# Influence of socioeconomic, behavioral and nutritional factors in body image dissatisfaction among female university students in Florianopolis, SC

*Influência de fatores socioeconômicos, comportamentais e nutricionais na insatisfação com a imagem corporal de universitárias em Florianópolis, SC*


***Abstract***

The study aimed to estimate the prevalence of dissatisfaction with body image and associated socio-economic, behavioral and dietary factors in female university students from a public university in Florianopolis, SC. Body image was assessed by the Body Shape Questionnaire (BSQ-34) in a sample of 220 students. Nutritional status was assessed by body mass index (BMI), waist circumference (WC) and percentage of body fat (%BF). Socio-economic characteristics (age, monthly household income and parental schooling) as well as energy intake and being on restrictive diets were also investigated. Factors associated with body image dissatisfaction were analyzed by multivariate Poisson regression analysis. The prevalence of body image dissatisfaction was 47.3% (95% CI 40.7; 53.9). Nutritional status based on BMI and dieting to lose weight were the variables associated with body dissatisfaction. The results indicate a high prevalence of rejection of physical image among university students, which points toward the need for nutritional actions at universities in order to understand and prevent abnormal eating attitudes among students.



**Keywords:** Body image; Self Concept; Nutritional status; Students



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## *Resumo*

Este estudo objetivou estimar a prevalência de insatisfação com a imagem corporal e testar a associação com fatores socioeconômicos, comportamentais e nutricionais em universitárias ingressantes de uma universidade pública em Florianópolis, SC. A insatisfação com a imagem corporal foi investigada por meio do *Body Shape Questionnaire* (BSQ-34) em uma amostra de 220 estudantes. O estado nutricional foi investigado por meio do índice de massa corporal (IMC), circunferência da cintura (CC) e percentual de gordura corporal (%GC). As características socioeconômicas (idade, renda familiar mensal e escolaridade dos pais), bem como consumo energético e prática de regimes para emagrecer também foram investigados. Os fatores associados à insatisfação com a imagem corporal foram testados pela regressão de Poisson . A prevalência de insatisfação com a imagem corporal foi de 47,3% (IC 95% 40,7; 53,9). O estado nutricional segundo IMC e a prática de regimes para emagrecer foram as variáveis que se mostraram associadas à insatisfação corporal. Os resultados apontam indicadores de uma elevada prevalência de rejeição da própria forma física entre as universitárias, o que sinaliza a necessidade de ações nutricionais nas universidades, a fim de esclarecer e prevenir atitudes alimentares anormais entre os estudantes.



**Palavras-chave:** Imagem corporal; Auto-Imagem; Estado nutricional; Estudantes


## Introduction

The concept of body image as a psychological phenomenon was initially established in 1935, by Austrian psychiatrist Paul Ferdinand Schilder (1886-1940), who said that the mental images that individuals have of their own bodies explain the way their bodies are introduced to them. According to the psychiatrist, one's mental body image is established by senses, ideas and feelings that, most of the time, are unconscious. This representation is built and rebuilt throughout life[1,2].

Throughout times, body image standards underwent several changes and, in certain historical moments, sudden changes may be perceived in the human figure as the ideal type. During the historical development of the female figure, obesity was seen as a standard of beauty, valued and represented in the arts. The pursuit for a thin body with defined forms began in the 1960's[3].

Currently, beautiful is considered good and thinness is synonymous with beauty, which makes it valued by society while its opposite, obesity, is strongly rejected. Although the ideals of female beauty vary as a function of esthetical standards adopted at each time, studies show that women have tried to change their bodies to follow these standards[4].

The interest in body dissatisfaction has been growing, motivated, largely, by the acknowledgement of the importance of identifying alterations in body image as essential for the early diagnosis of Eating Disorders and Body Dysmorphic Disorders (BDD), because isolated symptoms of these disorders precede their full blown manifestation[5].

