A review of Latin American studies on binge eating disorder

Uma revisão dos estudos latino-americanos sobre o transtorno da compulsão alimentar periódica

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Abstract

Objective: *To review the state of the art of the scientific literature on binge eating disorder in Latin America.* ***Method:*** *A literature search of studies conducted in Latin American countries using the term "binge eating" was performed in the following electronic databases: PubMed, LILACS, SciELO, and PsycINFO. Selected articles described studies developed with Latin American samples that met partial or complete DSM-IV diagnostic criteria for binge eating disorder.* ***Results:*** *8,123 articles were screened and 30 studies met the inclusion criteria (18 cross-sectional studies, 5 clinical trials, 4 case reports, 2 validity studies, and 1 cohort study). Most of the studies were conducted in Brazil (27), one in Argentina, one in Colombia, and one in Venezuela. The prevalence of binge eating disorder among obese people attending weight loss programs ranged between 16% and 51.6%. The comparison between obese people with and without binge eating disorder showed a tendency of higher weight, longer history of weight fluctuation, more concern about shape and weight, and association with psychiatric comorbidity in those with binge eating disorder.* ***Conclusion:*** *Binge eating disorder is a detectable phenomenon in Latin America with clinical features similar to those found in the international literature. This review provides support for the consideration of binge eating disorder as a distinct eating disorder in the International Classification of Diseases – 11th edition.*

Descriptors: *Binge eating disorder; International Classification of Diseases; Diagnostic and Statistical Manual of Mental Disorders; Diagnosis; Classification*

Resumo

Objetivo: Revisar o estado de arte da literatura latino-americana sobre o transtorno da compulsão alimentar periódica. **Método:** Foi feita uma busca sobre estudos realizados em países latino-americanos usando-se o termo "*binge eating*", nas seguintes bases eletrônicas: PubMed, LILACS, SciELO e PsycINFO. O critério de inclusão foi selecionar estudos desenvolvidos com amostras latino-americanas que preencheram critérios parciais ou completos do transtorno da compulsão alimentar periódica pelo Manual Diagnóstico e Estatístico de Transtornos Mentais-4ª Edição. **Resultados:** Foram rastreados 8.123 artigos e 30 preencheram o critério de inclusão (18 estudos de corte transversal, cinco ensaios clínicos, quatro relatos de casos, dois estudos de validade, um estudo de coorte). A maioria dos estudos foi conduzida no Brasil (27), um na Argentina, um na Colômbia e um na Venezuela. A prevalência de transtorno da compulsão alimentar periódica em obesos em programas para perda de peso esteve entre 16% e 51,6%. A comparação entre obesos com e sem transtorno da compulsão alimentar periódica mostrou uma maior tendência para peso mais alto, oscilação ponderal, preocupação com peso e forma corporal e associação com comorbidades psiquiátricas naqueles com transtorno da compulsão alimentar periódica. **Conclusão:** O transtorno da compulsão alimentar periódica mostra-se um fenômeno verificável na América Latina com características clínicas semelhantes às encontradas na literatura internacional. Esta revisão fornece subsídios para que o transtorno da compulsão alimentar periódica seja considerado uma categoria distinta de transtorno alimentar na Classificação Internacional de Doenças-11ª Edição.

Descritores: Transtorno da compulsão alimentar; Classificação Internacional de Doenças; Manual Diagnóstico e Estatístico de Transtornos Mentais; Diagnóstico; Classificação

Introduction

Two diagnostic classification systems guide the field of mental disorders. The first of them, the International Classification of Diseases, currently in its 10th edition (CID-10), is officially used in all countries.[1] The other system is the Diagnostic and Statistical Manual of Mental Disorders, in its 4th revised edition (DSM-IV-TR),[2] organized by the American Psychiatric Association, which

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is used in the United States and widely cited in international research.[2] These two classification systems are currently under review for the publication of their new editions. The systems have two main diagnostic categories of eating disorders (ED) in common: anorexia nervosa (AN) and bulimia nervosa (BN), among other categories of ED that are not diagnostic entities in themselves but include partial features of AN and BN or consist of unspecific syndromes (see CID-10/WHO,1992[1] and DSM-IV-TR/APA, 2000[2]).

The occurrence of binge eating episodes (BEE) in obese patients was first observed and described by Stunkard, in 1959.[3] In 1977, Wermuth et al. proposed diagnostic criteria for the binge eating syndrome, describing the presence of overeating followed or not by induced vomiting.[4] The DSM-III[5] adopted these criteria in 1980 and named the disorder "bulimia". The DSM-III-R[6] changed the name of this diagnostic category to "bulimia nervosa" in 1987, as well as changed the diagnostic criteria by requiring the presence of inappropriate compensatory methods of weight control (purging methods like induced vomiting, abuse of laxatives, enemas and/or diuretics, or engaging in excessive physical activity), thus restricting the coverage of this category and making it potentially more homogeneous.

In the beginning of the 1990s, Spitzer et al. described individuals in treatment for weight loss presenting BEE not associated with compensatory mechanisms and with different features from BN.[7] In that multicenter study, the same clinical picture occurred in 30.1% of a sample of 1,984 subjects. Based on these findings, the authors proposed the inclusion of diagnostic criteria for binge eating disorder (BED) in appendix B of the DSM-IV as a new diagnostic category requiring further investigation. The criteria included: (1) presence of recurrent BEE characterized by overeating associated with feelings of loss of control; (2) presence of at least three indicators of loss of control (eating faster than usual, eating until feeling full, overeating without being hungry, eating alone due to embarrassment of overeating, and feeling embarrassed, sad or guilty after the episode); (3) feelings of distress related to BEE; (4) frequency and average duration of BEE of two days per week for six months; and (5) no association with the regular use of inappropriate compensatory mechanisms to control weight (e.g., purging) or with AN and BN. Currently, patients presenting symptoms similar to those of BED are classified in the category of "eating disorder not otherwise specified" (EDNOS) according to the DSM-IV-TR,[2] which encompasses many conditions including partial presentations of AN and BN, but also presentations characterized mainly by recurrent BEE without the regular use of compensatory mechanisms.

