The Significance of Overvaluation of Shape or Weight in Binge-Eating Disorder: Results from a National Sample of U.S. Adults

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Objective: This study aimed to examine the prevalence of overvaluation of shape or weight in a nationally representative sample of U.S. adults with binge-eating disorder (BED) and to compare functioning correlates using a group of adults with bulimia nervosa (BN).

Methods: Participants included 207 respondents from the National Epidemiologic Survey on Alcohol and Related Conditions who met Diagnostic and Statistical Manual of Mental Disorders (Fifth Edition) diagnoses of BED (n = 163) or BN (n = 44). Sociodemographic characteristics and functioning were compared in BED with overvaluation (BED+OV), BED without overvaluation (BED), and BN.

Results: Approximately 50% of BED respondents reported overvaluation. Mean age was lower in BN than BED. Mean BMI was lower in BED+OV than BED and higher than BN. A greater proportion of BED+OV reported functional impairment than BED. BN was more likely to report “serious problems doing daily tasks” than BED and less likely to report “impairment in normal activities” than BED+OV. BN reported significantly lower mental functioning than BED.

Conclusions: Findings based on this nationally representative sample are that overvaluation was associated with greater functional impairment within BED, and BED+OV reported greater impairment than BN in interference with normal activities but less impairment related to mental health. The increased impairment associated with BED+OV provides support for overvaluation as a diagnostic specifier for BED.

Introduction

Binge-eating disorder (BED) became a formal diagnosis in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (1). BED is characterized by recurrent binge eating (i.e., eating an objectively large amount of food in a short period of time while experiencing a loss of control) at least once a week for 3 months. The most recent statistics suggest that 0.85% of U.S. adults may meet the criteria for DSM-5 BED in their lifetime (2).

Similar to bulimia nervosa (BN) and anorexia nervosa (AN), many patients with BED have elevated body image concerns (3-5). The DSM-5, however, did not include a body image criterion for the BED diagnosis as supported by research (6). Grilo (6), in a review of the literature based primarily on clinical samples, concluded that overvaluation of shape or weight, a required criterion for BN, warrants consideration as a diagnostic specifier for BED. In clinical samples of patients with BED, roughly half are characterized with overvaluation, and when present, overvaluation is associated with greater severity (7-12). Grilo (6) argued, however, that overvaluation should not be a required criterion, as it would exclude a significant proportion of persons with BED with clinically meaningful concerns (3,13). This position has received continued support (14,15).

Further support for this position comes from treatment studies with baseline overvaluation predicting poorer outcomes (10,16) and moderating different treatments (17). To date, research on overvaluation of shape and weight in BED has involved clinical and “convenience” community samples, which may be limited by treatment-seeking confounds and representativeness, respectively. Importantly, the literature to date has relied on “validators” consisting primarily of other eating disorder (ED) variables. The present study aimed to address these issues by examining the prevalence and significance of overvaluation for DSM-5-defined BED in a nationally representative study of U.S. adults. To provide context, a comparison group of adults with DSM-5-defined BN was used. The groups were compared on sociodemographic variables and measures of psychosocial and functional impairment. We used data from the National Epidemiologic Survey on Alcohol and Related Conditions-III (NESARC-III), conducted in 2012 to 2013, the largest epidemiologic survey to date on psychiatric disorders with U.S. adults that included DSM-5-defined BED.

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Methods

The NIH Institutional Review Board approved NESARC-III. Respondents provided consent, which was electronically recorded (18). The authors obtained Institutional Review Board exempt approval from the University at Albany, State University of New York to perform these analyses.

Participants

Respondents (N=36,309) were noninstitutionalized U.S. civilians who were all 18 years or older living in households and noninstitutionalized group quarters. Between April 2012 and June 2013, respondents were administered computer-assisted face-to-face interviews. The NESARC-III utilized counties or groups of contiguous counties as primary sampling units, groups of Census-defined blocks as secondary sampling units, and households within secondary sampling units as tertiary sampling units.

