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Subthreshold Binge Eating Disorder

Ruth H. Striegel-Moore,^{1*} F. A. Dohm,¹ E. E. Solomon,¹ C. G. Fairburn,²
K. M. Pike,³ and D. E. Wilfley⁴

¹ Department of Psychology, Wesleyan University, Middletown, Connecticut

² Department of Psychiatry, Oxford University, Oxford, England

³ Department of Psychiatry, Columbia Presbyterian Hospital, New York, New York

⁴ Department of Psychology, San Diego State University, San Diego, California

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Abstract: Objective: To examine the clinical features of subthreshold binge eating disorder (BED). **Method:** Participants were recruited directly from the community as part of an ongoing study of risk factors for BED. Forty-four women with subthreshold BED were compared with 44 women with BED and 44 healthy controls on demographic characteristics, body mass index (BMI), eating disorder symptomatology, and psychiatric distress. Diagnoses were established using the Eating Disorder Examination (EDE). Participants completed the EDE-Questionnaire, the Brief Symptom Inventory, and were measured and weighed. **Results:** Adjusting for significant group differences in BMI, the two eating disorder groups did not differ significantly on measures of weight and shape concern, restraint, psychiatric distress, and history of seeking treatment for an eating or weight problem. **Discussion:** Given the importance of diagnostic status for access to treatment, further evaluation of the severity criterion specified for BED is needed. © 2000 by John Wiley & Sons, Inc. *Int J Eat Disord* 27: 270–278, 2000.

Key words: binge eating disorder; Eating Disorder Examination; psychiatric distress

INTRODUCTION

Since the introduction of binge eating disorder (BED) into the 4th ed. of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association [APA], 1994) as a diagnostic category in need of further study, the diagnostic criteria for BED have been the source of considerable debate. One major focus of criticism has been the severity criterion for the core behavioral symptom of BED, binge eating. Specifically, the provisional research criteria specify a minimum average frequency of binge eating twice a week for a minimum duration of 6 consecutive months. Many experts consider this severity criterion arbitrary and too restrictive (Bruce & Agras, 1992; Hay & Fairburn,

*Correspondence to: Dr. Ruth Striegel-Moore, Department of Psychology, Wesleyan University, 207 High Street, Middletown, CT 06459. E-mail: Rstriegel@wesleyan.edu

1998; Shisslak, Crago, & Estes, 1995; Striegel-Moore & Marcus, 1995; Striegel-Moore, Wilson, Wilfley, Elder, & Brownell, 1998). In clinical experience, it is not uncommon to find patients who are functionally impaired as a result of recurrent binge eating (i.e., engage in a regular pattern of overeating with loss of control) yet do not meet this frequency criterion.

We are aware of only three studies that have examined specifically the binge eating frequency criterion. Wilson, Nonas, and Rosenblum (1993) found that bulimic patients who binged once a week did not differ from bulimic patients who binged twice a week or more on measures of concurrent psychopathology and treatment outcome. Based on a representative community-based study in Canada, Garfinkel and colleagues (1995) concluded that women who met all but the frequency criterion for bulimia nervosa did not differ from women with full syndrome bulimia nervosa in clinical presentation or risk factors for the disorder. A survey of obese binge eaters found few differences between individuals who reported recurrent binge eating at the severity level required for a diagnosis of BED and individuals who reported recurrent binge eating at a minimum average level of only once a week for 6 months (Striegel-Moore et al., 1998). However, in this study, diagnostic classification was based solely on responses to a self-report questionnaire. Recent research has shown limited agreement between self-report and interview-based assessments of binge eating (Black & Wilson, 1996; Fairburn & Beglin, 1994; Wilfley, Schwartz, Spurrell, & Fairburn, 1997).

The clinical significance of binge eating has been proposed to be twofold. Recurrent binge eating has been shown to be associated with elevated body weight (de Zwaan et al., 1994). Moreover, recurrent binge eating has been found to correlate significantly with various indicators of emotional distress and psychopathology (Telch & Stice, 1998). The present study sought to examine the clinical features of women with subthreshold BED.

