BODY SELF-IMAGE AND PREVALENCE OF OVERWEIGHT AND OBESITY IN UNIVERSITY STUDENTS

Autoimagem corporal e prevalência de sobrepeso e obesidade em estudantes universitários

Autoimagen corporal y prevalencia de sobrepeso y obesidad de estudiantes universitarios

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ABSTRACT

Objective: To assess overweight/obesity and self-perception of body image in university students and the associations of these variables with sociodemographic characteristics related to the University and health-related behaviors. **Methods**: Quantitative exploratory cross-sectional study conducted from January to February 2017 with 324 university students in the fields of Health, Exact and Human sciences. The University Students' Health Indicators and Quality of Life Questionnaire was used to assess sociodemographic characteristics, relationship with the university and health-related behaviors. Body self-image was assessed using the silhouette scale and nutritional status was assessed according to the body mass index. Descriptive analyses and multinominal logistic regression were performed. **Results**: The prevalence rate of overweight/obesity was 43.2% (n= 141) and the prevalence rate of body image dissatisfaction was 76.5% (n= 248). Female students presented higher chances of being overweight and obese (95%CI: 1.0-2.7, p 0.03). Married students (95%CI: 1.8-5.9; p 0.01), employed students (95%CI: 1.4-3.7; p 0.01) and students with an income equal to or greater than one minimum wage (95%CI: 1.4-4.8, p 0.01) were more likely to be overweight. Fair health status was associated with greater body image dissatisfaction (95%CI: 1.4-5.7; p 0.01). Better physical fitness was associated with lower chances of body dissatisfaction (95%CI: 0.06-0.47; p 0.01). **Conclusion**: There was a high prevalence of overweight/obesity and body image dissatisfaction among university students. Prevalence of overweight was associated with age, sex, marital status, employment, income and red meat consumption whereas self-perception of body image was associated with self-perception of health status, physical fitness and study shift.

Descriptors: Obesity; Nutrition Assessment; Body Image; Health Education; Universities; Public Health.

RESUMO

Objetivo: *Investigar o sobrepeso/obesidade, a autopercepção da imagem corporal de universitários e as associações entre essas variáveis com características sociodemográficas, vinculadas à Universidade e aos comportamentos relacionados à saúde.* ***Métodos:*** *Estudo transversal, exploratório e quantitativo, realizado entre janeiro e fevereiro de 2017, com 324 universitários das áreas da Saúde, Exatas e Humanas. Utilizou-se questionário de Indicadores de Saúde e Qualidade de Vida de Acadêmicos para avaliar características sociodemográficas, vínculo com a universidade e comportamentos relacionados à saúde. Avaliou-se a autopercepção da imagem corporal, através da escala de silhuetas, e o estado nutricional, pelo índice de massa corporal. Realizaram-se análises descritivas e regressão Logística Multinominal.* ***Resultados:*** *A prevalência de sobrepeso/obesidade foi de 43,2% (n= 141) e de insatisfação com a imagem corporal foi de 76,5% (n= 248). As universitárias apresentaram maiores chances de sobrepeso e obesidade (IC 95%:1,0-2,7; p 0,03). Os estudantes casados (IC 95%:1,8-5,9; p 0,01), que trabalham (IC 95%:1,4-3,7; p 0,01), com renda igual ou superior a um salário mínimo (IC 95%:1,4-4,8; p 0,01), tiveram maior chance de*

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sobrepeso. O estado de saúde regular relacionou-se com maior insatisfação com a imagem corporal (IC 95%:1,4-5,7; p 0,01). A melhor aptidão física associou-se com menor chance de insatisfação corporal (IC 95%: 0,06-0,47; p 0,01). **Conclusão:** Elevada prevalência de sobrepeso/obesidade e de insatisfação com a imagem corporal entre os universitários. Existe associação da prevalência de sobrepeso com faixa etária, sexo, estado civil, trabalho, renda, consumo de carne vermelha, assim como entre a autopercepção da imagem corporal com a autopercepção do estado de saúde, aptidão física e turno de estudo.

Descritores: Obesidade; Avaliação Nutricional; Imagem Corporal; Educação em Saúde; Universidades; Saúde Pública.

