



## Quality of life of the overweight population in Primary Health Care

### *Qualidade de vida da população com sobrepeso na Atenção Básica de Saúde*

### *Calidad de Vida de la Población con Sobrepeso en la Atención Primaria de Salud*

Eunaihara Lígia Lira Marques 

Institute of Medical Assistance to State Civil Servants of São Paulo (*Instituto de Assistência Médica ao Servidor Público Estadual de São Paulo*) - São Paulo (SP) - Brazil

Márcia Kiyomi Koike 

Institute of Medical Assistance to State Civil Servants of São Paulo (*Instituto de Assistência Médica ao Servidor Público Estadual de São Paulo*) - São Paulo (SP) - Brazil

Ana Maria Sanches 

Institute of Medical Assistance to State Civil Servants of São Paulo (*Instituto de Assistência Médica ao Servidor Público Estadual de São Paulo*) - São Paulo (SP) - Brazil

#### ABSTRACT

**Objective:** To analyze the Quality of Life (QoL) of the overweight population referred to or assisted by Primary Health Care (PHC), evidencing clinical and sociodemographic factors associated with aspects of QoL. **Methods:** Analytical cross-sectional epidemiological study, carried out in 2017-2020, in a municipality of Minas Gerais, Brazil, with 269 overweight people with a body mass index (BMI) equal to or above 25 kg/m<sup>2</sup>. Instruments were applied to assess QoL, sociodemographic data, anxiety, depression, binge eating, and self-image perception. Simple and multiple linear regression were used. **Results:** 74.3% (n=200) were female, mean age of 39.43 ± 14.46 years, 55% (n=149) were moderately obese. 50% (n=134) had symptoms of anxiety, 42.4% (n=114) had depressive symptoms, 20% (n=54) had binge eating and 32% (n=86) considered their self-image to be negatively affected. 62.1% (n=167) showed insufficiency in the vitality dimension. As for the correlation aspects, high BMI, medication use, increasing age, widowed marital status, symptoms of anxiety, depression, binge eating, and lack of physical activity showed a decrease in QOL dimensions. **Conclusion:** The study showed that among the eight dimensions analyzed, only the "vitality" dimension presented significantly low data among the participants, making it possible to identify sociodemographic variables that were correlated, tending to decrease aspects or dimensions of quality of life: severe obesity, using of medication, being widowed, not performing physical activities regularly, presenting symptoms of anxiety, depression, and binge eating at a severe level.

**Descriptors:** Quality of Life; Overweight; Obesity; Primary Health Care.

#### RESUMO

**Objetivo:** Analisar a qualidade de vida (QV) da população com sobrepeso referenciada ou assistida pela Atenção Básica de Saúde (ABS), evidenciando fatores clínicos e sociodemográficos associados aos aspectos da QV. **Métodos:** Estudo transversal analítico de caráter epidemiológico, desenvolvido em 2017-2020, em um município de Minas Gerais, Brasil, com 269 pessoas com sobrepeso e índice de massa corpórea (IMC) igual ou acima de 25 kg/m<sup>2</sup>. Aplicaram-se instrumentos para avaliação da QV, contendo dados sociodemográficos, ansiedade, depressão, compulsão alimentar periódica e percepção da autoimagem. Utilizou-se análise univariada, regressão linear simples e múltipla com  $p < 0,05$ . **Resultados:** Encontrou-se 74,3% (n=200) do sexo feminino, idade média de 39,43 ± 14,46 anos, 55% (n=149) obesidade moderada. 50% (n=134) apresentaram sintomas de ansiedade, 42,4% (n=114) sintomas depressivos, 20% (n=54) com compulsão alimentar e 32% (n=86) consideraram comprometimento negativo na sua autoimagem. 62,1% (n=167) apresentaram insuficiência na dimensão vitalidade. Quanto aos aspectos de correlação, IMC elevado, uso de medicação, aumento da idade, estado civil viúvo, presença de sintomas de ansiedade, depressão, compulsão alimentar e ausência de atividade física apresentaram diminuição em dimensões da QV. **Conclusão:** O estudo apontou que, entre as oito dimensões analisadas, apenas a dimensão "vitalidade" apresentou dados significativamente baixos entre os participantes, sendo possível identificar variáveis sociodemográficas que se correlacionaram, tendendo a diminuir aspectos ou dimensões da qualidade de vida: obesidade grave, fazer uso de medicação, apresentar estado civil viúvo, não realizar atividades físicas regularmente, apresentar sintomas de ansiedade, depressão e compulsão alimentar periódica em nível grave.