Experts have called for community-based studies (rather than clinic-based studies) of eating disorders because evidence suggests that only a small proportion of individuals with a current eating disorder are involved in treatment (Flament, Ledoux, Jemmet, Choquet, & Simon, 1995; Welch & Fairburn, 1994). Furthermore, clinic-based samples may differ systematically from community-based samples (Bruce & Agras, 1992; Fairburn, Welch, Norman, O'Connor, & Doll, 1996). For example, compared to patient samples, women with BED recruited in the community have been found to be significantly less likely to be obese (Bruce & Agras, 1992; Fairburn et al., 1998). To minimize biases inherent when recruiting among patient samples, participants in the present study were recruited directly from the community as part of an ongoing study of risk factors for BED (Striegel-Moore, Wilfley, Pike, Dohm, & Fairburn, 1999).

METHODS

Participants

Three groups were compared in this study: 44 women with subthreshold BED, 44 women with BED (APA, 1994), and 44 healthy controls. To be included as a subthreshold BED case, binge eating had to occur at a minimum average frequency of once a month over the 6-month period preceding the interview. Recurrent severe compensatory behaviors (fasting, purging, excessive exercise for weight control) are an exclusion criterion for BED. Therefore, in the present study, individuals were excluded from the subthreshold BED or full syndrome BED group if they reported a lifetime history of such behaviors at

a frequency exceeding five times in any consecutive 6-month period. The healthy control group included women who had no history of subthreshold or full-syndrome eating disorders and who did not meet current criteria for an Axis I diagnosis of a mental disorder (DSM-IV; APA, 1994).

Recruitment and Procedure

Participants in the current study were recruited as part of the New England Women's Health Project (NEWHP), a community-based study of risk factors for BED. The NEWHP used two recruitment strategies to find cases of women with BED. The first strategy involved identifying potential participants through the Metromail National Consumer Data Base (NCDB), a consumer information database that contains demographic information accumulated through census data and other sources. Eligibility criteria included being female, either white or black, between 18 and 40 years of age, and residing within driving distance of the NEWHP office. From the Metromail NCDB list, about 10,000 potentially eligible women were randomly identified and contacted by mail to inform them that they would be contacted by phone and given a brief phone screen for a project on women's health issues. This recruitment strategy was supplemented by placing advertisements for a study of women's mental health in a variety of media, including posters, newspaper interviews, newspaper ads, and radio and television announcements. Women were invited to call either a toll-free or a local number at the NEWHP office. Those who called the project were added to the roster of potentially eligible participants.

Research assistants of the NEWHP contacted potential participants by phone to determine eligibility for the study based on a 15-min phone interview developed for the study. Exclusion criteria were age over 40, physical conditions known to influence eating habits or weight, current pregnancy, psychotic disorder, race other than white or black, or not being born in the United States. Women who were found potentially eligible in the telephone screen were then interviewed in person and completed several self-report questionnaires. Only the instruments used in the present report will be described below.

Instruments

Demographic Information

During the screening phone call, participants answered questions about race, age, and educational attainment. In data analyses, three education levels were used: high school or less, some college, college graduate or more.

Body Mass Index (BMI)

Research staff measured participants' height and weight upon completion of the diagnostic interviews. BMI was calculated by dividing participants' weight (in kg) by their height (in m²). Obesity was defined as a BMI greater than or equal to 30.0 (NHLBI Obesity Taskforce, 1998).

Assessment of Clinical Symptoms

Eating disorder diagnoses were determined using the Eating Disorder Examination (EDE), a semistructured clinical interview of well-established reliability and validity (Fairburn & Cooper, 1993). The EDE elicits detailed behavioral information for the 3 months preceding the interview. Questions were added to permit a diagnosis of BED (requiring

information for the preceding 6 months). Moreover, participants were asked whether they believed they currently, or in the past, had "experienced an eating or weight problem" and/or had "wanted help for an eating or weight problem." Healthy controls were given an abbreviated EDE: once it was established that they did not have a history of binge eating or other eating disorder features, the interview was ended. Therefore, for analyses utilizing EDE items, only comparisons between the two groups of binge eaters are possible.