According to Conti, Frutuoso and Gambardella[6]:

> *Social factors, sociocultural influences, pressure from the media and the endless pursuit of an ideal body associated with accomplishments and happiness are among the causes of*

*changes in perception of body image, generating dissatisfaction especially in women.*

The intense biological changes and psychosocial instability of adolescence, combined with changes related to entering university with new social relations and adoption of new behaviors, may lead college adolescents to be vulnerable to health risks. Proximity with adult life may provide final opportunities to implement activities aimed at preventing health problems[7,8].

Due to the importance of the theme and to the need for studies that look at the association of factors with body image, we aimed to estimate the prevalence of dissatisfaction with body image and to test its association with age, income, schooling of parents, physical activity, body mass index (BMI), waist circumference (CC), percentage of body fat (%BF), energy consumption, and being on diets to lose weight in college girls entering a public university in Florianópolis, SC.

## Methods

It is a cross-sectional exploratory study, performed on a probabilistic sample comprised of 220 female students entering the 55 undergraduate university courses offered by the Federal University of Santa Catarina, in the first semester of 2006, in the municipality of Florianópolis, SC. Data were collected from June 05 to December 08, 2006.

The present study was part of a research project that aimed to identify the prevalence of abnormal eating behaviors[9,10]. In order to reach the objective, the prevalence of nervous anorexia symptoms was used as one of the parameters for calculating the minimum sample. The parameters used were: 95% confidence level, a sample error of 2.85 percentage points and a prevalence of symptoms of anorexia nervosa of 5.5%[11]. In this way, a minimum sample of 212 students was calculated. In order to compensate for any losses or refusals, 20% was added to the minimum sample figure, totaling 254 students. The selection of students was systematic, using a single list, in alphabetical order, including all students that entered university in the mentioned year.

In order to train the survey team, making it more experienced for field activities, to test instruments and to identify possible difficulties during the data collection stage, a pilot study was conducted, which also provided the definition of the minimum number of research team members necessary for the data collecting period, the sequence of activities developed, the time necessary to assess college students, and the adjustments necessary in the data collection questionnaire. Anthropometric measurements were taken by the main authors, duly trained by a Physical Education professional. Students of the Nutrition course who were not attending the first semester were assessed thus enabling the adjustment of anthropometric measurements.

Students were oriented on how to correctly fill out a self-administered questionnaire, in order to collect socioeconomic, behavioral variables and body image dissatisfaction.

In order to avoid a possible sample selection bias in the study, students who refused or did not come to collect data were not replaced.

### Independent variables

The following variables were investigated: age; mother´s and father´s schooling as complete number of years studied; monthly family income; practicing physical activity; food consumption, dieting to lose weight, and anthropometric measures.

### Socio-economic and behavioral variables

Students´ ages were calculated in years, by subtracting the date of data collection from the birth date. For association analysis, students were allocated into two age groups, according to Ministry of Health criteria[12]: adolescents - less or equal to 19 years of age and adults – equal to or over 20 years.

Mother and father schooling variables were collected as years studied and classified as: 1 to 8 years; and 9 or more complete years of schooling.

Net monthly family income, informed by college students was collected in absolute figures (in Reals) and used only for general characterization of the sample. In order to make data analysis easier, monthly family income was converted into minimum wages and classified as: 1 to 3 minimum wages; over 3 to 6 minimum wages; and over 6 minimum wages.

Dieting to lose weight was collected by the question "I diet to lose weight", present in the Food Habits Test[13], which enabled answers to the following frequencies: never; rarely; sometimes; frequently; very frequently; and always. Students were grouped as: does not diet, when options chosen were never, rarely or sometimes; and, diets, when options chosen were frequently, very frequently or always.

Physical activity was collected using the options "I do not practice", "I practice less than three times a week" and "I practice more than three times a week". For analysis purposes, they were classified as: does not exercise and exercises.

