

## **BENEFITS OF BARIATRIC SURGERY IN INDIVIDUALS WHO DO NOT ADHERE TO POST-OPERATIVE TREATMENT AND USE ALCOHOL**

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**Abstract:** Introduction: Obesity is chronic and complex, emphasizing the need for knowledge of the epidemiological and clinical profile and the use of alcohol in individuals who do not adhere to treatment, which can lead to comorbidities that could be avoided. Objective: To characterize a group of individuals who did not return to outpatient consultations for at least one year after bariatric surgery. Method: Analytical cross-sectional study involving 100 individuals who underwent surgery and who did not attend scheduled appointments for at least one year. A sociodemographic questionnaire was applied, an instrument to assess adherence to the post-bariatric follow-up clinic and alcohol consumption through the Alcohol Use Disorder Identification Test (AUDIT) questionnaire. This series also demonstrates the biochemical changes found in the partial non-adherence group: HB, HT, TGO, TGP, albumin, ferritin, triglycerides, cholesterol and proteins. Results: Of the total of 62 patients included, 54 are women, 42 white, the confirmation of alcohol use being male, with significant importance to this abuse with non-adherence to treatment, as well as changes in creatinine. This withdrawal is directly correlated with greater initial weight and on the day of surgery. And appreciation of the total non-adherence group: individuals without partners, with increased TH, TGP, urea, ferritin, protein and weight in the last consultation. Conclusion: The individuals who did not return are mostly women, white, with partners, own residence, with an income of 1 to 3 minimum wages, with religiosity, reporting being healthy, but using alcohol, demonstrating that the benefit prevails of the surgery.

**Keywords:** Obesity, abandonment, benefits, bariatric surgery, alcohol.

## INTRODUCTION

Obesity is a chronic, complex, epidemic, costly, multifactorial disease, involving several factors such as: genetic, environmental, behavioral, endocrine, familial, dietary, psychological and social (WHO, 2010). It is an important risk factor for the development of the Metabolic Syndrome, characterized by the presence of Type 2 Diabetes Mellitus, Systemic Arterial Hypertension, Hypercholesterolemia and Hypertriglyceridemia, associated with an inflammatory and prothrombotic condition whose main consequence is increased morbidity and mortality from cardiovascular disease (LAM, LEROITH, 2000).

After all failed attempts at clinical treatment, surgical treatment is chosen. The overall impact of surgery in reducing long-term mortality has been demonstrated in obese patients, with a 40% reduction in deaths from all causes, 56% from coronary heart disease, 92% from complications of diabetes, and 60% from any type of malignant neoplasm (CAMPOS et al., 2016).

The surgical process requires intense patient compliance in the pre- and postoperative periods, as it implies changes in eating habits, behavioral habits and lifestyle. Travado et al. (2004) and Zilberstein, Santo and Carvalho (2019) state that after bariatric surgery there is a need for follow-up, since the changes are drastic in food, social and behavioral habits, body image and difficulties in adapting to the new phase of life, putting the success of the surgery at risk. Individuals undergoing surgery deserve special attention before and after surgery regarding alcohol consumption (ERTELT et al., 2008; KUDSI et al., 2013) due to the increased risk of up to 6.5% in developing problems related to abuse of alcohol (SAULES et al., 2010). According to King et al. (2012), the prevalence indicates an increase from 7.6% to 9.6% in 12 months after the operation.

## METHODS

This is a-sectional analytical clinical study involving 100 obese individuals aged 26 to 69 years who cross gastric bypass Roux-en-Y to 2014, with 62 not attending the consultation for at least one year and 38 not responding to the subpoena.

The study was approved by the Research Ethics Committee under number 1,582,332

The data collection instruments used were:

- Sociodemographic Registration Form (Annex I);
- AUDIT Instrument (Alcohol Use Disorder Identification Test) for those who reported alcohol use (Appendix II);
- Instrument to assess adherence to post-bariatric outpatient follow-up (Annex III);
- Collection of laboratory test results by the AGHUSE computerized service system (HB, HT, TGO, TGP, BIL, ALB, CREA, UREA, VIT B12, IRON, FERRITIN, GLYCEMIA, TRIGLYCERIDES, VDLA, HDL, COL. AND PROTEIN.

