Epidemiology and Recognition of Binge-Eating Disorder in Psychiatry and Primary Care

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Substantial unmet needs exist regarding the awareness, diagnosis, and treatment of binge-eating disorder (BED). Affecting both men and women and appearing in all ethnic groups, BED is the most prevalent of all the eating disorders in the United States and worldwide. Left untreated, BED causes significant impairment, reduced quality of life, and decreased productivity. Many patients are unaware of the disorder and present for treatment of weight-related issues or comorbid medical and psychiatric conditions. Communication barriers, such as the reluctance of patients to volunteer information about their eating habits and of clinicians to ask potentially sensitive questions, may be overcome with the use of diagnostic criteria along with appropriate assessment questions and screening tools. Early recognition and accurate diagnosis may help mitigate the long-term impact of BED.

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Binge-eating disorder (BED) may not be as well-known as anorexia nervosa or bulimia nervosa due to its more recent formal recognition as an eating disorder. Although binge-eating behavior was first described by Stunkard in 1959,[1] its first mention in the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM*) was not until the third edition was published in 1980.[2] There, binge eating was included as a feature of bulimia nervosa. The term *binge-eating disorder* was introduced in the *DSM-IV* in 1994,[3] both under the category of Eating Disorder Not Otherwise Specified and with full criteria in the appendix of conditions requiring further study. Eventually, BED was formally recognized as a psychiatric disorder and a distinct eating disorder in the *DSM-5*,[4] published in 2013.

Even with the recent attention and research to develop its epidemiology and diagnostic criteria, BED remains underrecognized and undertreated.[5] However, clinicians who familiarize themselves with the diagnostic criteria, overcome communication barriers with patients, and incorporate screening tools into clinical assessment can improve their recognition of BED and help patients begin appropriate treatment.

DIAGNOSTIC CRITERIA

Binge-eating episodes are characterized by eating a larger amount of food in a discrete period than is typical for most people, while feeling unable to control the eating (Table 1).[4] During binge-eating episodes, individuals often eat very rapidly despite not being hungry, and they eat until they feel uncomfortably full, usually alone because of embarrassment. Episodes are followed by disgust or guilt and must cause marked distress in the individual.

The diagnosis of BED requires the presence of recurrent binge-eating episodes occurring at least once per week for a period of at least 3 months.[4] This frequency was reduced from the *DSM-IV* criteria[3] (which required at least 2 episodes per week for at least 6 months), because it allowed for better identification of clinically significant symptoms without a substantial increase in prevalence.[6] In contrast to anorexia nervosa and bulimia nervosa, the binge eating in BED is not associated with recurrent use of inappropriate compensatory behavior, such as purging, exercising excessively, or misusing laxatives.[4]

Although not a diagnostic criterion of BED (as in anorexia nervosa and bulimia nervosa), overvaluation of body shape and weight is commonly seen in patients with BED.[7] Overvaluation is more specific than body dissatisfaction because individuals place undue importance on body shape and weight to the point that these factors define their self-worth. As a cognitive feature, overvaluation is associated with severity of eating pathology and psychological distress and has negative prognostic significance.[7]

Clinicians must distinguish BED from overeating, which is a common phenomenon among Americans (eg, at holiday meals) but does not meet other BED criteria, such as loss of control or feelings of shame and guilt.

The severity of BED is based on frequency of binge-eating episodes. Mild severity is 1–3 episodes per week, moderate is 4–7, severe is 8–13, and extreme is 14 or more.[4]

EPIDEMIOLOGY

Among the eating disorders, BED is the most prevalent, both in the United States and worldwide. Three large studies[8–10] have assessed the prevalence of BED (Table 2).

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- Clinicians must be familiar with *DSM-5* criteria for binge-eating disorder (BED) in order to differentiate it from other eating disorders, such as bulimia nervosa and anorexia nervosa.

