

Relationship between binge-eating episodes and self-perception of body weight in a nonclinical sample of five Brazilian cities

Relação entre episódios de compulsão alimentar e autopercepção do peso corporal em uma amostra não-clínica em cinco cidades brasileiras

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Abstract

Objective: To investigate the relationship between binge-eating episodes and a perception that body weight is above the ideal in a sample of customers interviewed at shopping malls in five Brazilian cities. **Methods:** In 1999, data were collected over the course of one week (Monday-Friday only) at the largest shopping malls in the cities of Porto Alegre, Salvador, Fortaleza, Goiânia and Curitiba (two malls per city). A total of 2855 participants (917 men and 1938 women) were interviewed. Weight and height measurements were standardized. Binge-eating episodes were identified using a questionnaire including the following questions based on DSM-IV diagnostic criteria: "Have you ever eaten, in a period of two hours or less, an amount of food greater than that most people would eat?" and "If the answer was "yes", did you, during these episodes, feel unable to stop eating or to control how much you were eating?". **Results:** The prevalence of binge-eating episodes was higher among overweight subjects (15.6%) compared with normal-weight subjects (9.9%) ($p = 0.0001$) and, among subjects who perceived their body weight to be above the ideal (men: 13.9%; women: 15.1%) compared with those who perceived their body weight to be ideal or below the ideal (men: 8%; women: 7%) ($p < 0.0001$). In the multivariate analysis adjusted for body mass index and demographic variables, binge-eating episodes were correlated with the perception that body weight is above the ideal only among women (OR: 1.8; 95% CI: 1.2-2.5). **Conclusions:** These findings suggest that the perception that body weight is above the ideal, regardless of overweight status, is associated with binge-eating episodes in women.

Keywords: Body weight; Obesity/psychology; Obesity/epidemiology; Self concept

Resumo

Objetivo: Investigar a relação entre percepção de peso corporal acima do ideal e episódios de compulsão alimentar em uma amostra de usuários de shopping centers de cinco cidades brasileiras. **Métodos:** Centrais de atendimento foram montadas nos dois maiores shopping centers de cinco cidades: Porto Alegre, Salvador, Fortaleza, Goiânia e Curitiba, durante cinco dias do ano de 1999, de segunda a sexta-feira, com a participação de 2.855 indivíduos (917 homens e 1.938 mulheres). O peso corporal e a altura foram medidos de forma padronizada. Os episódios de compulsão alimentar foram avaliados através de um questionário que incluía as seguintes questões: "Você já comeu em duas horas ou menos, uma quantidade de comida que a maioria das pessoas consideraria grande demais?" e "Em caso afirmativo, nas ocasiões em que comeu deste modo, geralmente sentia que não conseguia parar de comer ou controlar o quanto comia?", formuladas a partir dos critérios diagnósticos do DSM-IV. **Resultados:** A prevalência de episódios de compulsão alimentar foi maior entre indivíduos com sobrepeso (15,6%) comparados aos de peso normal (9,9%) ($p = 0,0001$) e, entre indivíduos com percepção do peso corporal acima do ideal (14% em homens, 15% em mulheres) comparados àqueles que percebiam o peso corporal como ideal ou abaixo do ideal (8% em homens, 7% em mulheres) ($p < 0,0001$). Em análise multivariada, ajustada pelo Índice de Massa Corporal e variáveis demográficas, os episódios de compulsão alimentar mostraram-se associados à percepção de peso corporal acima do ideal somente nas mulheres (RC: 1,8 IC 95%: 1,2-2,5). **Conclusões:** Este estudo sugere que a percepção do peso corporal como acima do ideal, independente do sobrepeso, está associada com a ocorrência de episódios de compulsão alimentar em mulheres.

