

# Eating disorders and body image dissatisfaction among college students

## *Transtornos alimentares e insatisfação com a imagem corporal em estudantes universitários*

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### Abstract

**Introduction:** Body image dissatisfaction and disordered eating behavior increase during college. **Objectives:** To identify symptoms of eating disorders and body image dissatisfaction in college students and to verify the relationship between eating disorders and body image dissatisfaction. **Methods:** A cross-sectional study was conducted with 408 college students (283 females), aged 18-23y, enrolled in the first semester of health science in public universities from Recife-PE. Symptoms of eating disorders and body image dissatisfaction were assessed by self-report questionnaires (EAT-26, BITE, BES, BSQ). **Results:** Body image dissatisfaction was independently associated with a 22-fold increased risk for anorexia nervosa, 18-fold for bulimia nervosa and 25-fold for binge eating. Female college students (32.5%; CI95%=27.2-38.1%) have higher symptoms of eating disorders than males (18.4%; CI95%=12.3-25.9%). Specifically for bulimia, both females (26.1%; CI95%=21.3-31.5%) and males (21.6%; CI95%=15.1-29.5%) are at greater risk of developing this illness. **Conclusion:** The current findings provide preliminary evidence about risks of college health sciences students with body image dissatisfaction to develop eating disorders.

**Key words:** Anorexia nervosa; Body image; Bulimia nervosa; Prevention and control; Students.

### Resumo

**Introdução:** Insatisfação com a imagem corporal e comportamentos alimentares inadequados aumentam durante a faculdade. **Objetivo:** Identificar sintomas de transtornos alimentares e insatisfação com a imagem corporal em universitários e verificar a correlação entre sintomas de transtornos alimentares e insatisfação com a imagem corporal. **Métodos:** Estudo transversal conduzido com 408 estudantes universitários (283 mulheres), idade 18 a 23 anos, matriculados no primeiro semestre de cursos de graduação da área da saúde. Sintomas de transtornos alimentares e insatisfação com a imagem corporal foram avaliados por questionários auto-aplicáveis (EAT-26, BITE, BES, BSQ). **Resultados:** A imagem corporal foi associada com o aumento do risco em 22 vezes para anorexia nervosa, 18 vezes para bulimia nervosa e 25 vezes para compulsão alimentar. Mulheres (32,5%; IC95%=27,2-38,1%) apresentaram maior prevalência de sintomas quando comparadas com homens (18,4%; CI95%=12,3-25,9%). Para bulimia, tanto mulheres (26,1%; CI95%=21,3-31,5%) quanto homens (21,6%; CI95%=15,1-29,5%) demonstraram elevado risco para o desenvolvimento da doença. **Conclusão:** Os resultados apresentam evidências preliminares sobre o risco de estudantes universitários da área da saúde com insatisfação da imagem corporal em desenvolver transtornos alimentares.

**Descritores:** Anorexia nervosa; Bulimia nervosa; Estudantes; Imagem corporal; Prevenção e controle.

## Introduction

Eating disorders (ED) have grown over recent decades in distinct countries, cultures, and socioeconomic groups. Therefore, it is recognized as one of the main public health problems today<sup>1,2</sup>. ED and related behaviors are more prevalent in young people, especially in adolescent girls and young women. For anorexia nervosa, bulimia nervosa and binge eating, the average prevalence rates are 0.6%, 1% and 3%, respectively<sup>3,4</sup>. Men can also develop these disorders, which are more frequent in homosexual individuals<sup>5</sup>, however, until now, studies involving this population are scarce.

Studies have indicated that body image dissatisfaction and disordered eating behavior increase during college<sup>6,7</sup>, and health sciences college students are more vulnerable to develop these psychiatric disorders<sup>8,9</sup>. Data from the National Association of Anorexia Nervosa and Associated Disorders show 86% students report the onset of eating disorders at age of 20 and 43% between 16 and 20 years old<sup>10</sup>.

Sociocultural pressure to be thin and the strong influence of the media (that divulge thinness as a beauty standard) figure as the main causes to ED etiology, so that individuals use inadequate resources aimed to reach the "ideal body", causing damages to psychological and physical health<sup>11,12</sup>. Thus, body image dissatisfaction has been reported as an important risk and perpetuating factor to develop eating disorders<sup>13</sup>. The negative relationship with the body contributes to low self-esteem and negative emotions, leading to unhealthy eating behaviors<sup>14</sup>.

Nowadays, many individuals with eating disorders do not seek treatment<sup>3</sup> since they tend to hide the disease, and therefore, the diagnosis become difficult.