**Energy consumption**

The assessment of energy consumption (energy in kilocalories) used the 24-hour food recall questionnaire. Food consumption was processed in Nutwin software[14] which provided daily energy consumption.

The results of energy consumption were grouped into two categories, according to the Recommended Dietary Allowances[15] for 15- to 50-year-old women: energy consumption < 2,200 kcal; energy consumption ≥ 2,200kcal.

**Anthropometry**

Weight; height; waist circumference; and biceps, triceps, subscapular, and supra-iliac skin folds were measured. Measurements were collected following the recommendations of Lohman, Roche and Martorell[16]. Students were told to take off shoes, belts, heavy coats, jackets, and heavy sweaters for collecting data.

Weight, height and waist circumference were measured only once, while triceps, biceps, subscapular, and supra-iliac skin folds were measured three different times by one of the main investigators, duly trained by a physical education professional in order to avoid variability between measurements, using the average of the three measurements obtained.

Weight was measured on an electronic scale, with a 180 kg capacity and 100 g accuracy. Height was obtained using a portable anthropometer with a bilateral 35 to 213 cm scale and 0.1 resolution. Waist Circumference (WC) was measured using an inextensible measuring tape with 01 millimeter precision. Skin folds were measured using a scientific Lange 01 millimeter precision adipometer.

Weight and height of students were used to calculate the Body Mass Index (BMI), diagnosed based on the criteria recommended by the World Health Organization[17], that considers low weight BMI < 18.5 kg/m², eutrophic BMI between 18.5 kg/m² and < 25.0 kg/m², overweight BMI between 25.0 kg/m² and < 30.0 kg/m² and obesity BMI ≥ 30.0 kg/m².

Waist circumference (WC) was used because it is a sensitive and specific measurement for high abdominal adiposity, and is related to the metabolic complications of obesity in children and adolescents[18, 19, 20, 21]. Criteria recommended by the WHO[16], of absence of risk - WC < 80cm and risk of abdominal obesity - WC ≥ 80 cm, were followed.

Measurements of biceps, triceps, subscapular and supra-iliac skin folds were used to estimate the percentage of body fat (%BF), using the formula of Durnin and Womersley[22], and the classification followed the criteria proposed by Lohman[23] who considers: malnutrition-%BF ≤ 8; eutrophic-%BF > 8 and < 32; obesity-%BF ≥ 32.

**Dependent variable: Body image**

The presence of body image dissatisfaction was investigated using the Portuguese translated version by Cordás of the *Body Shape Questionnaire* (BSQ-34)[24]. College students who scored from 0 to 80 points were classified as satisfied with body image; 81 to 110 points, as slightly concerned; 111 to 140, as moderately concerned; and 141-204 points were classified as severely concerned. Afterwards, the variable was divided into satisfied, for those who scored 0 to 110 points; and dissatisfied for those above a 111 point score, for statistical analysis reasons.

The *Body Shape Questionnaire* (BSQ) is a self administered test whose first validation study was satisfactory for assessing concerns with body image, self-depreciation due to physical appearance and the feeling of being fat, by using the *Eating Disorder Inventory* (EDI) body dissatisfaction subscale with a total score of EAT-26 as the parameter[25].

Rosen et al.[26] found a significant reliability coefficient of 0.88 for all the 34 items of the psychometric characteristics of the BSQ-34. Similar results were observed in Brazil, after the validation of the instrument in Portuguese[5].

**Statistical analysis**

Statistical calculations were performed with the support of the Epi-info 3.5.1 version and 9.0 STATA version programs. In order to characterize the sample, variables of interest to the study were described based on central and dispersion tendency measurements (average and standard deviation). The variable body image dissatisfaction was the dependent variable or study outcome. Independent variables were: age, monthly family income, mother´s and father´s schooling, practicing physical activity, body mass index (BMI), waist circumference (WC), percentage of body fat (%BF), energy consumption, and dieting to lose weight. Pearson´s chi-square test was used to select independent variables associated with outcome. In order to test the association between body image dissatisfaction and independent variables, Poisson multiple regression was used to obtain the odds ratio (OR) with a 95% confidence interval. A level of significance of 5%, that is, $p < 0.05$ was considered. Prevalence rate and 95% confidence intervals (95% CI) were calculated using direct standardization.