Descritores: Peso corporal; Obesidade/epidemiologia; Obesidade/psicologia; Auto-imagem

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Introduction

The term "binge eating" refers to a pathological form of overeating, characterized by the consumption of great amounts of food over short periods of time and followed by a feeling of loss of control over what one is eating. Binge eating was first described in obese individuals. Since then, it has attracted an increasing amount of interest among clinicians who treat patients with eating disorders and obesity, as well as among researchers. The American Psychiatric Association has now included the binge-eating episode as a principal component of the definition of bulimia nervosa (BN) and binge-eating disorder (BED).¹ The diagnosis of BED accounted for persons who engaged in recurrent binge-eating episodes but not followed by compensatory behaviors such as those observed in BN.

Spitzer et al. found that 4.6% of the general population had BED,² which is frequently associated with obesity, an increase rates of general psychopathology (depression, anxiety, etc.) and eating related psychopathologies (body image disturbances). Although the prevalence of BED diagnosis in the general population is low, isolated episodes of binge-eating are more frequently observed (9-19%).³⁻⁵ Likewise, binge-eating episodes are also more prevalent in clinical samples of obese patients. Approximately 45.9% of the individuals who sought treatment for obesity presented such episodes.³ Some authors suggest that frequent binge-eating episodes, even without meeting the criteria for a primary eating disorder, would have a negative impact on the health of an individual.⁶

In Brazil, there have been no studies evaluating binge-eating episodes in population-based samples. The existing information comes from studies of clinical samples such as that conducted by Borges et al., who investigated the eating behavior of women participating in a weight-loss program in São Paulo.⁷ The authors found the prevalence of binge-eating episodes to be 22.6%. To date, there has been only one population-based study investigating abnormal eating behavior in Brazilian women. That study investigated women between 12 and 29 years of age living in the city of Porto Alegre but did not specifically focus on binge-eating behavior. The Eating Attitudes Test-26 (EAT-26), which evaluates behaviors seen in anorexia nervosa, and the Bulimic Investigatory Test, Edinburgh (BITE), which evaluates bulimic behaviors, were used as screening instruments. The authors reported that 11.3% of the women displayed eating behaviors that were considered abnormal (EAT-26 scores < 21 and scores < 10 on the BITE symptoms scale).⁸ Although that study did not provide information about binge eating, an interesting finding was that women who felt they were overweight were at a greater risk of presenting an abnormal eating behavior than those who felt they were thin or normal.⁸

Body image refers to the mental representation that individuals have of themselves or of their physical appearance, as well as to positive or negative feelings regarding the size or shape of their body.⁹⁻¹⁰ Altered body image has been described in patients with eating disorders and obesity,¹¹⁻¹³ as well as in overweight individuals.¹⁴⁻¹⁶ A growing amount of evidence suggests that dissatisfaction with body image is a risk factor for the triggering and maintenance of eating disorders and obesity.¹⁷⁻¹⁸ In a study using a convenience sample, Gromel et al. suggested that binge eating is associated with several characteristics related to body dissatisfaction.¹⁸ Stice et al. conducted a longitudinal study of female adolescents and demonstrated that body dissatisfaction was predictive of the onset of binge eating in a high percentage of the study sample.¹⁹

The assessment of body image is quite complex. Such evaluations can be carried out using structured questionnaires that determine attitudes regarding weight, diet, physical appearance and associated feelings of dissatisfaction with body shape.¹⁹ An indirect and simplified measure of body dissatisfaction used by some authors is the self-perception of excess body weight.²⁰⁻²¹ In Brazil, little is currently known about binge eating and its relationship to perception of excessive body weight, especially in nonclinical samples. Consumers of malls, despite the fact that they are not representative of the Brazilian population, constituted a group of individuals that can be differentiated from a clinical sample. Therefore, the present study aims at evaluating the correlation between binge-eating episodes and the perception that body weight is above the ideal in a large and heterogeneous population of consumers of malls.

Methods

The sample included individuals who voluntarily participated in the 1999 *Semana de Prevenção ao Excesso de Peso* (Excess Weight Prevention Week), sponsored by the Knoll Bask Pharma laboratory. For one week, from Monday through Friday, a treatment center was set up in two main shopping malls in each of five metropolitan cities in Brazil (Porto Alegre, Salvador, Fortaleza, Goiânia and Curitiba).

