

Nutritional status, weight evolution and eating behavior in university students of health careers in Ribeirao Preto, Sao Paulo, Brazil

Estado nutricional, evolução ponderal e comportamento alimentar em estudantes universitários de carreiras da área de saúde em Ribeirão Preto, São Paulo, Brasil

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RESUMO

Introdução: O estado nutricional e o comportamento alimentar dos universitários estão relacionados com fatores sócio-econômicos, culturais e ambientais, revelando efeitos diferentes no atendimento às necessidades nutricionais desses indivíduos.

Objetivos: Analisar hábitos alimentares, evolução ponderal e imagem corporal de universitários da área da saúde do Campus de Ribeirão Preto da Universidade de São Paulo (USP).

Métodos: Estudo transversal com 501 estudantes matriculados em cursos da área da saúde da USP do Campus de Ribeirão Preto. Houve aplicação de questionário envolvendo informações sócio-demográficas, do número de refeições, evolução ponderal após ingresso na universidade, além de informações sobre as percepções de imagem corporal dos universitários e de seus pais. Aferiu-se estatura e peso, composição cor-

poral (massa gorda, massa livre de gordura e água corporal) foi determinada através da bioimpedância e calculou-se o Índice de Massa Corporal (IMC).

Resultados: Os 501 universitários estavam distribuídos nos cursos de Medicina (12,4%), Enfermagem (18,5%), Nutrição e Metabolismo (19,5%), Fisioterapia (15%), Educação Física (11,8%), Fonoaudiologia (8,8%), Informática Biomédica (8,6%) e Terapia Ocupacional (5,4%). Os estudantes possuíam uma média de idade de 20,4±2,8 anos e de IMC de 22,4±3,4 Kg/m², sendo a maioria solteiros (98,80%), sexo feminino (73,05%), não tabagistas (96,2%) porém com presença da ingestão de bebida alcoólica (66,0%). Com relação aos comportamentos alimentares foram encontradas as médias de refeições realizadas pelos universitários diariamente e, destas, as realizadas dentro das dependências do Campus universitário, sendo respectivamente: café da manhã (83,8% e 3,99%), lanche da manhã (34,1% e 23,7%), almoço (99,6% e 82,8%), lanche da tarde (69,6% e 41,7%), jantar (93,4% e 29,5%) e ceia (30,1% e 0,19%), totalizando uma média de 4,12 ± 1,08 refeições diárias e de 1,81 ± 0,92 refeições realizadas no Campus. Quanto à evolução ponderal,

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avaliou-se se houve ganho, perda ou manutenção de peso após o ingresso na Universidade, sendo encontrado valores semelhantes entre os gêneros, sendo para homens (44,4%, 15,5% e 40% e 49,7%) e mulheres (49,7%; 23,4% e 26,7%), respectivamente. Referente à auto-imagem 61,47% dos universitários classificaram-se como normal e atribuíram a mesma classificação da percepção corporal de seu pai (42,31%) e mãe (54,09%).

Conclusões: Considerando este estudo, foi detectado que a maioria dos estudantes está na faixa de eutrofia, de acordo com o IMC, além da presença de estudantes que progrediram para o ganho de peso após o ingresso na universidade. Mudanças no comportamento alimentar e etilismo também foram encontrados nesta fase da vida. Finalmente, a universidade tem o papel de introduzir programas que auxiliem os estudantes nas suas escolhas alimentares e de estilo de vida, a fim de promover e preservar a saúde.

PALAVRAS-CHAVE

Comportamento alimentar, evolução ponderal, percepção corporal, autoimagem corporal, universidade.

ABSTRACT

Introduction: The nutritional status and eating behavior of university students are related to socioeconomic, cultural and environmental factors, with different effects in terms of meeting the nutritional needs of these individuals.

Objectives: To analyze the eating habits, weight evolution and body image of university students in the health area of the Ribeirao Preto Campus, University of Sao Paulo (USP).