**Descritores:** Qualidade de Vida; Sobrepeso; Obesidade; Atenção Básica de Saúde.



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## RESUMEN

**Objetivo:** Analizar la calidad de vida (CV) de la población con sobrepeso referenciada o asistida por la Atención Primaria de Salud (APS), evidenciando factores clínicos y sociodemográficos asociados a los aspectos de la CV. **Métodos:** Estudio transversal analítico de carácter epidemiológico, desarrollado en 2017-2020, en un municipio de Minas Gerais, Brasil, con 269 personas con sobrepeso e índice de masa corporal (IMC) igual o superior a 25kg/m<sup>2</sup>. Fueron aplicados instrumentos para evaluación de la CV, conteniendo datos sociodemográficos, ansiedad, depresión, trastorno de hiperfagia compulsiva y percepción de autoimagen. Fue utilizado análisis univariado, regresión lineal simple y múltiple con  $p < 0,05$ . **Resultados:** Se encontró 74,3% (n=200) del sexo femenino, edad media de 39,43 ± 14,46 años, 55% (n=149) obesidad moderada. 50% (n=134) presentaron síntomas de ansiedad, 42,4% (n=114) síntomas depresivos, 20% (n=54) con trastorno de hiperfagia compulsiva e 32% (n=86) consideraron comprometimiento negativo en su autoimagen. 62,1% (n=167) presentaron insuficiencia en la dimensión vitalidad. Cuanto a los aspectos de correlación, IMC alto, uso de medicación, aumento de la edad, estado civil viudo, presencia de síntomas de ansiedad, depresión, trastorno de hiperfagia compulsiva y ausencia de actividad física presentaron disminución en dimensiones de la CV. **Conclusión:** El estudio indicó que, entre las ocho dimensiones analizadas, solamente la dimensión "vitalidad" presentó datos significativamente bajos entre los participantes, posibilitando la identificación de variables sociodemográficas que se correlacionaron, tendiendo a disminuir aspectos o dimensiones de la calidad de vida: obesidad grave, uso de medicación, presentar estado civil viudo, no realizar actividades físicas regularmente, presentar síntomas de ansiedad, depresión y trastorno de hiperfagia compulsiva en nivel grave.

**Descriptor:** Calidad de Vida; Sobrepeso; Obesidad; Atención Primaria de Salud.

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## INTRODUCTION

Obesity is a chronic non-communicable disease characterized by excessive accumulation of body fat. It is associated with health risks and should be understood as a multifactorial problem since its etiology includes a relationship ranging from biological (genetic) and environmental (cultural) issues to socio-historical, economic, and Political aspects<sup>(1-3)</sup>.

The parameter used as a criterion in most epidemiological studies for the classification of obesity and overweight levels is the body mass index (BMI) which was defined by the World Health Organization<sup>(4)</sup> (WHO). Statistical data for the years 2019 and 2020 carried out by the Surveillance of Risk and Protection Factors for Chronic Diseases by Telephone Survey (VIGITEL) of the Unified Health System (SUS) show that in the age group over 18 years old, about half of the Brazilian population is overweight<sup>(5,6)</sup>.

On the prevalence of obesity and overweight in 2019, The National Health Survey (PNS) and the Ministry of Health recorded even more expressive numbers in the Brazilian population. The information was presented from the users of the Primary Health Care services (PHC). The results released in 2020 found that in the population aged 18 years and over, the proportion of overweight men and women reached a level of 60.3%, while for obesity, this index reached 25.9%<sup>(7)</sup>.

Regarding the factors associated with obesity, some studies point out that obesity and a sedentary lifestyle are considered higher risk factors for the development of several types of diseases, such as diabetes, hypertension, heart disease, and even some types of cancer, which increases the possibility of morbidity in these individuals or a compromise in quality of life (QoL)<sup>(8,9)</sup>. It is worth remembering, however, that in general, the literature understands QoL as the degree of satisfaction and a certain standard of comfort and well-being found in different spheres of people's lives<sup>(10)</sup>.

