Screening for *DSM-5* Other Specified Feeding or Eating Disorder in a Weight-Loss Treatment–Seeking Obese Sample

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ABSTRACT

Objective: To evaluate the effectiveness of specific self-report questionnaires in detecting *DSM-5* eating disorders identified via structured clinical interview in a weight-loss treatment–seeking obese sample, to improve eating disorder recognition in general clinical settings.

Method: Individuals were recruited over a 3-month period (November 2, 2011, to January 10, 2012) when initially presenting to a hospital-based weight-management center in the northeastern United States, which offers evaluation and treatment for outpatients who are overweight or obese. Participants (N = 100) completed the Structured Clinical Interview for *DSM-IV* eating disorder module, a *DSM-5* feeding and eating disorders interview, and a battery of self-report questionnaires.

Results: Self-reports and interviews agreed substantially in the identification of bulimia nervosa (*DSM-IV* and *DSM-5*: tau-b = 0.71, $P < .001$) and binge-eating disorder (*DSM-IV* and *DSM-5*: tau-b = 0.60, $P < .001$), modestly for subthreshold binge-eating disorder (tau-b = 0.44, $P < .001$), and poorly for other subthreshold conditions (night-eating syndrome: tau-b = –0.04, $P = .72$, $r = 0.06$ [*DSM-5*]).

Discussion: Current self-report assessments are likely to identify full syndrome *DSM-5* eating disorders in treatment-seeking obese samples, but unlikely to detect *DSM-5* other specified feeding or eating disorders. We propose specific content changes that might enhance clinical utility as suggestions for future evaluation.

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Obesity and eating disorders overlap substantially, with 7.5%[1] to 30%[2] of obese weight-loss program participants meeting criteria for binge-eating disorder. In a nationally representative face-to-face household survey in the United States, eating disorder prevalence was 0.9%, 1.5%, and 3.5% among women and 0.3% 0.5%, and 2.0% among men for anorexia nervosa, bulimia nervosa, and binge-eating disorder, respectively.[3] In the same and other studies,[3,4] subthreshold eating disorders were significantly more common, affecting 4.7% of American adults. Given that eating disorders are associated not only with health problems, but also with increased health care utilization,[5–7] primary care prevalence rates are likely to be even higher than in the general population. Unfortunately, the majority of eating disorder cases go undetected in clinical settings, including primary care.[5,6,8,9] For example, Mond and colleagues[7] reported that even though two-thirds of a group of 24 women with bulimic-type eating disorders attending primary care recognized a problem with their eating, only one-third of the individuals with self-identified problems had been asked about eating disorder symptoms by a primary care physician or other health provider, and even fewer had ever sought specialty help. Furthermore, an investigation of primary care and obstetric gynecology patients found that only 9% of individuals with eating disorders were recognized as having an eating disorder after evaluation by their clinician.[9] Time constraints may limit opportunities for detection; in 2005, the average length of a US primary care visit was just 20.8 minutes.[10] Given the great medical comorbidity,[11] as well as the high mortality rate of eating disorders,[12] it is crucial that individuals with eating disorders be identified promptly in primary care and referred to specialty services if needed. Therefore, it is critical that diagnostic measures be as short as possible, without sacrificing reliability and validity.

Diagnostic and Statistical Manual for Mental Disorders, Fifth Edition[13] (*DSM-5*) changes have rendered eating disorders even more relevant to individuals with obesity. For example, though binge-eating disorder was listed only as a research diagnosis in the *DSM-IV*, it became a formal diagnosis in the *DSM-5*. Moreover, several investigators have commented on the changing "weightscape" of bulimia nervosa, in which an increasing number of individuals who binge and purge are overweight or obese.[14,15] The *DSM-5* also describes new "other specified feeding or eating disorder" presentations that are particularly relevant to individuals with obesity, such as night-eating syndrome. Night-eating syndrome comprises recurrent episodes of night eating, manifested by eating after awakening from sleep or excessive food consumption after the evening meal,[16] often resulting in weight gain. Individuals with obesity are also at risk for developing other specified feeding or eating disorder presentations such as subthreshold bulimia nervosa and binge-eating disorder, according to studies using *DSM-IV* criteria.[17] Furthermore, atypical anorexia nervosa was specifically added to the *DSM-5* as an other specified feeding or eating disorder example to capture normal-weight or overweight persons who persistently engage in anorexic behaviors.

Clinical Points

- Screening for eating disorders in primary care practice is essential, as previous studies suggest that only one-third of individuals with eating disorders have been asked about problems with their eating.
- Suitable time-saving screening instruments are needed, in particular with major changes to eating disorder diagnostic criteria from the *DSM-IV* to the *DSM-5*.
- Primary care physicians can use the Questionnaire on Eating and Weight Patterns–Revised to identify bulimia nervosa and binge-eating disorder until *DSM-5*–based instruments have been created, but need to keep in mind that other specified feeding or eating disorder examples will most likely go undetected.

The gold standard for *DSM-IV* eating disorder diagnosis included structured interviews such as the Eating Disorder Examination[18] (EDE) and Structured Clinical Interview for *DSM-IV*[19] (SCID-IV). However, such interviews require time-intensive training and can be administered to only 1 respondent at a time.[20] Indeed, despite the fact that individuals with eating disorders consult their primary care physicians more frequently than those without eating disorders,[7] a majority of primary care physicians in the United States (68.0%) indicated that they would not administer an interview-based screening for eating disorders during routine visits.[21]

One advantage of questionnaires over structured interviews is that they can be scored quickly and do not require intensive training.[22] In addition, eating disorders such as binge-eating disorder are often associated with shame and guilt.[23] These emotions might be more pronounced during the administration of an in-person interview compared to a self-report questionnaire. Indeed, multiple studies have found that, compared to interviews, self-report questionnaires yield higher rates of eating disorder symptoms,[24,25] possibly due to greater perceived anonymity. Furthermore, previous studies[19,21,26–29] suggest that expert assessments and self-assessments of binge-eating disorder in obese samples yield acceptable to good agreement, including in primary care settings.[30]