RESUMEN

Objetivo: Investigar el sobrepeso/la obesidad, la autopercepción de la imagen corporal de universitarios y las asociaciones entre esas variables y las características sociodemográficas, las vinculadas a la universidad y las conductas relacionadas con la salud. **Métodos:** Estudio transversal, exploratorio y cuantitativo realizado entre enero y febrero de 2017 con 324 universitarios de las áreas de la Salud, Exactas y Humanas. Se utilizó un cuestionario de Indicadores de Salud y Calidad de Vida de Académicos para evaluar las características sociodemográficas, el vínculo con la universidad y las conductas relacionadas con la salud. Se evaluó la autopercepción de la imagen corporal a través de la escala de siluetas y el estado nutricional por el índice de masa corporal. Se realizaron los análisis descriptivos y de regresión logística multinominal. **Resultados:** La prevalencia del sobrepeso/ la obesidad ha sido del 43,2% (n= 141) y de la insatisfacción con la imagen corporal del 76,5% (n= 248). Las universitarias presentaron mayores probabilidades para el sobrepeso y la obesidad (IC 95%:1,0-2,7; p 0,03). Los estudiantes casados (IC 95%:1,8-5,9; p 0,01), con empleo (IC 95%:1,4-3,7; p 0,01) y renta superior o igual a un sueldo mínimo (IC 95%:1,4-4,8; p 0,01) tuvieron más probabilidad de sobrepeso. El estado de salud regular se ha relacionado con la mayor insatisfacción con la imagen corporal (IC 95%:1,4-5,7; p 0,01). La mejor capacidad física se asoció con la baja probabilidad de insatisfacción corporal (IC 95%: 0,06-0,47; p 0,01). **Conclusión:** Elevada prevalencia de sobrepeso/obesidad y de insatisfacción con la imagen corporal entre los universitarios. Hay asociación entre la prevalencia de sobrepeso y la franja de edad, el sexo, el estado civil, el trabajo, la renta, el consumo de carne roja así como entre la autopercepción del estado de salud, la capacidad física y el turno de estudio.

Descriptores: Obesidad; Evaluación Nutricional; Imagen Corporal; Educación en Salud; Universidades; Salud Pública.

INTRODUCTION

Brazil underwent several sociopolitical, economic and cultural changes which have led to changes in the way of life of the population. The expansion of social policies in the areas of health, education, work, employment and social security contributed to the reduction of social inequalities and allowed the country to grow in an inclusive manner. There was also a rapid demographic, epidemiological and nutritional shift that consequently led to a higher life expectancy and a reduction in the number of children per woman. In addition, it is important to emphasize the changes in the health pattern and food consumption of the Brazilian population[1], a problem addressed in the present study.

Brazil is currently facing public health problems, such as overweight and obesity. These problems, in addition to posing risks to physical health, can interfere with how the individual sees him/herself. Body image is an important component of the personal identity mechanism and this subjective component corresponds to the satisfaction with and feelings related to the mental picture of the body, measures and contours[2].

With a broader perspective on this context and with a view to building healthy environments and changing social contexts to reduce risk factors, the National Health Promotion Policy[3] emphasizes healthy eating, which, in combination with body practices and physical activity set as priority actions, constitutes a cornerstone for tackling and preventing health problems.

According to the World Health Organization, obesity is a worldwide epidemic and is associated with several biopsychosocial processes in such a way that the environment in which the individual is inserted has gained increasing importance[4].

Overweight and obesity in adults require the adoption and maintenance of lifestyle behaviors that favor both healthy eating and physical activity. These behaviors are influenced by many factors; therefore, interventions incorporating more than one level of the socioecological model and addressing several key factors may be more successful[5].

As in many countries of the world, the expressive increase in overweight and obesity has left the country on alert and in search of epidemiological data that help understand phenomena that can support effective actions in this scenario. It should be noted that the increase in obesity is strongly related to food consumption and the absence of physical activity. Its determinants are demographic, socioeconomic, epidemiological, cultural and environmental, which makes obesity a multifactorial disease as its determinants interact in a complex way, thus requiring that the

disease be treated considering all its complexity and the determination of contextual social factors. The Global Burden of Disease Study in Brazil reveals that 58% of the years of life lost early are related to noncommunicable diseases[6].