In this way, QoL impacts health and psychological well-being, with a close relationship between obesity and the decline in QoL, especially in those individuals who do not follow any treatment to control obesity and associated factors. In addition, bigger impairments can occur when QoL is associated with comorbidities and social aspects such as prejudice and discrimination, which also increases the possibility of developing emotional and psychological problems<sup>(11)</sup>. Emotional issues are generally understood to be consequences of obesity, although they can also precede the development of this condition. It is noticed that depression and anxiety are common symptoms and present in a large portion of people with obesity, and depression is still more frequently associated with individuals with a higher body index<sup>(11)</sup>.

Regarding food consumption, subgroups of obese individuals have excessive eating patterns and may have binge eating disorder (BED), which is also negatively associated with QoL<sup>(12)</sup>.

Regarding the treatment of obesity and/or overweight, there is a consensus that it should occur in a multidisciplinary way since the most satisfactory results are usually achieved, in most cases, in a medium or long time, with lifestyle

changes, that is, habits<sup>(13,14)</sup> and constitutes one of the great challenges in the practice of public health in Brazil. However, the Ministry of Health recommends that states and municipalities use care and management strategies, especially through the organization policy in health care networks (Redes de Atenção à Saúde - RAS), as well as through food and nutrition surveillance actions (vigilância alimentar e nutricional - VAN)<sup>(13)</sup>. The strategies implemented by PHC, as well as the actions adopted by professionals involved in the care of the public with obesity, should contribute positively to QoL and health maintenance<sup>(13,14)</sup>.

Therefore, the present study aimed to analyze the quality of life (QoL) of the overweight population referred to or assisted by Primary Health Care (PHC), evidencing clinical and sociodemographic factors associated with quality of life aspects.

## METHODS

This article comprises analytical cross-sectional research of an epidemiological nature, developed from 2017 to 2020. The data collection took place in Basic Health Units (Unidades Básicas de Saúde - UBS), study centers, physical activity groups linked to the Primary Health Care Network (PHC), and community centers in Pará de Minas, Minas Gerais, Brazil.

A type of selection by the judgment non-probabilistic sampling was used. That is, during the collection of research data, participants with the appearance of overweight or obese were selected. A total of 269 people participated in this study, including men and women, referred and/or assisted by PHC, with a BMI equal to or above 25 kg/m<sup>2</sup>, aged over 18 years and living in the investigated municipality. Participants could answer in-person to a properly trained and qualified interviewer, or they could answer the questionnaires themselves in reserved places and without the presence of third parties, thus reducing possible constraints. The average interview or self-application time was approximately 35 minutes per person.

However, at the beginning of the interviews, participants were asked to provide information about their height in meters, as well as their body weight. On occasion, BMI is calculated (weight in kilograms divided by height in meters squared) to ensure that the potential participant met the established criteria. Regarding the classification of levels of obesity and overweight, the references of the World Health Organization (WHO)<sup>(4)</sup> were considered, which estimate the level of overweight with: BMI equal to or above 25 kg/m<sup>2</sup>, moderate obesity; BMI between 30 and 34.9 kg/m<sup>2</sup>, severe obesity; when the BMI reaches levels between 35 and 39.9 kg/m<sup>2</sup>, obesity is more severe; and when individuals have a BMI above 40 kg/m<sup>2</sup>.

They were part of the data collection instruments: 1) personalized sociodemographic interview, with personal information, food and consumption, physical activity practices, stigma and discrimination due to weight, use of the Unified Health System (Sistema Único de Saúde – SUS), among other information; 2) scale to assess QoL, Short Form Health Survey SF-36<sup>(15)</sup> translated to Brazilian Portuguese<sup>(16)</sup> – so that the interpretation of the scores obtained in the SF-36 can be normalized to a distribution in which mean values vary around 50, with a scatter scale factor of 10 [thus scores greater than 50 and closer to 100 indicate better QoL or health status<sup>(17)</sup> –]; 3) questionnaire to investigate the level of perception of body image, identified as Body Shape Questionnaire (BSQ) and validated in the Brazilian population<sup>(18)</sup>; 4) two psychological inventories, translated and adapted to the Brazilian population<sup>(19)</sup>, one to measure anxiety, called the Beck Anxiety Inventory (BAI) and another to measure depression, called the Beck Depression Inventory (BDI); and 5) Binge Eating Scale (BES) to measure aspects of eating behavior, especially binge eating, translated and adapted to Brazilian Portuguese<sup>(20)</sup>. However, even before the application of the instruments, the participant consented and authorized by signing their inclusion in the research through the Free and Informed Consent Term (FICT/TCLE).