Overall, there is preliminary evidence that self-report assessments may be viable and time-saving alternatives to structured interviews for detecting eating disorders. However, no studies to date have validated existing self-report measures to identify eating disorders diagnosed via new *DSM-5* criteria. Understanding the validity of self-report assessments for detecting new *DSM-5* eating disorders—and how these differ from assessments based on the *DSM-IV*—is critical for both research and practice. Validated self-report assessments are relevant for *DSM-5* other specified feeding or eating disorder, which is described in much greater detail than *DSM-IV* "eating disorder not otherwise specified," and is thought to be more common than anorexia nervosa, bulimia nervosa, and binge-eating disorder combined. The present study therefore investigated the concordance between eating disorder diagnoses according to the *DSM-IV* and *DSM-5* based on structured interviews versus self-report questionnaires. We hypothesized that concordance between measures would be higher for disorders defined in both the *DSM-IV* and *DSM-5* (eg, bulimia nervosa, binge-eating disorder) compared to those new to the *DSM-5* (eg, other specified feeding or eating disorder examples such as night-eating syndrome). Also, we expected one such questionnaire—the Clinical Impairment Assessment—to perform well as a first-step screening instrument in identifying *DSM-5* eating disorders, as it has successfully differentiated between cases and noncases in *DSM-IV* presentations.[31]

METHOD

Subjects

Participants were recruited over a 3-month period (November 2, 2011, to January 10, 2012) when initially presenting to a hospital-based weight-management center in the northeastern United States, which offers evaluation and treatment for outpatients who are overweight or obese. Patients who met a priori inclusion criteria (adequate English-language fluency and literacy, clinical allocation to the 2 participating psychologists, and aged 18–65 years) were invited to take part. Of the 147 individuals informed about the study, 110 agreed to participate. Of these, 10 (9.1%) could not be reached by phone after 3 attempts. Thus, a total of 100 of 147 (representing 68.0% of eligible patients evaluated at the center during the recruitment period) ultimately took part. Participants did not differ significantly from nonparticipants with respect to body mass index (BMI) ($F_{1,145} = 1.13$, $P = .29$), sex ($\chi^2_1 = 0.16$, $P = .69$), or age ($F_{1,145} = 0.76$, $P = .38$).

Procedures

One of 2 clinic-based psychologist asked patients on their intake day whether they would be interested in being contacted by telephone to hear more about a study investigating eating disorders among individuals with overweight or obesity. If these patients agreed, 1 of 3 PhD-level study psychologists contacted them by phone. If patients provided informed consent, they were interviewed via telephone using the SCID-IV eating disorder module as well as the Diagnostic Interview for *DSM-5* Feeding and Eating Disorders (see the Interview Assessments section). The interview was audio recorded to allow for examination of interrater reliability. Subsequently, the interviewer sent a link to an online survey including self-report assessments via secure e-mail. This study was part of a larger project that examined differences in eating disorder prevalence assessed through *DSM-IV* versus *DSM-5* (for more information see Thomas et al[32]). The Partners Human Research Committee, the institutional review board of record for Massachusetts General Hospital, Boston, approved the protocol.

Instruments

Measures included 2 structured interviews administered by a researcher (1 of 3 licensed psychologists with thorough training in eating disorder assessment) via telephone and

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a battery of self-report questionnaires completed online through REDCap (an electronic data capturing system[33]). We used interviews to identify all possible eating disorder cases (ie, both full syndrome and subthreshold) under both *DSM-IV* and *DSM-5* criteria. However, because *DSM-IV* eating disorder not otherwise specified did not have specific inclusion or exclusion criteria, we did not attempt to identify subthreshold *DSM-IV* cases using self-report questionnaires. In contrast, because *DSM-5* is much more explicit in describing named examples of other specified feeding or eating disorder, we developed operational diagnostic criteria for the present study that aligned with descriptions provided in the *DSM-5* and screened for these presentations via self-report.

Interview Assessments

SCID-IV eating disorder module.[18] The SCID-IV is a semistructured interview instrument for assessment of current and lifetime *DSM-IV* Axis I disorders. We used the eating disorder module to ascertain presence of a current *DSM-IV* eating disorder diagnosis. Interrater reliability within the present study was high: $\kappa = 0.87$ (almost perfect according to Landis and Koch[34]), with 95% agreement (the raters agreed on the specific eating disorder diagnosis or noncase status in 19 of 20 randomly selected cases).

Diagnostic Interview for DSM-5 Feeding and Eating Disorders. This interview-based assessment (B. T. Walsh, MD, written communication, February 2011) was developed to gain preliminary data for the *DSM* revision. In the present study, we used this interview to ascertain feeding or eating disorders according to proposed *DSM-5* criteria as well as description of other specified feeding or eating disorder presentations at that time. The questions in the interview mirror the criteria but are phrased to aid the assessment process. Interrater reliability within the present study was high: $\kappa = 0.87$ (almost perfect agreement according to Landis and Koch[34]), with 95% agreement (the raters agreed in 19 of 20 randomly selected cases).

Self-Report Measures

Clinical Impairment Assessment (CIA). The CIA[30] consists of 16 items and assesses psychosocial impairment that is associated with eating disorder symptoms within personal, cognitive, and social domains. Internal consistency of the CIA in the present sample was 0.95. For the present study, we applied a cutoff score of 16 for differentiating between eating disorder cases and noncases, as suggested by the measure authors.[30]

Questionnaire on Eating and Weight Patterns–Revised (QEWP-R). We chose the QEWP-R[35] because its 28 items are designed to assess diagnostic criteria for binge-eating disorder and bulimia nervosa. The QEWP-R has shown adequate test-retest reliability in previous studies (Cohen $\kappa = 0.58$).[36] We used coding strategies described by the authors[35] to identify *DSM-IV* binge-eating disorder and bulimia nervosa and created an analogous strategy for *DSM-5* using the once-weekly binge and/or purge frequency (Table 1). Furthermore, we also ascertained the provisional diagnostic criteria for purging disorder as in other studies using interviews[37,38] and self-reports.[39] Additionally, we operationalized a priori criteria for subthreshold bulimia nervosa and binge-eating disorder diagnoses from the *DSM-5* descriptions of other specified feeding or eating disorder examples (see Table 1).

