

## Eating disorders and body image satisfaction among Brazilian undergraduate nutrition students and dietitians

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**SUMMARY.** The objective of this study was to evaluate the prevalence of risk behaviors related to eating disorders and body image satisfaction among Brazilian dietitians and undergraduate Nutrition students. The national representative sample was composed of 427 undergraduate students of Nutrition and 318 dietitians. Data were collected via an online questionnaire. Body image satisfaction was assessed by the Body Shape Questionnaire, and attitudes suggestive of an eating disorder (called positive EAT) were assessed by the Eating Attitudes Test. Adjusted Prevalence Ratios were performed by Poisson's regression. More than 50.0% of women were dissatisfied with their body image, but severe dissatisfaction was more prevalent among students (26.7% versus 16.0%). There was no difference in the prevalence of positive EAT test between both groups. Students with positive EAT had more chance of body dissatisfaction (PRadj 1.31; 95%CI 1.03-1.66). Dietitians with positive EAT had 35% more chance of being dissatisfied with their body image (PRadj 1.35; 95%IC 1.01-1.80). Undergraduate Nutrition students and dietitians are likely to develop attitudes suggestive of an eating disorder and being dissatisfied with their body image. The susceptibility of developing an eating disorder might have a relation with their professional field.

**Key words:** Eating disorders; body image; dietitians; undergraduate students; Nutrition.

**RESUMO. Eating disorders and body image satisfaction among Brazilians undergraduate students and dietitians.**

O objetivo deste estudo foi avaliar a prevalência de comportamentos de risco relacionados com distúrbios alimentares e satisfação com a imagem corporal entre mulheres nutricionistas e estudantes de Nutrição brasileiras. Adotou-se uma amostra representativa nacional, composta por 427 estudantes de Nutrição e 318 nutricionistas. Os dados foram coletados por meio de um questionário on-line. A satisfação com a imagem corporal foi avaliada pelo Body Shape Questionnaire, e as atitudes sugestivas de transtorno alimentar (denominadas EAT positivo) foram avaliadas por meio do Eating Attitudes Test. Razões de Prevalências Ajustadas foram calculadas usando Regressão de Poisson. Mais de 50,0% das mulheres estavam insatisfeitas com sua imagem corporal, mas a insatisfação severa foi mais prevalente entre as estudantes (26,7% versus 16,0%). Não houve diferença na prevalência de EAT positivo entre os grupos. Estudantes com EAT positivo tinham mais chances de ter insatisfação corporal (PRadj 1,31; 95%CI 1,03-1,66). Nutricionistas com EAT positivo tinham 35% mais chances de estarem insatisfeitas com sua imagem corporal (PRadj 1,35; 95%IC 1,01-1,80). Estudantes de Nutrição e nutricionistas tendem a desenvolver atitudes sugestivas de transtornos alimentares e estarem insatisfeitas com sua imagem corporal. Sua susceptibilidade a transtornos alimentares pode ter uma relação com sua área de atuação profissional.

**Palavras-chave:** Transtornos alimentares; imagem corporal; nutricionistas. Estudantes de graduação; Nutrição.

### INTRODUCTION

The pressure in Western society to be fit and healthy has been associated with frequent body dissatisfaction and the development of eating disorders, especially among women. Undergraduate Nutrition students and dietitians, as other health professionals, are susceptible to such demands, since they are expected to be role models who have healthy eating habits and thin bodies, which for many is translated into professional

success(1).

Studies have pointed to a higher prevalence of body dissatisfaction and attitudes related to eating disorders among Brazilian undergraduates studying Nutrition than others (2-5). However, it is not known if these signs are characteristic of registered dietitians. Thus, this study aimed to evaluate the prevalence of risk behaviors related to eating disorders and body image satisfaction among Brazilian undergraduate Nutrition students and dietitians, and to identify potential factors associated with these risks.

## MATERIALS AND METHODS

The study was approved by the Ethics Committee in Research of the University of Brasilia. It was conducted as a cross-sectional study with women, 427 undergraduate students of Nutrition and 318 dietitians between 18 and 59 years old. Only women were included in this study because 96.5% of dietitians in Brazil are women (6). Data were collected by a questionnaire online during October to December 2012, with the platform Survey Monkey with the technique of "snow sampling"(7) in which the questionnaire link was sent in the first instance via email to students and professors of universities with Nutrition courses, and was also posted on social networks. Participants were asked to invite their own colleagues, and so on, until the minimum sample size was reached. The final sample met the minimum proposed by Pasquali(8) of 10 individuals for each questionnaire item, a maximum error of 5% and a confidence interval of 95%.