For statistical analyses, frequency, mean data, and  $\pm$  standard deviation (median) were used. In addition, from submission to the Shapiro-Wilk normality test, the quantitative variables were obtained. In the univariate analysis, the association between the characteristics studied and the dimensions of QoL tested was based on simple linear regression models, and the results were presented as coefficients of the model and respective p-values. Using a multivariate model, the variables with  $p < 0.20$  were presented in the univariate analyzes for each dimension, and using multiple linear regression, the backward method, the final model was obtained, keeping the variables sex and age to control factors and other characteristics with  $p < 0.05$ . The Goodness-of-Fit by residual analysis was evaluated, and it was possible to observe normality, homoscedasticity, presence of outliers, and absence of multicollinearity. Finally, the analyzes were carried out in the free program R version 3.5.2.

The study was approved by the Research Ethics Committee of the Institute for Medical Assistance to State Public Servants (CEP/IAMSPE), under Opinion No. 2,296,545.

## RESULTS

Of the 269 participants in the sample, 74.3% (n=200) were female, with an average age of  $39.43 \pm 14.46$  years. Concerning data on overweight and obesity levels classified according to the WHO<sup>(17)</sup>, the analysis showed that 44.4% (n=119) of the sample had a level of overweight, about 32.8% (n=88) moderate obesity, and 13.4% (n=36) severe obesity. The other information on the sociodemographic profile of the sample is shown below in Table I.

Table I - Sociodemographic profile or sample characteristics. Pará de Minas, Minas Gerais, Brazil, 2017-2020.

Characteristics(s)	n	%
<b>Sex</b>		
Female	200	74.3%
Male	69	25.7%
<b>BMI</b>		
overweight	119	44.4%
moderate level obesity	88	32.8%
severe level obesity	36	13.4%
most severe obesity	24	9.4%
<b>Marital status</b>		
Married	115	42.9%
Single	123	45.9%
Separate/Divorced	17	6.3%
Widower	14	4.9%
<b>Education</b>		
Elementary School	51	19%
High School	103	38.2%
Higher education/Postgraduate	115	42.8%
<b>Origin/housing</b>		
Countryside	13	4.5%
Urban area	256	95.5%
<b>Professional activity</b>		
Inactive (retired or pensioner))	34	12.3%
Active (registered or self-employed)	154	57.5%
Other (housewife or unemployed))	81	30.2%
<b>Income (in minimum wages - MW)</b>		
up to 1 MW	86	34.5%
1 MW to 3 MW	126	50.6%
> 3 MW	37	14.9%

MW: minimum wage. The characteristic "Income (in minimum wages - MW)" was presented by n=249

As for food consumption habits, the results showed that of the participants studied, 80.2% (n=215) ate about four or more times a day. Regarding diets, approximately 24% (n=64) of the sample indicated practicing some diet or food restriction. Concerning the practice of physical activities, the results showed that 52% (n=140) of the participants did not perform any physical activity, declaring "lack of time, lack of interest, and indisposition" as arguments.

Regarding the investigation of symptoms of anxiety and depression, the results showed that about 50% (n=134) of the sample presented symptoms of some degree of anxiety, at mild, moderate, or severe levels, and 42.4% (n=114) identified with depressive symptoms, also at some of the mentioned levels above.

As for the identification of binge eating behavior, the results showed that 20% (n=54) of this population has binge eating at a moderate or severe level, and about 80% (n=215) do not have any characteristics of binge eating behaviors.

As for the negative social representation or stigma about obesity, 34% (n=91) of the participants indicated that they had suffered some type of social discrimination because of their weight. Thus, regarding the investigation of the

perception of body self-image, the results showed that 32% (n=86) of the sample considered negative impairment in their self-image (Table II).