All individuals aged 18 or over, except for pregnant women, were invited to participate in the study. Weight and height were measured according to standardized procedures, with individuals wearing light clothes and no shoes. Height was measured using a platform with a measure fixed on a bar whose precision was 0.1 cm, and weight was measured using a digital scale. The anthropometrists were previously trained. Participants completed a standardized questionnaire that included questions regarding sociodemographic characteristics as well as questions regarding nutritional state, leisure physical activity, binge-eating episodes and body weight perception.

Binge eating was assessed based on the definition proposed in the DSM-IV (APA, 1994), using the following questions: "Have you ever eaten, in a period of two hours or less, an amount of food greater than that most people would eat?" and "If so, on those occasions when you ate in this way, did you feel unable to stop eating or to control how much you were eating? If so, how many times have you experienced such episodes within the last three months?" The criteria used to define a binge-eating episode were affirmative answers to the two questions related to binge-eating episodes and having had at least one episode in the three months prior to the survey. Body weight perception was assessed with the question "How do you classify your current weight: above the ideal, ideal, or below the ideal?", which was included in the questionnaire. In the multivariate analysis, this variable was categorized in a dichotomous way such as: 1) above the ideal; and 2) ideal and below the ideal.

Approximately 200 interviews per day were carried out in each city. Of the approximately 1000 average number of interviews per week, 60% from each city were randomly included in order to obtain the final sample. In all five cities, all but one of the individuals were weighed, and 36 (2.0%) declined to answer the questions about binge-eating episodes. The final study sample comprised 2855 participants.

Nutritional state was assessed by calculating the body mass index (BMI), defined as body weight in kilograms divided by the height in square meters (kg/m²). The cutoff points used

Table 1 – Mean, standard deviation (SD) of risk factors by gender in a sample of consumers of shopping malls in five Brazilian cities

	Male (n = 919)			Female (n = 1939)		
	Mean	SD	(95% CI)	Mean	SD	(95% CI)
Age in years: mean (SD)	43.8	(15.7)		41.4	(14.4)	
White race: % (95% CI)	62.2	(59.0)	65.4)	66.6	(64.5)	68.7)
Schooling: % (95% CI)						
< 8 years	8.1	(6.3)	9.9)	11.9	(10.4)	13.4)
8-11 years	17.2	(14.7)	19.7)	17.2	(15.5)	18.9)
12 years	33.8	(30.7)	36.9)	40.1	(37.9)	42.3)
> 12 years	40.9	(37.7)	44.1)	30.9	(28.8)	33.0)
Binge-eating episodes*: % (95% CI)	12.8	(10.6)	15.0)	13.0	(11.4)	14.5)
Perception of body weight above the ideal: % (95% CI)	30.0	(27.3)	32.7)	40.7	(38.6)	42.8)
Overweight (BMI 25-29.99 kg/m ²): % (95% CI)	46.6	(43.3)	49.9)	36.6	(34.3)	38.7)
Obesity (BMI ≥ 30 kg/m ²): % (95% CI)	26.9	(24.0)	29.8)	22.9	(21.0)	24.8)
Leisure physical activity (within the last year): % (95% CI)	54.9	(51.6)	58.2)	49.9	(47.6)	52.2)

* At least one binge eating episode within the three months preceding the study

for classification or the nutritional status were those proposed by the World Health Organization,²² classifying a BMI between 18.5 and 24.99 kg/m² as normal, a BMI between 25.0 and 29.99 kg/m² as overweight and a BMI ≥ 30 kg/m² as obese.