The main demographic, anthropometric, clinical and laboratory characteristics were evaluated. Assessments of weight, comorbidities, use of illicit drugs, alcohol and laboratory tests were carried out before the non-adherence period and upon return, in order to measure the impact caused by this period of non-attendance.

## RESULTS

The frequencies found in the sociodemographic description of the 62 individuals summoned and who returned were 54 (87.10%) women and 8 (12.90%) men. Of these, 42 (67.74%) declared themselves white and 20 (32.26%) as brown or black. 18 (29.03%) have a rented residence and 44 (70.97%) have a partner, 51 (82.26%) have a partner and 11 (17.74%) do not have a partner, with a family income of up to 1

minimum wage 17 (27.42%), 1 to 3 salaries 33 (53.23%), 4 to 6 salaries 12 (19.35%), have religion 56 (90.32%) and no religion 6 (9.68%), have private health plan 5 (8.06%) and no private health plan 57 (91.94%), of these have active diseases 20 (32.26%) and 42 (67.74%) report being healthy, drug use 1 (1.61%) and 61 (98.39%) denied drug use, however, 32 (51.61%) say they use alcohol and 30 (48.39%) deny it (Table 1).

When assessing adherence, an adapted questionnaire was applied that was closer to the reality of the individual undergoing post-bariatric surgery who requires changes in lifestyle, and it was concluded, therefore, that 20 (32.25%) showed extreme adherence, 22 (35.48%) present in a situation of borderline adherence, 10 (16.13%) present medium adherence range and 10 (16.13%) present what is considered still adherence, these data evaluated by numerical classification (Table 2), however, when evaluating by descriptive classification we have only 8 (12.90%) in extreme non-adherence (NAE), 28 (45.16%) bordering on total non-adherence (LNA), 20 (32.26%) in medium adherence interval (MAI) and 6 (9.68%) in the total adherence border and none in extreme adherence (AE) (Table 3).

The profile of the 38 patients called who did not return was a retrospective study in which 28 (75.68%) were women and 10 (24.32%) men, of which 24 (62.16%) were white and 14 (37.84%) brown/black, of which 17 (48.57%) were described as having a partner and 18 (51.43%) as not having a partner (Table 1).

The influence that alcohol causes on individuals after bariatric surgery where there is significant variation in the evaluation of the mean and standard deviation in relation to the evaluation of adherence of alcohol users being  $4.23 \pm 1.43$  and non-users is  $5.19 \pm 1.53$  ( $p < 0.0229$ ), in addition, it presents the

Creatinine variation (CREA), where alcohol users have a negative variation of  $-4.97 \pm 20.17$  in relation to non-alcohol users  $0.03 \pm 0.09$  ( $p < 0.0237$ ) (Table 4).

The correlation between time of withdrawal and initial weight ( $p < 0.0209$ ) and time of non-adherence and weight at surgery ( $p < 0.0065$ ) have low correlations, correlation coefficient of 0.2929 for the correlation between time of dropout and initial weight and a correlation coefficient of 0.3423 between time of dropout and weight at surgery. The existence of positive correlations shows that the greater the initial weight and the weight at surgery, the longer the noncompliance time, but they are of low magnitude. The variables age, adherence assessment, weight at the last visit and return, as well as regain, HB, HT, TGO, TGP, BIL. TOTAL, albumin, creatinine, urea, vitamin B12, iron, ferritin, glycemia, triglycerides, VLDL, HDL, cholesterol and protein do not show correlation with the time of abandonment (table 5).

Univariate analysis shows that evasion is statistically associated with marital status ( $p = 0.0008$ ), HT ( $p = 0.0007$ ), TGP ( $p = 0.0133$ ), urea ( $p < 0.0001$ ), ferritin ( $p = 0.0055$ ), protein ( $p = 0.0015$ ), while the variables, Gender, Ethnicity, age, initial weight, surgical weight, consultation weight, HB, TGO, total bilirubin, albumin, creatinine, vitamin B12, iron, glycemia, triglycerides, VLDL, HDL, cholesterol does not differ significantly (table 6).