Unhealthy eating behaviors and body image dissatisfaction are precursors of eating disorders for many young people<sup>15</sup>, and early identification of these behaviors and feelings could increase the quality of public policies to prevent the rise in eating disorders incidence. Hence, the

aim of this study was to identify symptoms of eating disorders and body image dissatisfaction in college students and to verify the relationship between eating disorders and body image dissatisfaction.

## Methods

### Participants

This cross-sectional study was conducted in 2012 with 408 health sciences college students (medicine, nutrition, physical education, physiotherapy, dentistry, nursing and occupational therapy) enrolled in the first semester of public universities in the urban zone of Recife, Northeast of Brazil. Subjects were 125 males and 283 females aged between 18 and 23. The exclusion criteria were to be enrolled in other health science classes or semesters (to avoid previous knowledge about the instruments) and pregnancy for women.

Sample size was calculated according to a 1.2% margin of error, 95% confidence interval, and 50% expected prevalence of ED symptoms<sup>16-19</sup>, following these criteria and based on a population of 984 students enrolled in health sciences classes in 2009, the sample size was estimated in 332 participants.

This epidemiological cross sectional study was performed in accordance with the principles of the declaration of Helsinki and was formally approved by the ethical committee of the Federal University of Pernambuco (CAAE 0143.0.172.000-10). Informed consent was obtained from all subjects.

### Instruments and measures

At the end of regular class time, subjects were invited to participate as volunteers after an explanation on the aim and procedures of the research. Those who agreed to participate were submitted to the assessment procedures composed of questionnaires and anthropometric measures.

Standing weight and height were measured on a Filizola scale to the nearest 0.1 kg and 0.5 cm, respectively, according to the proposed by Jackson and Pollock<sup>20</sup>. Body mass index (BMI) was calculated by dividing body weight (kg) by squared height (m<sup>2</sup>).

Self-report questionnaires were applied by a psychologist in a separate and quiet room before anthropometric procedures.

Eating Attitudes Test (EAT-26). Translated and validated for the Brazilian population by Nunes et al.<sup>21</sup>. EAT-26 is a self-report instrument employed in the evaluation and identification of abnormal eating patterns, thus, it is useful for accompanying the evolution of clinical cases. The instrument comprises of 26 items, with six reply options: always=3 points, very frequently=2 points, frequently=1 point, sometimes/rarely/never=0 point. Scores above 20 points were classified as likelihood of showing abnormal eating behavior and risk to develop anorexia nervosa<sup>22</sup>.

### **Bulimic Investigation Test Edinburgh (BITE)**

Translated and validated for the Brazilian population by Cordás and Hochgraf<sup>23</sup>. BITE is a 33-item self-report measure, designed to identify subjects with symptoms of bulimia or binge eating. The BITE consists of two subscales: the symptom scale and severity scale. Scores of the symptom scale can be subdivided into three groups: high scorers (score higher than 20); medium scorers (score between 10 and 19); and low scorers (score below 10). The severity scale measures the severity of bingeing and purging behavior, as defined by frequency<sup>24</sup>.

### **Binge Eating Scale (BES)**

Translated and validated for the Brazilian population by Freitas et al.<sup>25</sup>. BES is a 16-item self-reported questionnaire designed specifically to identify behavioral and cognitive characteristics of binge eating. Based on BES scores, disturbed eating behavior is classified into three

different levels of severity: non-bingers (scoring 17 or less), moderate bingers (scoring between 18 and 26), and severe binger eaters (scoring 27 or above)<sup>26</sup>.

### **Body Shape Questionnaire (BSQ)**

Translated into Portuguese<sup>27</sup> and validated for the Brazilian population by Manetta<sup>28</sup>. A 34-item measure of body dissatisfaction assesses the frequency of concern and distress about body size/shape. The subjects could be classified as having light (between 81 and 110 points), moderate (between 111 and 140), and severe (more than 140 points) body image dissatisfaction<sup>29</sup>.

### **Statistical analysis**

All data were analyzed by SPSS version 10 for Windows. Komolgorov–Smirnov test was performed to verify the normality of the data. Since the distribution was not normal, data was expressed by median, minimum and maximum values. Comparisons between genders were verified by Mann-Whitney U test. For categorical variables, data are presented as absolute and relative frequencies, and differences were analyzed by Chi-square test. Correlation analyses between symptoms of eating disorders with body image dissatisfaction were performed by Spearman correlation test. The relative risk of developing anorexia nervosa, bulimia nervosa and binge eating with body image dissatisfaction as independent risk factors was assessed by stepwise binary logistic regression. Wald's statistic was determined in order to assess the significance level of the final adjusted models. Significance was set at  $p < 0.05$ .