Eating Disorder Examination–Questionnaire. The EDE-Q, version 6.0[40] evaluates the frequency of key eating disorder behaviors (eg, objective binge episodes, self-induced vomiting), as well as the severity of restraint, eating concern, shape concern, and weight concern. In the present study, the instrument showed satisfactory internal consistency reliability, 0.65 (weight concern) < Cronbach $\alpha < 0.84$ (shape concern) across each of the 4 subscales. We used this measure to operationalize the diagnosis of other specified feeding or eating disorder with features consistent with atypical anorexia nervosa (see Table 1).

Night Eating Questionnaire (NEQ). The NEQ[41] assesses the severity of the night-eating syndrome as well as its psychological and behavioral symptoms in 14 items that form 4 factors: nocturnal ingestions, evening hyperphagia, morning anorexia, and mood/sleep. As it assesses these associated features, the self-report is less broad in making a diagnosis of an other specified feeding or eating disorder presentation consistent with night-eating syndrome than the corresponding section of the *DSM-5* interview. According to the measure authors,[41] a sum score > 30 can be used to identify clinically significant night-eating syndrome. Internal consistency reliability of the NEQ in the present study was modest (Cronbach $\alpha = 0.55$ compared to 0.70 in the original validation study[42]).

Analyses

We computed sensitivity, specificity, and area under the curve (AUC) of the measures in identifying the presence of any eating disorder, as well as specific *DSM-IV* and *DSM-5* diagnoses. We examined concordances between interviews and self-reports by computing the Kendall tau-b. We converted tau-b correlation coefficients into a Pearson r ($r = \sin[0.5\pi\tau]$[43]) and interpreted them according to Cohen's standards[44] ($r > 0.1$, small effect; $r > 0.3$, medium effect; and $r > 0.5$, large effect). We examined group differences in numbers of cases using Fisher exact test, as it does not require cell numbers > 5, with the Cramer V reported as the effect size ($V > 0.1$, small; $V > 0.3$, medium; and $V > 0.5$, large).[45]

RESULTS

Demographic and Clinical Characteristics

Key demographic and clinical characteristics of study participants are summarized in Table 2. The majority were female, heterosexual, and white/non-Hispanic. Most individuals were married and had graduated from high school or college.

The sample BMIs ranged from 29.92 (minimum) to 66.25 (maximum), and approximately half (53%) had a BMI in the class III obesity range (BMI > 40). The mean onset of

Table 1. Operationalization of *DSM-5* Diagnoses Through Self-Report Assessments

Diagnosis	Measure	Item[a]	Item Content	Diagnostic Criteria
Bulimia nervosa	QEWP-R	10, 11, 12	Overeating, loss of control over eating (scores = 1 each), frequency (score ≥ 3)	Presence of overeating and loss of control and frequency of binge eating
		17	Influence of shape and weight on feeling as a person (score ≥ 3)	Undue influence of shape and weight
		18, 19, 20, 18a, 19a, 20a	Vomiting, laxatives, diuretics (score = 1 in 1 of the items), frequency (score ≥ 2)	Presence and frequency of purging
		OR		
		21, 22, 23, 21a, 22a, 23a	Fasting, diet pills, exercising (score = 1 in 1 of the items), frequency (score ≥ 2)	Presence and frequency of nonpurging compensatory strategies
Binge-eating disorder	QEWP-R	10, 11, 12	See above	Presence of overeating and loss of control and frequency of binge eating
		13	Eating more rapidly until feeling full, eating large amounts despite not being hungry, feeling embarrassed, feeling depressed, and feeling guilty (score ≥ 3)	Associated features of binge-eating disorder
		15, 16	Being upset/distressed (score ≥ 2)	Distress/burden experienced by overeating/loss of control
Subthreshold bulimia nervosa	QEWP-R		See bulimia nervosa above except for lower frequency: item12 (score = 1 or 2)	
Subthreshold binge-eating disorder	QEWP-R		See binge-eating disorder above except for lower frequency: item 12 (score = 1 or 2)	
Purging disorder	QEWP-R	18,19, 20	Vomiting, laxatives, diuretics (score = 1),	Purging behaviors
		18a, 19a, 20a	Frequency (score ≥ 2)	Frequency of purging behaviors (at least once a week over the last 3 mo)
		17	Influence of shape and weight on feeling as a person (score ≥ 3)	Undue influence of shape and weight
		10, 11	Overeating, loss of control over eating (score = 0 each)	Absence of binge eating
Atypical anorexia nervosa	EDE-Q	10	Fear of weight gain (score ≥ 4)	Fear of weight gain
		11, 22, 23	Feeling fat, influence of shape and weight on feeling as a person (score ≥ 4)	Body image disturbance, undue influence of shape and weight
		1, 2, 3	Limiting food intake, fasting, excluding foods from diet (score ≥ 4)	Nonpurging actions to counteract weight gain
		16, 17, 18	Vomiting, laxatives, exercising (score ≥ 4)	Purging actions to counteract weight gain
		13, 14	Overeating and loss of control over eating (score = 0)	Absence of binge eating

[a]Participants needed to meet all criteria unless otherwise specified as indicated with "OR."
Abbreviations: EDE-Q = Eating Disorder Examination–Questionnaire, QEWP-R = Questionnaire on Eating and Weight Patterns–Revised.

overweight was early, resulting in a relatively long duration of overweight status. The number of hospitalizations, including residential treatment, due to eating and other psychiatric disorders (ie, depressive episodes, anxiety disorders) was low.