Since the introduction of criteria for research on BED in the DSM-IV (1994),[8] this diagnostic category has been widely investigated. Literature reviews suggest that BED has similarities with other ED that allow the distinction between affected and healthy individuals, but also highlight its differences in relation to other ED, strengthening its specificity as a distinct condition.[9,10] Although a number of questions on the diagnosis of BED are still under discussion, there is enough support to consider its inclusion as a new diagnostic category in the DSM-V.[9-12]

In the ICD-10, however, no reference is made to any diagnostic category close to the one currently included in the DSM-IV. Patients with overeating associated to loss of control that do not resort to compensatory methods may be classified in three of the current ED categories in the ICD-10: "ED, unspecified", "atypical BN", and "overeating associated with other psychological disturbances". These are wide categories encompassing several conditions, especially the first one {an useful residual category to classify any condition that cannot be assigned to another category). In the ICD-10, the category "atypical BN" covers partial presentations of BN (those in which one or more BN criteria are not fulfilled), such that BEE (as those in BED) could be present but not necessarily in association with compensatory mechanisms. There is also mention to regular or excessive weight in atypical BN, an aspect that is also observed in BED. The third category above is intended to diagnose conditions in which overeating may lead to obesity and which result from distressing events (mourning, accidents, surgeries, etc.). Although no specific mention is made to BEE observed in BED in this category, these episodes involve overeating and potential weight gain, as well as emotionally distressing events. The distribution of individuals with similar behavioral manifestations in different categories of the ICD may hamper the study of their clinical features, etiological factors, and therapeutic strategies. It is important, therefore, that the revision of the ICD take into consideration studies on BED so as to enable the analysis of the validity and clinical utility of this disorder as a new diagnostic category, or, at least, to favor the classification of BED patients in a single category of ED.

Despite the significant contribution of the vast literature produced mainly in North America and Europe concerning this novel potential diagnostic category, little has been discussed about BED (or conditions alike) in Latin American populations, since the major reviews in this field tend to include few publications in Spanish and Portuguese.[9,10] This circumstance has raised the interest of Latin American clinicians and researchers in investigating the extent to which BED can be considered a global syndrome, as well as how far it has been investigated and identified as distinct from

other ED, obesity, and normality. This review examines studies conducted in Latin American countries involving ED patients fulfilling the criteria for BED according to the DSM-IV or with presentations resembling BED (subthreshold samples) in order to broaden the cross-cultural knowledge on BED and contribute for the discussion regarding its inclusion as a specific diagnostic category in classification systems.

Method

In this comprehensive literature review, we included Latin American articles published in indexed journals that used the DSM-IV diagnostic criteria for the investigation of BED and its subthreshold form. Databases searched included PubMed (1950 to December 7, 2010), LILACS (1995 to December 7, 2010), SciELO (1998 to December 7, 2010), and PsycINFO (1965-2010). The search term used was "binge-eating" and studies in English, Spanish, and Portuguese were selected. Book chapters, theses, conference annals, and theoretical articles were not included in the review. Systematic reviews by Latin American authors were used to complement the screening for Latin American bibliographic references (cited in these publications); however, the reference lists of selected articles were not checked. The following criteria were defined for the inclusion of research articles: (1) studies conducted in Latin American countries (involving clinical and general population samples comprising mainly Latin American subjects); and (2) studies including at least one sample subgroup that fulfilled partial or complete DSM-IV[2] criteria for the diagnosis of BED with no constraints related to gender, age, education, or body mass index (BMI). We excluded, however, studies whose findings referred to patients with BEE alone and where there were no other aspects associated with these episodes that were suggestive of BED and allowed its differentiation from others bulimic type diseases or other EDNOS, and also studies involving ED patients in which results for BED groups were not presented separately.

Two reviewers (M.A.P. and G.H.K.) independently examined the titles and abstracts of the references found and selected articles to be fully reviewed for subsequent decision concerning their adequacy to the purposes of this review. When there were doubts related to the fulfillment of the inclusion criteria, the second reviewer was asked to examine the articles in question and a third reviewer (A.M.C.) was consulted in the case of disagreement, until consensus was reached. The three reviewers are clinicians and researchers in the field of ED. The selected articles were classified according to the type of information provided in the following classes: (1) epidemiology; (2) clinical characteristics and diagnostic investigation; (3) comorbidity; and (4) intervention and prognosis.

Results

The searches yielded 8,122 articles published in English, Spanish or Portuguese. One more article was selected from the reference lists of 16 systematic reviews identified in the searches, adding up to a total of 8,123 articles. The article selection flowchart is described in Figure 1.

Together, the selected studies included a total of 7,514 patients, of which 1,025 were diagnosed with BED. The articles included in this review were published between 1995 and 2010 and their characteristics are outlined in Tables 1-4. Most studies were performed in Brazil (n = 27), and Argentina,[13] Venezuela,[14] and Colombia[15] contributed with only one article each. The articles were classified in the categories "epidemiology" (11 studies summarized in Table 1), "clinical characteristics" (9 articles summarized in Table 2), "comorbidity" (11 articles detailed in Table 3), and "intervention and prognosis" (10 studies in Table 4). Information from a same study may be described in more than one table. Excluded articles and reasons for exclusion are presented in Table 5 (available at www.scielo.br/rbp).

The number of participants in each study ranged from 1 (case report) to 1,971. Clinical samples were enrolled in most investigations (n = 28) and only two studies included specific samples (students). The age range of participants (not only with BED) was 11-65 years (n = 26 articles), and age means ranged between 14.1 and 52.9 years (n = 13). In respect to gender, 16 studies included men and women and 10 enrolled women only, excluding the case reports studies (n = 4). The mean BMI of participants was in the obesity range, between 30.1 and 52.2kg/m^2 (n = 10). Fourteen studies included only obese subjects.

The prevalence of BED was informed in 11 studies. Nine of these investigations, which included clinical samples of obese patients[13,15-22] seeking treatment, described prevalence rates between 16% and 51.6%. Only 2 investigations assessed the frequency of BED in student samples.[14,23] There were no studies concerning the prevalence of BED in the general population (Table 1).