## **Results**

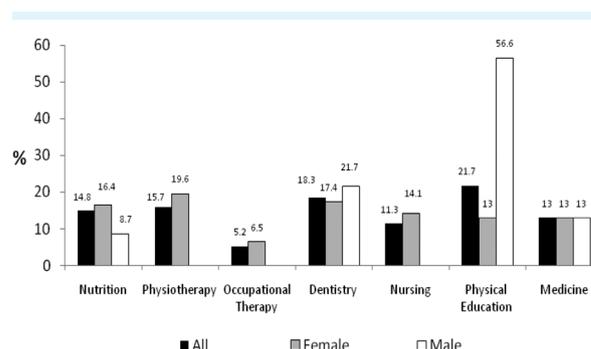
From the 473 college students invited to participate in the present study, 23 (5%) refused to be part of the sample and 42 (9%) did not meet the inclusion criteria. Thus, the final sample was

composed of 408 college students, 283 females (70%) and 125 males (30%).

It was observed that, men were older ( $p < 0.01$ ), heavier ( $p < 0.00$ ), taller ( $p < 0.00$ ) and had higher BMI ( $p < 0.00$ ) than women, conversely, females presented high scores for EAT ( $p < 0.00$ ), BITE ( $p = 0.02$ ), BES ( $p = 0.00$ ) e BSQ ( $p = 0.00$ ) (Table 1). Regarding bachelor degree programs, 12% of the students were enrolled in nutrition, 14.2% in physiotherapy, 3.4% in occupational therapy, 17.7% in dentistry, 10.1% in nursing, 23.3% in physical education and 19.4% in medicine.

Figure 1 demonstrates the frequency of at least one symptom of eating disorders (anorexia nervosa and/or bulimia nervosa and/or binge eating), according to gender and bachelor degree program. The frequency of at least one symptom of ED was higher in physical education (21.7%) and dentistry (18.3%) students than in students from other programs. Additionally, 32.5% (CI95%=27.2-38.1%) of women were found to have at least one symptom, while this frequency was 18.4% (CI95%=12.3-25.9%) for men ( $p = 0.04$ ). Analyzing each disorder independently, data showed no gender differences for symptoms of bulimia and binge eating, however, females showed higher frequency of anorexia nervosa (16.3%; CI95%=12.6-21.2%) when compared to males (4.8%; CI95%=1.9-9.7%) ( $p < 0.00$ ). The same pattern was observed for body image

dissatisfaction, 35.5% (CI95%=30-41.2%) and 12% (CI95%=7.1-18.6%), for women and men ( $p < 0.00$ ), respectively. The highest symptoms were verified for bulimia nervosa, specifically for this disorder women had a prevalence estimated in 26.1% (CI95%=21.3-31.5%), and for men 21.6% (CI95%=15.1-29.5%), without gender differences.



**Figure 1:** Frequency of at least one symptom of eating disorders, according to gender and bachelor degree program

Binary logistic regression revealed that body image dissatisfaction was independently associated with a 22-fold increase risk for anorexia nervosa, 18-fold for bulimia nervosa and 25-fold for binge eating, even when adjusted for age, gender and BMI (Table 2), thus, BSQ scores had a positive correlation with EAT ( $r = .646$ ,  $p = 0.00$ ), BITE ( $r = .732$ ,  $p = 0.00$ ) and BES ( $r = .728$ ,  $p = 0.00$ ).

**Table 1:** Descriptive analyses of anthropometric measures and scores of EAT, BITE, BES e BSQ in college students

Variables	All (n=408)		Woman (n=283)		Men (n=125)	
	Median	V(min-max)	Median	V(min-max)	Median	V(min-max)
Age (y)	19.28	18.00-23.86	19.17	18.00-23.64	19.48	18.04-23.86
Height (m)	1.65	1.46-1.93	1.62	1.46-1.83	1.76	1.57-1.93
Body Mass (Kg)	60.00	40.00-111.50	55.00	40.00-111.50	71.00	48.80-109.00
BMI (Kg/m <sup>2</sup> )	21.64	15.65-37.82	21.09	16.61-37.82	23.06	15.65-32.17
EAT	10.50	0.00-64.00	12.00	1.00-64.00	8.00	0.00-32.00
BITE	6.00	0.00-29.00	6.00	0.00-29.00	5.00	0.00-21.00
BES	5.00	0.00-39.00	5.00	0.00-39.00	4.00	0.00-19.00
BSQ	59.00	33.00-182.00	66.00	34.00-182.00	52.00	33.00-128.00

BMI = Body Mass Index; EAT= Eating Attitudes Test; BITE = Bulimic Investigatory Test Edinburgh; BES = Binge Eating Scale; BSQ = Body Shape Questionnaire; V=value.