Overview of Eating Disorder Prevalence

In this treatment-seeking sample of individuals with obesity, by definition, no participants met diagnostic criteria for anorexia nervosa, which requires markedly low body weight, by either interview or self-report. Under both *DSM-IV* and *DSM-5*, the prevalence of bulimia nervosa ranged from 2% (interview) to 1% (QEWP-R self-report), and the prevalence of binge-eating disorder ranged from 9% (interview) to 7% (QEWP-R self-report). Another 18 participants met diagnostic criteria for *DSM-IV* eating disorder not otherwise specified via SCID-IV (18%). Additionally, 19% (interview) and 5% (QEWP-R and EDE-Q self-report) met criteria for an other specified feeding or eating disorder presentation that corresponded to 1 of 5 examples listed in the *DSM-5* (ie, atypical anorexia nervosa, subthreshold bulimia nervosa and binge-eating disorder, purging disorder, night-eating syndrome). An additional 7% were classified via *DSM-5* interview (but not self-report) as having an "other" other specified feeding or eating disorder since their presentation was not consistent with a named example. Thus, the total *DSM-IV* eating disorder prevalence (bulimia nervosa, binge-eating disorder, and eating disorder not otherwise specified) was 29% according to interviews and 11% using questionnaires (this counts bulimia nervosa and binge-eating disorder only, as *DSM-IV* eating disorder not otherwise specified could not be identified via self-report). For *DSM-5*, the prevalence was 32% according to interview (inclusive of bulimia nervosa, binge-eating disorder, the 5 named examples of other specified feeding or eating disorder, and other specified feeding or eating disorder–other) and 14% using questionnaires (inclusive of bulimia nervosa, binge-eating disorder, and the 5 named

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Table 2. Participants' Demographic and Clinical Characteristics (N = 100)

Characteristic	Statistic
Age, mean (SD), y	45.83 (12.02)
Sex, n (%)	
Female	72 (72.0)
Race (response rate: n = 99, 99%), n (%)	
White	81 (81.0)
Ethnicity (response rate: n = 99, 99%), n (%)	
Non-Hispanic/non-Latino	89 (89.9)
Educational attainment (response rate: n = 99, 99%), n (%)	
≤ Grade 6	2 (2.0)
Grade 7–12	2 (2.0)
High school	16 (16.2)
Partial college	24 (24.2)
2-year college	7 (7.1)
4-year college	21 (21.2)
Partial graduate school	8 (8.1)
Graduate school	19 (19.2)
Marital status (response rate: n = 100, 100%), n (%)	
Divorced	11 (11.0)
Living with domestic partner	11 (11.0)
Married	48 (48.0)
Never married	24 (24.0)
Separated	4 (4.0)
Widowed	2 (2.0)
Sexual orientation (response rate: n = 99, 99%), n (%)	
Heterosexual	92 (92.9)
Age at onset of overweight, mean (SD), y	19.27 (11.77)
Body mass index, mean (SD), kg/m^2	41.87 (9.08)
Overweight (BMI = 25–29), mean (SD)	2 (2.00)
Class I obesity (BMI = 30–34), mean (SD)	15 (15.00)
Class II obesity (BMI = 35–39), mean (SD)	30 (27.00)
Class III obesity (BMI > 40), mean (SD)	53 (53.00)
Duration of overweight status, mean (SD), y	26.71 (14.75)
Hospitalizations due to eating disorders, mean (SD)	0.25 (1.28)

examples of other specified feeding or eating disorder only).

Sensitivity and Specificity of Self-Report Measures in Identifying *DSM-IV* Diagnoses

Overall, receiver operating characteristic analyses indicated that self-report measures showed medium sensitivity (0.21) and high specificity (0.97) in identifying the presence of bulimia nervosa and binge-eating disorder (ie, the only 2 *DSM-IV* eating disorders that the screening measures were designed to detect) according to *DSM-IV* criteria (AUC = 0.59). For bulimia nervosa, sensitivity was 0.50 and specificity was zero (AUC = 0.75), while for binge-eating disorder, sensitivity was 0.71 and specificity was 0.96 (AUC = 0.84).

Concordance Between Structured Interview and Self-Report for *DSM-IV* Diagnoses

Of the 11 cases identified with the SCID-IV, the CIA only identified a subset of 7. Furthermore, the CIA flagged an additional 28 individuals who were not diagnosed with a *DSM-5* eating disorder according to our structured interview ($\chi^2_1 = 4.46$, $P = .035$, V = 0.21).

Two participants were classified as bulimia nervosa (purging subtype) with the SCID-IV and 1 with the QEWP-R ($\chi^2_1 = 49.50$, $P = .020$, V = 0.70), which represents a large concordance (tau-b = 0.71, $P < .001$, $r = 0.90$). No participant received a diagnosis of bulimia nervosa (nonpurging subtype) on either measure. Concordance of binge-eating disorder diagnoses measured with the SCID-IV (n = 9) and QEWP-R (n = 7) was also large and significant (tau-b = 0.60, $P < .001$, $r = 0.81$). Interviews and questionnaires differed in the number of identified cases with binge-eating disorder ($\chi^2_1 = 35.82$, $P < .001$, V = 0.56) (Table 3).

Sensitivity and Specificity of Self-Report Measures in Identifying *DSM-5* Diagnoses

Overall, receiver operating characteristic analyses demonstrate that self-report measures showed medium sensitivity (0.47) and high specificity (0.78) in identifying the presence of any type of eating disorder according to *DSM-5* criteria (AUC = 0.62). Sensitivity and specificity in detecting specific full and subthreshold diagnoses varied, with better identification of full syndrome eating disorders ($0.50 \leq$ sensitivity ≤ 0.56; $0.98 \leq$ specificity ≤ 1.00) than of other specified feeding or eating disorder (< 0.01 [night-eating syndrome] $\leq$ sensitivity ≤ 1 [purging disorder]; < 0.01 [purging disorder] $\leq$ specificity ≤ 1.00 [subthreshold binge-eating disorder]).