Seven studies examined the clinical features of participants with BED symptoms. Women with BED had higher weight, more weight fluctuations, and were more concerned about body weight and shape as compared to women without BED.[17,24] The study by Fontenelle and colleagues, the only one to use both classificatory systems (DSM-IV and ICD-10), described a subgroup of patients with BED symptoms (DSM-IV), also classified as atypical BN according to the ICD-10, in which the severity of BE assessed with the Binge Eating Scale (BES) was higher compared to obese participants without BED (30.05 vs. 18.32; p < 0.000) (Table 2).[25]

BED patients had more comorbid psychiatric symptoms or diagnoses, especially mood[17,22,25,26] and anxiety[26,27] disorders. Women

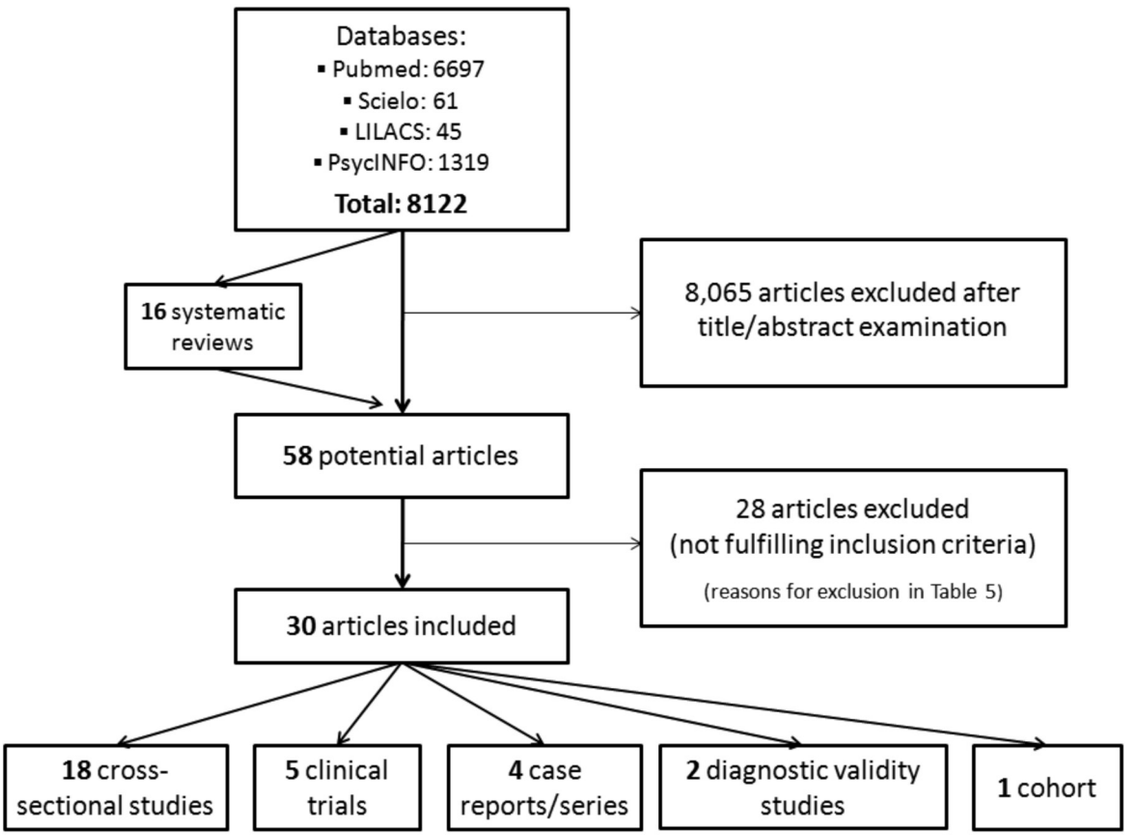

Figure 1 – Literature review flowchart.

with BED had higher scores than women without BED in several psychopathological domains assessed with the Symptom Checklist – 90 (SCL-90)[22,25] and lower scores compared to a group with symptoms indicative of partial BN.[25] BED was associated with type 2 diabetes mellitus in two studies[28,29] (Table 3).

Although eight studies dealt with pharmacological or psychotherapeutic interventions for BED,[27,30-36] only two performed randomized controlled clinical trials[34,36] (Table 4).

Discussion

The findings of this review contribute to the current discussion in the literature regarding the status of BED as a distinct pathology in relation to other ED. The prevalence of BED in obese Latin American populations in treatment for weight loss ranged between 16% and 51.6%, and between 0.66% and 1.8% among youth. Evidence[17,24] shows that BED patients have higher weight, greater weight oscillation, and higher concerns about body weight and shape compared to those without BED. An important association of BED with other psychiatric conditions was found, especially mood[17,22,25,26] and anxiety[26,27] disorders. Obese individuals with BED were responsive to pharmacological (sibutramine and topiramate) and psychological (cognitive behavioral therapy - CBT) interventions.[34-36] In general, our results were similar to those already reported in the literature, suggesting that BED is a global phenomenon also observed in Latin America.

BED has drawn increasing attention from clinicians and researchers, what is demonstrated by the fact that 26 out of the 30 Latin American publications selected for this review consisted of empirical studies. The frequency with which the syndrome is manifested justifies the research on BED. Epidemiological studies report BED prevalence rates around 0.7% and 3% in the general population, which makes BED more frequent than classical AN and BN.[37,38] Although no Latin American epidemiological studies in the general population were found, our results point to the prevalence of BED in clinical populations of obese individuals seeking treatment as ranging between 16% and 51.6%, equivalent to the frequencies between 7.5% and 30% reported by international services[39,40] and 11% and 49% among obese patients awaiting bariatric surgery.[41,42] Some of our findings refer to the manifestation of BED in adolescence: in a non-clinical population of youth (12-18 years)