Methods: A cross-sectional study was conducted on 501 students enrolled in health area courses of USP, Ribeirao Preto Campus. A questionnaire was applied in order to obtain sociodemographic data, number of meals and weight gain after entering the university, as well as information about the students' perception of their own body image and of the body image of their parents. Height and weight were measured, body composition (fat mass, fat free mass and body water) was determined by bioimpedance and the body mass index (BMI) was calculated.

Results: The 501 university students were enrolled in the courses of Medicine (12.4%), Nursing (18.5%),

Nutrition and Metabolism (19.5%), Physiotherapy (15%), Physical Education (11.8%), Speech Therapy (8.8%), Biomedical Informatics (8.6%), and Occupational Therapy (5.4%). Mean student age was 20.4±2.8 and mean BMI was 22.4±3.4 kg/m², the majority of students were single (98.80%), females (73.05%), not smoking (96.2%) but with consumption of alcoholic beverages (66.0%). Regarding eating behavior, the mean percentages of daily meals taken by the students and of those taken on the premises of the university Campus were, respectively: breakfast (83.8% and 3.99%), morning snack (34.1% and 23.7%), lunch (99.6% and 82.8%), afternoon snack (69.6% and 41.7%), dinner (93.4% and 29.5%), and supper (30.1% and 0.19%). Regarding weight evolution was evaluated whether there was a gain, loss or weight maintenance after entering at the University, and it was found similar values between genders, with men (44.4%, 15.5% and 40% and 49.7%) and women (49.7%, 23.4% and 26.7%) respectively. Regarding self-image, 61.47% of the students classified themselves as normal and reported the same classification of body perception of their father (42.31%) and mother (54.09%).

Conclusions: regarding this study it was detected the majority of students in the eutrophic range, according to BMI, and the presence of students who progressed to weight gain after university entrance. Changes in eating behavior and drinking habit were also found in this stage of life. Finally, the university should introduce programs to help the students in food a life style choices in order to promote and preserve their health.

KEY WORDS

Eating behavior, weight evolution, body perception, body self-image, university.

INTRODUCTION

The human choice of foods is described as a complex process involving a multiplicity of influencing aspects such as the socioeconomic and cultural context, the access to and availability of food, as well as the educational level and age range of a person^{1,2}. Thus, the global context surrounding an individual has an impact on life style factors such as food choices, the nutritional value of the diet, alcohol consumption and smoking, a reality also present among university students^{3,4}.

According to this general view, studies have revealed that entering the university can be seen as a period of greater vulnerability regarding the beginning and the maintenance of habits such as the use of alcohol and of other drugs^{5,6}. Several authors have also pointed out that the eating habits of these individuals, as well as tobacco use and alcohol intake may be influenced by the new social context experienced, characterized by new social relationships, behaviors and situations, and physical and mental stress, also possibly leading to eating disorders during the undergraduate period^{7,8}.

Mattos and Martins⁹ have pointed out that the life style and eating habits of university students are strongly influenced by factors arising in parallel to entering the university, such as leaving family life and starting to have experiences with other, previously unknown, students in student housing, and beginning new social relationships and discoveries. Add to this the increased academic responsibilities and the consequent lack of time to eat meals in an appropriate manner, which lead to the consumption of practical and fast high-calorie snacks of low nutritive value, known as "fast food".

According to this scenario, university students may be in a vulnerable condition and may be classified as being in a situation of nutritional risk, since this period may favor undesired weight gain possibly accompanied by the onset of chronic diseases and changes in body perception¹⁰.

In this respect, Dinger & Waigandt stated that, in the age range of 18 to 24 years of many university students, the establishment of healthy life behaviors, including eating behavior, may have a lasting impact on the health of these individuals and consequently on the health of their future families¹¹. This becomes even more relevant regarding university students in the health area, who will perpetuate their acquired habits not only for themselves and their relatives, but also for the future community of patients covered by their professional activity.

On the basis of these premises, it is necessary to observe the impact of the university context on the eating behavior of the students in order to identify factors that influence their nutritional status and quality of life. Thus, the objective of the present study was to evaluate factors that influence the nutritional status of students of the University of Sao Paulo (USP) and their relation to the eating behavior, weight evolution and body perception of these individuals.