Faced with this demand, which interconnects educational and health concepts based on an expanded view of the individual who enters higher education, the training process is understood not only as a preparation to master effective theoretical and technical concepts, but also as the human dimension of the teaching-learning process.

Therefore, the present study aimed to assess overweight/obesity and self-perception of body image in university students and the associations of these variables with sociodemographic characteristics related to the University and health-related behaviors.

METHODS

A quantitative exploratory cross-sectional study was carried out with data collected in January and February 2017. This study is part of a thesis research conducted for Education Sciences doctoral program of the University of Trás-os-Montes and Alto Douro (*Universidade Trás-os-Montes e Alto Douro – UTAD/Portugal – UTAD/Portugal*) on the process of adaptation to higher education: factors associated with academic performance and quality of life in university students, carried out at a higher education institution in the Northwest region of Ceará, Brazil.

The study population consisted of 420 university students who were regularly enrolled in the second semester and last academic year of the following schools: Architecture and Urbanism, Physical Education, Nursing, Pharmacy, Physical Therapy, Journalism, Veterinary Medicine, Nutrition, Pedagogy and Social Work.

Proportional sampling was used to define the sample size considering the relationship between the number of students in each area that met the eligible criteria. A proportion of each course was calculated from this population distribution in order to guarantee a representative sample.

Sampling was determined according to a proportional selection plan for the areas and calculated based on a sampling error of 5% and a 95% confidence level. Additional 20% was included for potential losses and refusals and 15% for control of confounding factors in association studies, thus resulting in a sample of 324 students distributed as follows: Architecture and Urbanism (10.2%; n=33), Physical Education (12.7%; n=41), Nursing (11.4%; n=37), Pharmacy (11.4%; n=37), Physical Therapy (7.7%; n=25), Journalism (9.0%; n=29), Veterinary Medicine (10.8%; n=35), Nutrition (9.3%; n=30), Pedagogy (8.6%; n=28) and Social Work (9.0%; n=29).

Exclusion criteria were: students who were not enrolled in the regular semester, but only in isolated courses, students whose year of admission to the university was different from that of the class, and distance learning graduate students.

Data were collected using the University Students' Health and Quality of Life Indicators (*Indicadores de Saúde e Qualidade de Vida de Acadêmicos – ISAQ-A*)[7], a questionnaire with satisfactory characteristics of applicability, validity and reproducibility for use in research with Brazilian university students. The instrument used is composed of seven sections: (1) school information, (2) sociodemographic indicators, (3) lifestyle and health indicators, (4) eating habits and body weight control, (5) physical activity and leisure options, (6) preventive behaviors and (7) environment and learning conditions indicators.

It should be noted that the ISAQ-A was applied by a team of professors previously trained to receive the participants, fill in the general data and carry out anthropometric measurements. In addition, student enrollment occurred on a voluntary basis.

As the research focused on the quality of life of the students, there was a concern with their participation and thus ethics and humanization were prioritized. The students were provided with comfortable and adequate physical space, enough time to answer the questionnaire and private space for measurements.

The study variables are divided into dependent and exploratory and the outcomes of the dependent variables were: nutritional assessment (normal weight/low weight and overweight/obesity) and self-perception of body image (satisfied and dissatisfied).

The outcome variables were chosen according to the following steps. In the classification by the body mass index (BMI) of the students of the female and male samples, the actual data on the anthropometric measurements were considered: weight and height. BMI was obtained from the body mass (BM, in kilograms, kg) and height (H, in meters, m). The BMI classification of individuals aged 18 years or older was as follows: low weight – below 18.5 kg/m^2; normal (normal weight) – between 18.5 and 24.9 kg/m^2; overweight – between 25.0 and 29.9 kg/m^2; obesity – above or equal to 30.0 kg/m^2[7].

A calibrated digital scale (Kratos-Cas®, Brazil) was used to measure weight and the participants were weighed without shoes and without clothing or heavy objects. Height was measured using a portable anthropometer (Kratos-Cas®, Brazil).

For the assessment of the nutritional status, students with low weight were grouped in the normal category (reference) due to the low frequency for this category and the overweight and obese students were grouped in the overweight category.