Concordance Between Structured Interview and Self-Report for *DSM-5* Diagnoses

Of the 32 cases identified with the *DSM-5* interview, the CIA only identified a subset of 19. Furthermore, the CIA flagged an additional 18 individuals who were not diagnosed with a *DSM-5* eating disorder according to our structured interview ($\chi^2_1 = 10.11$, $P = .001$, V = 0.32).

Two participants were diagnosed with bulimia nervosa in the *DSM-5*-oriented interview and 1 in the QEWP-R ($\chi^2_1 = 49.50$, $P = .020$, V = 0.70), which represents a large concordance (tau-b = 0.71, $P < .001$, $r = 0.90$). Binge-eating disorder was diagnosed in 9 individuals via interview and 7 individuals using the QEWP-R, which yielded a large concordance (tau-b = 0.60, $P < .001$, $r = 0.81$), but a significant group difference ($\chi^2_1 = 35.82$, $P < .001$, V = 0.56).

Finally, we compared the number of night-eating syndrome, atypical anorexia nervosa, subthreshold bulimia nervosa, subthreshold binge-eating disorder, and purging disorder cases identified using the *DSM-5*–oriented interview assessment versus self-report (Table 4). Interview assessment did not identify atypical anorexia nervosa in any of the individuals, whereas, surprisingly, we identified atypical anorexia nervosa in 15 individuals via the EDE-Q using our operationalization developed for the present study. In addition, the *DSM-5* interview classified 5 participants as subthreshold binge-eating disorder, whereas the QEWP-R classified only 1 participant (who was among these 5) as such ($\chi^2_1 = 19.19$, $P = .050$, V = 0.44). This finding corresponds with a medium-sized concordance (tau-b = 0.44, $P < .001$, $r = 0.64$). The *DSM-5* interview classified 2 participants as subthreshold bulimia nervosa, whereas the QEWP-R classified none. One individual with purging disorder was identified in the interview and also with the diagnosis operationalized through the QEWP-R ($\chi^2_1 = 99.00$, $P = .010$, V = 1.00),

Table 3. Full-Syndrome Eating Disorder Diagnoses Assessed With Interview and Self-Report and With *DSM-IV* and *DSM-5* Diagnostic Criteria

Diagnosis	SCID-I for *DSM-IV*	QEWP-R *DSM-IV*	Agreement[a]	Interview for *DSM-5*	QEWP-R *DSM-5*	Agreement[a]
Bulimia nervosa	2	1	1	2	1	1
Binge-eating disorder	9	7	5	9	7	5

[a]Number of cases identified with both measures in *DSM-IV* and *DSM-5*, respectively.
Abbreviations: QEWP-R = Questionnaire on Eating and Weight Patterns–Revised, SCID-I = Structured Clinical Interview for *DSM-IV*.

Table 4. A Comparison of Interview-Based and Self-Report Assessment of *DSM-5* Other Specified Feeding and Eating Disorders Diagnoses

DSM-5	*DSM-5* Interview	Self-Report	Agreement[a]
Atypical anorexia nervosa	0	15	0
Subthreshold bulimia nervosa	2	0	0
Subthreshold binge-eating disorder	5	1	1
Purging disorder	1	1	1
Night-eating syndrome	6	4	0

[a]Number of cases identified with both measures in *DSM-IV* and *DSM-5*, respectively.

representing a large concordance (tau-b = 1.00, $r = 1.00$). We identified night-eating syndrome in 6 participants via interview and 4 participants via the NEQ ($\chi^2_1 = 0.25$, $P = .90$, V = 0.09). However, the interview and self-report assessments were discordant for night-eating syndrome in each of these individuals (tau-b = –0.04, $P = .72$, $r = 0.06$). The individuals with night-eating syndrome identified via interview received higher scores on the NEQ (mean = 22.00, SD = 4.47, range, 15–28) than those not diagnosed with night-eating syndrome (mean = 14.86, SD = 4.93, $t = 3.41$, $P = .001$); but all scored below the cutoff for night-eating syndrome caseness. The 4 participants who were classified as night-eating syndrome via the NEQ were all diagnosed with a different eating disorder diagnosis by the *DSM-5* interview: bulimia nervosa, binge-eating disorder, subthreshold bulimia nervosa and binge-eating disorder (1 individual with each diagnosis). Of the 7 individuals diagnosed within the other specified feeding or eating disorder–other category, none received an eating disorder diagnosis via self-report, also because we were unable to operationalize criteria for other specified feeding or eating disorder–other from existing self-report questionnaires.

DISCUSSION

The present study examined the clinical utility of self-report measures as a valid and efficient alternative to clinical interviews in ascertaining *DSM-5* other specified feeding or eating disorders in an outpatient weight-loss treatment–seeking sample of individuals with obesity. Concordance in diagnostic classification between assessments made by interviews and self-report questionnaires was satisfactory for bulimia nervosa and binge-eating disorder by both *DSM-IV* and *DSM-5* criteria. However, this was not the case for the 5 other specified feeding or eating disorder examples described in the *DSM-5*. Therefore, the use of self-report assessments, such as the QEWP-R, can be recommended to screen for *DSM-5* bulimia nervosa and binge-eating disorder, whereas they cannot be recommended to screen for *DSM-5* other specified feeding or eating disorders. Furthermore, based on its poor performance evidenced by multiple false positives and false negatives, the CIA cannot be recommended as a screener for any *DSM-5* eating disorders among overweight individuals seeking weight-loss treatment. It is possible that individuals with obesity endorse functional impairment on the CIA due to their overweight status in general rather than to an eating disorder specifically.

Overall, in our study sample, self-reports identified fewer individuals as having binge-eating disorder, but the agreements between self-report and *DSM-IV* and *DSM-5* interview diagnoses were large and significant. This is consistent with earlier studies that found acceptable to good agreement for binge-eating disorder identified by interview versus self-report using *DSM-IV* criteria.[19,21,25–28] However, our sensitivity and specificity analyses suggest that self-reports may fail to identify some cases of bulimia nervosa, particularly those individuals who do not use self-induced vomiting as a form of purging. Specifically, we identified 2 cases of bulimia nervosa via *DSM-IV* and *DSM-5* interview, but only 1 through self-report, thus some alterations to questionnaires might be needed in order to fully detect bulimia nervosa in obese samples.

