0.46 to 4.35)	
	TOTAL	32	100.0	23	100.0	55	100.0		
	B12 (6 months)								p(2) = 1.000
	Low	13	52.0	3	60.0	16	53.3	**	
	Normal	12	48.0	2	40.0	14	46.7		
	TOTAL	25	100.0	5	100.0	30	100.0		
	B12 (12 months)								p(2) = 1.000
	Low	7	46.7	1	100.0	8	50.0	**	
	Normal	8	53.3	-	-	8	50.0		
	TOTAL	15	100.0	1	100.0	16	100.0		
P-value between types of surgery in the evaluation 1		p(1) = 0.126		p(1) = 0.043*		p(1) = 0.019*			
P-value between types of surgery in evaluation 2		p(1) = 0.800		p(2) = 1.000		p(1) = 0.817			
P-value between types of surgery in evaluation 3		p(1) = 0.885		p(2) = 1.000		p(1) = 0.590			

(*) Significant difference at the level of 5.0%. (**) It was not possible to determine due to the occurrence of null or very low frequencies. (1) Pearson's Chi-square test. (2) Fisher's exact test.

DISCUSSION

Nutritional deficiencies are common after bariatric surgery. Despite the use of supplementary nutritional support, a considerable portion of patients presents such postoperative complication[8].

The type of patient undergoing bariatric surgery, found by Castanha et al., is mostly female (89.3%), with a mean age of 44.2 years, initial grade III obesity, with 42.4% presenting hypertension and 18.2% diabetes[12]. In our sample, we had a similar type of patinet. The systematic review by Kelles et al., also identified a similar patients undergoing bariatric surgery at SUS. It was found that 79% were female, and patients with hypertension represented 60.8% of the sample and diabetics 22.3%[13].

No significant differences in serum levels of hemoglobin, vitamin B12, iron and ferritin were identified between patients using the public and private healthcare systems at the different follow up assessments. This finding is due to the short follow-up period (12 months) since there are conflicting results in the literature. Rolim et al. indicated that after ten years of surgery among low-income patients, 52.3% have anemia and 47.6% iron deficiency[14].

Toh et al. found, when comparing the two procedures (SG and RYGB), that 12 months after surgery, patients undergoing the RYGB had a higher incidence of anemia than those undergoing SG[15]. However, this finding is in agreement with our study and others reported in the literature, such as Ferraz et al., in which the incidence of anemia was similar among patients undergoing both procedures[11].

Souza and Lima assessed the nutritional status of iron and iron deficiency anemia in obese patients undergoing RYGB or SG in a university hospital. They indicated no significant differences in the hematological levels as well as for levels of iron and ferritin[16]. When surgical techniques were compared, there were no significant differences between the prevalence of anemia and iron deficiency, either.

It is important to take into account that obese patients have a chronic inflammatory state, due to the release of pro-inflammatory cytokines, which impacts the intestinal iron absorption mechanism[17]. Iron deficiency seems to be the most important cause of anemia after bariatric surgery[18]. In our study, the deficiency of this micronutrient was decreased throughout the follow-up assessments.

The study by Salgado et al, involving obese patients undergoing RYGB, indicated that out of the 102 patients, 21.5% had pre-surgical anemia and 20% iron deficiency. It was also observed that there was no variation in the number of anemic patients during the study period, however, serum ferritin levels decreased significantly throughout the study. Females are related to a higher incidence of iron deficiency and patients who had greater weight loss had a higher incidence of anemia[19].

When analyzing ferritin, we assessed its relation with the iron deficiency. Alexandrou et al. reported ferritin deficiency, five years after bariatric surgery, in up to 30% of patients, with no differences between those undergoing RYGB or SG[20]. Our study also indicated an increase in the incidence of ferritin- deficient patients throughout the follow-up. A statistically significant difference was seen between the incidence of ferritin deficiency in the public and private system patients, after six months, but this did not keep the same pattern until the end of the first year of follow-up.

In our study, there was a progressive increase in vitamin B12 deficiency throughout the evaluations in the first post-surgical year, independently where they were treated, which contrasts with the findings by Alexandrou et al., who pointed out the greater incidence of deficient patients undergoing RYGB when compared to SG[20]. The risk of vitamin B12 deficiency is higher among patients undergoing RYGB than SG, due to the lower production of hydrochloric acid in the gastric pouch, with consequently lower production of intrinsic factor, responsible for carrying vitamin B12 to the absorption site in the terminal ileum. The absorption of B12 can also be affected after SG, but there is still the production of acid secretion and of the intrinsic factor after surgery[21].