The present study was approved by the Ethics Committee for Research on Human Beings of the Federal University of Santa Catarina (UFSC). Data were collected after the consent of course coordinators and adolescent and adult students selected. Confidentiality of personal information was guaranteed.

## Results

The study obtained a 86.6% response rate. The prevalence of body image dissatisfaction found for students entering university was 47.3% (95% CI: 40.7 – 53.9), considering the light (27.3%), moderate (15.5%) and severe (4.5%) categories.

The general characteristics of the sample are presented in Table 1. The mean age of university students was 20.2 years, with a standard-deviation of 2.75. There were 57.7% of adolescents (under 20 years) and 42.3% of adult students (20 years or more).

The mean maternal and paternal schooling in complete number of years studied was 12 years. Monthly family income had an average of R$ 4,469, although there were minimum and maximum discrepancies of R$ 450.00 and R$ 26,000, respectively. The average energy consumption of university students was 1,780.86 kcal, with a large variation between the minimum and maximum values (331 kcal and 5,325 kcal, respectively). The classification revealed that 79% of university students consumed less than 2,200 kcal a day.

Table 2 presents the distribution and association of independent variables with outcome (body image dissatisfaction). A high rate of discontentment with body image was observed both in eutrophic

university students, and in those above weight. Students with low weight (BMI < 18.5 kg/m²) had a significant higher prevalence of satisfaction with body image (91.4%), while obese students (BMI ≥ 30 kg/m²) had a significant higher prevalence of dissatisfaction with their body image (85.7%) ($p < 0.0001$).

Dieting to lose weight frequently or very frequently had a significantly higher prevalence in the group of students dissatisfied with body image (96.8%), when compared with the group of students satisfied with body image (3.2%) ($p = 0.004$).

Poisson multiple regression analysis showed that body image dissatisfaction was significantly higher among obese university students, those who went on a diet to lose weight, and those with a high percentage of body fat (%BF). However, the latter association lost statistical significance in the adjusted analysis (Table 3). Eutrophic university students had a 5.3 times higher prevalence of body image dissatisfaction; overweight university students had a 4.5 times higher prevalence; and the obese had a 6.7 times higher prevalence than those with low weight. Students who went on a diet to lose weight had a two-fold higher prevalence of dissatisfaction with their bodies.

## Discussion

The prevalence of some degree of dissatisfaction with body image observed in the present study (47.3%) was higher than the prevalence found by most domestic studies, in which the BSQ-34 was used to identify dissatisfaction with body image[27,28,29]. The prevalence found in those studies ranged between 18.8%[28] and 46.9%[27]. Only one study with a higher prevalence (50%) was found. The latter used the BSQ-34 instrument and was performed by Moreira et al.[30] in university students of Bahia. Other studies with higher prevalences of body dissatisfaction were found, although using other evaluation instruments, like the Figure Rating Scale, for example [31,32].

In the municipality of Florianópolis (SC), in a study performed with 10- and 19-year-old female students of municipal public schools, a prevalence of 18.8% with body image dissatisfaction was found[28].

The nutritional status according to the BMI and dieting to lose weight were

**Table 1** - Distribution of values of central tendency and dispersion measurements for the demographic, socioeconomic, anthropometric variables and dietary intake among first year female university students. Florianopolis, SC.

