



# Obesity and Physical Activity in Ostomized Patients

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## Abstract

**Introduction** The relationship between obesity and physical activity is still unknown in specific groups, such as people living with ostomies.

**Objective** To assess the prevalence of obesity and the level of physical activity in ostomized individuals.

**Methods** A cross-sectional study with a population of ostomized patients in two hospitals of a Brazilian city. Obesity was assessed by the Body Mass Index (BMI) and physical activity, by the International Physical Activity Questionnaire.

**Results** The study included 148 patients (55.4% of men [82]), with a mean age of 58.5 ( $\pm 17.8$ ) years, with 56.1% (83) of the sample aged 60 or older. Colostomies were identified as definitive in 67.6% (100), there were 28 cases (18.9%) of obesity, 67 (45.3%) overweight patients, and 31 (20.9%) subjects were underweight. Sedentary lifestyle was identified in 40.5% (60) of the participants. The mean BMI was significantly higher in men ( $25.9 \pm 5.1$ ), and a higher proportion of men were overweight (28; 34.1%); the underweight group had a greater proportion of women (20; 30.3%). An association between physical inactivity and underweight ( $p = 0.003$ ) was found.

**Conclusion** Most patients with ostomies, especially colostomies, are men over 60 years of age who are overweight or obese. In general, underweight individuals are more sedentary.

## Keywords

- obesity
- ostomy
- exercise

## Introduction

The prevalence of obesity has increased worldwide, both in developed and developing countries, with serious health consequences such as increased risk of premature death,

difficulties in breathing, chronic musculoskeletal problems, skin problems, infertility, and association with other morbidities that have a definite impact on quality of life. In addition, being overweight puts the individual at greater risk of comorbidities.<sup>1</sup>

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Obese patients requiring ostomy surgery<sup>2</sup> already start the process at a disadvantage and face many challenges, among them, the choice of the best location to place the ostomy and the choice of measures to prevent complications. Successful physical, emotional, and mental recovery depends on careful planning of the care, including the treatment of pain, immobility, skin lesions, respiratory problems, and risk of embolisms.<sup>3,4</sup> In people living with ostomies (in the colon or ileum), obesity is mentioned only as a risk for early excoriation of peristomal skin.<sup>5</sup>

Obesity, in the absence of an ostomy, has received multidisciplinary attention with regard to intervention, from therapeutic proposals with drugs and educational activities<sup>6,7</sup> to interventions with a broader scope that includes exercise and diets.<sup>8</sup>

No publications were identified that related the condition of obesity in adults living with ostomies and that addressed the possible interventions, or even that described the lifestyle of these people. The present article aims to describe the frequency of obesity and physical activity among people living with ostomies.

## Methods

The present is a cross-sectional, descriptive study with a quantitative approach. The population consisted of people with intestinal ostomies, from two hospitals in the city of Goiânia, Midwestern Brazil. The hospitals were selected because they served the greatest number of people with ostomies in the city, providing care and dispensing collection equipment and adjuvants.

A minimum of 20% of ostomized people registered in each of the two hospitals was included. The present study included individuals with intestinal ostomies who were 18 years of age or older through convenience sampling.

Data on sociodemographic variables (age, gender, education, occupation, number of children), clinical data, body mass, and level of physical activity were collected.

## Obesity

The data referring to weight and height were recorded during the interview process to calculate the Body Mass Index (BMI = weight in kilos/the square of the height in meters), which was used to assess the nutritional status of individuals and to classify them according to World Health Organization (WHO)<sup>1</sup> into underweight (BMI < 18.5 kg/m<sup>2</sup>); eutrophic (BMI: 18.6–24.9 kg/m<sup>2</sup>); overweight (BMI: 25.0–29.9 kg/m<sup>2</sup>); or obese (BMI ≥ 30.0 kg/m<sup>2</sup>).

## Physical Activity

To assess the level of physical activity, we used the International Physical Activity Questionnaire – Short Form (IPAQ-SF), which has been validated in Brazil for adult populations.<sup>9</sup> The individuals were classified as: sedentary, low physical activity, moderate physical activity, or high physical activity.