To permit a continuous assessment of eating disorder symptoms in all three groups, three subscales of the self-report EDE-Questionnaire (EDE-Q; Fairburn & Beglin, 1994) were administered: Shape Concern, Weight Concern, and Dietary Restraint. The EDE-Q questions focus on the past 28 days and measure the affective, cognitive, and behavioral features of eating disorders. The EDE-Q has been shown to provide reliable and valid measurements of shape concern, weight concern, and dietary restraint (Black & Wilson, 1996; Fairburn & Beglin, 1994; Wilfley et al., 1997). To measure psychiatric symptoms associated with the eating disorder, the 53-item Brief Symptom Inventory (BSI; Derogatis, 1975) was administered. Items are rated on a 5-point scale ranging from 0 (not at all) to 4 (extremely), indicating how much the participant has been bothered by a symptom during the past 7 days. A Global Severity Index score was calculated by dividing the summed score of all items by the total number of items.

Data Analysis

Groups were compared using chi-square analyses for categorical data. Univariate analyses of variance (age, BMI) and multivariate analyses of variance (EDE-Q, BSI) were computed and significant results were tested further using planned post-hoc *t* tests.

RESULTS

Sample Description

Subthreshold BED cases and the two groups of controls (BED, healthy) were group matched on race and age. In each group, 27 (61.4%) women were white and 17 (38.6%) women were black. As Table 1 shows, the three groups did not differ in age ($F_{(2,129)} = 0.35$, $p = .71$) or educational attainment ($\chi^2_{(4)} = 7.44$, $p = .12$).

Disturbance in Weight and Eating

Body Weight

Significant group differences were found for BMI ($F_{(2,129)} = 11.93$, $p < .0001$). Planned univariate comparisons found that subthreshold BED cases ($M = 31.45$, $SD = 9.23$) and BED cases ($M = 33.84$, $SD = 8.40$) did not differ in BMI ($t = 1.36$, $p = .18$); in contrast, healthy controls had significantly lower BMIs ($M = 25.53$, $SD = 6.84$) than women with subthreshold BED ($t = 3.38$, $p < .001$) and those with BED ($t = 4.74$, $p < .0001$). Obesity (BMI ≥ 30) was found to be significantly more common both among women with subthreshold BED ($n = 22$, 50%) and women with BED ($n = 26$, 59.1%) than among the healthy controls ($n = 8$, 18.2%) ($\chi^2_{(2)} = 16.62$, $p < .0001$). Obesity was not significantly more common among women with BED than among those with subthreshold BED ($\chi^2_{(1)} = 0.73$, $p = .39$).

Table 1. Descriptive characteristics of participants

	Subthreshold BED (n = 44) N (%)	BED (n = 44) N (%)	Normal Control (n = 44) N (%)
Education			
High School or less	3 (6.8%)	11 (25.0%)	12 (27.3%)
Some College	24 (54.5%)	18 (40.9%)	17 (38.6%)
College graduate or more	17 (38.6%)	15 (34.1%)	15 (34.1%)
	M (SD)	M (SD)	MD (SD)
Age	28.80 (68.5)	29.82 (5.29)	29.48 (5.35)

Eating Disorder Symptoms

Subthreshold BED cases reported a mean number of 3.8 days ($SD = 2.3$) per month with at least one binge eating episode, based on detailed assessment of eating binges in the 3 months preceding the diagnostic interview. In comparison, women with BED reported a mean number of 13.0 days ($SD = 6.0$) per month ($F_{1,86} = 80.33, p < .0001$). Twenty-five women (56.8%) with subthreshold BED met the BED diagnostic criterion B (i.e., they reported three of five symptoms that serve as external validation of loss of control over eating) and 10 women (22.7%) met BED criterion C (marked distress over binge eating). (By definition, all women with BED met diagnostic criteria for BED.) It is also of note that 30 (68.2%) women with subthreshold BED and 35 (79.5%) women with BED reported extreme overconcern with weight and shape (a rating of 4 or greater on the EDE items regarding the importance of weight and shape) ($\chi^2 = 1.47, p = .23$), a diagnostic criterion for bulimia nervosa.