**Table 2: Crude and adjusted Odds Ratio (OR) to eating disorders development with body image dissatisfaction as independent factor, in college health sciences students**

Variables	Crude OR (95% CI)	Wald	P value*	Adjusted OR (95% CI)**	Wald	P value*
Anorexia Nervosa	22.8 (10.3. 50.5)	59.3	0.00	28.9 (11.6. 72.1)	51.9	0.00
Bulimia Nervosa	18.8 (10.7. 33.3)	102.7	0.00	13.3 (6.8. 25.9)	57.7	0.00
Binge Eating	25.2 (5.7. 110.8)	18.2	0.00	14.5 (2.9. 71.7)	10.7	0.01

Legend: CI = confidence interval;

\* P values are related to the Wald statistical test

\*\*Adjusted for gender, age, and body mass index.

## Discussion

This is the first study analyze the relationship between symptoms of ED and body image dissatisfaction in male and female college students. The main findings were 1) body image dissatisfaction is a powerful risk factor to develop anorexia nervosa, bulimia nervosa and binge eating; and 2) female college students have higher symptoms of ED than men; and 3) As well as women, men showed higher risk of developing bulimia nervosa.

The estimated prevalence of ED symptoms in college students in this study is in agreement with previous findings. Alvarenga et al.<sup>18</sup>, analyzing a representative sample of Brazilian female college students (N=2483) reported that 26.1% of them had symptoms of ED. An interesting finding of this study is the high prevalence of symptoms of bulimia in men ( $\approx 22\%$ ), but unfortunately, there are no available data from other studies involving this population to compare with our results, or to justify this abnormal behavior in males. It is interesting to note that both males and females show great concern about body weight, the former demonstrating a desire to become stronger while the latter to become thin<sup>30-32</sup>.

Fiat and Salles<sup>8</sup> suggest that people who are worried about personal appearance (e.g. adequate body weight and size) have personal motivation to study this topic, being more predisposed to choose health science courses. Additionally, in female college students, body image dissatisfaction and disordered eating be-

havior increase during the freshman year of college<sup>33</sup>. However, Vohs et al.<sup>34</sup> verified that body dissatisfaction increases from the senior year of high school to the first year of college, suggesting that disordered eating symptoms and attitudes are established before college. In this sense, it is still unclear whether the environment has an influence, triggering these disorders or if these people would already be predisposed to developing eating disorders and, therefore, seek such professions<sup>9,35</sup>. In the present study, participants were first semester students, so we can suggest that these individuals were not influenced by the environment, but were attracted to these courses because they could have had a personal interest in health and disease issues, among them, eating disorders.

Mori et al.<sup>36</sup> showed that, in Japanese adolescent girls, body image dissatisfaction is associated with low self-esteem, negative affect, depression and changes in eating behaviors. Our results showed that body image dissatisfaction is a powerful risk factor for developing eating disorders, increasing in more than 18 folds the relative risk for ED (adjusted for age, gender and BMI). These data are still more relevant since adolescence and early adulthood are critical periods for one's identity formation related to physical self-evaluation and self-esteem, being these individuals more susceptible to pressures about standards models of physical appearance<sup>37</sup>. However, if the individual do not reach the "ideal body" this can lead to problems related to body image, and therefore, inappropriate eating behaviors.

A strong point of the present study is the fact that it was conducted with students enrolled in the first semester of undergraduate programs, avoiding any influence of the courses, once students from the second semester could have had access to information regarding self-report questionnaires and/or eating disorders that could have increased the bias in the answers.

The present study has some limitations that should be considered. ED symptoms were measured with self-report instruments, rather than being diagnosed by a psychologist/psychiatrist. Due the direct association between adiposity and ED, the absence of body composition measures is a significant limitation.

Due to the high prevalence of eating disorder and the serious consequences to the individual, including low recovery rate, high risk of relapse, development of associated co-morbidities, physical complications, and ultimately death<sup>38-40</sup>, the present study adds important data to actual knowledge about the elevated risks that health sciences college students with body image dissatisfaction have to develop eating disorders.

## Conclusion

In conclusion, such information is essential to enhance health professional skills to early detect individuals that are under great risk to develop ED, decreasing the incidence of eating disorders. We suggest that universities should pay attention to this problem, offering psychological support for students from the beginning of college; and offers prevention information of ED during orientation classes for freshman health science students, avoiding future complications in the next generation of health professionals.

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