Table 1 – Epidemiology

Reference	Study design	Sample	Diagnostic criteria / Classification system (Instrument)	Results	Conclusion
Appolinário et al.[16] Brazil (1995)	Cross-sectional	n = 22 both genders mean age = 37 BMI* > 20kg/m² outpatients	BED*/DSM-IV* (Clinical diagnosis)	Prevalence of BED 27.2% (n = 6)	Presence of BED in population treated for weight loss at endocrinology office.
Borges et al.[17] Brazil (2002)	Cross-sectional	n = 217 women mean age = 36 mean BMI = 30.3kg/m² outpatients	BED/DSM-IV (QEWP-R)*	Prevalence of BED 16% (n = 35)	Presence of BED in a population of women with overweight in treatment for weight loss.
Matos et al.[18] Brazil (2002)	Cross-sectional	n = 50 both genders mean age = 38.5 mean BMI = 52.2kg/m² outpatients	BED/DSM-IV (QEWP-R)	Prevalence of BED 36% (n =18): - 35% women (n = 14/40) - 40% men (n = 4/40)	Presence of BED in morbid obese people in treatment for weight loss.
Quintero-Párraga et al.[14] Venezuela (2003)	Cross-sectional	n = 1363 both genders age range = 12-18 students	ED*-BED/ DSM-IV (author's questionnaire based on DSM-IV)	Prevalence of BED 0.66% (n = 9): - 0.5% girls (n = 7/9) - 0.1% boys (n = 2/9) Prevalence of partial BED 1.9% (n = 27): - 0.8% girls (n = 11/27) - 1.1% boys (n = 16/27)	Presence of BED in a population of young students.
Borges et al.[19] Brazil (2005)	Diagnostic validity study	n = 89 women mean age = 35 BMI > 25kg/m² outpatients	BED/DSM-IV (QEWP-R and SCID-I/P*)	Prevalence of BED 47.2% (n = 42) by SCID-I/P	Presence of BED in a population of women with overweight assessed with the SCID-I/P in treatment for weight loss and ED.
Rodriguez & Guerrero[15] Colombia (2005)	Cross-sectional	n = 362 women mean age = 21.8 outpatients	BED/DSM-IV (SCID-CV*)	Prevalence of BED 25.1% (n = 91)	Presence of BED in a population of women in treatment for ED.
Bay et al.[13] Argentina (2005)	Cross-sectional	n = 1971 both genders mean age = 14.1 outpatients	ED-BED/ DSM-IV (EDE.12*)	Prevalence of BED 6.6% (n = 130)	Presence of BED in a young population at a pediatric service.
Freitas et al.[20] Brazil (2006)	Diagnostic validity study	n = 178 women mean age = 36.4 mean BMI = 36.2kg/m² outpatients	BED/DSM-IV (SCID-I/P e BES*)	Prevalence of BED 51.6% (n = 92) by SCID-I/P	Presence of BED in a population of obese women assessed with the SCID-I/P in treatment for weight loss and ED.
Moreira & Batista[21] Brazil (2007)	Cross-sectional	n = 156 women mean age = 39.1 mean BMI = 39.7kg/m² outpatients	BED/DSM-IV (SCID-I/P)	Prevalence of BED 29.4% (n = 46)	Presence of BED in a population of obese women in treatment for weight loss.
Fandiño et al.[22] Brazil (2010)	Cross-sectional	n = 203 adult women BMI ≥ 30kg/m² outpatients	BED/DSM-IV (SCID-I/P)	Prevalence of BED 26.6% (n = 54)	Presence of BED in a population of obese women in treatment for weight loss.
Pivetta et al.[23] Brazil (2010)	Cross-sectional	n =1.209 both genders age range = 15-17 students	BED/DSM-IV (QEWP-R)	Prevalence of BED 1.8% (n = 22)	Presence of BED in a population of young students.

** BMI = Body Mass Index; BED = Binge Eating Disorder; DSM-IV = Diagnostic and Statistical Manual of Mental Disorders; QEWP-R = Questionnaire on Eating and Weight Patterns – Revised; ED = Eating Disorder; SCID-I/P = Structured Clinical Interview for DSM-IV Axis I Disorders, Research Version, Patient Edition; SCID-CV = Structured Clinical Interview for DSM-IV – Clinician Version; EDE.12 = Eating Disorder Examination – version 12; BES = Binge Eating Scale.*

Table 2 – Clinical characteristics and diagnostic investigations

Reference	Study design	Sample	Diagnostic criteria / Classification system (Instrument)	Results	Conclusion
Borges et al.[17] Brazil (2002)	Cross-sectional	n = 217 women mean age = 36 mean BMI* =30.3kg/m² outpatients Groups compared: BED (n = 35), partial BED (n = 49), BN* (n = 10), without ED* (n = 123)	BED*/DSM-IV* (QEWP-R) *	BMI: BED > no ED Weight oscillation: BED > without ED Concern about weight and shape: BED > partial BED and without ED Age: BED > BN	Women with BED and overweight have higher weight, more weight oscillation, and greater concern about weight and shape in a population treated for weight loss, and are older than a sample with bulimia.
Matos et al.[18] Brazil (2002)	Cross-sectional	n = 50 both genders mean age = 38,5 mean BMI = 52.2kg/m² outpatients Group assessed: BED (n = 18)	BED/DSM-IV (QEWP-R)	58.8% (n = 10/18) Moderate and severe concern about body image (BSQ*)	More than half of a sample of morbid obese patients with BED in treatment for weight loss has concerns about weight and shape.
Fontenelle et al.[67] Brazil (2002)	Cross-sectional	n = 63 both genders age range = 18-65 mean BMI = 36.7kg/m² outpatients Groups compared: BED (n = 19), without BED (n = 21), OCD* (n = 23)	BED and OCD / DSM-IV (SCID-I/P*)	Obsessive-compulsive traits: OCD > BED = without BED	In a clinical sample, obese OCD patients have higher scores of obsessive-compulsive traits than those with and without BED. The latter have similar results for the same measure, with no statistical difference.
Quintero-Párraga et al.[14] Venezuela (2003)	Cross-sectional	n = 1363 both genders age range = 12-18 students Group assessed: partial BED (n = 27)	ED-BED/ DSM-IV (author's questionnaire based on the DSM-IV)	- 100% with binge eating twice/wk, 3 months - 48.1% (n = 13) eat fast - 55.5% (n = 15) eat until full - 55.5% (n = 15) eat without being hungry - 37% (n = 10) eat alone - 33.3% (n = 9) feel disgusted - 44% (n = 12) feel distress associated with binge eating	In this sample of youth with partial BED, there is a relevant frequency (> 33%) of criteria B, C, and D in the DSM-IV for BED diagnosis.
Borges et al.[19] Brazil (2005)	Diagnostic validity study	n = 89 women mean age = 35 IMC > 25kg/m² outpatients	BED/DSM-IV (QEWP-R and SCID-I/P)	QEWP-R. Psychometric properties for this sample: - sensitivity = 0.55 - specificity = 0.80 - positive predictive value = 0.79 - negative predictive value = 0.56	QEWP-R has 79.3% of chance of confirming BED diagnosis.
Fontenelle et al.[25] Brazil (2005)	Cross-sectional	n = 53 adult women BMI range = 30-45kg/m² outpatients Groups compared: ABN* ≠ BED (n = 16) ABN = BED (n = 18) controls (n = 19)	BED/DSM-IV (SCID-I/P) ABN/ICD-10* (checklist with ICD-10 criteria for ABN)	Severity of symptoms binge eating symptoms (BES*): ABN ≠ BED and ABN = BED > Controls	The two groups fulfilling diagnostic criteria for ED have more severe binge eating symptoms compared to obese without ED.