Self-perception of body image was assessed using the silhouette scale[8], which consists of a set of nine silhouettes of each sex presented in individual figures with progressive variations in the measurement scale (from the leanest figure to the fattest figure), with a mean BMI ranging 17.5 to 37.5 kg/m^2. Each student was invited to choose the figure that best represented them and the one they would like to have or that they thought was ideal. Satisfaction or dissatisfaction with body image was assessed according to the discrepancies between the selected figures (Figure 1). Thus, the outcomes were grouped into two categories: Satisfied with body image and Dissatisfied with body image.

The body silhouette figures[8] were validated with a population of Brazilian adults and university students used as a reference in the questionnaire used in this study.
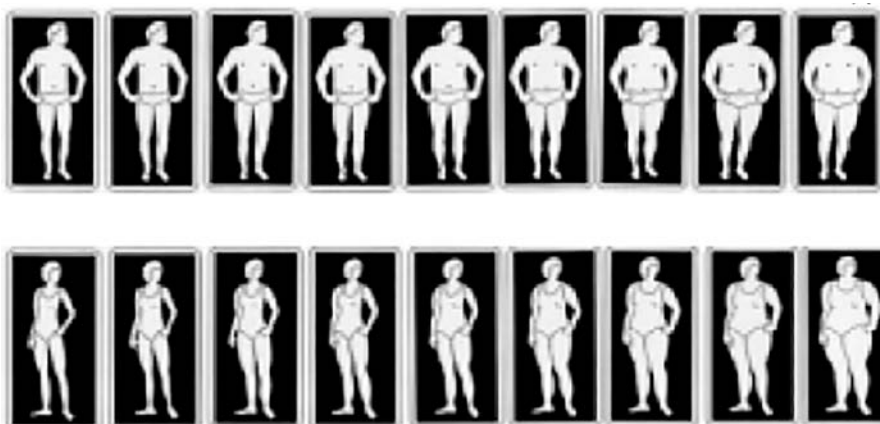

Figure 1 - Silhouette Scale of each sex, with mean BMI ranging 17.5 to 37.5 kg/m^2[8].

The exploratory variables were divided into (1) sociodemographic characteristics: sex, age, marital status, work, working hours and income; (2) characteristics of their relationship with the university: areas, duration of university exposure, study shift and teaching, research and extension opportunities; (3) health-related behaviors: leisure-time physical activity, eating habits (weekly consumption of fruits, vegetables and red meat; chicken with skin; snacks; soft drinks; meals in university restaurants) and healthy behaviors.

The data were analyzed using descriptive and inferential analysis of the sample of frequency tables and the analysis of mean, standard deviation and minimum and maximum values. The SPSS 20.0® (IBM, USA) software was used to check for associations in the tests, such as the Chi-squared test and prevalence ratios.

The study was carried out respecting the ethical principles of Resolution 466/12[9] of the National Health Council, which deals with research involving human beings. The project was sent to the Research Ethics Committee of Brazil and was approved under Approval No. 1.910.729.

RESULTS

The present study was carried out with the following participants: 324 university students, most of whom were women (67.9%; n=220), single (81.2%; n=263) and aged 20-29 years (68.5%; n=222) and lived in the city where the educational institution is located (65.4%; n=212) and lived with their parents (59.9%; n=194). In addition, they used their own motorcycle or car (41.7%; n=135) as a means of transportation to the educational institution.

The level of education was higher among mothers. Of these, 33% (n=107) completed secondary education, while 41.4% (n=134) of the fathers presented only primary education. Regarding work and income, 52.5% (n=170) of the students did not work and 56.5% (n=183) did not have their own income. Of those who reported working or taking internships, 42.2% (n=65) worked 20 to 40 hours a week in these activities and the income of 2.5% (n=8) was below one (1) minimum wage.

Table I shows the prevalence of overweight and obesity in 43.2% (n=141) of the students; 50% (n=162) of the students were dissatisfied with their image and wanted to lose weight; and 26.5% (n=86) of the students were dissatisfied with their image and wanted to gain weight.

Table I - Distribution of university students according to nutritional assessment and self-perception of body image. Sobral, Ceará, Brazil, 2017.