Of 36,309 NESARC-III respondents who completed a lay-administered diagnostic interview, 207 respondents met DSM-5 diagnostic criteria for a 12-month BED or BN diagnosis (see Udo and Grilo for the prevalence of lifetime and 12-month BED and BN in NESARC-III) (2). Three respondents met 12-month diagnostic criteria for both BN and BED; following well-established diagnostic “hierarchy” of BN > BED (i.e., BED excluded those with concurrent AN or BN), these individuals received a BN diagnosis. Respondents had a mean age of 41.9 (SD = 14.9) and a mean BMI of 33.2 kg/m² (SD = 8.8). Most respondents identified as white (n=127, 62.0%), 27 were black (13.2%), 40 were Hispanic (19.5%), and 11 were of other ethnic minority groups (5.4%).

Measures

Sociodemographic characteristics. Sociodemographic information was collected from respondents, including but not limited to age, sex, ethnicity/race, income category ($0-$19,999, $20,000-$34,999, $35,000-$69,999, ≥ $70,000), and education level (categorized as less than high school diploma, high school or general equivalency diploma (GED), or at least some college).

Creation of ED diagnoses. A structured diagnostic interview, the National Institute on Alcohol Abuse and Alcoholism Alcohol Use Disorder and Associated Disabilities Interview Schedule-5 (AUDADIS-5) (19), was used to assess a range of DSM-5-defined psychiatric disorders and their criteria, including specific information for AN, BN, and BED diagnoses (20) (see Hasin et al. for detailed reliability and validity of the AUDADIS-5) (21). The diagnostic codes for 12-month BN and BED diagnostic groups were created based on the DSM-5 criteria by the authors rather than the ED diagnosis coding provided by NESARC-III (see Udo and Grilo for exact coding schemes) (2).

For the diagnosis of BN or BED, respondents were required to report recurrent binge eating, which was determined based on the following three statements: (1) ever eaten an unusually large amount of food within a 2-hour period, not including the holidays; (2) ever eaten unusually large amounts of food on average at least once weekly for at least 3 months; and (3) while eating an unusually large amount of food, felt unable to stop eating or control how much/what eating.

For the diagnosis of BN, respondents were additionally required to report that during any of their binge-eating episodes, they (1) tried to keep from gaining weight by vomiting, using enemas, laxatives, or diuretics/other medicines, fasting, or exercising excessively; (2) engaged in the weight-compensatory behaviors at least once weekly for at least 3 months; and (3) thought their weight/shape was one of the most important things about them.

For the diagnosis of BED, respondents were additionally required to report whether eating an unusually large amount of food made them very upset as well as at least three of the following five features during the times they ate unusually large amounts of food: (1) eating much more quickly than usual, (2) eating until uncomfortably full, (3) eating despite not being hungry, (4) eating alone because they were embarrassed by how much they were eating, and (5) feeling disgusted, depressed, or very guilty about eating so much.

For the categorization of the overvaluation of shape or weight, NESARC-III included the following three questions: (1) during any time like this when you ate an unusually large amount of food, did you feel that your weight or body shape was one of the most important things about you?; (2) when you were eating an unusually large amount of food and doing some of the things we talked about to keep from gaining weight around the same time, was your weight or body shape the most important thing about you?; and (3) when you were eating an unusually large amount of food, was your weight or body shape the most important thing about you? Respondents were categorized as presenting overvaluation of shape or weight if they said “yes” to one of these three questions.

ED-related psychosocial impairment. NESARC-III assessed for impairment in social functioning because of ED symptoms, including (1) interference with normal daily activities, (2) serious problems getting along with others, and (3) serious problems fulfilling responsibilities.

BMI. BMI was calculated using the following formula: self-reported weight (pounds)/self-reported height (inches squared) × 703.