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Table 2 – Clinical characteristics and diagnostic investigations

Reference	Study design	Sample	Diagnostic criteria / Classification system (Instrument)	Results	Conclusion
Freitas et al.[20] Brazil (2006)	Diagnostic validity study	n = 178 women mean age = 36.4 mean BMI = 36.2kg/m² outpatients	BED/DSM-IV (SCID-I/P and BES)	BES. Psychometric properties for this sample: - sensitivity 97.8% - specificity 47.7% - positive predictive value 66.7% - negative predictive value 95.3%	BES is useful to identify binge eating symptoms among obese women in treatment for weight loss, but a clinical interview is recommended to confirm BED diagnosis.
Coutinho et al.[68] Brazil (2007)	Cross-sectional	n = 47 women age range = 30-65 mean BMI = 40.5kg/m² outpatients Groups compared (correlated with salivary cortisol levels): BED (n = 21) without BED (n = 26)	BED/DSM-IV (SCID-I/P)	Severity of binge eating symptoms: BED > without BED	Severity of binge eating symptoms may be a stronger regulator of cortisol secretion than obesity in a sample with BED.
Costa et al.[24] Brazil (2010)	Cross-sectional	n = 40 adult women BMI range = 30-40kg/m² outpatients Groups compared: BED (n = 20) without BED (n = 20)	BED/DSM-IV (clinical diagnosis)	Better body attitude in all domains, except salience of weight and shape (BSQ*): without BED > BED Concern about body image (BSQ): BED > without BED	In a program for ED, women with BED have greater concern about body image and worse body attitude.

** BMI = Body Mass Index; BN = Bulimia Nervosa; ED = Eating Disorder; BED = Binge Eating Disorder; DSM-IV = Diagnostic and Statistical Manual of Mental Disorders; QEWP-R = Questionnaire on Eating and Weight Patterns – Revised; BSQ = Body Shape Questionnaire; OCD = Obsessive-Compulsive Disorder; SCID-I/P = Structured Clinical Interview for DSM-IV Axis I Disorders, Research Version, Patient Edition; ABN = Atypical Bulimia Nervosa; ICD-10 = International Classification of Diseases, version 10; BES = Binge Eating Scale.*

from Venezuela,[14] the prevalence of BED was 0.66% (0.51% in girls and 0.14% in boys), and a Brazilian study[23] reported that 1.8% of a sample of young students (15-17 years) had BED. In countries outside Latin America, studies with samples of adolescents have shown similar rates. A Norwegian investigation involving participants aged 14-15 described a prevalence of 0.4% for each gender,[43] and a North American study found BED rates of 1.9% among girls and 0.34% among boys with a mean age of 14 years.[44]

The identification of clinical and demographic aspects capable of distinguishing BED from other diagnostic categories of ED is crucial for its validation as a distinct category. It cannot be inferred from our data, however, that the incidence of BED is higher among adult obese women, as reported in most of the studies included in this review, since 10 of them included only female samples and 14 included only obese patients. Nonetheless, one of the articles reviewed[17] that compared groups of women with BED and BN found that the former comprised older people. The findings that BED affects mainly older people and women (although the proportion across genders is similar: three women for every two men[45]) and that it is frequently connected with obesity support its differentiation from AN and BN, both conditions affecting mostly adolescent and young women and commonly associated with lower BMI over life.[10,46,47]

Little has been done in the sense of evaluating the diagnostic validity of BED through instruments in Spanish or Portuguese. Two self-rating scales in Portuguese have been validated, and only one of them, the Questionnaire on Eating and Weight Patterns – Revised (QEWP-R[7]) assesses the diagnosis of BED according to the DSM-IV. The other instrument, the Binge Eating Scale (BES[48]) has been mainly designed to evaluate the severity of binge eating symptoms, and not to diagnose BED. The Portuguese versions of these instruments have adequate psychometric qualities, with

Table 3 – Comorbidities (psychiatric and physical)