Characteristics	n	%
BMI classification		
Low weight	7	2.2
Normal	176	54.3
Overweight	106	32.7
Obesity	35	10.5
Not informed	1	0.3
Body image classification		
Satisfied	75	23.1
Dissatisfied/wants to gain weight	86	26.5
Dissatisfied/wants to lose weight	162	50.0
Not informed	1	0.3

There was no association between the prevalence of overweight and the students' areas of knowledge (Exact, Human or Health Sciences). Also, there was no significant association between overweight and the time of university exposure.

Table II shows an association between sex and prevalence of overweight. Female students were 1.7 times more likely to be overweight/obese, with an association between age and prevalence of overweight. Considering the individuals aged 30 years or older, the students under the age of 20 were 77% less likely to be overweight and those aged 20-29 were 65% less likely to be overweight.

As for marital status, married/separated/widowed students were 3.3 times more likely to be overweight than their single peers. As for work and income, and considering the students who work, the monthly income was associated with the prevalence of overweight. Students who received 1 minimum wage or more were 2.6 times more likely to be obese.

Table II - Comparison between prevalence of overweight and the sociodemographic characteristics of the university students. Sobral, Ceará, Brazil, 2017.

Characteristics	Low weight/ Normal		Overweight/ obesity		p	OR	95%CI
	n	%	n	%			
Sex							
Men	133	60.7	86	39.3	**0.03***	1.0	
Women	50	48.1	54	51.9		**1.7**	[1.0-2.7]
Age							
< 20 years	42	67.7	20	32.3	**<0.01***	**0.23**	[0.10-0.54]
20-29 years	128	57.9	93	42.1		**0.35**	[0.17-0.71]
30 years or older	13	32.5	27	67.5		1.00	-
Marital status							
Single	163	62.0	100	38.0	**<0.01***	1.0	-
Married/Divorced/Widowed	20	33.3	40	66.7		**3.3**	[1.8-5.9]
Work							
Work	111	65.3	59	34.7	**0.01***	1.0	-
Internship	22	51.2	21	48.8		1.8	[0.9-3.5]
Work with/without wage	47	46.1	55	53.9		**2.2**	[1.4-3.7]
Working hours							
Up to 20 hours/week	33	51.6	31	48.4	0.39	-	-
20 | 40 hours/week	26	40.0	39	60.0			
More than 40 hours/week	11	50.0	11	50.0			
Income							
None	115	62.8	68	37.2	**0.01***	1.0	
< 1 MW	44	53.7	38	46.3		1.5	[0.9-2.5]
1 or more MW	22	39.3	34	60.7		**2.6**	[1.4-4.8]

MW: Minimum Wage; Chi-squared Test; Logistic Regression Analysis; *p <0.05; OR: *Odds ratio*; CI: confidence interval

As for weekly food consumption, there was no significant association between prevalence of overweight and fruit consumption and vegetable consumption for more than 3 days/week.

Table III shows that the mean red meat consumption was 3.5 days/week in the overweight/obesity group and 3.0 days/week in the normal weight group. The chances of being overweight/obese was 1.15 times higher as red meat consumption increased. There was no association between prevalence of overweight and consumption of snacks and soft drinks in this group.

Table III - Comparison between prevalence of overweight and weekly food consumption. Sobral, Ceará, Brazil, 2017.

Characteristics	Low weight/ Normal		Overweight/ obesity		p	OR	95%CI
	Mean	SD	Mean	SD			
Weekly food consumption							
Fruits	3.3	2.1	3.4	2.1	0.82	-	-
Vegetables	3.1	2.3	3.0	2.3	0.70	-	-
Red meat	3.0	1.7	**3.5**	1.9	**0.03***	1.15	[1.01-1.30]
Chicken with skin	2.1	2.0	2.5	2.2	0.05	-	-
Snacks	2.6	2.0	2.7	2.0	0.64	-	-
Soft drinks	2.5	2.2	2.5	2.3	0.94	-	-
Meals at the UR							
Breakfast	0.5	1.3	0.3	1.0	0.27	-	-
Lunch	0.1	0.3	0.2	0.8	0.08	-	-
Dinner	0.4	1.1	0.4	1.1	0.98	-	-

Student's t-test; Logistic Regression Analysis; *p <0.05; UR: university restaurant; OR: Odds ratio; SD: standard deviation; CI: confidence interval

With regard to body self-image (Table IV), the results showed that full-time students (morning and afternoon), such as those enrolled in Veterinary Medicine, were 2.9 times more likely to be dissatisfied with their image whereas night-shift students were twice as likely to be dissatisfied with body image. The other characteristics were not associated with self-perception of body image.