- Many patients are unaware of the BED diagnosis, are reluctant to discuss their eating habits, and seek treatment for weight management or comorbid medical or psychiatric conditions rather than BED.

- Clinicians can use assessment questions along with screening tools (eg, EDE-Q, QEWP-5, BEDS-7) to identify patients with BED.

Table 1. Summary of the *DSM-5* Diagnostic Criteria for Binge-Eating Disorder[a]

Criterion A. Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following:
1. Eating, in a discrete period of time (eg, within any 2-hour period), an amount of food that is definitely larger than what most people would eat in a similar period of time under similar circumstances
2. A sense of lack of control over eating during the episode (eg, a feeling that one cannot stop eating or control what or how much one is eating)

Criterion B. The binge-eating episodes are associated with 3 (or more) of the following:
1. Eating much more rapidly than normal
2. Eating until feeling uncomfortably full
3. Eating large amounts of food when not feeling physically hungry
4. Eating alone because of feeling embarrassed by how much one is eating
5. Feeling disgusted with oneself, depressed, or very guilty afterward

Criterion C. Marked distress regarding binge eating is present

Criterion D. The binge eating occurs, on average, at least once a week for 3 months

Criterion E. The binge eating is not associated with the recurrent use of inappropriate compensatory behavior as in bulimia nervosa and does not occur exclusively during the course of bulimia nervosa or anorexia nervosa

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Abbreviation: *DSM-5* = *Diagnostic and Statistical Manual of Mental Disorders,* Fifth Edition.

In a US study[8] based on data from the National Comorbidity Survey Replication (NCS-R; N = 9,282), the lifetime prevalence of BED was 2.6%,[9] while the rate of anorexia nervosa was 0.6% and the rate of bulimia nervosa was 1%. The 12-month prevalence rate of BED was 1.2%.[8]

Based on data from the World Health Organization (WHO) World Mental Health Surveys,[9] which assessed more than 24,000 adults across 14 countries, the average lifetime prevalence of BED was 1.9%, with rates ranging from 0.2% in Romania to 4.7% in Brazil. The average 12-month prevalence of BED was 0.8%.

Both of these studies[8,9] used *DSM-IV* criteria for BED. A recent Internet survey[10] of a nationally representative US sample compared BED prevalence according to *DSM-IV-TR*[11] (same as *DSM-IV*[3]) and *DSM-5*[4] criteria. Among more than 22,000 respondents, *DSM-5* criteria for BED resulted in higher prevalence estimates than *DSM-IV-TR* criteria did (1.64% vs 1.15% for 12-month prevalence and 2.03% vs 1.52% for lifetime prevalence, respectively).[10]

As with bulimia nervosa and anorexia nervosa, BED is much more prevalent in women than in men (3.5% vs 2.0%), although the gender ratio is more balanced for BED.[8] In addition to being common in both men and women, BED is seen across ethnic and racial groups. Pooled data[12] from the National Institute of Mental Health Collaborative Psychiatric Epidemiologic Studies revealed a similar prevalence of BED among Latinos, Asians, African Americans, and non-Latino whites in the United States. However, the lifetime prevalence of any binge-eating behavior was greater among each of the ethnic minority groups compared with non-Latino whites.[12]

The mean age at onset of BED in the NCS-R was 25.4 years.[8] Similarly, the mean age at onset was 23.3 years in the WHO World Mental Health Surveys.[9] However, BED is also seen in adolescents. The NCS-R Adolescent Supplement[13] examined the prevalence of eating disorders in a nationally representative sample of over 10,000 adolescents (aged 13 to 18 years) in the United States. The most common eating disorder identified was BED, with a lifetime prevalence estimate of 1.6% compared with 0.3% and 0.9% for anorexia nervosa and bulimia nervosa, respectively.[13] Data from the Growing Up Today Study[14,15] have shown that binge eating in adolescents may predict future depression, obesity, and substance use.