SUBJECTS AND METHODS

Subjects

A cross-sectional study was conducted on a sample of 501 healthy university students of both genders, consisting of 197 adolescents aged 17-19 years and 304 adults with 20 years or more, who were duly enrolled in the following undergraduate courses in the health area of USP on the Ribeirao Preto Campus, SP: Medicine, Nutrition, Speech Therapy, Physiotherapy, Occupational Therapy, Biomedical Informatics, Physical Education, and Nursing. The study was approved by the Research Ethics Committee of the University Hospital, Faculty of Medicine of Ribeirao Preto, USP (Protocol HCRP n° 1955/2010).

The courses were selected at random and by convenience and all students of a class were invited to participate. They were informed about the objectives and methodology of the study and then scheduled for data collection. On the scheduled date, each subject gave written informed consent to participate in the study and was then submitted to measurement of weight and height and to the application of a questionnaire specifically elaborated by the authors for the present study.

Exclusion criteria were: inability to walk, amputation, and having no tie to the Campus as an undergraduate student. All students participated voluntarily and were evaluated only once during the study by a group of trained examiners.

Anthropometric evaluation

Weight (kg) was measured with an electronic scale, BC-558 Ironman Segmental Body Composition Monitor (Tanita Corp., Tokyo, Japan), with a maximum capacity of 150 kg and precision of 0.01 kg. This measurement was made after a fast of at least 5 hours, followed by emptying of the bladder, with the subject barefoot and wearing light clothing. Height was measured with a plastic tape attached to a wall with no baseboard and with the aid of a wood rod, with the students standing up straight with head and neck aligned, and barefoot. Height (m) was measured in duplicate, with a maximum variation of 0.5 cm between measurements, with the mean value was calculated¹². The body mass index (BMI) was calculated according to the equation $BMI = \text{weight (kg)}/\text{height (m)}^2$ and classified according to the criteria proposed by the WHO (1995) indicating malnutrition ($BMI < 18.5$), normal weight (BMI from 18.5 to 24.9), overweight (BMI from 25 to 29.9) or obesity ($BMI \geq 30$)¹³.

Demographic and dietary pattern questionnaire

We used a questionnaire specifically elaborated for the present study by a team of trained investigators based on the existing literature, containing objective questions and closed response options, for the collection of relevant information regarding the objectives of the study.

The questions concerned demographic data (gender, age, place of birth, marital status, ethnicity), alcohol drinking and smoking, the course in which the student was enrolled, the semester and year of the course, employment contract, housing situation in Ribeirao Preto, SP, daily meals taken, type of predominant diet while staying on the USP campus, as well as information about the history of weight evolution since the student entered the university.

The same questionnaire also contained questions about self-perception of one's own body image and the body image of one's parents, with the students being invited to classify their perceptions within five categories: very thin, thin, normal, fat, and very fat.

Statistical analysis

Descriptive analysis was performed, the Student t-test was used to compare means, with the level of significance set at $p < 0.05$ in all analyses. The Statistical Package for the Social Sciences 15.0 (SPSS) was used for statistical analysis.

RESULTS

The study was conducted on 501 university student in the health area. Mean age was 20.4 ± 2.8 years for

the sample as a whole, 20.8 ± 3.2 years for men, and 20.3 ± 2.7 for women, with no significant difference between groups. Mean BMI was 22.4 ± 3.4 kg/m², mean fat-free mass was 45.3 ± 10.3 kg and mean fat mass was $24.0 \pm 7.5\%$, with all of these variables showing significant differences between genders. The anthropometric and body composition characteristics of the university students are presented in Table 1.

Most students (98.8%) were single and most resided with their families (55.68%) or alone (30.16%). A small percentage of students had an employment contract (6.18%) and many students had recently entered the university, being enrolled in the 1st year of the course (42.71%). In addition, most of these future professionals in the health area reported that they ingested some type of alcoholic beverage (66.06%), whereas few reported that they were smokers (3.8%).