Table IV - Comparison between self-perception of body image and relationship with the university. Sobral, Ceará, Brazil, 2017.

Characteristics	Satisfied		Dissatisfied		p	OR	95%CI
	n	%	n	%			
Area							
Exact Sciences	10	30.3	23	69.7	0.48	-	-
Human Sciences	24	24.7	73	75.3			
Health Sciences	41	21.2	152	78.8			
Years of exposure to the university							
< 1 year	30	20.4	117	79.6	0.32	-	-
3 years	24	30.8	54	69.2			
4 years	15	22.7	51	77.3			
5 years	6	18.8	26	81.2			
Status							
Final year	45	25.6	131	74.4	0.29		
First year	30	20.4	117	79.6			
Shift							
Morning	42	31.6	91	68.4	0.02*	1	
Afternoon	6	16.2	31	83.8		2.4	[0.9-6.1]
Full time	5	13.5	32	86.5		2.9	[1.1-8.1]
Night	22	19.0	94	81.0		2.0	[1.1-3.6]

Student's t-test; Logistic Regression Analysis; *p <0.05; n: Absolute number; OR: Odds ratio; CI: confidence interval

In the positive self-perception group the students who rated their health status as fair were 2.8 times more likely to be dissatisfied with body image, as described in Table V. In analyzing the relationship between self-perception of body image and physical fitness, and considering the students who think their physical fitness was worse than their peers', the students with better physical fitness were 83% less likely to be dissatisfied with body image while those who have similar physical fitness were 76% less likely to be dissatisfied with body image.

Table V - Comparison of self-perception of body image with self-perception of health status and physical fitness compared with peers. Sobral, Ceará, Brazil, 2017.

Perception	Satisfied		Dissatisfied		p	OR	95%CI
	n	%	n	%			
Positive	62	28.8	153	71.2	<0.01*	-	-
Fair	11	12.5	77	87.5		2.8	[1.4-5.7]
Negative	2	10.0	18	90.0		3.6	[0.8-16.2]
Physical Fitness							
Worse	6	8.2	67	91.8	<0.01*	1.00	
Better	17	34.7	32	65.3		0.17	[0.06-0.47]
The same	34	27.4	90	72.6		0.24	[0.09-0.60]
Does not know	18	23.4	59	76.6		0.29	[0.11-0.79]
Leisure-time physical activity							
Active	49	27.5	129	72.5	0.06	-	-
Inactive	26	18.2	117	81.8			

Student's t-test; Logistic Regression Analysis; *p <0.05; OR: *Odds ratio*; CI: confidence interval

DISCUSSION

In the present study, the prevalence of dissatisfaction with body image was 76.5%. Most of the students dissatisfied with their body image had a negative perception of their health status. Body image perception was also associated with the comparison of their physical fitness with their peers', as students who reported having better physical fitness were less likely to present a negative body image.

Considering the imagery constructions in the contemporary world, such results may be related to the demands of the social stereotype of women. A national study carried out with schoolchildren found an association between body image perception and extreme behaviors for weight control, mainly in girls who felt being very fat. These results allow us to infer that the perception of body image may have a greater influence on the adoption of extreme behaviors[10].

While assessing consumption and lifestyles, a study with students of the University of Lisbon[11] found that the body shape can be seen based on a subjective corporal configuration produced by oneself, by the others and by processes of evaluation and recognition of the individual's suitability for a "healthy lifestyle". The students' view of their body, their silhouette and the sensations fired back at them during a social comparison with other bodies ignite subjective mechanisms of body evaluation, which have effects on the individual's self-esteem and individual and social well-being, thus allowing strategies for maintaining or changing the body towards a body socially recognized as "healthy".

The degree of excellence in the assessment of body shape also varies according to sex, with girls being more demanding than boys in their evaluation of excellent[11]. These data confirm the findings of the present study: female students were more dissatisfied with their body image and negative assessment increased in older students of both sexes.