The self-administered questionnaire asked about: age; self-reported weight and height to estimate body mass index (BMI in kg/m<sup>2</sup>) to categorize them as underweight (BMI < 18.5 kg/m<sup>2</sup>), normal weight (BMI 18.5-24.9 kg/m<sup>2</sup>), overweight (BMI 25-29.9 kg/m<sup>2</sup>) or obese (BMI > 29.9 kg/m<sup>2</sup>) (9). Physical activity indicator was assessed by the questions: "Do you exercise at least once a week?"; "How many days a week do you usually do physical exercise or sport?"; and "How long do you exercise for on the days that you do physical activity?", as adopted in previous representative Brazilian study (10). Sufficient physical activity was considered as at least 150 minutes of activity a week as recommended by the World Health Organization (11). Sedentarism was considered when participants reported no physical activity during the week.

We also used the Body Shape Questionnaire (BSQ), validated for the Brazilian population(12). The BSQ consists of 34 self-scored questions using a 6-point Likert scale, with answers varying from 1 – never to 6 – always(13). It evaluates individual satisfaction with his/her own body. The BSQ score is the sum of its items, classified as normal (<70 points), mild (70-90 points), moderate dissatisfaction (90-110) or severe dissatisfaction (>110 points)(4).

For the assessment of attitudes suggestive of an eating disorder we used the Eating Attitudes Test (EAT-26), validated for Brazilian population (14). The question-

naire consists of 26 questions that aim to assess different behaviors as pathological refusal to eat high-calorie foods, preoccupation with physical appearance and episodes of binge eating. The subject has six options for answering each item varying from 0 (seldom, almost never, and never) to 3 (always). The EAT-26 score is the sum of its items. A total score greater than or equal to 21 is considered positive for eating disorder (EAT+).

Data analysis was performed using SPSS 20.0 and Stata 11.0. Descriptive and bivariate analyses (Chi-square test, significant at  $p < 0.05$ ) were conducted to assess the variable distribution between the two groups (students and dietitians). To investigate the factors associated with attitudes suggestive of an eating disorder and body image satisfaction in both groups, we calculate the prevalence ratio, using presence of attitudes suggestive of eating disorder and presence of body image satisfaction as outcomes. For BSQ we included all degrees of dissatisfaction as a unique category. The adjusted prevalence ratios (PR) were performed by Poisson regression (CI 95%), and in order adjust the raw associations we included in the model the variables that showed  $p > 0.20$  in the bivariate analyses. The adjusted PR was also obtained only for the variables with  $p > 0.20$  in the bivariate analyses. The model for presence of attitudes suggestive of eating disorder was adjusted for students by body image satisfaction and physical activity, and among dietitians the model was adjusted only by body image satisfaction. The model for presence of body image satisfaction was adjusted for students by the presence of attitudes suggestive of eating disorder, nutritional status, and physical activity, and among dietitians it was adjusted by the presence of attitudes suggestive of eating disorder and nutritional status.

## RESULTS

Our sample includes 743 subjects, being 427 students and 318 dietitians. Students in our sample had a mean age of 22.5 years old (SD = 4.6) and Dietitians had a mean age of 31.2 years old (SD = 8.0). A total of 15.7% of the students were overweight or obese against 22.7% of the dietitians ( $p = 0.005$ ) (Table 1). Based on self-reported measurements, students were more sedentary (49.9%) than dietitians (38.4%) ( $p = 0.015$ ). More than 50.0% were dissatisfied with their body image in

both groups; however, severe dissatisfaction was observed in 26.7% of the students, while this percentage among dietitians was 16.0% ( $p=0.002$ ). We did not observe a significant difference between the prevalence of attitudes suggestive of an eating disorder between the two groups ( $p=0.368$ ).

Sedentary students showed less chance of being EAT+ (PRadj 0.90; 95%CI 0.73-1.10) compared with the more active ones (150 or more minutes/week). Less active students also showed less chance of body image dissatisfaction (PRadj 0.95; 95% IC 0.75-1.19 for low activity - between 1 and 149 minutes/week; and PRadj 0.99; 95% IC 0.83-1.20 for sedentary students) (Table 2).