The information obtained revealed that the main daily meals taken by the students were breakfast (83.83%), lunch (99.6%) and dinner (93.41%), with lunch, afternoon snack and dinner being usually taken more within the physical premises of the campus (82.83%, 41.71% and 29.54%, respectively).

The data regarding weight evolution revealed that many students (48.3%) gained weight (mean gain of 4.36 ± 2.94 kg), whereas 21.35% reported a weight loss (mean of 3.54 ± 3.41 kg) or weight maintenance (30.33%) after entering the university. The sociodemographic characteristics and dietary patterns obtained with the above questionnaire are listed in Table 2.

Also according to Table 2, and considering the genders differences, it is possible to notice that drinking

Table 1: Anthropometric and body composition characteristics of university students in the health area of USP-RP.

N	All (501)	Males (135)	Females (366)	P value
Weight (kg)	63.0±13.5	76.9±13.6	57.8±9.2	< 0.001*
Height (m)	166.9±9.0	177.3±6.7	163.1±6.3	< 0.001*
BMI (kg/m ²)	22.4±3.4	24.4±3.8	21.7±3.0	< 0.001*
Fat-free mass (kg)	45.3±10.3	60.0±7.7	39.8±3.8	< 0.001*
Fat mass (%)	24.0±7.5	17.0±6.2	26.6±6.2	< 0.001*
Total body water (%)	55.8±5.2	59.9±5.3	54.3±4.4	< 0.001*

Data are reported as mean \pm SD.

*Significant difference of t-test ($p < 0.05$) between males and females.

Table 2: Replies of the participants to a questionnaire containing demographic and eating pattern questions.

Questions	Replies	Total (%)
Q1. Which undergraduate course are you enrolled in?	A. Medicine	N= 62(12.4%)
	B. Nutrition	N= 98(19.6%)
	C. Speech therapy	N= 44(8.8%)
	D. Physiotherapy	N= 75(15.0%)
	E. Occupational therapy	N= 27(5.4%)
	F. Biomedical informatics	N= 43(8.6%)
	G. Physical education	N= 59(11.8%)
	H. Nursing	N= 93(18.6%)
Q2. Which year are you attending?	A. First	N= 214(42.71%)
	B. Second	N=130(25.94%)
	C. Third	N= 99(19.76%)
	D. Fourth	N= 57(11.37%)
	E. Fifth	N= 1(0.19%)
	F. Sixth	N= 0 (0.0%)
Q3. What is your gender?	A. Male	N=366(73.05%)
	B. Female	N= 135(26.95%)
Q4. What is your color?	A. White	N= 424 (84.6%)
	B. Mulatto	N= 51(10.1%)
	C. Yellow	N= 19(3.8%)
	D. Black	N= 7(1.4%)
Q5. What is your current marital status?	A. Married	N= 6(1.2%)
	B. Single	N=495(98.8%)
	C. Divorced/separated	N= 0 (0.0%)
	D. Widowed	N= 0 (0.0%)
Q6. Do you consume alcoholic drinks?	A. Yes	N= 331(66.06%)
	B. No	N= 170(33.93%)
Q7. Do you smoke?	A. Yes	N=19 (3.8%)
	B. No	N= 482(96.2%)
Q8. Do you have a job contract?	A. Yes	N= 31(6.18%)
	B. No	N= 346(69.06%)
	C. Others	N= 124(24.75%)
Q9. What is your housing situation in Ribeirão Preto?	A. Family home	N= 279(55.68%)
	B. Alone	N= 151(30.16%)
	C. With other students	N= 43(8.58%)
	D. With a spouse	N= 19(3.79%)
	E. With a boy/girl friend	N= 9(1.79%)

Table 2 continuación: Replies of the participants to a questionnaire containing demographic and eating pattern questions.