Happiness, as self-perception of satisfaction – which contributes to the ability to decide how to enjoy life and how to be an active subject in the construction of projects and interventions to overcome individual and collective difficulties and in the recognition of potentialities – is one of the fundamental values for effective health promotion[3].

Thus, activities, projects or curricular components to favor students' reflection about themselves and their adaptation in higher education and to potentiate conditions for facing life adversities – whether academic or personal – should be part of the daily life of the university.

Higher education institutions are ideal places for debates and discussions about quality of life, obesity, eating habits and health assessments. In addition, healthy environments can enhance promotion and prevention, as suggested by the National Health Promotion Policy[3].

The silhouette scale was very effective in assessing the degree of dissatisfaction with body weight and dimensions in the assessment of the perceptual component of body image and also contributed to the understanding of how students idealized their image and saw their objective image[8].

Overweight was prevalent in 43.2% of the students and university women were more likely to be overweight and obese than men. Data show that Brazil has been facing the progressive increase of overweight and obesity. Being one of the main risk factors for noncommunicable diseases and a public health problem, excess weight affects 1 (one) in 2 (two) adults and (1) one in each (3) three Brazilian children[1].

In adults over 18 (eighteen) years old living in Fortaleza, Ceará, the frequency of obesity found by the Surveillance System for Risk and Protective Factors for Chronic Diseases by Telephone Survey (*Vigilância de Fatores de Risco e Proteção para Doenças Crônicas por Inquérito Telefônico – VIGITEL*) was 19.2%[12].

With regard to the significant association of overweight/obesity with the female sex, another study with university students found different results, i.e., the highest prevalence rates of overweight/obesity were found in male students. It should be noted that the study was cross-sectional and repeated over a period of 2 (two) years, from 2010 to 2012, with the participation of over 1200 students from a public university and the application of the same data collection instrument[13].

As previously reported, the data confirm the Brazilian population's trend described in the 2013 National Health Survey. With regard to the analysis of excess weight in the adult population stratified by age groups, it was estimated that more than half of the population presented excess weight (56.9%), that is, approximately 82 million Brazilians presented a BMI equal to or greater than 25 kg/m^2, with a higher prevalence of overweight among women, 58.2%[6].

The prevalence of overweight and obesity in three surveys (2003, 2008 and 2013) demonstrated an inverse behavior and increased continuously in both men and women. In men, the prevalence of overweight increased from 42.4% in 2002-2003 to 57.3% in 2013 while obesity increased from 9.3% to 17.5%. In women, the increase in overweight was more pronounced, from 42.1% in 2002-2003 to 59.8% in 2013; obesity increased from 14.0% to 25.2%[6].

Agreeing with the results of the present study, in which students younger than 20 years were less likely to be overweight and obese, a study with university students from Southern Brazil[14] found an association between excess weight and age. The magnitude of the association in students aged 20 years or older was 2 (two) times greater than that in their younger peers and higher prevalence rates of overweight in older individuals were found in other studies[1,6,13].

Regarding the other sociodemographic variables found in the present study, married/separated/widowed students, working students and students with an income greater than 1 (one) minimum wage were more likely to be overweight. These results were also found in a study with university students from a public institution in Piauí, where the risk of students developing overweight was higher in middle and high socioeconomic levels[15].

Broadening the view of the phenomenon of overweight increase among university students is necessary because the identification of the factors associated with risk behaviors can guide public policies and the development of programs to make the university environment a promoter of healthy cultures.

Surveillance, monitoring and assessment while using multiple approaches in the generation and analysis of information on health conditions to support decisions, interventions and implement public policies for health promotion are one of the axes of the National Health Promotion Policy[3]. Thus, the importance of indicators to guide the implementation of projects and programs targeted at the university population should be emphasized.

Negative stereotypes, which are sometimes present in overweight people, negatively influence adherence to programs and discourage these individuals, thus resulting in reluctance to treatment. Therefore, educational strategies that emphasize the complex etiology of obesity can reduce weight stereotypes among students and should be included in curricula and programs[16].