Physical and mental functioning. The Short-Form Health Survey (SF-12) Version 2 (22,23) was used to assess self-reported physical and mental functioning. Ten summary scores were derived based on the scoring methods described in Ware et al. (23). Norm-based scores range from 0 to 100 with a mean of 50. A greater score indicates better functioning.

Statistical analysis

Analyses were performed using SAS (release 9.4; SAS Institute, Inc., Cary, North Carolina) and accounted for NESARC-III survey design by using Proc Survey procedures with Taylor series-variance-estimation method. Weighed means and frequencies were computed for age, gender, income category, race (white vs. nonwhite), marital status, education, BMI, and impairment related to the ED diagnosis. ANOVA was used to examine whether BMI differed between BN and BED with and without overvaluation. χ² tests were used to compare gender, income category, race, marital status, education, and ED-related impairments across the ED groups. Significant omnibus χ² tests were further analyzed by comparing cells to identify significant differences between ED groups. ANCOVA was performed controlling for BMI, sex, age, and non-Hispanic white (1 = Yes, 0 = No) to compare the SF-12 physical and mental functioning scales by ED groups.
Results

Sociodemographic characteristics

Of the 207 respondents analyzed in the present study, 163 respondents met criteria for current (i.e., 12-month) diagnosis of BED and 44 met criteria for current BN (see Udo and Grilo for the prevalence of ED in NESARC-III) (2). Of the 163 respondents with a BED diagnosis, 88 respondents (50.0%, SE = 2.87) reported overvaluation of shape or weight (BED+OV) and 75 did not (BED). Respondents in the 12-month BN group reported a significantly lower age compared with BED+OV and BED (Table 1). There were no significant differences between three ED groups in gender, race/ethnicity, income, or education.

Clinical and functional characteristics

Regardless of overvaluation, mean BMI was significantly greater in both BED groups than BN; the mean BMI was significantly lower in the BED+OV than the BED group (Table 1). A significantly greater percentage of BED+OV participants reported “impairment in normal activities” than BED and BN (69.1%, 40.9%, 49.3%, respectively; \( \chi^2 = 11.33; P = 0.004 \) (Table 2). BN participants were significantly more likely to report that their ED diagnosis “causes serious problems getting along with people” (44.4%) compared with BED (7.4%) (\( \chi^2 = 17.97; P < 0.001 \)) but did not differ significantly from BED+OV (31.1%). BED+OV participants were significantly more likely to report “serious problems doing the things you were supposed to do” compared with BED (42.6%) vs. 9.9%) but did not differ significantly from BN (35.9%). BN participants were also significantly more likely to report “serious problems doing the things you were supposed to do” compared with BED (\( \chi^2 = 17.69; P < 0.001 \)).

Controlling for BMI, gender, age, and white versus nonwhite, there were significant differences on the mental and physical disability subscales of the SF-12 scale by ED groups. Tukey-Kramer post hoc tests

<table>
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<tr>
<th>TABLE 1 Sociodemographic characteristics across three groups</th>
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<tr>
<td><strong>BED with overvaluation</strong> (n=88; 39.3%)</td>
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<tr>
<td>Age (y), mean (SD)</td>
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<td>Gender, % (SE)</td>
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<tr>
<td>Female</td>
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<td>BMI (kg/m(^2)), mean (SD)</td>
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<td>Income category, % (SE)</td>
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<td>$0-$19,999</td>
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<td>White vs. nonwhite, % (SE)</td>
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<td>Education, % (SE)</td>
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<td>White</td>
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</table>

\(^a\)Significant differences from BED with no overvaluation.
\(^b\)Significant differences from BN.