There is a significant independent association between abandonment and HB ( $p = 0.0155$ ), Urea ( $p = 0.0042$ ), stating that the lower the values of these tests, the greater the risk of abandonment, as well as marital status ( $p = 0.0008$ ) states that individuals without a partner are five times more likely to not adhere to treatment, and also the weight at the consultation ( $p = 0.0258$ ) which states that

the lower the weight at the last consultation, the greater the possibility of not adherence (Table 6).

## DISCUSSION

Due to the obesity pandemic and the use of the laparoscopic approach, bariatric surgery is currently among the most performed gastrointestinal surgeries worldwide, with beneficial effects on survival, weight loss and improvement of associated comorbidities (CASTANHA et al., 2018). Therefore, these individuals require lifelong monitoring.

The main assessment made in this study and in other studies reviewed for this work is the need to know the organic condition of individuals after bariatric surgery so that their organic condition can be evaluated: were the comorbidities controlled? Is the desired quality of life achieved? Is this individual satisfied? Has alcohol abuse brought about surgical changes?

Thus, demonstrating that the surgical procedure is effective, but with a targeted education, and even with the non-adherence of this individual, it is possible to verify the surgical success.

Despite everything, it is evident in this case study that a small number of participants were included, since a large part did not answer the telephone contact we made, and another part depended on their acceptance to participate in the research. In addition, it was necessary to carry out several questionnaires to carry out the work, which could make it tiring and time-consuming. On the other hand, these questionnaires came to help survey the panorama of patients followed after bariatric surgery, allowing the approach of controversial issues within bariatric surgery. It is noteworthy that, despite all the problems involved in non-adherence to treatment and its consequences,

in general, the individuals analyzed in this study showed a general improvement in their health status, analyzed by clinical and laboratory measures, demonstrating the beneficial effect of the surgery. bariatric surgery, even with follow-up far from ideal conditions. This finding reinforces the need for dissemination and diffusion of bariatric surgery, since most potential candidates do not have access to it. Currently, almost one in every 100 individuals eligible for surgery in the world receives an operation, and the situation is even more precarious in Brazil, where only 10% of procedures are performed by the public system (SBCBM, 2019).

In this study, we emphasize the importance of multidisciplinary follow-up that favors better preparation for individuals in the face of the changes they will have to face in the postoperative period, such as significant weight loss, inability to eat the amount of food consumed previously, changes in the body, the family and social conflicts that remain part of their lives, the memories of traumatic events that occurred in phases before and during the development of obesity (MARCELINO, PATRÍCIO, 2011). The improvement in self-esteem encourages the individual to “want more” and is not always prepared to deal with frustration in the face of failure. Significant weight loss, as well as the inability to eat food in large quantities to relieve current tensions, encourages individuals to seek alternatives that help them find some pleasure and this way, they discover alcohol as a source of escape, taking refuge from them. again (SANTOS, CRUZ, 2016).

We also came to promote a reflection on methods that can improve post-operative follow-up rates, so that the results can be even better.

## CONCLUSION

Individuals who remain non-adherent for at least 12 months after Roux-en-Y bariatric surgery tend to have slightly significant biochemical and clinical changes, with the benefits provided by bariatric surgery prevailing, even in the presence of alcohol use.

## DISCLOSURES

The authors have no business associations that could be a conflict of interest in relation to this article.

Informed consent was obtained from all participants included in the study.

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Characteristic	n	percentage
<b>INDIVIDUALS</b>	-	-
Total number of individuals	100	100%
individuals who returned	62	62%
Individuals who did not return	38	38%
<b>Characteristics of individuals who returned</b>	-	-
Female	54	87.1%
Male	8	12.9%
white self-declared ethnicity	42	67.74%
Self-declared brown or black ethnicity	20	32.26%
rented residence	18	29.03%
own residence	44	70.97%
with partner	51	82.26%
no partner	11	17.74%
Family income of up to 1 salary	17	27.42%
Family income of 1 to 3 wages	30	48.39%
Family income of 4 to 6 wages	12	19.35%
More than 6 salaries	3	4.84%
Individuals who have religion	56	90.32%
Individuals who have no religion	6	9.68%
private health plan	5	8.06%
public health plan	57	91.94%
With comorbidities	20	32.26%
No comorbidities	42	67.74%
do drugs	1	1.61%
Does not use drugs.	61	98.39%
Makes use of alcohol	32	51.61%
does not use alcohol	30	48.38%
<b>Characteristics of individuals who did not return</b>	-	-
Female	28	75.68%
Male	10	24.32%
white self-declared ethnicity	42	67.74%
Self-declared brown or black ethnicity	20	32.26%
with partner	51	82.26%
no partner	11	17.74%

Table 1: Frequencies found in the sociodemographic description.