## Statistics

The Chi-squared test or Fisher exact test was used to check for associations, and for the distribution, the Kolmogorov test

**Table 1** Sociodemographic characteristics of the study sample (N = 148)

Characteristics	n (%)
<i>Age group (years)</i>	
18 to 20	5 (3.4)
20 to 40	20 (13.5)
40 to 60	40 (27.0)
> 60	83 (56.1)
<i>Gender</i>	
Male	82 (55.4)
Female	66 (44.6)
<i>Level of schooling</i>	
Illiterate	20 (13.5)
Elementary up to 4th grade	67 (45.3)
Elementary up to 8th grade	18 (12.2)
High school	35 (23.6)
Higher education	8 (5.4)

was applied. For variables with normal distribution, we used the Student *t*-test for comparison between means, and the Mann Whitney-U test for variables with non-parametric distribution. All tests were applied with a 5% significance level and a 95% confidence interval (95%CI).

## Results

The present study included 148 individuals with intestinal ostomies, with a mean age of 58.5 (±17.8) years. There was a significant difference ( $p = 0.003$ ) in the average age between the two hospitals; in hospital 1, the patients had a higher mean age ( $61.2 \pm 15.3$ ) than in hospital 2 ( $51.6 \pm 21.7$ ).

The age group over 60 years was the one with the highest frequency. The proportion of men was of 55.4%. The predominant level of schooling was elementary school until the fourth grade (→ Table 1).

Colostomies predominated as intestinal ostomies in the sample, and 67.6% were identified as definitive. The prevalence of obesity was of 18.9% ( $n = 28$ ), and, when added to overweight, it represented 45.3% ( $n = 67$ ) of the sample. The frequency of underweight corresponded to 20.9% ( $n = 31$ ) of the cases. Sedentary lifestyle was identified in 40.5% of the participants (→ Table 2).

The BMI was significantly higher in males ( $25.9 \pm 5.1$  kg/m<sup>2</sup>) compared with females ( $24.0 \pm 6.3$  kg/m<sup>2</sup>) ( $p = 0.038$ ), with a general average of  $25.1 \pm 5.7$  kg/m<sup>2</sup>. A higher proportion of overweight (28; 34.1%) was found among men. There was a higher proportion of women in the underweight category (20; 30.3%). No difference was identified in the distribution of the categories of the IPAQ-SF with respect to gender (→ Table 3).

An association was identified between the underweight and physical inactivity categories. Regarding the other

**Table 2** Clinical characterization of the study sample (N = 148)

Type of surgery	n (%)
Colostomy	138 (93.2)
Ileostomy	10 (6.8)
Temporality	
Temporary	47 (31.8)
Definitive	100 (67.6)
Undefined	1 (0.7)
Body mass index	
Low weight	31 (20.9)
Eutrophic	50 (33.8)
Overweight	39 (26.4)
Obesity	28 (18.9)
Classification on the IPAQ-SF	
Sedentary	60 (40.5)
Low physical activity	60 (40.5)
Moderate physical activity	16 (10.8)
High physical activity	12 (8.1)

Abbreviation: IPAQ-SF, International Physical Activity Questionnaire – Short Form.

domains of the IPAQ-SF, no association was identified, even when overweight and obesity were considered as the same category (► **Table 4**).

## Discussion

Obesity was identified among the participants of the present study at rates much higher than those known to the Brazilian population in the same age group regarding overweight (BMI > 25.0 Kg/m<sup>2</sup>).<sup>10–12</sup> A study conducted by Malta et al.<sup>11</sup> analyzed the trend of the prevalence of overweight and obesity among adults in the capitals of 26 Brazilian states and the federal district. The prevalence of obesity increased

**Table 4** Sedentary and not sedentary categories of the IPAQ-SF according to the classification of the Body Mass Index

Body Mass Index (Kg/m <sup>2</sup> )	Short IPAQ categories		p-value*
	Sedentary (n = 60): n (%)	Not sedentary (n = 88): n (%)	
Underweight	20 (33.3)	11 (12.5)	0.003
Eutrophic	15 (25.0)	35 (39.8)	0.064
Overweight	13 (21.7)	26 (29.5)	0.294
Obesity	12 (20.0)	16 (18.2)	0.781

Abbreviation: IPAQ-SF, International Physical Activity Questionnaire – Short Form.