Binge-eating frequency was assessed according to the following variables: the perception that body weight is above the ideal, nutritional status, and leisure physical activity. Statistical significance was assessed using the Mantel-Haenszel test. Standardization by age was carried out through stratification in five-year age brackets using the direct method, and the standard population was the combined population of all of the cities. The differences among the cities were tested using logistic regression, including all of the cities as indicator variables, and the city of Curitiba was used as a reference. The correlation between binge-eating episodes and the perception that body weight is above the ideal was assessed using multivariate logistic regression models. The BMI was used as a continuous variable only for the adjustment. Data were analyzed using the SAS system program, version 6.12,²³ and the SUDAAN program, version 7.11.²⁴

Results

In the sample of 2856 individuals aged 18 or over there were greater numbers of women in all of the cities, and 32%

of the participants (919) were male. The mean age was 43.8 years for males, with a standard deviation (SD) of 15.7 and 41.4 years (SD = 14.4) for females. The prevalence of binge-eating episodes was 12.8% among men and 13% among women. Of the total sample, 30% of the men and 40.7% of the women perceived their body weight to be above the ideal. The frequency of obesity (BMI ≥ 30 kg/m²) was 26.9% among men and 22.9% among women (Table 1).

After adjusting for BMI and age, we found that the men of the five cities surveyed presented statistically significant differences in the prevalence of binge-eating episodes compared with those found for the cities of Goiânia and Porto Alegre. The extreme values prior to the adjustment were 19.1% for Porto Alegre and 9.7% for Curitiba. After the adjustment, the p values of the comparison of the cities, using the prevalence in Curitiba as reference, were 0.43 for Fortaleza, < 0.0001 for Porto Alegre, 0.35 for Salvador and 0.03 for Goiânia. In the same analysis carried out for the women, all of the cities except Goiânia (p = 0.01) presented statistically significant differences in the prevalence of binge-eating episodes. These episodes were more frequent among the men (p = 0.003) and the younger women (p < 0.0001). The demographic variables "schooling" and "skin color" presented no statistically significant correlation with binge-eating episodes (Table 2).

Table 2 – Prevalence of binge eating episodes by demographic characteristics and leisure physical activity adjusted for age*, in a sample of consumers of shopping malls in five Brazilian cities

	Male			Female		
	n	%	SE	n	%	SE
Age (years)						
18-40	476	17.2	1.7	842	17.5	1.3
41-60	309	8.4	1.6	714	11.6	1.2
> 60	113	6.2	2.3	347	5.2	1.2
p value**		0.003			< 0.0001	
Race						
White	555	11.9	1.4	1,244	14.1	1.0
Nonwhite	329	12.4	1.7	627	11.8	1.3
p value**		0.57			0.15	
Schooling						
< 8 years	72	19.2	5.2	227	16.0	3.1
8-11 years	154	13.6	2.7	330	17.5	2.2
12 years	301	13.4	1.9	759	12.4	1.2
> 12 years	369	9.5	1.5	583	2.2	1.3
p value**		0.12			0.19	
Leisure physical activity						
Yes	491	11.7	1.4	944	11.4	1.2
No	405	12.5	1.6	958	14.7	1.1
p value**		0.20			0.04	

*Adjusted by the direct method for five-year age brackets

**chi-square Mantel and Haenszel test

SE: standard error

The prevalence of binge-eating episodes was higher among individuals who perceived their body weight to be above the ideal than among those who perceived their body weight to be ideal or below the ideal ($p < 0.0001$). The prevalence of binge-eating episodes was also higher among overweight and obese individuals than among normal-weight individuals ($p < 0.0001$) – Figure 1.

In a multivariate analysis adjusted for leisure physical activity and demographic variables, binge-eating episodes were found to correlate with the perception that body weight is above the ideal in both genders. With the inclusion of BMI in the multivariate model, binge-eating was correlated with the perception that body weight is above the ideal only in the women (Table 3).

Discussion

To the best of our knowledge, the present study is the first to present a large nonclinical sample including a significant number

of men, a gender not frequently included in studies of binge-eating behavior. Our data revealed that the presence of binge-eating episodes was significantly correlated with the perception that body weight is above the ideal in women, regardless of the BMI.