Adhesion	n	Percentage
Adhesion extreme	20	32.25%
Borderline adherence situation	22	35.48%
Average membership range	10	16.12%
membership yet	10	16.12%

Table 2. Evaluate adherence to post-bariatric outpatient follow-up of the 62 individuals who returned, numerical classification.

Adhesion	n	Percentage
Extreme non-adherence (NAE)	8	12.90%
Borderline for total non-adherence (LNA)	28	45.16%
Mean Adherence Interval (IMA)	20	32.26%
Borderline for full adherence and none for extreme adherence (AE)	6	9.68%

Table 3. Assess adherence to post-bariatric outpatient follow-up of the 62 individuals who returned, numerical classification.

	Alcohol use – mean (standard deviation)	Non-alcohol use – mean (standard deviation)	p for significance
Adherence assessment	4.23 (±1.43)	5.19 (±1,53)	p<0,0229
Creatinine Variation (CREA)	-4.97 (±20.17)	0.03 (±0.09)	p<0,0237

Table 4. Influence that alcohol causes in individuals after bariatric surgery where there is significant variation in the evaluation of mean and standard deviation.

	Resignation time
starting weight	R = 0,2929 p < 0,0209
weight in surgery	R = 0,3423 p < 0,0065

Table 5. Correlation between stopping time and initial weight and stopping time and weight in surgery.

	Relationship	independent relationship
Marital status	p = 0,0008	p = 0,0008
Ht	p = 0,0007	-
TGP	p = 0,0133	-
Urea	p < 0,0001	p = 0,0042
Ferritin	p = 0,0055	-
Protein	p = 0,0015	-
Hb	-	p = 0,0155
Weight at consultation	-	p = 0,0258

Table 6. Relationship / Independent relationship between abandonment and collected data.



**SOCIODEMOGRAPHIC DATA REGISTRATION FORM SHEET No.:** \_\_\_\_\_

**1. Name:** \_\_\_\_\_

**PERSONAL INFORMATION:**

**2. Age:** \_\_\_\_\_ (years)

**3. Naturalness (state):** \_\_\_\_\_

**4. Address / neighborhood:** \_\_\_\_\_

**5. City:** \_\_\_\_\_ **Telephone: ( )** \_\_\_\_\_

**6. Sex:** ( ) Male ( ) Feminine

**7. Breed / Color** ( ) white ( ) brown ( ) black ( ) Yellow ( ) Indigenous

**SITUATION SOCIODEMOGRAPHIC**

**8. Residence:** ( ) urban ( ) Rural ( ) own ( ) rented ( ) donated ( ) leased

**9. Schooling:** ( ) can't read write ( ) Literate ( ) Incomplete Elementary School.

( ) Complete primary education ( ) Incomplete high school

( ) Complete high school ( ) Incomplete higher ( ) Graduated

( ) postgraduate ( ) Specialization / Residence ( ) Master's degree ( ) Doctorate degree

**10. Marital Status:** ( ) Lives with regular partner

( ) Lives without a regular partner (sporadically)

( ) Does not live with a partner ( ) don't have a partner

**11. Occupation:** ( ) Business ( ) industry ( ) farming ( ) Student

( ) Retired ( ) Pensioner ( ) from home ( ) Dependent

( ) Unemployed ( ) autonomous ( ) removed ( ) Other \_\_\_\_\_

**12. Family income** ( ) <1 minimum wage ( ) 1 to 3 months ( ) 4 to 6 years ( ) > 6 wages

**13. Religion:** ( ) catholic ( ) Evangelical ( ) spiritist ( ) Atheist ( ) test Jehovah ( ) Judaism

( ) Buddhist ( ) muslim ( ) No religion.