***Tabela 1*** *– Distribuição dos valores de medidas de tendência central e de dispersão para as variáveis demográficas, socioeconômicas, antropométricas e consumo alimentar das universitárias ingressantes. Florianópolis (SC).*

| Variables studied | N | Mean | Standard Deviation |
|---|---|---|---|
| Age (years) | 220 | 20.2 | 2.75 |
| Mother's schooling (years studied) | 219 | 12.3 | 4.07 |
| Father's schooling (years studied) | 217 | 12,6 | 4.52 |
| Monthly family income - R$ | 190 | 4,469.90 | 3,807.12 |
| Weight (kg) | 220 | 57.2 | 9.96 |
| Height (cm) | 220 | 163.7 | 6.52 |
| BMI (kg/m²) | 220 | 21.3 | 3.38 |
| WC (cm) | 220 | 69.0 | 7.24 |
| BF (%) | 220 | 28.0 | 4.10 |
| Energy consumption (kcal) | 219 | 1,780.86 | 747.96 |

**Table 2** - Prevalence of body image dissatisfaction and association with socioeconomic, behavioral, nutritional status, energy consumption and dieting to lose weight among first year female university students. Florianópolis, SC.
***Tabela 2*** *– Prevalência de insatisfação com a body image and associação com as variables socioeconômicas, comportamentais, classificação do estado nutricional, energy consumptionand prática de regimes para emagrecer em universitárias ingressantes. Florianópolis, SC.*

| Variables | Sample Distribution (%) | 95% CI | Body Dissatisfaction (%) | *p* |
|---|---|---|---|---|
| **Nutritional Status (BMI)** | | | | < 0.0001 |
| Low weight (BMI < 18 kg/m$^2$) | 15.9 | 11.3 – 21.4 | 8.6 | |
| Eutrophic (18.5 ≥ BMI < 25 kg/m$^2$) | 72.3 | 65.9 – 78.1 | 53.5 | |
| Overweight (25 ≥ BMI < 30 kg/m$^2$) | 8.6 | 5.3 – 13.2 | 52.6 | |
| Obesity (BMI ≥ 30 kg/m$^2$) | 3.2 | 1.3 – 6.4 | 85.7 | |
| **Dieting to lose weight** | | | | 0.0000 |
| Does not diet | 85.4 | 79.9 – 89.8 | 38.1 | |
| Diets | 14.6 | 10.2 – 20.1 | 96.8 | |
| **Age (years)** | | | | 0.6890 |
| < 20 years | 57.7 | 50.9 – 64.3 | 48.8 | |
| ≥ 20 years | 42.3 | 35.7 – 49.1 | 45.2 | |
| **Monthly family income (MW)** | | | | 0.8416 |
| 1 to 3 | 8.6 | 5.3 – 13.2 | 42.1 | |
| > 3 to 6 | 15.5 | 10.9 – 20.9 | 44.1 | |
| > 6 | 62.3 | 55.5 – 68.7 | 49.6 | |
| No information | 13.6 | 9.4 – 18.9 | 43.3 | |
| **Mother's schooling** | | | | 0.8684 |
| 1 to 8 years of schooling | 17.4 | 12.6 – 23.0 | 47.4 | |
| > 9 years of schooling | 82.6 | 77.0 – 87.4 | 47.3 | |
| **Father's schooling** | | | | 0.6420 |
| 1 to 8 years of schooling | 21.7 | 16.4 – 27.7 | 51.1 | |
| > 9 years of schooling | 78.3 | 72.3 – 83.6 | 45.9 | |
| **Physical activity** | | | | 0.3214 |
| Exercises | 44.1 | 37.4 – 50.9 | 55.1 | |
| Does not exercise | 55.9 | 49.1 – 62.6 | 43.9 | |
| **Waist Circumference** | | | | 0.2978 |
| WC < 80 cm | 93.6 | 89.6 – 96.5 | 46.1 | |
| WC ≥ 80 cm | 6.4 | 3.5 – 10.4 | 64.3 | |
| **Body fat (%)** | | | | 0.0705 |
| BF > 8% and BF < 32% | 83.2 | 77.6 – 87.9 | 44.3 | |
| BF ≥ 32% | 16.8 | 12.1 – 22.4 | 62.2 | |
| **Energy consumption** | | | | 0.7060 |
| < 2,200 kcal | 79.0 | 73.0 – 84.2 | 48.0 | |
| ≥ 2,200 kcal | 21.0 | 15.8 – 27.0 | 43.5 | |