Reference	Study design	Sample	Diagnostic criteria / Classification system (Instrument)	Results	Conclusion
Borges et al.[17] Brazil (2002)	Cross-sectional	n = 217 women mean age = 36 mean BMI* = 30.3kg/m² outpatients Groups compared: BED* (n = 35) partial BED (n = 49) BN* (n = 10) without ED* (n = 123)	BED/DSM-IV* (QEWP-R*)	Depressive symptoms (BDI*): BED = BN > partial BED > without ED Alexithymia (TAS-20*): BED = BN = partial BED > without ED	BED and BN have higher levels of depressive symptoms than partial BED and the three groups have higher scores compared to the group without ED. Alexithymia is more frequent in groups with ED symptoms.
Matos et al.[18] Brazil (2002)	Cross-sectional	n = 50 both genders mean age = 38.5 mean BMI = 52.2kg/m² outpatients Group assessed: BED (n = 18)	BED/DSM-IV (QEWP-R)	45.7% (n = 8/18) Presence of trait anxiety (STAI-S*)	Almost half of a sample with morbidly obese patients with BED in treatment for weight loss has trait anxiety.
Fontenelle et al.[26] Brazil (2003)	Cross-sectional	n = 65 both genders age range = 18-65 BMI range = 30-45kg/m² outpatients Groups compared: BED (n = 33) without BED (n = 32)	BED/DSM-IV (SCID-I/P*)	Comorbidity: BED > without BED ↓ Lifetime axis I disorders (59.3%) Mood disorders (34.3%) Anxiety disorders (43.7%)	BED subjects have higher levels of psychiatric comorbidity, especially depression and anxiety, compared to individuals without BED.
Mattos et al.[55] Brazil (2004)	Cross-sectional	n = 86 diagnosis: ADHD* both genders age range =18-52 outpatients	ED-BED/ DSM-IV (SCID-I/P)	ED: 10.4% (n = 9/86) BED: 81% (n = 7/9)	BED is the most prevalent ED in a sample of subjects with ADHD in a psychiatric service.
Rodriguez & Guerrero[15] Colombia (2005)	Cross-sectional	n = 362 diagnosis: ED women mean age = 21.8 outpatients	BED/DSM-IV (SCID-CV*)	Self-harm: 22.6% (n = 82/362) BED + self-harm: 20.2% (n = 17/82)	In a sample with ED, self-harm was present in 17 BED patients.
Papelbaum et al.[28] Brazil (2005)	Cross-sectional	n = 70 diagnosis: type 2 DM* both genders mean age = 52.9 mean BMI = 30.6kg/m² outpatients	ED-BED/ DSM-IV (SCID-I/P)	ED: 20% (n = 14/70) BED: 10% (n = 7/14)	BED is the most prevalent ED in a sample with type 2 DM at an endocrinology service.
Fontenelle et al.[25] Brazil (2005)	Cross-sectional	n = 53 adult women BMI range = 30-45kg/m² outpatients Groups compared: ABN* ≠ BED (n = 16) ABN = BED (n = 18) controls (n = 19)	BED/DSM-IV (SCID-I/P) ABN/ICD-10* (checklist with ICD-10 criteria for ABN)	Major depressive episode: ABN ≠ BED and ABN = BED > Controls Psychiatric symptoms (somatization, obsessive-compulsive, anxiety, anger/hostility, and psychoticism) and agoraphobia: ABN ≠ BED > ABN = BED	The two groups fulfilling diagnostic criteria for ED have more severe symptoms of major depressive episode compared to obesity without ED. When the two groups are compared, more psychiatric symptoms are present in the group that does not include BED, suggesting that the combination of ABN and BED may encompass patients with different levels of psychopathology.

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Table 3 – Comorbidities (psychiatric and physical)

Reference	Study design	Sample	Diagnostic criteria / Classification system (Instrument)	Results	Conclusion
Papelbaum et al.[69] Brazil (2007)	Case report	n = 1 diagnosis: type 2 DM women age = 41 obese outpatients	BED/DSM-IV (clinical diagnosis)	Fluoxetine improved eating symptoms with positive effects in the treatment for diabetes.	BED may be associated with type 2 DM.
Melo & Odorizzi[29] Brazil (2009)	Cross-sectional	n = 63 diagnosis: type 2 DM both genders adults overweight and obese outpatients	BED/DSM-IV (QEWP-R)	BED: 28.6% (n = 18) ↓ women (n = 16/18) > 50 years (n = 13/18)	BED is present in a sample of type 2 DM patients at a service for diabetes and hypertension.
Fandiño et al.[22] Brazil (2010)	Cross-sectional	n = 203 adult women BMI ≥ 30 kg/m² outpatients Groups compared: BED (n = 54) without BED (n = 149)	BED/DSM-IV (SCID-I/P)	Depressive symptoms (BDI): BED > without BED Psychopathological symptoms (SCL-90*): BED > without BED	More depressive and psychopathological symptoms in a sample of obese women with BED as compared with obese women without BED.
Sallet et al.[54] Brazil (2010)	Cross-sectional	n = 815 diagnosis: OCD* both genders adults outpatients Groups compared: OCD+BED (n = 59) OCD without ED (n = 723)	ED-BED/ DSM-IV (SCID-CV)	ED: 11.3% (n = 92/815) BED: 7.2% (n = 59/815) Specific phobia, posttraumatic stress, skin picking, social phobia, panic disorder, and pathological gambling: OCD+BED > OCD	More comorbidity when OCD is associated with BED.

** BMI = Body Mass Index; BED = Binge Eating Disorder; BN = Bulimia Nervosa; ED = Eating Disorder; DSM-IV = Diagnostic and Statistical Manual of Mental Disorders; QEWP-R = Questionnaire on Eating and Weight Patterns – Revised; BDI = Beck Depression Inventory; TAS-20 = Toronto Alexithymia Scale – Portuguese Version; STAI-S = State-Trait Anxiety Inventory; SCID-I/P = Structured Clinical Interview for DSM-IV Axis I Disorders, Research Version, Patient Edition; ADHD = Attention Deficit Hyperactivity Disorder; SCID-CV = Structured Clinical Interview for DSM IV, Clinician Version; DM = Diabetes Mellitus; ABN = Atypical Bulimia Nervosa; ICD-10 = International Classification of Diseases, version 10; SCL-90 = The Symptom Checklist – 90; OCD = Obsessive-Compulsive Disorder.*

good positive predictive value and specificity in the case of the QEWP-R (79.3% chance to identify BED cases). The BES proved highly sensitive for the presence of binge eating symptoms, although diagnoses must be confirmed through clinical interview. Only one study from Argentina[13] used the Spanish version of the Eating Disorders Examination (EDE - version 12),[49] the gold standard for the diagnostic evaluation of ED. Therefore, the scarcity of valid and easily applied instruments for Latin American populations is an obstacle to further investigations in this field in Latin America.