Questions	Replies	Total (%)
Q10. Where do you predominantly take your meals while you are on Campus?	A. Central restaurant	N= 397(79.24%)
	B. Lancheonette	N= 163(32.53%)
	C. Self-service restaurant	N= 113(22.55%)
	D. Brought from home	N= 102(20.35%)
Q11. What meals do you take during the day?	A. Breakfast	N= 420(83.83%)
	B. Morning snack	N= 171(34.13%)
	C. Lunch	N= 499(99.6%)
	D. Afternoon snack	N= 349(69.66%)
	E. Dinner	N= 468(93.41%)
	F. Supper	N= 151(30.13%)
Q12. Which of these meals you take on Campus?	A. Breakfast	N= 20(3.99%)
	B. Morning snack	N= 119(23.75%)
	C. Lunch	N= 415(82.83%)
	D. Afternoon snack	N=209(41.71%)
	E. Dinner	N= 148(29.54%)
	F. Supper	N=1 (0.19%)
Q13. How did your weight evolve since the beginning of your undergraduate course?	A. Maintenance	N= 152 (30.4%)
	B. Gain	N= 242(48.3%)
	C. Loss	N= 107(21.3%)
Q14. How do you classify yourself?	A. Very thin	N= 16(3.1%)
	B. Thin	N= 90(18.0%)
	C. Normal	N= 308(61.5%)
	D. Fat	N=84 (16.8%)
	E. Very fat	N= 3(0.6%)
Q15. How do you classify your father?	A. Very thin	N= 7(1.5%)
	B. Thin	N= 73(15.0%)
	C. Normal	N= 212(43.8%)
	D. Fat	N= 181(37.4%)
	E. Very fat	N= 11(2.3%)
Q16. How do you classify your mother?	A. Very thin	N= 7(1.4%)
	B. Thin	N= 63(12.7%)
	C. Normal	N= 271(54.4%)
	D. Fat	N= 147(29.5%)
	E. Very fat	N= 10(2.0%)

alcoholics is a present habit at this life stage, being reported by 74.0% of men and 63.3% of women, while the opposite happened with smoking, because only 9.6% of men and 1.9% of women reported smoking habit. Both genders make your meals, especially in the central restaurant while studying at university, being 89.6% and 75.4%, for men and women, respectively. And the average number of daily meals consumed on campus was around 1.8 meals / day for both sexes. As to the weight gain, the data for gain, loss or weight maintenance were distributed, respectively, as follows between genders: 44.4%, 15.5% and 40% among men and 49.7%, 23.4% and 26.7% for women, and for both predominated weight gain after entering university.

The great majority of the students considered themselves normal in terms of body image self-perception

(Table 3), a classification they also attributed to the body image of their parents (Table 4). The criteria adopted for the classification of image self-perception were too fat, fat, normal, thin and very thin and both genders presented similar distributions, respectively, for this classification ranges, as being for men (0, 18.5%; 57.0%, 20.7%, 3.7%) and women (0.8%, 16.1%, 63.1%, 16.9%, 3.0%).

However, curiously, even though most of the students considered themselves normal, some malnourished individuals according to BMI classified themselves as normal (1.99%); normal individuals classified themselves as very thin (1.97%) or very fat (0.19%); overweight individuals classified themselves as normal (8.58%), obese students classified themselves as normal (0.19%) and, interestingly, none of the obese individuals classified themselves as very fat.

Table 3: Relationship between reported body image self-perception and nutritional status according to the BMI of university students on the Ribeirao Preto Campus of USP.

Nutritional status (BMI)	Reported body image self-perception					
	Very thin (N/%)	Thin (N/%)	Normal (N/%)	Fat (N/%)	Very fat (N/%)	Total (N/100%)
Malnutrition						
Male	3 (2.2)	2 (1.5)	1 (0.7)	-	-	6 (4.4)
Female	7 (1.9)	28 (7.6)	9 (2.5)	-	-	44 (12.0)
Normal weight						
Male	2 (1.4)	26 (19.2)	47 (20.0)	3 (2.2)	-	78 (57.8)
Female	4 (1.0)	34 (9.2)	207 (56.5)	25 (6.8)	1 (0.2)	271 (74.0)
Overweight						
Male	-	-	28 (20.7)	12 (8.9)	-	40 (29.6)
Female	-	-	15 (4.0)	28 (7.6)	2 (0.5)	45 (12.3)
Obesity						
Male	-	-	1 (0.7)	10 (7.4)	-	11 (8.2)
Female	-	-	-	6 (1.6)	-	6 (1.64)
Total						
Male	5 (3.7)	28 (20.8)	77 (57.0)	25 (18.5)	-	135 (100)
Female	11 (3.0)	62 (17.0)	231 (63.1)	59 (16.1)	3 (0.8)	366 (100)

Table 4: Relationship between reported body image self-perception and body image perception that the students have of their parents.