Overweight or obese dietitians had more chance of being dissatisfied with their body image (PRadj 1.21; 95% IC 0.96-1.53 for overweight and PRadj 2.19; 95% IC 0.84-1.68 for obese dietitians). Similar results were obtained for students, but with less intensity (PRadj 1.12; 95% IC 0.88-1.43 for overweight and PRadj 1.17; 95% IC 0.84-1.64 for obese students)(Table 2).

Students who were dissatisfied with their body image had slightly more chance to present EAT+

(PRadj 1.17; 95% CI 0.97-1.40) than students without body dissatisfaction (Table 2). In dietitians, similar results were found (PRadj 1.15; 95% CI 0.93-1.42).

Among students, women with EAT+ had 31% more chance of being dissatisfied with their body image (PRadj 1.31; 95% IC 1.03-1.66) than those without attitudes suggestive of an eating disorder. The same association was showed for dietitians (PRadj 1.35; 95%CI 1.01-1.80). This association was the only one that remained significant after adjusted analysis (Table 2).

## DISCUSSION

Undergraduate Nutrition students and dietitians have a high prevalence of body image dissatisfaction and EAT+(5, 15, 16). Therefore, these results show that both problems are not determined by age or graduation. The social pressure imposed on Nutrition students or professionals to have a slim body shape might force them to be more severe with their own body evaluation. Additionally, the fact that this group is studying and working daily with healthy food aspects might contribute to a greater susceptibility of developing attitudes

TABLE 1. Demographic characteristics, nutritional status, assessment of physical activity, body image satisfaction, and presence of attitudes suggestive of an eating disorder among students and dietitians in Brazil, 2012.

Variables	Total	Undergraduate students	Dietitians	p-value
	n (%)	n (%)	n (%)	
Total	745 (100.0)	427 (57.3)	318 (42.7)	
<b>Nutritional status</b>				
Underweight (BMI < 18.5 kg/m <sup>2</sup> )	63 (8.5)	47 (11.0)	16 (5.0)	0.005
Normal (BMI 18.5 – 24.9 kg/m <sup>2</sup> )	541(72.8)	313 (73.3)	230 (72.3)	
Overweight (BMI 25-29.9 kg/m <sup>2</sup> )	97(13.1)	45 (10.5)	52 (16.4)	
Obesity (BMI > 29.9 kg/m <sup>2</sup> )	42 (5.7)	22 (5.2)	20 (6.3)	
<b>Physical activity (minutes/week)</b>				
150 or more (Satisfactory)	252 (33.8)	133 (31.1)	119 (37.4)	0.003
Between 1 and 149	158 (21.2)	81 (19.0)	77 (24.2)	
0 (Sedentary)	335 (45.0)	213 (49.9)	122 (38.4)	
<b>Body Image Satisfaction<sup>a</sup></b>				
Normality (< 70 points)	347 (46.6)	195 (45.7)	152 (47.8)	0.002
Slight dissatisfaction (70-90 points)	157 (21.1)	83 (19.4)	74 (23.3)	
Moderate dissatisfaction (90-110 points)	76 (10.2)	35 (8.2)	41 (12.9)	
Severe dissatisfaction (> 110 points)	165 (22.1)	114 (26.7)	51 (16.0)	
<b>Attitudes suggestive of an eating disorder<sup>b</sup></b>				
Negative (< 21 points)	677 (90.9)	384 (89.8)	293 (92.1)	0.368
Positive (> 21 points)	68 (9.10)	43 (10.1)	25 (7.9)	

<sup>a</sup> Results obtained by BSQ – Body Shape Questionnaire <sup>b</sup> Results obtained by EAT: Eating Attitude Test.

TABLE 2. Factors associated with attitudes suggestive of eating disorder and body image satisfaction among students and dietitians, Brazil, 2012.