One study assessed the presence of DSM-IV criteria for the diagnosis of BED: B (presence of behavioral indicators associated with loss of control during BEE), C (presence of distress), and D (frequency of BEE).[14] This is an interesting study because it investigated the frequency with which these criteria were fulfilled by people with symptoms suggestive of BED, contributing for the characterization of symptoms that are relevant for the diagnosis. The study found that 100% of patients with a partial diagnosis of BED fulfilled a subthreshold criterion related to the frequency of BEE in BED: two episodes in one week over three months. Wilson and Sisko suggest that the duration of three months be maintained for both the diagnosis of BN (as it is already in the DSM) and BED (currently requiring a period of six months in the DSM) in the new edition of the DSM.[50] The ICD-10 describes no specific duration of symptoms for ED diagnoses. Quintero-Párraga et al.[14] reported a frequency of 33-55% for the occurrence of behavioral indicators of loss of control (see Table 2) related to BEE (described

Table 4 – Intervention and prognosis

Reference	Study design	Sample	Diagnostic criteria / Classification system (Instrument)	Results	Conclusion
Papelbaum & Appolinário[27] Brazil (2001)	Case report	n = 1 diagnosis: OCD* man age = 26 BMI* = 31.3kg/m² outpatient	BED*/DSM-IV* (clinical diagnosis)	Sibutramine: - ↓ frequency and severity of binge eating - improved socio-occupational functioning	Sibutramine is indicated for the treatment of BED.
Appolinário et al.[30] Brazil (2001)	Case report	n = 1 woman age = 22 BMI = 42.5kg/m² outpatient	BED/DSM-IV (clinical diagnosis)	Topiramate: - remission of BEE* - ↓ weight	Topiramate can be prescribed for the treatment of BED.
Appolinário et al.[31] Brazil (2002a)	Open clinical trial	n = 10 women mean age = 35.4 BMI > 30kg/m² outpatients	BED/DSM-IV (SCID-I/P*)	Sibutramine: - BEE remission in 7 patients - ↓ weight and depressive symptoms	Sibutramine can be prescribed to treat obese patients with BED.
Appolinário et al.[32] Brazil (2002b)	Open clinical trial	n = 8 both genders mean age = 32 BMI > 30kg/m² outpatients	BED/DSM-IV (SCID-I/P)	Topiramate: - ↓ BEE, weight, and depressive symptoms	Topiramate can be used to treat obese patients with BED.
Schmidt do Prado-Lima & Bacaltchuck[33] Brazil (2002)	Case report	n = 1 woman age = 32 outpatient	BED/DSM-IV (clinical diagnosis)	Topiramate: - BEE remission - ↓ weight	Topiramate can be useful in the treatment of unipolar depression and BED in cases where no response is achieved with conventional treatment.
Appolinário et al.[34] Brazil (2003)	Randomized double-blind trial	n = 60 both genders age range = 18-60 BMI range = 35-40kg/m² outpatients Groups compared: sibutramine (n = 30) placebo (n = 30)	BED/DSM-IV (SCID-I/P)	Reduction in BEE, depressive symptoms, and weight: sibutramine > placebo	Sibutramine is efficient and well tolerated in the treatment of obese patients with BED.
Duchesne et al.[35] Brazil (2007)	Open clinical trial	n = 21 both genders mean age = 37.2 mean BMI = 39.4kg/m² outpatients	BED/DSM-IV (SCID-I/P)	Manual-based CBT*: - ↓ BEE, depressive symptoms, concerns about weigh/shape and weight	The use of manual-based CBT adapted for groups of obese patients with BED leads to symptom improvement.
Claudino et al.[36] Brazil (2007)	Randomized double-blind trial	n = 73 both genders age range = 18-60 BMI ≥ 30kg/m² outpatients Groups compared: topiramate + CBT (n = 37) placebo + CBT (n = 36)	BED/DSM-IV (SCID-I/P)	BEE remission and weight decrease: Topiramate > placebo	Association of topiramate with CBT is efficient to treat obese patients with BED.
Sallet et al.[61] Brazil (2007)	Cohort	n = 216 both genders mean age = 36.3 mean BMI = 45.9kg/m² outpatients Groups compared: BED (n = 44) partial BED (n = 129) without BED (n = 43)	BED/DSM-IV (SCID-I/P)	Weight loss two years after bariatric surgery: BED and partial BED < without BED	The presence of BEE has a negative association with post-surgical weight loss.

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Table 4 – Intervention and prognosis

Reference	Study design	Sample	Diagnostic criteria / Classification system (Instrument)	Results	Conclusion
Melo & Odorizzi[29] Brazil (2009)	Cross-sectional	n = 63 diagnosis: type 2 DM* both genders adults overweight and obese outpatients Groups compared: BED (n = 18) without BED (n = 45)	BED/DSM-IV (QEWP-R)	Weight: BED > without BED Metabolic control: BED < without BED Clinical complications: BED > without BED	The presence of BED in patients with type 2 DM may lead to higher weight and impaired metabolic control.

** OCD = Obsessive-Compulsive Disorder; BMI = Body Mass Index; BED = Binge Eating Disorder; DSM-IV = Diagnostic and Statistical Manual of Mental Disorders; BEE = Binge Eating Episode; SCID-I/P = Structured Clinical Interview for DSM-IV Axis I Disorders, Research Version, Patient Edition; CBT = Cognitive Behavioral Therapy; DM = Diabetes Mellitus.*

in criterion B).[2] This is a relevant finding because few studies refer to the frequency and importance of such indicators for the diagnosis of BED. Some authors state that existing evidence concerning these indicators provide moderate support for the diagnosis of BED,[12] although further studies are necessary to validate BED indicators.

In respect to clinical features, obese female patients with BED had higher weight, greater weight oscillation, and greater concern about body weight and shape (or body image) as compared to obese women without BED.[17,24] Similar data have been described in the literature, where dissatisfaction with weight, past and current presence of excessive body weight, and weight fluctuations distinguished between obese subjects with BED and obese individuals without the syndrome.[51-53]

Three studies comparing samples with and without BED[22,26,54] and one comparing full and partial BED, BN, and healthy volunteers[17] showed an important association between BED and psychiatric comorbidities, especially mood and anxiety disorders. Additional findings concerning comorbidity describe the association of BED with other psychopathological conditions or symptoms, such as attention deficit hyperactivity disorder,[55] alexithymia, impulsivity (e.g., self-harm), somatization, psychoticism, and others.[15,17,22,24,25] Our findings corroborate the observations of two recent literature reviews[10,11] summarizing research results on BED that showed a higher frequency of associated psychiatric conditions in obese BED patients compared to obese individuals without BED. According to Wonderlich et al., the presence of psychiatric comorbidity in BED is not related to the presence of obesity in itself, since it is also observed in non-obese BED patients, but it is associated with the occurrence of BEE.[10] Likewise, Latner and Clyne state that the harm caused by BED seems to be independent of the presence of obesity.[12] Therefore, patients with BED, regardless of being obese, evolve differently from healthy individuals, that is, with more associated psychiatric symptoms and potential quality of life impairment.[56]

Although the literature on BED has plenty of evidence supporting its distinction in relation to people without ED, and especially obese individuals without BED, few classificatory studies (involving taxometric and latent class analyses) including obese people with and without BED support this discrimination so far,[10] and no such studies have been performed in Latin America.