Perception of body image of the parents	Body image self-perception					
	Very thin (N/%)	Thin (N/%)	Normal (N/%)	Fat (N/%)	Very fat (N/%)	Total (N/100%)
Very thin						
F	-	3 (0.6)	2 (0.4)	2 (0.4)	-	7 (1.4)
M	-	-	6 (1.2)	1 (0.2)	-	7 (1.4)
Thin						
F	4 (0.8)	17 (3.5)	37 (7.6)	15 (3.0)	-	73 (15.0)
M	4 (0.8)	20 (4.0)	23 (4.6)	14 (2.8)	2 (0.4)	63 (12.6)
Normal						
F	8 (1.6)	37 (7.7)	137 (28.3)	29 (6.0)	1 (0.2)	212 (43.9)
M	9 (1.8)	48 (9.6)	182 (36.6)	31 (6.2)	1 (0.2)	271 (54.4)
Fat						
F	3 (0.6)	30 (6.2)	118 (24.4)	29 (6.0)	1 (0.2)	181 (37.4)
M	2 (0.4)	18 (3.6)	93 (18.7)	34 (6.8)	-	147 (29.5)
Very fat						
F	-	1 (0.2)	3 (0.6)	7 (1.5)	-	11 (2.3)
M	1 (0.2)	1 (0.2)	4 (0.8)	4 (0.8)	-	10 (2.0)
Total						
F	15 (3.0)	88 (18.2)	297 (61.4)	82 (17.0)	2 (0.4)	484 (100)
M	16 (3.2)	87 (17.5)	308 (61.8)	84 (16.9)	3 (0.6)	498 (100)

F: father and M: mother.

DISCUSSION

The present study revealed that university students were in the normal weight range according to BMI ($22.4 \pm 3 \text{ kg/m}^2$), presenting average levels of fat mass compatible with cutoffs recommended for adults by the WHO¹⁴, and for men found $17.0 \pm 6.2\%$ (fat mass cutoff $<25\%$) for women and 24.0 ± 7.5 (fat mass cutoff $<35\%$). These data corroborate the study by Rios et al.¹⁵ who found very similar values in a sample of university students of Physical Education, being 15.98 ± 5.36 and 21.89 ± 6.37 , for men and women, respectively.

Considering the eating behavior of the students is influenced by aspects interlinked with the daily routine of

the university, resulting in inadequate food fractionation possibly leading to prolonged periods of fasting. Low rates of consumption of morning and afternoon snacks and of supper were detected, a fact that may be associated with the habit of skipping meals also pointed out by other authors^{16,17}.

It should also be pointed out that the period of undergraduate study usually represents the first occasion when the students start to take responsibility for their own eating behavior¹⁸ and to live alone, as was the case for 30.16% of the present study sample, emphasizing the need to offer more support and foundation to help these individuals with the decision making process.

In addition, the sociocultural aspects within the university influence the eating behavior and the adoption of life habits, especially if we consider that the latter can also be considered as a form of identification with a determined group of persons¹⁹. Thus, the consumption of alcoholic beverages (66.06%) and the smoking habit (3.8%) of the students studied here, as well as the environments and the foods that the university makes available to them on its premises become extremely relevant.