the variables shown to be associated with body image, which may show the pursuit of female university students for body suitability, whose motivations may vary from trying to be healthy to adjusting to social beauty patterns. The results deserve attention, given that body image dissatisfaction and restrictive eating practices are part of the main risk factors for developing eating behavior disorders[33].

Similar results on the association between body image dissatisfaction and nutritional status according to the BMI were found in other studies[5,30,33,34].

**Table 3** – Poisson's regression analysis of body image dissatisfaction and independent variables. Florianópolis, SC.
***Tabela 3*** *– Análise de regressão de Poisson entre insatisfação corporal and as variables independentes. Florianópolis, SC.*

| Variables | Crude OR | 95%CI | *p* | Adjusted OR | 95%CI | *p* |
|---|---|---|---|---|---|---|
| **Nutritional status (BMI)** | | | 0.000 | | | 0.000 |
| Low weight (BMI < 18 kg/m$^2$) | 1 | | | | | |
| Euthrophic (18.5 ≥ BMI < 25 kg/m$^2$) | 6.24 | 2.1;18.6 | | 5.30 | 1.8;15.9 | |
| Overweight (25 ≥ BMI < 30 kg/m$^2$) | 6.14 | 1.9; 19.7 | | 4.52 | 1.4;14.3 | |
| Obesity (BMI ≥ 30 kg/m$^2$) | 10.00 | 3.2; 30.8 | | 6.73 | 2.1;21.2 | |
| **Dieting to lose weight** | | | 0.000 | | | 0.000 |
| Does not diet | 2.54 | 2.1; 3.1 | | 2.18 | 1.8;2.7 | |
| Diets | 1 | | | | | |
| **Age (years)** | | | 0.595 | | | |
| < 20 years | 1 | | | | | |
| ≥ 20 years | 0.93 | 0.7;1.2 | | | | |
| **Monthly family income (MW)** | | | 0.750 | | | |
| 1 to 3 | 1 | | | | | |
| > 3 to 6 | 1.04 | 0.5;2.0 | | | | |
| > 6 | 1.17 | 0.7;2.1 | | | | |
| **Mother's schooling** | | | 0.964 | | | |
| 1 to 8 years of schooling | 1 | | | | | |
| > 9 years of schooling | 0.99 | 0.7;1.4 | | | | |
| **Father's schooling** | | | 0.518 | | | |
| 1 to 8 years of schooling | 1 | | | | | |
| > 9 years of schooling | 0.89 | 0.6;1.2 | | | | |
| **Physical activity** | | | 0.976 | | | |
| Exercises | 1 | | | | | |
| Does not exercise | 1.00 | 0.7;1.5 | | | | |
| **Waist circumference** | | | 0.120 | | | |
| WC < 80 cm | 1 | | | | | |
| WC ≥ 80 cm | 1.39 | 0.9;2.1 | | | | |
| **Body fat (%)** | | | 0.027 | | | |
| BF > 8% and BF < 32% | 1 | | | | | |
| BF ≥ 32% | 1.40 | 1.0;1.9 | | | | |
| **Energy consumption** | | | 0.597 | | | |
| < 2,200 kcal | 1 | | | | | |
| ≥ 2,200 kcal | 0.91 | 0.6;1.3 | | | | |

Moreira et al.[30] assessed 163 first year medical students and found an association between body image dissatisfaction and nutritional status using the BMI. Female university students with a normal BMI had higher scores in the BQS-34 than those with a low BMI ($p < 0.015$).