In regard to the prevalence of binge-eating episodes observed in our sample (12.8% among men and 13% among women), similar results were obtained in two previous studies.^{4-5,25} Kinzl et al. studied binge eating behavior in a random sample of 2000 Australian individuals interviewed by telephone regarding their eating habits.⁵⁻⁶ The authors found that the prevalence of binge eating was 12.2% among women and 9.4% among men. Unfortunately, the time interval used to count the frequency of binge-eating episodes was not mentioned by the authors. In another study, conducted by French et al., it was observed that 14% of the female participants in a weight-loss program (9.1% of women with normal weight and 20.8% of the overweight ones) had at least one binge-eating episode within the preceding six months.²⁵

A third study, involving Australian housewives, found a prevalence that was much lower than that found in our sample. The authors assessed the occurrence of binge-eating episodes within the three months prior to the interview and observed that only 3.2% of the participants reported at least one binge-eating episode per week within the preceding three months.²⁶ The lower prevalence found by those authors may have been due to the use of a more restrictive criterion of frequency of binge-eating episodes.

The correlation between BED and increasing levels of severity of obesity has been observed in the literature.¹⁵ However, although our study demonstrated that being overweight correlated significantly with an increase in the frequency of binge-eating episodes, we failed to demonstrate an increase in the prevalence of these episodes in more severe ranges of excess weight. The obese patients in our sample did not have a significant increase in the prevalence of binge-eating episodes when compared to the overweight patients. Since there seems to be a positive correlation between the severity of binge eating and the severity of excess weight,²⁷ our study may not have found a correlation between binge eating and severity of excess weight because it involved individuals who had had at least one binge-eating episode within the last three months rather than the diagnosis of BED, the former being a much less severe eating behavior.

In our study, binge-eating episodes correlated with the self-perception that body weight is above the ideal. The binge-eating episodes were two times more prevalent among women and men who perceived their body weight to be above the ideal, as well as among overweight individuals of both genders. The modeling used, adjusted for BMI as a continuous variable, indicated that the perception that body weight is above the ideal, regardless of overweight status, was correlated with binge-eating episodes only in women.

Self-perception of excess body weight has been used by several authors as a way to express body dissatisfaction.²⁰⁻²¹ Theoretically, body dissatisfaction would promote an eating disorder in two ways: by inducing the use of restrictive diets or triggering the negative affects related to low self-esteem.²⁸ First, body dissatisfaction would lead to dietary restriction due to the general belief that this is an efficient way to control body weight. As a result, the use of restrictive diets could trigger binge-eating episodes as a way to counteract the effects of caloric deprivation. Second, body dissatisfaction would trigger negative effects since physical appearance is a central dimension in the personal evaluation, especially among women.²⁸⁻²⁹ Therefore, depressive symptoms, a form of negative affect, would be a risk factor for