For example, the present study showed that almost 80% of the subjects took some meals in the central restaurant of the university, an aspect that should be emphasized since this restaurant serves the main meals (lunch and dinner) at low cost. Thus, the university should be concerned about offering balanced meals adequate for its public and also, by considering the impact of these physical spaces on the eating behavior of the students, it should use such spaces for the promotion of programs and events that would transmit the importance of adopting healthy eating and living habits. The other sites where the students also take their meals, such as luncheonettes (32.35%) and self-service restaurants (22.55%), should make an effort to guarantee the quality and nutritional value of the food they serve. The presents study also showed how important it is to counsel the students, also considering that a relevant proportion of them (20.35%) bring their food from their residence.

Keeping this in mind, we can perceive the impact of the university as a physical and learning space for the generation and maintenance of common behaviors among the students, thus influencing weight gain and the way the students identify themselves and others²⁰. Many of the students investigated here (48.3%) reported that they gained weight (a mean gain of 4.36 ± 2.94 kg) after entering the university, a finding that, in agreement with other studies, may be explained by the acquisition of poor eating habits during the undergraduate course²¹⁻²³, and by other factors such as lack of time²⁴, the physical and social environment²⁴, convenience and the financial factor²⁵, the taste of the foods and preparations to be consumed^{25,26}, and also by concern about weight control and one's appearance²⁷.

It can be seen, therefore, that university students are highly exposed to eating and living habits that are often unhealthy and that can contribute to undesired weight gain. On this scenario, appearance and body perception become important because they reflect how

an individual perceives himself and how he feels about himself and his own body²⁸.

Based on the data related to body image self-perception, it was possible to observe under- and overestimate of one's own body silhouette. These are alarming data since they reveal that dissatisfaction with body image may be a risk factor for the presence of inappropriate eating behaviors²⁹ and for the genesis of eating disorders in these individuals³⁰, possibly interfering with their health and nutritional status³¹.

In addition, the formation of the body self-image may be directly related to the family environment of the individual, since, ultimately, the body image is also constructed socially^{32,33}. The family, as a social institution, is subjected to existing social norms and rules and perpetuates values, behaviors and attitudes, with the consequent incorporation of factors that will influence the self-esteem and self-image of the adolescent, as well as the body perception of others³²⁻³⁴. In the present study we observed that the great majority of the students considered their body perception to be normal, a classification they also used for their parents. Almost half the students investigated classified the body image of their parents as normal (49.89%). However, we also observed that some students who classified themselves as very fat categorized their parents as very thin (0.6%), and, conversely, that other students who perceived themselves as very thin classified their parents as very fat (0.2%). Although we cannot certify the presence of body image disorders in these cases, we can suspect that the way the students perceive themselves can somehow influence the criteria they use to perceive their parents or possibly even other people in their social circle.

Also with respect to the classification of body self-image was observed that both sexes showed similar distributions for classification ranges, which opposes in part the findings of Branco et al.³⁵, that although the great majority of adolescents in the normal weight, overweight and obesity ranges have an adequate perception of their body image, women showed a tendency to overestimate and the male underestimate their overweight and obesity nutritional status.

Among the limitations of the present study is the fact that eating behavior was investigated as a whole, with no possibility of establishing specific nutritional risks of university students. In addition, so far we have no gold standard method that might prevent under- or overes-

timates on the part of the students when self-reporting their eating behaviors and life habits. Regarding body perception, we did not use a validated method since the objective of the study was to learn how the students dealt with body perception. These considerations should be kept in mind in future studies and interventions by validating and incorporating effective and specific tools that might contribute to the understanding of how the health and well-being of the students are affected within the context of the environment in which they live during their undergraduate period.

CONCLUSION

The results of this study emphasize the importance of observing the university students as a whole. In this context, it was detected an overall average of eutrophic individuals, according to BMI, and the presence of students who progressed to weight gain after university entrance. However, these data is also associated with changes in eating behavior, based on the physical environment of the university and the ways how to university possibility the access to food, and adopting lifestyle habits, characterized, for example, by drinking and smoking.

Finally, we emphasize the need to plan programs of nutritional education in the universities in order to increase the understanding of nutritional aspects that will be of help in food and life style choices, providing health and well-being to the students and permitting them to recognize the fundamental importance of the diet and the context experienced in order to promote and preserve their own health and the health of the population.

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