Bosi et al.[33] also found an association between body image dissatisfaction and BMI in the assessment of 193, 17-32 year-old, female university students of the Nutrition course. There were 82.9% of eutrophic students with a moderate/severe BSQ result, and 11.4% had high weight (overweight/obesity) ($p = 0.026$).

Branco, Hilário and Cintra[34] found an association between body image dissatisfaction and BMI ($p < 0.001$). Body dissatisfaction was also found in eutrophic students, but especially in those overweight and obese. Moreover, the authors correlated body self-perception with nutritional status and detected female overestimation. Approximately 39% of eutrophic girls considered themselves overweight and 47% of those in the condition considered themselves obese. Among boys, there was also a distortion of reality, although inverse, as 26% of those overweight considered themselves eutrophic, and 46% of the obese thought themselves as overweight or eutrophic.

Coqueiro et al.[32] did not find an association between body image dissatisfaction and BMI, although, the assessment of 256 university students in Florianópolis observed that 79% of students were dissatisfied with body image, and that 49.2% wanted to reduce silhouette size, while 26.6% wanted to increase it.

Kakeshita and Almeida[35] assessed 106 both male and female university students in Ribeirão Preto, and results showed that eutrophic or overweight women (87%) overestimated their body size, while obese women or men, regardless of BMI (73%), underestimated their body size. Gender related differences were statistically significant.

These results stand out because not only students who were above weight, but most eutrophic students were dissatisfied with their bodies, pointing toward a trend of adolescents and young adults to want to reach or stay at a below recommended weight. And many times the path found to reach the target is going on restrictive diets.

Cicco et al.[36] assessed 160 women in São Paulo and identified that 80% of low weight adults and 50% of low weight adolescents considered their weight normal, and 40% of low weight adolescents considered themselves fat or very fat. Using methods to lose weight were shown to be common among women who considered themselves fat and the methods used most by adolescents were magazine diets, TV programs and formulas indicated by someone; among adults, 46.2% referred using some kind of purging method.

Restricting food normally begins in adolescence, as an answer to non-acceptance of body changes, mainly weight, and is associated with individual and family psychological factors, and with the strong sociocultural appeal of cult to thinness, which can predispose to an eating disorder[37].

According to Campagna and Souza,[38] the lack of social support to deal with the typical transformations of youth, and the extreme valuation of appearance promoted by the media lead young people to internalize beauty patterns, without questions, as something natural.

Airing or producing news, representations and expectations to individuals with ads, information and news, generate internal conflict, that on one hand stimulates the utilization of dietetic products and eating practices to lose weight and, on the other hand, stimulates the consumption of fast-food, eating practices that will eventually lead to obesity. The body then becomes a battlefield that involves different knowledge, practices and the social imaginary[39].

The present study has some methodological limitations that include the sample design that does not allow establishing a time relationship among variables; and the sample calculation based on the prevalence of nervous anorexia symptoms that may have underestimated values, given the prevalence of body image dissatisfaction is higher than eating disorders. Moreover, the same BMI nutritional evaluation criterion was used both for students under and over 20 years, to enable comparisons. Such comparison has been found in the literature, being used for students in their late teens, with a height standard defined or stable as a defined or adult standard[28, 29, 33]. Likewise, Weight Circumference was used for both groups, because despite the lack of a nationally validated standard for adolescents, studies have used this measurement to compare the estimated frequency of distribution of central adiposity to total

adiposity in children and adolescents[40].

The authors suggest that new studies be carried out, adopting new variables, because body image is an interaction among several biological, physiological, emotional and social factors. The utilization of studies with interventions in the change of body image perception would be very valuable.

The data presented underscore the importance of assessing satisfaction with body image in female university students, given that the distorted body image perception may lead to inadequate eating practices, and may lead to damage to students' health and school performance. They also highlight the need for nutritional actions at universities, in order to explain and prevent abnormal eating attitudes among students.

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