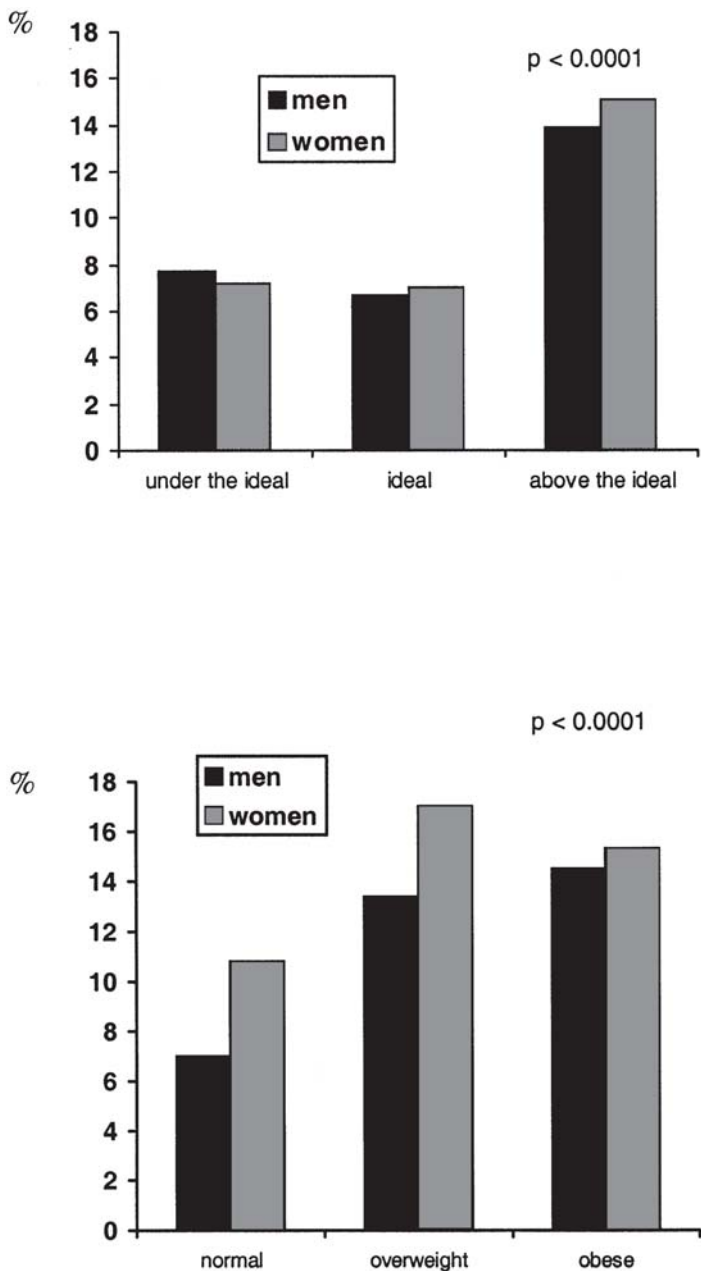


Figure 1 – Prevalence of binge eating episodes (%) according to perception of body weight and BMI in a sample of consumers of shopping mall in five Brazilian cities

binge eating since some individuals would eat excessively in order to compensate for these feelings.³⁰

Women who perceive themselves as overweight tend to feel that they are deviating from the Western ideal of thinness. Therefore, the women in our study who considered themselves to be above the ideal weight could present the risk behaviors for binge eating discussed above. In studies of American women, French et al.²⁵ and Gromel et al.¹⁸ also found that preoccupation with body weight and altered body image correlated significantly with the occurrence of binge-eating episodes, even after having adjusted for BMI. These data, similarly to ours, suggest that self-evaluation of body weight as above the ideal may be a significant risk factor for binge-eating episodes, at least in a subgroup of women.

Our study present possible limitations: 1) its cross-sectional design; 2) the fact that our study did not include weekends as data collection days, resulting in a sample that was comprised only of customers who go to shopping malls on weekdays and therefore had higher mean educational level and income; 3) the use of very simple questions to assess the frequency of binge-eating episodes; 4) the fact that the questionnaire used for data collection has not been validated.

Conclusion

From the results of present study, we can draw the important conclusion that the perception that body weight is above the ideal is more common among women than among men, and that, among women, it is correlated with binge-eating episodes. These findings increase the knowledge in the area and suggest that the women who perceive their body weight to be above the ideal should be more properly evaluated. Body image alterations, presence of negative affect and other risk behaviors for binge eating and obesity could be present. An appropriate approach to these aspects may further the evaluation and monitoring of this subgroup of individuals. However, considering the cross-sectional design of our study, the present findings should be further investigated through longitudinal studies.

Table 3 – Odds ratio and confidence intervals for binge-eating episodes in male and female consumers of shopping malls by self-perception of body weight

Perception	Weight modelling	Male (n = 876)		Female (n = 1860)	
		OR	95% CI	OR	95% CI
1*	≤ ideal	1		1	
	> ideal	1.6	[1.1; 2.5]	2.0	[1.1; 2.5]
2**	≤ ideal	1		1	
	> ideal	1.4	[0.9; 2.2]	1.8	[1.2; 2.5]

*Adjusted for city, race, schooling, age and leisure physical activity

**Adjusted for city, race, schooling, age, leisure physical activity and BMI

OR: odds ratio; 95% CI: 95% confidence intervals

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