However, existing self-report measures performed poorly in screening for the 5 named examples of *DSM-5* other specified feeding or eating disorder: atypical anorexia nervosa, subthreshold bulimia nervosa and binge-eating disorder, purging disorder, and night-eating syndrome. These conditions are salient to clinical practice, because individual symptoms (eg, body dissatisfaction, dieting) are risk factors for the onset of full-blown eating disorders,[46] and subthreshold eating disorders are associated with elevated mortality rates.[47] For the diagnosis of atypical anorexia nervosa, we used operational diagnostic criteria developed for this study, based on responses to EDE-Q items concerning the cognitive symptoms of fear of weight gain, feeling fat, and overevaluation of shape and weight, combined with unhealthy weight control behaviors and the absence of binge eating. This method led to classification of 15 individuals with atypical anorexia nervosa, none of whom were identified as having an eating disorder via *DSM-5* interview. Thus, our findings do not support the use of this method to diagnose or even screen for atypical anorexia nervosa and suggest that atypical anorexia nervosa may be difficult to operationalize in epidemiologic settings, particularly among obese individuals who are actively attempting to lose weight. In this study, subthreshold bulimia nervosa and binge-eating disorder also could only be assessed using operational diagnostic criteria

Table 5. Main Proposed Changes for Further Research Evaluation for Improving Self-Report Assessment of *DSM-5* Eating Disorder Diagnoses

Diagnosis	Suggested Change
Bulimia nervosa and binge-eating disorder	Adaptation of QEWP-R to accommodate different duration of symptom presentation: eg, change duration in items 10, 12, 15, 16, and 17 from 6 to 3 mo Change scoring in order to accommodate new frequency of symptoms required (at least once a week) for items 12, 18,19, 20, 21, 22, and 23
Atypical anorexia nervosa	Assessment of significant weight loss in individual besides cognitive and affective symptoms Add item to EDE-Q: "Have you lost a significant amount of weight during the last 3 mo?"
Subthreshold bulimia nervosa, binge-eating disorder, and purging disorder	Adaptations of QEWP-R to accommodate limited duration of symptom presentation as well as limited frequency; see "to be changed" items for bulimia nervosa and binge-eating disorder
Night-eating syndrome	Assessment of daytime binge eating to more accurately discriminate night-eating syndrome from bulimia nervosa and binge-eating disorder Add items such as "Do you also have cravings during the day? If yes, do you experience overeating with/without a loss of control during the day? How often? Does this occur more often than during the night?"

Abbreviations: EDE-Q = Eating Disorder Examination Questionnaire, QEWP-R = Questionnaire on Eating and Weight Patterns–Revised.

based on a limited frequency of binges—but not duration of the disorders—as the QEWP-R assesses symptoms in a 6-month timeframe, in contrast to the 3-month timeframe now referenced in the *DSM-5*. For these conditions, concordance between *DSM-5* interview and this study's self-report assessments was barely satisfactory.

One clinical presentation that lands squarely within other specified feeding or eating disorder and was not classified as a full syndrome disorder under the *DSM-5* is night-eating syndrome. The NEQ was designed to measure the severity of night-eating syndrome, rather than to establish a categorical diagnosis. The results of our study are consistent with this use of the NEQ, as we found zero concordance between the NEQ and clinical interview, and the NEQ identified different patients as having NES compared to the interview. Further, the night eaters identified with the *DSM-5* interview also yielded significantly higher but not above-threshold scores on the NEQ. Thus, the self-report NEQ measure does not appear to be a clinically useful means of diagnosing NES. Notably, if a lower threshold score of 25 had been used in our study—as in the study by Olbrich et al[48]—2 individuals with night-eating syndrome identified with the interview would have scored above threshold. Thus, additional research may be needed to clarify the ideal cutoff score, especially since our findings suggest that the NEQ may misclassify individuals with (subthreshold) bulimia nervosa or binge-eating disorder as night-eating syndrome. This misclassification is particularly concerning, because it has been posited that binge-eating disorder and night-eating syndrome are clinically distinct disorders.[49] Table 5 presents some suggestions for revising current self-report questionnaires to conform with revised *DSM-5* criteria that could be evaluated for their clinical utility in a future study.

Finally, consistent with previous epidemiologic studies using *DSM-IV* criteria, other specified feeding or eating disorder was the most common eating disorder diagnosis in our weight-loss treatment–seeking sample, and among these, other specified feeding or eating disorder–other was the most common presentation. The fact that we currently cannot capture other specified feeding or eating disorder–other via self-report and that these individuals were not identified as having any other kind of other specified feeding or eating disorder presentation through existing questionnaires highlights the importance of ensuring that new and revised eating disorder screening instruments more closely mirror *DSM-5* criteria. It remains to be seen whether other specified feeding or eating disorder–other, which lacks specific diagnostic criteria, can be accurately operationalized in self-report format, or whether clinical judgment will always be required in order to confer the diagnosis.

The present study has both weaknesses and strengths. The response rate (68%) may have introduced selection bias on unmeasured variables, even though our comparisons suggested that participants and nonparticipants did not substantially differ on key characteristics. Also, the number of participants (N = 100) is limited, in particular with regard to the prevalence of certain disorders. Thus, these interesting preliminary findings could be evaluated for replication in a larger study. In addition, the advantages and disadvantages of phone (instead of face-to-face) interviews may counterbalance each other: while it may be easier to talk about potentially sensitive information via phone, telephonic disclosure may feel awkward. Furthermore, since self-report measures were conducted online, our study may have attracted individuals who were particularly literate in technology. Additionally, we could not capture the significant weight loss suggested for the diagnosis of atypical anorexia nervosa with available standardized self-report assessments in this study. Therefore, we recommend that authors of existing eating disorder questionnaires consider including such an item in future iterations for evaluation of the assessment's clinical utility for screening in the primary care clinical population. Such an inclusion might be especially useful since single EDE-Q items may identify attitudes and behaviors that represent pathology in underweight and normal-weight individuals, but which in obese individuals might reflect a healthful desire to lose weight.