Through public calls for proposals, the Ministry of Health encourages public and private universities to develop projects aimed at preventing and controlling obesity within the Unified Health System and improving the quality of assistance, care and research development[17]. However, it should be noted that the university population should not be seen only in terms of knowledge and good practice production so as to put these actions into effect.

In the present study, the analysis of the prevalence of overweight and its association with the study areas (Health, Human and Exact Sciences) found no significant association. The fact that the students enrolled in Health programs studied healthy behaviors and other issues related to the subject did not differentiate them from the others.

In the Southern region of the state of Bahia[13], a study found lower estimates of association with obesity in students (men) in the second year of university exposure and in students (women) in the fourth year or over of university exposure. The effects of the association were weaker in students enrolled in Exact, Earth and Human Sciences programs. In university students from another state, the prevalence of excess body weight increased with the time of exposure to university[18].

As for food consumption, which is considered a marker of healthy standards, the present study assessed the frequency of consumption of fruits and vegetables and unhealthy eating patterns, that is, the consumption of red meat, soft drinks and snacks by the students. No differences in consumption of fruits and vegetables, snacks and soft drinks were observed in the outcome groups. However, overweight/obese students presented higher prevalence rates of consumption of red meat and chicken with skin, with the chances of obesity increasing with the increase in the consumption of red meat.

According to a study with university students[13], male students who reported eating fruit up to 4 days/week were less likely to be obese, but university students who reported eating vegetables up to 4 days/week were more likely to be obese and those who reported eating meat with visible fat were more likely to be overweight. As for women, those who drank soft drinks five or more days a week were more likely to be obese. In contrast, those who reported consuming snacks were less likely to be obese.

The consumption of fruits and vegetables by the students analyzed in the present study was below the recommended by the World Health Organization, which is 400 grams daily on five or more days a week[19]. This problem is in line with the national survey, in which only 24.1% of Brazilians consumed the recommended amount of fruits and vegetables and 29.4% of the population still consumed meat with excess fat. The figures also indicate that the Brazilian people have decreased the consumption of soda, with a decrease of about 20% over the last six years. However, more than 20% of the population still drinks this beverage five or more times a week[11].

The consumption of healthy foods is below the recommended. The fact that students enrolled in Health programs did not present differences related to overweight and eating habits shows how knowledge of prevention and health promotion acquired during the program does not guarantee the adoption of healthy habits.

The accelerated growth of excess weight in all age groups and income strata clearly shows the need for measures to control and prevent weight gain. If such actions are not implemented, about 70% of Brazilians will present excess weight in 20 years' time. Tackling this problem requires actions in the various sectors – from production to final food marketing – and the guarantee of environments conducive to behavior change in individuals and society[1].

This study corroborates the needs pointed out in a study carried out with school adolescents[20], namely the importance of guidance on and encouragement to healthy food choices, availability of physical activity in the school, provision of healthy food options in canteens, and guidelines for reducing and preventing overweight. In the university, we emphasize the importance of university restaurants, student support centers (*Núcleos de Apoio aos Discentes – NAPs*), extension projects aimed at promoting health, and spaces and actions that favor physical activity and adoption of healthy lifestyles.

The results presented herein are expected to support and strengthen ongoing actions and projects to prevent and tackle overweight and obesity in university students. Furthermore, it is expected that aspects related to students' self-perception be addressed in the university environment to improve mental health and students' protagonism in choosing healthy habits within an environment that encourages such behaviors.

This study had some limitations. Body mass index was used to determine overweight and obesity. This method is accepted for population-based studies, but it does not allow to measure students' fat mass and fat-free mass.

CONCLUSION

There was a high prevalence of overweight/obesity and body image dissatisfaction among university students. The prevalence of overweight was associated with age, sex, marital status, work, income and consumption of red meat and self-perception of body image was associated with self-perception of health status, physical fitness and study shift. There were no associations between overweight and the study areas or the time of university exposure.

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CONTRIBUTIONS

Michelle Alves Vasconcelos Ponte contributed to the study conception and design; acquisition, analysis and interpretation of data; writing and revision of the manuscript; **Sandra Celina Fernandes Fonseca, João José Saraiva da Fonseca, Maria Isabel Martins Mourão Carvalhal** contributed to the study design; interpretation of data and revision of the manuscript.

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