There are also few studies published to date dealing with the atypical forms of AN and BN. Only one article included in this review compared a group that completed the required criteria for atypical BN in the ICD-10, but not for BED in the DSM-IV, and a group completing diagnostic criteria for both diagnoses.[25] The two groups presented more severe symptoms of binge eating and major depressive episode as compared to a control group without ED. When these two groups were compared amongst themselves, the one with atypical BN had higher scores of psychiatric symptoms including somatization, obsessive-compulsive traits, and anxiety. This study contributed to the distinction between patients with ED (both atypical BN and BED) and obese controls without ED from the psychopathological viewpoint. However, the higher frequency of comorbid psychiatric conditions in the atypical BN group (potentially including subjects with partial BN) is suggestive of the differentiation between atypical BN and BED. The lack of accuracy of the ICD-10 diagnostic criteria does not allow for a clear distinction between partial BN (syndromes with characteristics that are closer to those of BN) and BED, which may favor the

inclusion of patients in the atypical BN category who actually have less severe psychiatric comorbidity and associated psychopathological symptoms, and that may thus have different clinical evolutions.[25] There are two different categories in the ICD-10 to diagnose partial and full presentations of BN (BN and atypical BN). Greater coherence is likely to be achieved if the BN category is expanded so as to include atypical BN and a distinct category is created to classify BED.

In respect to physical comorbidity, two studies indicated an association between BED and type 2 diabetes mellitus, with prevalence rates of 10%[28] and 28.6%[29] in clinical populations with diabetes. The second study highlighted the negative impact of BED on weight and the impairment of the metabolic control in diabetic patients. A North American study[57] described an association of BED and type 2 diabetes mellitus of 25.6%, and a higher frequency of obesity, consonant with our findings. The identification of BED in populations with diabetes may help improve the clinical management and evolution of this condition.[28,29]

Randomized, placebo-controlled trials assessed pharmacological interventions (sibutramine)[34] alone or in association with CBT (topiramate)[36] to treat obese patients with BED. Both treatments were efficient, especially in respect to the decrease or remission of BEE and weight loss. A non-controlled clinical trial with CBT also reported positive effects on BED symptoms.[35] Meta-analyses on the efficacy of treatments for BED showed a moderate effect of medications on BEE,[58,59] as well as supported CBT as the technique of choice to treat BED,[58,60] although expressive results in terms of weight loss are not commonly observed with psychotherapy.[37] Our finding that BED responds to pharmacological and psychological interventions demonstrates the clinical usefulness of this diagnosis; however, limitations in the design of the studies reviewed hamper the examination of the specificity of these interventions for the treatment of BED in relation to other ED, since no study compared more than one intervention or diagnostic group.

A study with obese patients who underwent gastric bypass surgery identified a frequency of 20% of BED after six months of follow-up.[61] Two years later, these patients had lost less weight than the group without BEE. The authors support, therefore, a worse prognosis for those with a history of binge eating after gastric bypass surgery and raise the hypothesis that the early identification of BED followed by adequate treatment would favor a better post-surgical evolution.[61] Although these findings were confirmed by a North American study with 2-7 years of post-surgical follow-up,[62] other investigations do not support the impact of BEE or BED in the post-surgical evolution of obese patients[63,64] and therefore further investigation is warranted to clarify this prognostic aspect. The identification of BED or BEE in candidates for bariatric surgery and after operation, however, may contribute for the control of their potential implications.

The similarities between Latin American and international studies lend support to the consistency and specificity of the manifestation of BED. Nonetheless, the literature recognizes limitations to this diagnosis related to the criteria proposed in DSM,[12] as well as to other factors concerning its construct validity, such as the paucity of investigations on etiological factors (e.g., neurobiological findings) and clinical course in representative population samples.[10]

The diagnostic differences that emerge with the application and comparison of ICD-10 and DSM-IV criteria are currently under discussion, as well as their implications for research and communication between clinicians. According to a survey by Nicholls and Arcellus that examined the number of studies published between 2005 and 2009 which used the ICD-10 or DSM-IV to classify patients with ED, only 4 (out of 236) used only the ICD-10.[65] This finding demonstrates the limitations of the use of ICD-10 for research in the field. Despite the large number of categories in the ICD-10, the authors stated that many of these categories are not easily differentiated and that the inter-rater reliability for atypical presentations of ED is low. It has been recommended[65,66] that atypical presentations be described in a more specific and consistent way so as to allow their diagnosis, although they do not support BED as a distinct category but as a presentation of the category "overeating associated with other psychological disturbances". Although major changes in classification systems are not convenient due to their implications (related to existing diagnostic instruments and research findings), we consider that there is enough information to support the characterization of BED as a distinct entity and acknowledge that the diagnosis of BED is already in use by specialists in the field in clinical practice.

This review has limitations that deserve mention: some of the studies reviewed involved small samples; there are no epidemiological investigations in general Latin American populations, nor studies dealing with other strategies of validation (e.g., laboratory findings, genetics or family history); in general, the studies examined used a cross-sectional design; the screening instruments used were mostly self-rated; few studies provided comparative data between subjects with BED and other ED, restricting the differentiation of BED from other eating pathologies; and no studies used the ICD-10 alone as classification system to identify patients with symptoms suggestive of BED.

Despite these limitations, studies involving Latin American populations suggest that the characteristics of the presentation

of BED in Latin America are similar to those reported in the international literature. BED is distinct from normality due to its clinical aspects, and its presence in obese patients allows the differentiation between affected and non-affected obese individuals, which supports the consideration of BED as a distinct eating disorder in the ICD-11.

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** Modest*
*** Significant*
**** Significant: Amounts given to the author's institution or to a colleague for research in which the author has participation, not directly to the author.*
Note: UNIFESP = Universidade Federal de São Paulo; FAPESP = Fundação de Amparo à Pesquisa do Estado de São Paulo; CNPq = Conselho Nacional de Desenvolvimento Científico e Tecnológico; CAPES = Coordenação de Aperfeiçoamento de Pessoal de Nível Superior.
For more information, see Instructions for Authors.

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