As shown in Table 2, significant group differences were found on the EDE-Q subscales ($F_{(6,256)} = 19.18, p < .0001$). Specifically, on the Shape Concern subscale, women with subthreshold BED scored significantly lower than women with BED ($t = 2.44, p < .03$) and significantly higher than the healthy controls ($t = 10.18, p < .0001$). On the Weight Concern subscale, women with subthreshold BED did not differ significantly from women with BED ($t = 1.39, p = .24$) but scored significantly higher than healthy controls ($t = 9.99, p < .001$). Similarly, on the Restraint subscale, women with subthreshold BED and women with BED did not differ ($t = -0.81, p = .39$), but the subthreshold BED group scored significantly higher than the healthy controls ($t = 5.62, p < .0001$). On all three subscales, women with BED endorsed more disturbed attitudes and behaviors than the healthy women ($t_{\text{shape}} = 12.67, p < .0001$; $t_{\text{weight}} = 11.46, p < .0001$; $t_{\text{restraint}} = 4.83, p < .0001$).

To determine whether these group differences were due to differences in BMI, the multivariate analysis was repeated, entering BMI as a covariate. The results remained essentially unchanged with one exception: The subthreshold cases no longer differed significantly from full-syndrome BED cases on Shape Concern when adjusting for BMI ($t = 1.96, p < .06$). (Complete description of results and adjusted means available upon request.)

History of an Eating Disorder

A history of bulimia nervosa was less common among women with subthreshold BED ($n = 1, 2.3\%$), compared to women with BED ($n = 6, 13.6\%$, $\chi^2_{(1)} = 3.88, p < .05$). One woman with subthreshold BED (2.3%) and no women with BED had a history of anorexia nervosa ($\chi^2_{(1)} = 1.01, p = .32$). One third (31.8%) of women with subthreshold BED had met full-syndrome criteria for BED in the past.

Table 2. Eating disorder symptoms in women with subthreshold BED, women with full syndrome BED, and healthy controls

	Group						F*
	Subthreshold BED (n = 44)		BED (n = 44)		Healthy Controls (n = 44)		
	X	SD	X	SD	X	SD	
Shape Concern ^a	3.86	1.33	4.43	1.22	1.28	1.10	83.14
Weight Concern ^b	3.64	1.40	3.96	1.41	0.99	0.94	72.69
Restraint ^b	2.66	1.61	2.39	1.52	0.95	1.26	17.31

Note: * $p < .0001$.

^aSubthreshold BED -vs- BED: $p < .03$; Subthreshold BED or BED -vs- healthy controls: $p < .0001$.

^bSubthreshold BED or BED -vs- healthy controls: $p < .0001$.

Desire to Receive Help for the Eating Problem

Women with subthreshold BED (32 of 43; 72.7%) were as likely as women with BED (37 of 44; 84.1%) to indicate that, at present, they had an eating problem ($\chi^2_{(1)} = 1.68, p = .30$). Similarly, 33 of 43 (76.7%) women with subthreshold BED reported that, at present, they would like to receive help for their eating problem, compared to 39 of 44 (88.6%) women with BED ($\chi^2_{(1)} = 2.75, p = .10$). Actually having received treatment for an eating disorder was uncommon in both groups: only 6 (of 44; 13.6%) women with subthreshold BED and 8 (of 44; 18.2%) women with BED had ever been in treatment specifically for their eating disorder ($\chi^2_{(1)} = 0.34, p = .56$). A history of treatment for a weight problem was more common in both groups: 7 of 44 (15.5%) women with subthreshold BED versus 12 of 44 (27.3%) women with BED, but again the difference between groups was not significant ($\chi^2_{(1)} = 1.69, p = .19$).

Associated Psychological Symptoms

Significant group differences were observed on the Global Severity Index score of the BSI ($F_{(2,126)} = 21.84, p < .0001$). Women with subthreshold BED ($M = 0.91, SD = 0.61$) did not differ significantly from women with BED ($M = 0.96, SD = 0.62; t = 0.40, p = .69$), but differed significantly from the healthy controls ($M = 0.27, SD = 0.39, t = 5.48, p < .0001$). The women with BED reported significantly greater psychiatric distress than the healthy controls ($t = 5.91, p < .0001$).

DISCUSSION

This study examined the clinical characteristics of subthreshold BED. The clinical features assessed belong to three major domains: body weight, eating disorder symptoms, and associated psychiatric symptoms. Our results suggest that, with one exception (Shape Concern), women with subthreshold BED did not differ significantly from women with full-syndrome BED whereas they did differ from matched healthy controls. The difference between the two groups in Shape Concern was small and no longer significant in analyses that adjusted for differences in BMI. Our data show that women with subthreshold BED appear to be at similar risk for obesity and psychiatric distress as women with full-syndrome BED.