Note: \*Chi-squared test.

from 11.6% in 2006 to 17.4% in 2012, which meant an increase of almost 1% per year.<sup>11</sup> The prevalence overweight increased more, 1.37% per year, corresponding to an increase from 43.2% to 51.0%.<sup>11</sup>

The frequency of overweight and obesity<sup>11</sup> reached a proportion similar to that reported for the Midwestern region of the country, where the present study was conducted. According to the Obesity Map, this region has rates of 48.3% among adults. In Brazil, the Northeastern region has the lowest rate, 44.4%, but quite similar our results.<sup>10,11</sup>

The results of the present study showed a small predominance of males, which is similar to the results of national and international studies.<sup>13–15</sup> This may reflect the underlying disease that required the ostomy, as the majority is definitive colostomy, e.g., malignancy or inflammatory bowel disease. Conversely, some studies<sup>16,17</sup> conducted in Brazil have reported a higher prevalence of females. In the present study, the age, marital status and occupation of the sample were similar to those of the samples of studies with male predominance.<sup>13–15</sup> The results of the present study also showed a high rate of patients with low level of schooling (only elementary education), and this may influence daily habits and quality of life with an ostomy.<sup>14,18</sup>

**Table 3** Distribution of Body Mass Index and IPAQ-SF assessment according to sex (%)

Gender	Male (n = 82)	Female (n = 66)	p-value*	Total (n = 148)
Body Mass Index (Kg/m <sup>2</sup> )				
Underweight	11 (13.4)	20 (30.3)	0.014	31 (20.9)
Eutrophic	26 (31.7)	24 (36.4)	0.557	50 (33.8)
Overweight	28 (34.1)	11 (16.7)	0.017	39 (26.4)
Obesity	17 (20.7)	11 (16.7)	0.542	28 (18.9)
IPAQ-SF				
Sedentary	31 (37.8)	29 (43.9)	0.456	60 (40.5)
Low intensity	36 (43.9)	24 (36.4)	0.360	60 (40.5)
Moderate intensity	8 (9.8)	8 (12.1)	0.653	16 (10.8)
Vigorous intensity	7 (8.5)	5 (7.6)	0.846	12 (8.1)

Abbreviation: IPAQ-SF, International Physical Activity Questionnaire – Short Form.

Note: \*Chi-squared test.

An outstanding finding of the present study is that 41.7% of the surveyed patients were overweight or obese and were sedentary, and 47.7% of non-sedentary patients were overweight or obese.

Regarding the sedentary lifestyle, the national rate indicates that 45.9% of Brazilians do not practice any physical activity; in the present study, we found an association between underweight and physical inactivity ( $p=0.003$ ), but it did not show any significance in the categories of obesity and overweight (– **Table 4**). In a study by Baretta et al.,<sup>19</sup> the prevalence of physical inactivity was of 57.4%, with a score of 0 for weekly physical activity found in 8.8% of men and 5.1% of women. The average weekly number of minutes of physical activity was 799.9 for men and 560.7 for women ( $p=0.364$ ). Physical inactivity was positively associated with individuals with eight or more years of schooling, and with those who did not work or not being retired, (income > US\$500.00/month).

The women in the present study had the lowest weight in relation to the men, which similar to the results of a study by Anttolini and Gallon,<sup>20</sup> in which male individuals presented the highest rates of overweight and obesity among.

Health care for ostomized individuals is a challenge for professionals who work with patients with intestinal diseases, as this procedure implies body changes requiring a change in habits, values, and beliefs, in addition to the incorporation of professional knowledge; access to services in the public health system; the need to use collecting devices, changes in daily life, family, and work. All these factors reinforce the need for more attention to colostomy patients from health providers.<sup>21</sup>

## Conclusion

Most ostomy patients, mainly definitive colostomies, are men over 60 years of age who are overweight or obese, and have low levels of schooling. In general, underweight individuals tend to have more sedentary lifestyles.

### Availability of Data and Materials

The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

### Statement of Ethics

The subjects of the present study have provided their consent, and the study protocol was approved by the institutional committee on human research under CAAE: 34772514.9.0000.5083.

### Authors Contribution

All authors played a role in designing the study, analyzing and interpreting the data, drafting the article, and ensuring the authenticity of the data.

### Ethics Approval and Consent to Participate

This study was approved by the Research Ethics Committee of Universidade Federal de Goiás (CEP: 1.237.077).

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### Conflict of Interests

The authors have no conflict of interests to declare.

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