Table II - Clinical characteristics investigated and dimensions of the sample's quality of life. Pará de Minas, Minas Gerais, Brazil, 2017-2020.

Characteristic(s)	n	%
<b>anxiety inventory</b>		
Absent	135	50.2%
Mild	80	29.7%
Moderate/Severe	54	20.1%
<b>depression inventory</b>		
Absent	155	57.6%
Mild	75	27.9%
Moderate/Severe	39	14.5%
<b>BED Scale</b>		
No BED	215	79.9%
Moderate BED	34	12.6%
Severe BED	20	7.5%
<b>Body image perception</b>		
Absent	183	68%
Present	86	32%
<b>Dimensions of quality of life</b>		
		M e DP
Functional capacity		76.26 ± 21.06
Physical limitations		71.19 ± 33.76
Pain		63.47 ± 23.95
General health status		67.29 ± 21.46
Vitality		54.02 ± 24.11
Social aspects		69.88 ± 26.74
Emotional aspects		64.68 ± 40.68
Mental health		61.01 ± 21.80

M: medium; SD: standard deviation; BED: binge eating disorder

When analyzing the results of the QoL dimensions from the participants' scores, it was noticed that 175 (64.5%) had scores equal to or higher than 61 points, which indicates a satisfactory QoL and health status. However, 94 participants, an average of 35.1%, had scores equal to or less than 60 points. Only in the isolated dimension "vitality" was the deficit more expressive, since the index of participants who had a score equal to or less than 60 points reached 62.1% (n=167).

About the dimensions of QoL associated with the other variables studied, it was found, from the multiple linear regression models, that the dimension "functional capacity" had a good association between the male gender variables (6; p=0, 03) and performing regular physical activities (6.3; p<0.01); in addition, the worst indices indicated increasing age (-0.5; p<0.01), obesity at severe or more severe levels (compared to overweight) (-8.9; p<0.01), anxiety at any level (mild, moderate and severe) (-6.3; p=0.04; and -8.8; p=0.02) and depression at moderate or severe levels (-1.8; p= 0.54; and -8.6; p=0.03).

The dimension "physical limitations" was associated with higher QoL scores in the variable of higher education or postgraduate (in relation to elementary school) (9; p=0.15; 13.6; p=0.04) and lower QoL scores for medication use variables (-12.1; p=0.03), moderate or severe anxiety levels (-12.4; p=0.04), mild depression (- 13.7; p<0.01) and in BED at severe level (-21.3; p=0.01).

In the "pain" dimension, the factors that led to a decrease in QoL were due to increasing age (-0.3; p<0.01), anxiety at any level (-13.9; p<0.01; and -18.8; p<0.01), and depression at moderate and severe levels (-14.8; p<0.01).

As for the dimension of QoL that is intended to assess the general state of health, the variables that were associated with better or increased QoL were male (6.5;  $p=0.02$ ) and physical activity regular (4.9;  $p=0.04$ ), with the variables obesity severe and more severe levels (compared to overweight) (-6.6;  $p=0.03$ ), moderate and severe anxiety levels (-9.7;  $p<0.01$ ), depression at all levels (-8.8;  $p<0.01$ ; and -14.6;  $p<0.01$ ) and severe CAP (-12.5;  $p=0.01$ ) were related to a decrease in QoL.

It was also observed that the "vitality" dimension had an increase in QoL only in the variable performing regular physical activities (5.7;  $p=0.02$ ), while all anxiety levels (-11.7;  $p<0.01$  and -11.6;  $p<0.01$ ) and depression show that they interfere negatively in this dimension (-12.3;  $p<0.01$  and -28.4;  $p<0.01$ ).

Regarding the dimension "social aspects of health", being a widower (compared to being married) (-15.9;  $p=0.02$ ), having anxiety at any level (-14.1;  $p<0.01$  and -22.6;  $p<0.01$ ), having moderate or severe depression (-13.6;  $p<0.01$ ) and having severe CAP (-12.1;  $p=0.04$ ) led to a decrease in QoL.