Other \_\_\_\_\_

**14. Health:**

Do you have medical insurance? ( ) Yea ( ) Not. Which? \_\_\_\_\_

Do you have any disease? ( ) Yea ( ) No. Which? \_\_\_\_\_

Do you do any other treatment? ( ) Yea ( ) No. Which? \_\_\_\_\_

Where? \_\_\_\_\_

Use of illicit drugs: ( ) No ( ) Yes

Which \_\_\_\_\_

For how long? \_\_\_\_\_

Annex 1: Sociodemographic Form.

<p>1. How often do you consume drinks that contain alcohol? [Write the number that best matches your situation]</p> <p>0 = Never 1 = once a month or less 2 = two to four times a month 3 = two to three times a week 4 = four or more times a week</p>	<p>6. In the past 12 months, how often did you need to drink first thing in the morning to “cure” a hangover?</p> <p>0= Never 1= less than once a month 2 = at least once per month 3 = at least once a week 4 = daily or almost daily</p>
<p>2. When you drink, how many drinks containing alcohol consume on a typical day?</p> <p>0 = once or twice 1= three or four 2= five or six 3= seven to nine 4= ten or more</p>	<p>7. In the past 12 months, how often have you had feelings of guilt or remorse about having been drinking?</p> <p>0 = never 1= less than once a month 2 = at least once per month 3 = at least once a week 4 = daily or almost daily</p>
<p>3. How often do you have six drinks or more on one occasion?</p> <p>0 = Never 1= less than once a month 2= at least once per month 3= at least once a week 4= daily or almost daily</p>	<p>8. In the past 12 months, how often have you been unable to remember what happened the night before because of your drinking?</p> <p>0 = never 1 = less than once a month 2 = at least once per month 3 = at least once a week 4 = daily or almost daily</p>
<p>4. In the past 12 months, how often have you noticed that couldn't stop drinking after starting?</p> <p>0 = Never 1 = less than once a month 2 = at least once per month 3 = at least once a week 4 = diaramente ou quase diaramente</p>	<p>9. Have you ever been hurt or someone else hurt because you've been drinking?</p> <p>0 = not 1 = yes, but not in the last 12 months 2 = yes, it happened in the last 12 months</p>
<p>5. In the past 12 months, how often were you unable to fulfill the tasks that you are usually required to do because you have been drinking?</p> <p>0 = Never 1= less than once a month 2 = at least once per month 3 = at least once a week 4= daily or almost daily</p>	<p>10. Has a family member, friend, doctor or healthcare professional ever expressed concern about your alcohol consumption or suggested that you stop drinking?</p> <p>0 = not 1 = yes, but not in the last 12 months 2 = yes, it happened in the last 12 months</p>