As RYGB is considered the gold standard for bariatric surgery, Zaparolli et al. sought to analyze the intake of macronutrients in the postoperative period. As a result, there was a change in macronutrient consumption when comparing the preoperative periods with the assessments at 6 months and one year after surgery. At the sixth month assessment, patients had a tendency to recover their preoperative dietary patterns, with an increased intake of grains and cereals, which are foods with low iron content and a high content of carbohydrates. The authors associate the appearance of post-surgical food intolerances favoring the intake of carbohydrates, whose acceptance and digestibility are more tolerable[22]. The findings of the latter study may justify why patients undergoing RYGB have a significant difference in relation to the loss of excess weight when comparing the public and the private healthcare services. This may be explained by the fact that such foods are more inexpensive and thus commonly used by low income people as those operated on in the public healthcare system. Ferreira and Magalhães reported the lower consumption of fruits and vegetables by obese low-income women in a community in Rio de Janeiro, which is almost always related to the high cost of these items[23].

Another factor is the length of the biliodigestive loops after the RYGB. Ahuja et al. performed a retrospective analysis to assess the effect of the biliodigestive loop length on weight loss, resolution of comorbidities and nutritional deficiencies after one year of bariatric surgery. The authors concluded that up to 150 cm in length results in minimal nutritional complications and good results[24]. Abellan et al. studied the influence of the common loop length after RYGB in patients at a Spanish university hospital, and they indicated that the percentage of the common loop had no effect on weight loss, but there was an inverse relationship between a smaller loop and increased nutritional complications[25].

In addition to the size of the intestinal loops, Savassi-Rocha et al. highlight the variation in the intestinal length of human beings (4 to 9 meters), which is not considered by most of the surgeons, although there is a correlation with the great variation in the length of the common loop[26]. It was not feasible to verify the standard length of the common loop for RYGB in patients treated at both systems, with the goal to assess possible correlations between greater loss of excess weight and lower levels of serum iron in patients from the private healthcare.

There is a bias in the current study related to the significant reduction of patients' follow up, which is in agreement with Belo et al. who assessed the predictive factors for follow-up losses od patients undergoing bariatric surgery over four years.

This study indicated that there was a progressive reduction in the frequency of medical follow-up, mainly from the second postoperative year on, but the number follow-up losses almost doubled from the first to the second year[27].

Sant'Helena and Dal Prá observed patients who underwent gastroplasty in the public healthcare system and abandoned the multidisciplinary post-surgical follow-up. The authors reported that patients consider themselves discharged from the moment they reach the weight loss goal. Geographic and institutional factors are also referred as aggravating the impossibility of access to postoperative follow-up[28].

CONCLUSION

In the present study, with a 12-month follow-up after bariatric surgery, there was no statistically significant difference regarding micronutrient deficiencies between patients using the public and private healthcare services. The use of bariatric surgery as a therapeutic option for obesity is effective and effectively contributes to improving the quality of life of both public and private healthcare system users. Nutritional monitoring is mandatory for a good clinical outcome, which prophylactic and therapeutic benefits, considering that nutritional deficiencies and surgical success are directly linked to eating behavior.

R E S U M O

Objetivos: *Comparar a evolução do perfil nutricional de pacientes submetidos ao bypass gástrico em Y de Roux (BGYR) e ao Sleeve, em hospitais dos setores público e privado da Saúde de Pernambuco.* ***Método:*** *O estudo incluiu pacientes submetidos à cirurgia bariátrica nos setores público e privado de saúde de Pernambuco no período de 2008 a 2016. Foram avaliados dados antropométricos e bioquímicos (Hemoglobina, Vitamina B12, Ferro e Ferritina) no período pré-operatório e com 3, 6 e 12 meses de pós-operatório.* ***Resultados:*** *Não foram registradas diferenças significativas entre os pacientes internados nos dois setores da Saúde no tocante às variáveis: níveis hemoglobina, anemia por deficiência de ferro e vitamina B12 em nenhuma das avaliações e conforme o tipo de cirurgia. Entre os pacientes submetidos ao BGYR, os níveis de ferro sérico foram significativamente menores nos pacientes do setor privado da Saúde apenas na primeira avaliação. Baixos níveis de ferritina sérica foram observados na segunda avaliação, sendo os pacientes do setor privado os que apresentaram menores valores. O sucesso cirúrgico foi significativamente maior no grupo que realizou o BGYR na rede privada.* ***Conclusões:*** *Com um seguimento de 12 meses pós-cirurgia bariátrica, não foi observada diferença estatisticamente significante no que diz respeito às deficiências de micronutrientes entre pacientes usuários dos setores público e privado de Saúde.*

Descritores: *Cirurgia Bariátrica. Deficiências Nutricionais. Necessidades Nutricionais. Estado Nutricional. Saúde Suplementar. Saúde Pública.*

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Mailing address:
Fernando Santa-Cruz
E-mail: f.santacruzoliveira@gmail.com