The factors that were related to the decrease in scores in the "emotional aspects" dimension were anxiety (-19.4;  $p<0.01$  and -21.1;  $p<0.01$ ), and depression (-17;  $p<0.01$  and -21.4;  $p<0.01$ ) at all levels and BED at the severe level (-27.4;  $p<0.01$ ). Finally, in the "mental health" dimension, increasing age (0.2;  $p<0.01$ ) and higher education or postgraduate education were associated with higher scores and satisfactory QoL (compared to elementary school) (7.1;  $p=0.04$ ), and corresponded to lower scores, that is, the decrease in QoL, anxiety (-10.1;  $p<0.01$  and -12;  $p<0.01$ ), depression (-10.8;  $p<0.01$  and -23.3;  $p<0.01$ ) at all levels and severe CAP (-10.7;  $p=0.01$ ) (Table III).

Table III - Correlation between the clinical characteristics investigated and the dimensions of QOL in the multiple linear regression model. Pará de Minas, Minas Gerais, Brazil, 2017-2020.

Characteristics	FC (R <sup>2</sup> = 23.54%)	PL (R <sup>2</sup> = 16.32%)	PAIN (R <sup>2</sup> = 25.58%)	GHS (R <sup>2</sup> = 29.08%)	VIT (R <sup>2</sup> = 40.59%)	SA (R <sup>2</sup> = 29.81%)	EA (R <sup>2</sup> = 23.83%)	MH (R <sup>2</sup> = 45.39%)
<b>Intercept</b>	98.1 ( $p<0.01$ )	86.7 ( $p<0.01$ )	84.2 ( $p<0.01$ )	77.4 ( $p<0.01$ )	57.6 ( $p<0.01$ )	80.9 ( $p<0.01$ )	85.6 ( $p<0.01$ )	59.8 ( $p<0.01$ )
<b>Sex (ref. Female)</b>								
Male	6 ( $p=0.03$ )	-9 ( $p=0.05$ )	4.1 ( $p=0.18$ )	6.5 ( $p=0.02$ )	4.3 ( $p=0.12$ )	4.2 ( $p=0.21$ )	-3.3 ( $p=0.53$ )	3.6 ( $p=0.13$ )
Age	-0.5 ( $p<0.01$ )	-0.2 ( $p=0.20$ )	-0.3 ( $p<0.01$ )	-0.1 ( $p=0.28$ )	0.2 ( $p=0.06$ )	0.1 ( $p=0.51$ )	0.1 ( $p=0.84$ )	0.2 ( $p<0.01$ )
<b>BMI (ref. overweight)</b>								
moderate level obesity	-0.9 ( $p=0.74$ )	-	-	-3.5 ( $p=0.19$ )	-	-	-	-
Severe and of greater severity obesity levels	-8.9 ( $p<0.01$ )	-	-	-6.6 ( $p=0.03$ )	-	-	-	-
<b>Marital status (ref. Married)</b>								
Single	-	-	-	-	-	-1 ( $p=0.76$ )	-	-
Separated/Divorced	-	-	-	-	-	-3.9 ( $p=0.51$ )	-	-
Widower	-	-	-	-	-	-15.9 ( $p=0.02$ )	-	-
<b>Education (ref. Elementary)</b>								
High school	-	9.4 ( $p=0.15$ )	-	-	-	-	-	2.6 ( $p=0.42$ )
Higher education/PG	-	13.6 ( $p=0.04$ )	-	-	-	-	-	7.1 ( $p=0.04$ )
Medication use (ref. Not used)	-	-12.1 ( $p=0.03$ )	-	-	-	-	-	-
Regular physical activities (ref. Without practicing)	6.3 ( $p<0.01$ )	-	-	4.9 ( $p=0.04$ )	5.7 ( $p=0.02$ )	-	-	-
<b>Anxiety Inventory (ref. Absent)</b>								
Mild	-6.3 ( $p=0.04$ )	-8.1 ( $p=0.11$ )	-13.9 ( $p<0.01$ )	-0.9 ( $p=0.75$ )	-11.7 ( $p<0.01$ )	-14.1 ( $p<0.01$ )	-19.4 ( $p<0.01$ )	-10.1 ( $p<0.01$ )
Moderate/Severe	-8.8 ( $p=0.02$ )	-12.4 ( $p=0.04$ )	-18.8 ( $p<0.01$ )	-9.7 ( $p<0.01$ )	-11.6 ( $p<0.01$ )	-22.6 ( $p<0.01$ )	-21.1 ( $p<0.01$ )	-12 ( $p<0.01$ )
<b>Depression Inventory (ref. Absent)</b>								
Mild	-1.8 ( $p=0.54$ )	-13.7 ( $p<0.01$ )	-5.7 ( $p=0.08$ )	-8.8 ( $p<0.01$ )	-12.3 ( $p<0.01$ )	-7.2 ( $p=0.05$ )	-17 ( $p<0.01$ )	-10.8 ( $p<0.01$ )
Moderate/Severe	-8.6 ( $p=0.03$ )	-7.5 ( $p=0.28$ )	-14.8 ( $p<0.01$ )	-14.6 ( $p<0.01$ )	-28.4 ( $p<0.01$ )	-13.6 ( $p<0.01$ )	-21.4 ( $p<0.01$ )	-23.3 ( $p<0.01$ )
<b>BED Scale (ref. Without BED)</b>								
BED Moderate	-	-8.4 ( $p=0.17$ )	-	-3.9 ( $p=0.27$ )	-	-0.1 ( $p=0.98$ )	-11.3 ( $p=0.11$ )	-1.2 ( $p=0.70$ )
BED severe	-	-21.3 ( $p=0.01$ )	-	-12.5 ( $p=0.01$ )	-	-12.1 ( $p=0.04$ )	-27.4 ( $p<0.01$ )	-10.7 ( $p=0.01$ )