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<th>TABLE 2 Psychosocial impairment across three groups</th>
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<tr>
<td><strong>BED with overvaluation</strong> (n=88)</td>
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<tr>
<td>Functioning variables, % (SE)</td>
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<tr>
<td>Interfere with your normal daily activities</td>
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<tr>
<td>Cause serious problems getting along with people</td>
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<td>Cause any serious problems doing the things you were supposed to do</td>
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<td>SF-12 scales, score (SE)</td>
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<td>Physical disability scale</td>
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<td>Mental health disability scale</td>
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\(^a\)Significant differences from BED with no overvaluation.
\(^b\)Significant differences from BN.
showed that BED, regardless of overvaluation status, was significantly higher than BN on the mental health disability scale (Table 2). Despite the significant omnibus effect of ED group, post hoc tests revealed no significant differences in physical disability scale by ED group.

**Discussion**

The present study examined the prevalence of BED with and without overvaluation and compared sociodemographic variables and psychosocial functioning of respondents with BED with and without overvaluation with those with BN in a sample derived from a large epidemiologic survey of U.S. adults. We estimated that 50% of U.S. adults with BED reported overvaluation of shape or weight. This is comparable to the findings from clinical studies, which have reported that between 46% and 68% of BED patients endorse clinical overvaluation (3,7,9-13). This suggests that overvaluation of shape or weight is not specific to those who seek treatment but rather appears to also commonly characterize roughly half of adults with BED in the general population.

We also identified several important similarities and differences in psychosocial impairment between BED with versus without overvaluation as well as all EDs. BED with overvaluation was associated with significantly greater psychosocial impairment. A significantly greater proportion of respondents with BED and overvaluation reported that their ED (1) interfered with normal daily activities relative to BED without overvaluation and BN, (2) caused serious problems getting along with others relative to BED without overvaluation, and (3) caused serious problems doing things you were supposed to do relative to BED without overvaluation. Levels of mental and physical disabilities were greater in BN relative to BED regardless of overvaluation, as indicated by lower SF-12 scores; they were similar between BED with and without overvaluation. Our findings regarding greater functional impairment associated with overvaluation are consistent with smaller community studies using convenience sampling (7,14). Our study also has potential limitations to consider. The reliability and validity of ED-related questions in the AUDADIS-5 have not been evaluated; the complexities determining diagnoses in large-scale studies are considerable (24). The AUDADIS-5 was administered by trained lay interviewers with computer assistance, rather than by clinicians. Furthermore, overvaluation was operationalized based on respondent endorsements of one of the three overvaluation questions in the AUDADIS-5 structured interview used in NSEARC-III. The challenges of assessing ED psychopathology, particularly complex constructs such as overvaluation and functional impairment, are acknowledged (24). We note, however, that previous studies of overvaluation in BED and BN using self-report (13) and investigator-based interviews (3) both relied on two items to capture overvaluation and that their findings converged. Moreover, research has supported the use of such single-item approaches over longer scales comprising admixtures of constructs (25).

In summary, these findings, derived from a large nationally representative sample of U.S. adults, suggest that the presence of overvaluation in BED signals greater severity (i.e., in this case, greater functional impairment) and therefore warrants consideration as a diagnostic specifier in future editions of the DSM (4,6,15). Research with clinical (26) and community (27) samples has found that overvaluation provides more robust information about severity of BED than the new DSM-5 severity specifier based on binge-eating frequency. We offer additional potential clinical implications cautiously based on our findings from this epidemiologic sample. First, our findings that body image disturbance is a salient feature in many persons with BED suggest that using body image-related queries or messages might be useful to help earlier identification of BED. Research has found that the majority of persons with BED do not seek help or delay getting help and that many health care providers fail to recognize BED (28). Perhaps asking about body image concerns, in addition to concerns about binge eating, might facilitate recognition. Second, in terms of clinical referral and treatment prescription, the presence of overvaluation, which signals greater severity and potentially poorer overall outcomes (16), might also signal the advantage of seeking cognitive behavioral therapy over pharmacological approaches (17). With cognitive behavioral therapy for BED, clinicians can utilize or focus more heavily on specific therapeutic techniques, such as cognitive restructuring, that specifically target patients’ shape and weight concerns.

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