	Attitudes suggestive of eating disorders a				Body Image Dissatisfaction b			
	Students		Dietitians		Students		Dietitians	
	PR (95% CI)	PRadj (95%CI) c	PR (95%CI)	PRadj (95%CI) c	PR (95%CI)	PRadj (95%CI) c	PR (95%CI)	PRadj (95%CI) c
<b>Nutritional status</b>								
Underweight	0.62 (0.20-1.95)		0.80 (0.11-5.61)		0.47 (0.29-0.78)		0.68 (0.32-1.42)	
Normal	1		1		1		1	
Overweight	1.30 (0.57-2.93)		0.98 (0.35-2.78)		1.36 (1.11-1.67)		1.67 (1.36-2.05)	
Obesity	0.44 (0.06-3.08)		1.28 (0.32-5.12)		1.43 (1.12-1.83)		1.67 (1.29-2.19)	
<b>Physical Activity in minutes</b>								
150 or more	1	1	1	1	1	1	1	1
Between 1 and 149	0.55 (0.26-1.16)	0.94 (0.73-1.22)	0.90 (0.37-2.19)		0.86 (0.67-1.12)	0.95 (0.75-1.19)	0.86 (0.67-1.12)	
Sedentary	0.29 (0.15-0.57)	0.90 (0.73-1.10)	0.49 (0.19-1.26)		0.90 (0.75-1.09)	0.99 (0.83-1.20)	0.90 (0.75-1.09)	
<b>Attitudes suggestive of an eating disorder a</b>								
Negative					1	1	1	1
Positive								
Body Image Satisfaction b					1.97 (1.77-2.21)	1.31 (1.03-1.66)	2.08 (1.85-2.34)	1.35 (1.01-1.80)
Normality	1	1	1	1				
Dissatisfaction	35.3 (4.9-254.16)	1.17 (0.97-1.40)	&	1.15 (0.93-1.42)				

PR: raw prevalence ratio. PRadj: adjusted prevalence ratio for Poisson's multiple regression. a Results obtained by EAT: Eating Attitude Test. Among students, the presence of attitudes suggestive of eating disorder was adjusted by body image satisfaction and physical activity. Among dietitians, it was adjusted only by body image satisfaction. b Results obtained by BSQ – Body Shape Questionnaire (for Poisson's multiple regression, results were grouped in normality and dissatisfaction). Among students, the body image satisfaction was adjusted by the presence of attitudes suggestive of eating disorder, nutritional status, and physical activity. Among dietitians, it was adjusted by the presence of attitudes suggestive of eating disorder and nutritional status. & Undefined Value: all individuals with body satisfaction have EAT negative. c The adjusted PR was calculated only for the variables with  $p > 0.20$  in the bivariate analyses.

suggestive of an eating disorder(1, 17).

Prevalence of dissatisfaction with body image among students and dietitians was higher than in other studies(2, 4, 5). We found a prevalence of EAT+ lower than data from other Brazilian studies with Nutrition undergraduate students(2-5). It seems that there are wide differences in studies conducted in other countries such as Portugal (6%)(15) and Greece (30.2%)(17), that might be explained by differences in methods, sample sizes, or representativeness. No previous study investigated the prevalence of body dissatisfaction or attitudes suggestive of an eating disorder among dietitians.

As expected, there was an association between body image dissatisfaction with EAT+(5, 18, 19), but not with nutritional status after model adjustment. Previous studies showed an association between nutritional status and these outcomes, in which overweight or obese women were more dissatisfied with her body image(18, 20-22). This situation could contribute to the adoption of some attitudes suggestive of an eating disorder as an attempt to lose weight.

Studies reveal that body dissatisfaction can be associated with less motivation for engaging in physical activities(21, 23, 24). In our study, sedentary students and dietitians had more chance to be dissatisfied with their bodies, but these associations did not remain after adjusted analysis. We did not find an association between physical activity and positive EAT, but previous studies as the one conducted by Mouchacca et al.(25) found an association between psychological stress and less leisure-time physical activity among women, who also had more frequent fast food consumption.

This study has several limitations. Results regarding attitudes suggestive of an eating disorder serve only as an indication of the prevalence of women at risk, since EAT is not a diagnostic instrument for eating disorders; however, we chose a widely used validated version for the Brazilian population. The snowball technique sampling might bias the sample in favor of higher prevalence rates, since it is expected that individuals who are body image concerned or EAT+ are more likely to have friends who share these concerns and so people with common characteristics will be informed about the study. However, we found huge differences in prevalences in the literature using the same instruments. Since this was a cross sectional study, it is not possible to indicate a causal pathway between choosing the pro-

fession and showing attitudes suggestive of an eating disorder or being dissatisfied with their body image. Future studies should adopt representative samples and longitudinal design.

## CONCLUSION

Nutrition students and dietitians are susceptible to develop attitudes suggestive of an eating disorder and being dissatisfied with their body image. It is not the early stage of life that seems to contribute to greater susceptibility towards developing an eating disorder; there might be a direct relation with the professional area chosen. Body dissatisfaction, identified in the majority of the participants, might play an important role in the development of eating disorders among Nutrition students and dietitians. Therefore, the academic background in Nutrition should address this debate in order to reduce the risk inherent to the profession.

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