FC: functional capacity; PL: physical limitations; GHS: general health status; VIT: vitality; SA: social aspects; EA: emotional aspects; MH: mental health; ref.: reference(s); BMI: body mass index; PG: postgraduate; BED: binge eating

When collecting information on the use of public health services, the data revealed that 84% ( $n=221$ ) of the sample claimed to use the Unified Health System -SUS. Nevertheless, when analyzing the number of times per month that they sought and/or received care from health services, the results showed that 71.9% ( $n=204$ ) of the participants did not seek the services or did not receive care at all. However, the services with the highest number of requests were medical consultations, with a percentage of 64.9% ( $n=174$ ), followed by vaccinations with 59.3% ( $n=160$ ).

## DISCUSSION

According to the results of the present study, it is possible to affirm that among the eight dimensions analyzed, only the “vitality” dimension presented low significant data among the participants. It means that in this aspect (vitality dimension), the energy and force spent in carrying out daily tasks are lower than expected; and leads to tiredness and physical exhaustion<sup>(16,17)</sup>. The literature also states that obesity not only promotes an increase in morbidity and mortality but also brings with it a reduction in the QoL of this population<sup>(8,9,21-25)</sup>. In this sense, in a meta-analysis<sup>(22)</sup> it was identified that adults with higher levels of obesity reduce QoL, especially in the physical aspect, as they tend to show exhaustion more easily.

As for the analysis of sociodemographic aspects that correlated with QoL, the current study showed that variables such as severe obesity, taking medication, being a widower, not performing regular physical activities, as well as presenting symptoms of anxiety, depression, and BED at a severe level tend to decrease aspects or dimensions of QoL.

It is consensual in the literature that a sedentary lifestyle, caused by the absence of physical activity practices, and unhealthy food intake, are considered the main sources of obesity. In addition, unhealthy lifestyles and habits, when associated with obesity and overweight, tend to generate bigger complications and worsen QoL, with a sedentary lifestyle considered one of the enemies of public health in the world, and one of the main factors for the increase in obesity and the development of cardiovascular diseases<sup>(6,8,9,13,14,21,24-26)</sup>.

It is worth noting that, in the present study, the presence of symptoms of anxiety and depression were the factors that most correlated with the decrease in QoL since in all dimensions studied, aspects of significant correlations were found. However, there is still not enough clarity to state that the presence of such symptoms are consequences of or precede obesity<sup>(11,27,28)</sup>. However, it is possible to state that patients with obesity are more likely to develop neuroendocrine disorders and may more easily develop emotional disorders such as depression and anxiety<sup>(27,28)</sup>.