Table 2. US Prevalence of Binge-Eating Disorder Based on Different *DSM* Criteria

| Study	Diagnostic Criteria	12-Month Prevalence, %	Lifetime Prevalence, %
Hudson et al,[8] Kessler et al[9]	*DSM-IV*[3]	1.2	2.6
Cossrow et al[10]	*DSM-IV-TR*[11]	1.2	1.5
Cossrow et al[10]	*DSM-5*[4]	1.6	2.0

Abbreviations: *DSM-IV* = *Diagnostic and Statistical Manual of Mental Disorders,* Fourth Edition; *DSM-IV-TR* = *Diagnostic and Statistical Manual of Mental Disorders,* Fourth Edition, Text Revision; *DSM-5* = *Diagnostic and Statistical Manual of Mental Disorders,* Fifth Edition.

Obesity and BED are strongly associated.[8,16] Among individuals with BED, 42.4% are obese (ie, body mass index [BMI] > 30 kg/m^2), with 14.8% having a BMI > 40 kg/m^2, which is considered the most severe class of obesity.[8,17] However, it is important to note that more than half of individuals with BED are not obese.[16]

One group in which BED is found is individuals seeking weight loss treatment, such as bariatric surgery. Prevalence rates for patients with BED prior to bariatric surgery range from 4% to 49%, with the large range due to different *DSM* criteria, study designs, and assessment methods.[18,19] Among 130 obese individuals with BED who sought weight loss treatment, the majority were found to have experienced 5% or greater weight gain in the year before seeking treatment.[20] In a study[21] comparing weight changes among 97 overweight and obese patients in the year prior to seeking weight loss treatment, patients with BED gained an average of 18.3 lb (8.3 kg) compared with an average of 1.5 lb (0.7 kg) in patients without BED. Thus, rapid weight gain can be a sign to clinicians to screen for BED.

Figure 1. Role Impairment Associated With Binge-Eating Disorder[a]
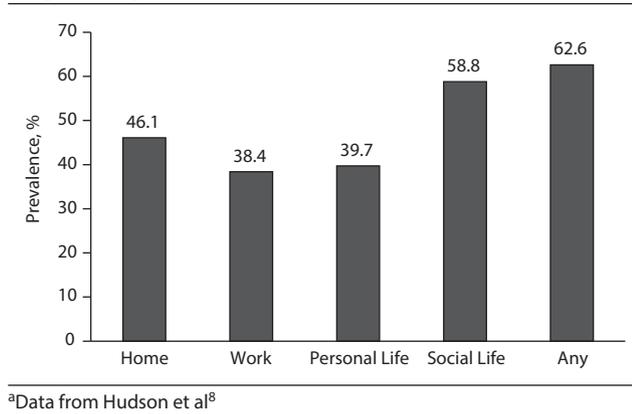
[a]Data from Hudson et al[8]

BURDEN OF ILLNESS

Reasons for clinicians to be vigilant for signs of BED are the significant functional impairment, reduced quality of life, and psychiatric and medical comorbidities experienced by individuals with BED.

The NCS-R[8] reported that 62.6% of individuals with BED experience functional impairment. The most commonly affected area of impairment was social functioning (58.8%), but more than one-third of respondents also reported impaired functioning at home and at work (Figure 1).[8]

The WHO World Mental Health Surveys data[9] found that 46.7% of individuals with BED reported any role impairment, and 13.2% reported severe role impairment. Data from the same survey[22] showed that early-onset BED predicted reduced odds of marriage in women and of employment in men.

A misperception about BED has been that it is not as severe as other eating disorders, perhaps because it is not associated with the severe underweight seen in patients with anorexia nervosa or with the purging seen in anorexia nervosa and bulimia nervosa. However, the level of functional impairment with BED has been shown to be comparable to that with bulimia nervosa.[22]

Individuals with BED (with or without obesity) show worse work productivity, absenteeism, presenteeism, and non–work-related activity impairment compared with those without BED (both obese and non-obese).[23] In a study[24] of binge eating in a working population, significant associations were found between binge eating and impaired productivity, even after adjusting for demographics, obesity, and other risks.