This study has several noteworthy strengths. Our sample was established by recruiting in the community, thus avoiding biases inherent in using patient samples (Mitchell et al., 1988). The three study groups were matched on race and age; therefore, group differences do not appear to be the result of recruitment biases or age effects. Diagnosis was determined using state-of-the-art interview methods, thus reducing the errors inherent in survey-based studies (Fairburn & Beglin, 1994). Several limitations of our study also need to be noted. First, the definition of subthreshold BED was based solely on the severity criterion of recurrent binge eating. Second, the number of women with subthreshold BED was relatively small, limiting our ability to detect small (but potentially meaningful) differences between the subthreshold and full-syndrome groups. These limitations notwithstanding, the present study represents the first effort to examine the clinical features of subthreshold BED.

Our data suggest that even at frequency levels that fail to satisfy diagnostic criteria for BED, recurrent binge eating is correlated with elevated body weight. Obesity was significantly more common both among women with subthreshold BED and women with BED, compared to a sample of age-matched healthy controls. The association of binge eating and adiposity is well established in the literature (for review, see Yanovski, 1993). It is interesting to note, however, that in both eating disorder groups, obesity, although significantly more common than among controls, was not present uniformly among all recurrent binge eaters. Recurrent binge eaters who are not obese have received relatively little empirical attention. With few exceptions, studies to date have recruited specifically overweight or obese binge eaters (e.g., Kuehnel & Wadden, 1994; Raymond, Mussell, Mitchell, de Zwaan, & Crosby, 1995; Telch & Stice, 1998). Not surprisingly, some of these studies have reported higher mean BMI values for binge eaters than observed in our sample. However, studies where recruitment is not limited to overweight patient samples (e.g., Brody, Walsh, & Devlin, 1994; Bruce & Agras, 1994; Fairburn et al., 1998; Hay, 1998) report mean BMI values and obesity rates comparable to those obtained in our study. These data suggest that research of recurrent binge eating should not be limited to overweight populations.

Consistent with survey data reported by Striegel-Moore et al. (1998), women with subthreshold BED did not differ significantly from women with full-syndrome BED in weight concern or (after adjustment for BMI) shape concern. Given the well-documented association between body weight and body image dissatisfaction, not surprisingly both eating disorder groups reported greater weight concern and shape concern than the healthy controls. These differences remained, however, after adjustment for differences in BMI. It is interesting to note that a majority of women with subthreshold or full-syndrome BED reported a clinically significant level of overconcern with weight or shape, a core diagnostic criterion for bulimia nervosa and anorexia nervosa. The diagnostic criteria for BED are silent on the question of body image concern. Our data underscore the pervasiveness of body image concerns among recurrent binge eaters and suggest that disturbances in body image are not limited to anorexia nervosa or bulimia nervosa.

Subthreshold BED cases did not differ from full-syndrome BED cases in terms of dietary restraint. Compared to healthy controls, the two binge eating groups reported significantly more restraint. By definition, however, these behavioral efforts at weight management did not reach the level of severity that define nonpurging bulimia nervosa. Nevertheless, it is clear that women with recurrent binge eating are concerned about, yet seemingly ineffective with, efforts to manage their weight. Teaching women with BED to adopt effective weight management strategies has been recommended as an important component of treatment of this disorder (Levine & Marcus, 1998).

Psychiatric distress was elevated in both groups of recurrent binge eaters. The association of binge eating and psychiatric symptomatology has been established in a number of studies of patients with BED (e.g., Telch & Stice, 1998). Our data show that this association may be also observed in women who binge eat regularly yet not as frequently as required for a diagnosis of BED.

To our knowledge, no studies have explored whether recurrent binge eaters believe that their eating is problematic. In our community-based sample, a majority even of those women who failed to meet full-syndrome criteria for BED viewed themselves as having an eating problem and indicated that they would like to receive help. In contrast, however, only a minority reported that they had ever received treatment for their eating disorder. Given the availability of promising treatments for BED (Mitchell & Peterson, 1997), steps need to be taken to reduce barriers to receiving treatment for women with recurrent binge eating. Because in the United States eligibility for treatment covered by health insurance often is dependent on diagnostic status, a re-evaluation of the severity criterion for BED is warranted.

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