An additional limitation is that the QEWP-R measures eating pathology over the course of 6 months and the EDE-Q assesses disordered cognitions and behaviors over a period of 1 month (rather than 3 months required for *DSM-5* bulimia nervosa and binge-eating disorder, or 3

months previously suggested for *DSM-IV* bulimia nervosa). Furthermore, our sample included only treatment-seekers from a weight-loss center. Most patients were referred to the center by their primary care physicians, and we therefore assume that these patients would not differ from ordinary primary care patients on variables other than weight. However, the potential for selection bias cannot be ruled out, and replication of our study in a primary care setting is essential. And, lastly, a difficulty pertaining more to the field and the *DSM* than to the current study is the lack of specific diagnostic criteria for other specified feeding or eating disorder examples; a replication of this study with a more specific operationalization of other specified feeding or eating disorder examples would therefore be desirable. Strengths include the thorough training and experience of the interviewers and the use of assessments with established validity for the *DSM-IV* eating disorder diagnoses anorexia nervosa, bulimia nervosa, and binge-eating disorder.

In conclusion, the present study suggests that, in this early post-*DSM-IV* era, the QEWP-R might be a clinically useful self-report alternative to structured diagnostic interviews in screening for the presence of bulimia nervosa and binge-eating disorder in weight-loss treatment–seeking populations. In contrast, our findings do not support the utility of available self-report assessments, including the QEWP-R, NEQ, CIA, and EDE-Q, in screening for all presentations of other specified feeding or eating disorder. We propose specific changes (see Table 5) for evaluation of improved sensitivity for the identification of *DSM-5* eating disorders—in particular those that fall under the umbrella of other specified feeding or eating disorder. In addition, looking to the future, we recommend development of a new, more general, transdiagnostic self-report measure, which might serve as the optimal first stage of a 2-stage screening process for primary care physicians to decide on referrals to specialists for more in-depth interview assessment and differential diagnosis. Such a measure would require especially careful validation in distinguishing subthreshold *DSM-5* eating disorders from nonpathological forms of weight control, particularly among individuals with obesity.

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REFERENCES

1. Ricca V, Mannucci E, Moretti S, et al. Screening for binge-eating disorder in obese outpatients. *Compr Psychiatry*. 2000;41(2):111–115.
2. Spitzer RL, Devlin M, Walsh BT, et al. Binge-eating disorder: a multisite field trial of the diagnostic criteria. *Int J Eat Disord*. 1992;11(3):191–203.
3. Hudson JI, Hiripi E, Pope HG Jr, et al. The prevalence and correlates of eating disorders in the National Comorbidity Survey Replication. *Biol Psychiatry*. 2007;61(3):348–358.
4. Le Grange D, Swanson SA, Crow SJ, et al. Eating disorder not otherwise specified presentation in the US population. *Int J Eat Disord*. 2012;45(5):711–718.
5. Cummins LH, Dunn EC, Rabin L, et al. Primary care provider familiarity with binge-eating disorder and implications for obesity management: a preliminary survey. *J Clin Psychol*. 2003;10(1):51–56.
6. Striegel-Moore RH, Dohm FA, Wilfley DE, et al. Toward an understanding of health services use in women with binge-eating disorder. *Obes Res*. 2004;12(5):799–806.
7. Mond JM, Myers TC, Crosby RD, et al. Bulimic eating disorders in primary care: hidden morbidity still? *J Clin Psychol Med Settings*. 2010;17(1):56–63.
8. Crow SJ, Peterson CB, Levine AS, et al. A survey of binge-eating and obesity treatment practices among primary care providers. *Int J Eat Disord*. 2004;35(3):348–353.
9. Johnson JG, Spitzer RL, Williams JB. Health problems, impairment and illnesses associated with bulimia nervosa and binge-eating disorder among primary care and obstetric gynecology patients. *Psychol Med*. 2001;31(8):1455–1466.
10. Chen LM, Farwell WR, Jha AK. Primary care visit duration and quality: does good care take longer? *Arch Intern Med*. 2009;169(20):1866–1872.
11. Mehler PS, Andersen AE. *Eating Disorders: A Guide to Medical Care and Complications*. Baltimore, MD: Johns Hopkins University Press; 2011.
12. Preti A, Rocchi MB, Sisti D, et al. A comprehensive meta-analysis of the risk of suicide in eating disorders. *Acta Pschiatr Scand*. 2011;124(1):6–17.
13. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition. Arlington, VA: American Psychiatric Association; 2013.
14. Bulik CM, Marcus MD, Zerwas S, et al. The changing "weightscape" of bulimia nervosa. *Am J Psychiatry*. 2012;169(10):1031–1036.
15. Villarejo C, Fernández-Aranda F, Jiménez-Murcia S, et al. Lifetime obesity in patients with eating disorders: increasing prevalence, clinical and personality correlates. *Eur Eat Disord Rev*. 2012;20(3):250–254.
16. Lundgren JD, Drapeau V, Allison KC, et al. Prevalence and familial patterns of night eating in the Québec adipose and lifestyle investigation in youth (QUALITY) study. *Obesity (Silver Spring)*. 2012;20(8):1598–1603.
17. Vamado PJ, Williamson DA, Bentz BG, et al. Prevalence of binge eating disorder in obese adults seeking weight loss treatment. *Eat Weight Disord*. 1997;2(3):117–124.
18. Fairburn CG, Cooper Z. The Eating Disorder Examination. In: Fairburn CG, Wilson GT, eds. *Binge Eating: Nature, Assessment and Treatment*. 12th ed. New York, NY: Guilford Press; 1993:317–360.
19. First MB, Spitzer RL, Gibbon M, et al. *Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Research Version, Patient Edition (SCID-I/P)*. New York, NY: Biometrics Research, New York State Psychiatric Institute, 2002.
20. Wilfley DE, Schwartz MB, Spurrell EB, et al. Assessing the specific psychopathology of binge eating disorder patients: interview or self-report? *Behav Res Ther*. 1997;35(12):1151–1159.
21. Linville D, Brown T, O'Neil M. Medical providers' self perceived knowledge and skills for working with eating disorders: a national survey. *Eat Disord*. 2012;20(1):1–13.
22. Decaluwé V, Braet C. Assessment of eating disorder psychopathology in obese children and adolescents: interview versus self-report questionnaire. *Behav Res Ther*. 2004;42(7):799–811.
23. Albohn-Kühne C, Rief W. Shame, guilt and social anxiety in obesity with binge-eating disorder [article in German]. *Psychother Psychosom Med Psychol*. 2011;61(9–10):412–417.
24. Keel PK, Crow S, Davis TL, et al. Assessment of eating disorders: comparison of interview and questionnaire data from a long-term follow-up study of bulimia nervosa. *J Psychosom Res*. 2002;53(5):1043–1047.
25. Mond JM, Hay PJ, Rodgers B, et al. Self-report versus interview assessment of purging in a community sample of women. *Eur Eat Disord Rev*. 2007;15(6):403–409.