The Brazilian Association for the Study of Obesity and Metabolic Syndrome (Associação Brasileira para o Estudo da Obesidade e da Síndrome Metabólica - ABESO) points out that obesity increases the chances of depression by 55%, and depression increases the chances of obesity by 58%<sup>(28)</sup>. In this regard, it was found that women have worse health and psychological problems in most countries, as well as they use health services more, generally having the highest burden of chronic diseases; men, on the other hand, develop more serious diseases, which favors a higher risk of mortality<sup>(25,28)</sup>.

In the present study, regarding social discrimination due to weight, a considerable number of participants indicated that they had already suffered some discrimination. However, it is assumed that surveys on this specific aspect tend to generate some discomfort, even in research without identification. However, constraints, discrimination, prejudice, and social stigma resulting from obesity can also contribute to the emergence or worsening of depression or other emotional problems in overweight people<sup>(11,18,28)</sup>.

Another relevant finding in this particular study shows that performing regular physical activities, having higher education or postgraduate education, and being male tend to generate an increase in QoL dimensions. In this sense, it is worth noting that, to a large extent, household chores and activities are still mostly undertaken by women. A study carried out by the Brazilian Institute of Geography and Statistics (Instituto Brasileiro de Geografia e Estatística - IBGE) in 2019, released by the official website “Agências de Notícias do IBGE” investigated other forms of work of the National Household Sample Survey (PNAD), revealed that women spend an average of 21.3 hours a week on housework, twice as many hours as men (10.9 hours)<sup>(29)</sup>. It can make women feel more tired than men, in addition to having less time for leisure activities or even physical activity.

As pointed out in the findings of the current study, the variable that implies higher education (higher or postgraduate) is an aspect that can generate more favorable conditions in QoL dimensions. This correlation is relevant since it is understood that higher education is related to the possibilities of increasing salary income, which can contribute to access to better living conditions (e.g. food and physical activity), health services, and leisure opportunities, favoring improvements in QoL<sup>(29)</sup>.

Regarding the use of public health services in the UBSs of the studied municipality, where PHC services are mostly offered, it was noticed that services with group interaction activities, management, promotion, and prevention of obesity are scarcely sought after, as well as the search for other professionals who make up the teams and who can contribute to the management of the implications involving obesity, such as nutritionists and/or psychologists, which are also insufficient for the level of demand. In this way, it was observed that the offer of PHC services, at least for the population studied, is concentrated on medical consultations and vaccinations.

In this way, it is necessary to develop more studies that can contribute to this theme to enable adequate treatment of obesity and its implications, thus subsidizing policies and actions of an interventional nature, especially in the health promotion context. Given the above, it is believed that this is relevant since there is a considerable increase in obesity and overweight in the world population. Therefore, this study can serve as a discussion, source, and reference for further research, as well as contribute to the planning and evaluation of public health actions and policies for the obese and overweight population. This study also reveals the importance of acting and developing actions in PHC for the management and health promotion of overweight and obese people. It is believed that the development of practices that facilitate the management of emotional and psychological factors, often involved in overweight and obesity, can contribute to an increase in QoL, as the (re)establishment of well-being.

## CONCLUSION

The study showed that among the eight dimensions analyzed, only the “vitality” dimension presented significantly low data among the participants, making it possible to identify sociodemographic variables that were correlated, tending to decrease aspects or dimensions of quality of life: severe obesity, using of medication, being widowed, not performing regular physical activities, presenting symptoms of anxiety, depression, and binge eating at a severe level.

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## CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest between the team or institutions mentioned in the text.

## CONTRIBUTIONS

**Eunaihara Lígia Lira Marques** contributed to the elaboration and design of the study; acquisition, analysis, and interpretation of data; and writing and/or reviewing of the manuscript. **Márcia Kiyomi Koike** and **Ana Maria Sanches** contributed to the writing and/or revision of the manuscript. All authors have approved the final version to be published and are responsible for its content, accuracy, and completeness.

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**Mailing address:**

Eunaihara Lúgia Lira Marques  
Programa de Pós-Graduação em Ciências da Saúde do Instituto de Assistência Médica ao Servidor Público Estadual de São Paulo - IAMSPE  
Rua Lucila Marinho de Aguiar Amorim, 69  
Bairro: Redentor  
CEP: 36660-361 - Pará de Minas - MG - Brazil  
E-mail: eunamarques@yahoo.com.br

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