Screening score regarding alcohol consumption

0-7 points: LOW RISK

8-15 points: MEDIUM RISK

16-19 points: HIGH RISK

20-40 points: PROBABLE ADDICTION

Annex 2: ADUIT

VARIABLES	NOTE MAXIMUM	NOTE RECEIVED	DESCRIPTION
ADEQUATE SALT CONSUMPTION	1.0	(0,0) ( )	He clearly mentions that he consumes salt without moderation. It mentions this as unimportant.
		(0,25)( )	He clearly mentions that he consumes salt without any moderation, but he says he knows that it is bad
		( 0,5) ( )	He clearly mentions that he consumes a lot of salt, but he says that he wants to reduce it and cannot
		(0,75) ( )	He mentions that sometimes he consumes a larger amount of salt, but it is rare
		(1,0) ( )	Claims to be extremely careful with salt restriction
ADEQUATE FAT CONSUMPTION	0.5	(0,0) ( )	He clearly mentions that he consumes fat, without moderation, and mentions this as unimportant
		0,12 ( )	He clearly mentions that he consumes fat, without any moderation, but says he knows that it is bad.
		0,25 ( )	He clearly mentions that he consumes a lot of fat, but claims that he wants to reduce it and cannot
		0,37 ( )	He mentions that sometimes he consumes more fat, but it is rare
		0,5 ( )	Claims to be extremely careful with fat restriction
BODY MASS INDEX (MC)	1.0	(0,0) ( )	>35 e <40 kg/m <sup>2</sup> ou <19,9
		(0,25) ( )	>30 e <35kg/m <sup>2</sup>
		(0,5) ( )	>25 e <30 kg/m <sup>2</sup>
		(1,0) ( )	≤25kg/m <sup>2</sup>
ABSTINENCE FROM SMOKING	0.5	(0,0) ( )	Clearly mentions that he smokes, in excess, and counts this as unimportant
		(0,12) ( )	He clearly mentions that he smokes, in excess, but he says he knows that it is harmful.
		(0,25) ( )	He clearly mentions that he smokes, but comments that he wants to cut down and cannot.
		(0,37) ( )	He mentions that he sometimes smokes, but it is rare
		(0,5) ( )	He claims to be extremely careful with smoking restrictions.
ABSENCE OF ALCOHOLIC INTAKE	0.5	(0,0) ( )	He clearly mentions that he is an alcoholic, without moderation, and talks about this as unimportant.
		(0,12) ( )	He clearly mentions that he is an alcoholic, without any moderation, but he says he knows that it is harmful.
		(0,25) ( )	He clearly mentions that he is an alcoholic, but alleges that he wants to cut back and is unable to do so.
		(0,37) ( )	He mentions that he sometimes drinks, but it is rare
		(0,5)	Claims to be extremely careful with alcohol restriction
REGULAR PRACTICE OF PHYSICAL EXERCISES	1.0	(0,0)	Clearly mentions that he is sedentary and mentions this as unimportant
		(0,25)	He clearly mentions that he is sedentary, but he says he knows that it is bad
		(0,5)	He clearly mentions that he is sedentary, but emphasizes that he wants to change his behavior and is unable to do so.
		(0,75)	He mentions that he is sometimes sedentary, but it is rare
		(1,0)	Claims to be extremely careful with sedentary lifestyle

VARIABLES	NOTE MAXIMUM	NOTE RECEIVED	DESCRIPTION
EFFECTIVE COPING WITH STRESS	0,5	(0,0) ( )	He clearly mentions that he gets stressed very easily and with that he eats uncontrollably
		(0,12) ( )	He clearly mentions that he gets stressed very easily, and with that he eats
		(0,25) ( )	Clearly mentions that he gets stressed easily, but restrains himself when eating and emphasizes that he wants to change his behavior
		(0,37) ( )	He mentions that he sometimes gets stressed, but it is rare for him to overeat
		(0,5) ( )	Claims to be extremely careful with stress and does not eat
PROPER USE OF VITAMIN(S)	1,5	(0,0) ( )	Clearly mentions that he does not take the medication and mentions this as unimportant
		(0,25) ( )	He clearly mentions that he does not take medication, only when the exams change
		(0,5) ( )	He clearly mentions that he has difficulty taking the drug correctly due to its cost and difficulty in applying it.
		(1,0) ( )	He mentions that sometimes he forgets to take the medicine, but it is rare.
		(1,5) ( )	He claims to be extremely careful with the time and way of taking the medications
ATTENDANCE TO PERIODIC OR SCHEDULED APPOINTMENTS	0,5	(0,0) ( )	He clearly mentions that he goes to the consultation only when he feels very unwell
		(0,12) ( )	He clearly mentions that he goes to the consultation only when he feels slightly unwell.
		(0,25) ( )	He clearly mentions that he misses appointments, but says he wants to change this behavior and is unable to do so.
		(0,37) ( )	Refers If sometimes he misses the consultation, but it is rare.
		(0,5) ( )	He claims to be extremely careful with attending appointments
EXCESS WEIGHT LOSS CONTROL	3,0	(0,0) ( )	( ) 0 a 20%
		90,5) ( )	( ) 21 a 40%
		(1,0) ( )	( ) 41 a 60%
		(1,5) ( )	( ) 61 a 80%
		(3,0) ( )	( ) 81 a 100%
<b>TOTAL</b>	<b>10,0</b>	<b>X =</b>	

Adapted by Cândido(2016) from Ribeiro(2010)

**CLASSIFICATION:**

X<3= Extreme non-adherence (NAE)

X≥3 e <5 = Borderline to total non-adherence (LNA)

X≥5 e < 7 = Average adherence interval (IMA)

X≥7 e <9 = Borderline to total adherence (LA)

X≥9 = Extreme adherence (AE).

Annex III. Instrument to evaluate adherence to post-bariatric outpatient follow-up.