26. de Zwaan M, Mitchell JE, Specker SM, et al. Diagnosing binge eating disorder: level of agreement between self-report and expert-rating. *Int J Eat Disord*. 1993;14(3):289–295.
27. Dymek-Valentine M, Rienecke-Hoste R, Alverdy J. Assessment of binge eating disorder in morbidly obese patients evaluated for gastric bypass: SCID versus QEWP-R. *Eat Weight Disord*. 2004;9(3):211–216.
28. Freitas SR, Lopes CS, Appolinario JC, et al. The assessment of binge eating disorder in obese women: a comparison of the binge eating scale with the structured clinical interview for the *DSM-IV*. *Eat Behav*. 2006;7(3):282–289.
29. Grilo CM, Masheb RM, Wilson GT. Different methods for assessing the features of eating disorders in patients with binge eating disorder: a replication. *Obes Res*. 2001;9(7):418–422.
30. Barnes RD, Masheb RM, White MA, et al. Comparison of methods for identifying and assessing obese patients with binge eating disorder in primary care settings. *Int J Eat Disord*. 2011;44(2):157–163.
31. Bohn K, Doll HA, Cooper Z, et al. The measurement of impairment due to eating disorder psychopathology. *Behav Res Ther*. 2008;46(10):1105–1110.
32. Thomas JJ, Koh KA, Eddy KT, et al. Do *DSM-5* feeding and eating disorder criteria over-pathologize normative eating patterns among individuals with obesity? *J Obes*. 2014;320803:1–8.
33. Harris PA, Taylor R, Thielke R, et al. Research electronic data capture (REDCap): a metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform*. 2009;42(2):377–381.
34. Landis JR, Koch GG. An application of hierarchical kappa-type statistics in the assessment of majority agreement among multiple observers. *Biometrics*. 1977;33(2):363–374.
35. Spitzer R, Yanovski S, Marcus M. *The Questionnaire on Eating and Weight Patterns-Revised (QEWP-R)*. New York, NY: New York State Psychiatric Institute; 1993.
36. Nangle DW, Johnson WG, Carr-Nangle RE, et al. Binge eating disorder and the proposed *DSM-IV* criteria: psychometric analysis of the Questionnaire of Eating and Weight Patterns. *Int J Eat Disord*. 1994;16(2):147–157.
37. Smith KE, Crowther JH. An exploratory investigation of purging disorder. *Eat Behav*. 2013;14(1):26–34.
38. Stice E, Marti CN, Rohde P. Prevalence, incidence, impairment, and course of the proposed *DSM-5* eating disorder diagnoses in an 8-year prospective community study of young women. *J Abnorm Psychol*. 2013;122(2):445–457.
39. Tasca GA, Maxwell H, Bone M, et al. Purging disorder: psychopathology and treatment outcomes. *Int J Eat Disord*. 2012;45(1):36–42.
40. Fairburn CG, Beglin S. Eating disorder examination questionnaire (EDE-Q 6.0). In: Fairburn CG, ed. *Cognitive Behavior Therapy and Eating Disorders*. New York, NY: Guilford Press; 2008:309–314.
41. Allison KC, Lundgren JD, O'Reardon JP, et al. The Night Eating questionnaire (NEQ): psychometric properties of a measure of severity of the night eating syndrome. *Eat Behav*. 2008;9(1):62–72.
42. Allison KC, Grilo CM, Masheb RM, et al. Binge eating disorder and night eating syndrome: a comparative study of disordered eating. *J Consult Clin Psychol*. 2005;73(6):1107–1115.
43. Walker DA. Converting Kendall's tau for correlational or meta-analytic analyses. *J Mod Appl Stat Methods*. 2003;2(2):525–530.
44. Cohen J. Statistical power analysis. *Curr Dir Psychol Sci*. 1992;1(3):98–101.
45. Cramér H. *Mathematical Methods of Statistics*. Princeton, NJ: Princeton University Press; 1999.
46. Stice E, Marti CN, Durant S. Risk factors for onset of eating disorders: evidence of multiple risk pathways from an 8-year prospective study. *Behav Res Ther*. 2011;49(10):622–627.
47. Arcelus J, Mitchell AJ, Wales J, et al. Mortality rates in patients with anorexia nervosa and other eating disorders: a meta-analysis of 36 studies. *Arch Gen Psychiatry*. 2011;68(7):724–731.
48. Olbrich K, Mühlhans B, Allison KC, et al. Night eating, binge eating and related features in patients with obstructive sleep apnea syndrome. *Eur Eat Disord Rev*. 2009;17(2):120–127.
49. Stunkard AJ, Allison KC. Two forms of disordered eating in obesity: binge eating and night eating. *Int J Obes Relat Metab Disord*. 2003;27(1):1–12.