In a study[25] of public university students (N = 1,165), around 7.8% were assessed as having BED, which was more common among obese than non-obese students. Moderate BED was associated with reduced classroom productivity and daily activity impairment.[25]

A systematic review[26] found worse health-related quality of life and increased health care utilization for individuals with BED compared with healthy controls; however, patients rarely received treatment specifically for their eating disorder.

Psychiatric and medical comorbidities are associated with BED. Among individuals with BED, 78.9% have at least 1 comorbid psychiatric disorder, and 48.9% have 3 or more. The most common comorbid conditions are anxiety disorders, but nearly half have mood disorders.[8] Medical complications of BED include obesity, metabolic syndrome, type 2 diabetes, and sleep problems.[5]

UNDERDIAGNOSIS, UNDERTREATMENT, AND BARRIERS

Despite the high prevalence of BED, rates of diagnosis and treatment are low. In the recent Internet survey[10] of over 22,000 individuals in the United States, only 3.2% of participants who met criteria for BED in the past 12 months reported receiving a formal diagnosis of BED from a health care provider. According to the WHO World Mental Health Surveys,[9] only 38.3% of those with a lifetime diagnosis of BED have ever received treatment for an eating disorder. These low rates of diagnosis and treatment indicate the need to improve awareness and recognition of BED among both health care providers and patients. Barriers to the underrecognition and undertreatment of BED include both patient factors and health care provider factors.

Patient Factors

Many patients with BED are not aware that they have a diagnosable disorder. They are also often uncomfortable raising the issue of their binge eating with their health care providers because of feelings of shame or embarrassment. Patients with BED are often secretive about their eating disorder and hide their behaviors from family, friends, and health care providers. They may associate BED with stigma and fear of disappointing their families or being viewed as having a weak or flawed character.[27] Patients with BED may present to medical facilities for weight loss programs or for treatment of medical or psychiatric comorbidities instead of for the BED itself.[16]

Health Care Provider Factors

Because BED is a new diagnosis in the *DSM*, clinicians may lack awareness of BED as a distinct eating disorder.[10] They may also be unaware that effective treatments for BED are available. A recent national survey[28] of US physicians found that fewer than half reported using *DSM* criteria in diagnosing BED, and 27% did not even recognize BED as a discrete eating disorder.

In addition, providers may feel uncomfortable asking patients about binge eating because they perceive it as a sensitive topic. Some providers may be less compassionate toward patients with BED, particularly those who are obese, seeing it as a problem of willpower. For example, one study[29] found that physicians (N = 40) had less respect for patients with a higher BMI.

Because eating disorders are more common in women, health care providers may also be less likely to screen for and consider a diagnosis of BED in male patients, even though

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the level of clinical impairment is comparable with that of female patients; men may also be more reluctant to seek treatment for BED.[23] Patients have also reported perceiving that clinicians' stereotypes about ethnicity have affected care for an eating disorder.[27]

Another barrier to BED diagnosis and treatment is ineffective communication between clinicians and patients.[30,31] Patients with BED may see their health care providers as insensitive and uninformed about their disorder. A qualitative study[30] found that individuals with BED felt that health care providers were focused more on physical problems, were judgmental about weight, and were unable to differentiate BED from obesity. Another study[31] used linguistic analysis of physician-patient conversations to identify barriers to effective communication between physicians and patients with BED. This study found that physicians tended to focus on weight-related issues and perceived lack of self-control in the patients, whereas the patients tended to focus on negative emotions, coping strategies, and the compulsion to binge eat. Both patients and providers were reluctant to discuss BED, with patients expressing a fear of being judged and the physicians feeling awkward discussing the topics for fear of making the patients uncomfortable.

RECOGNITION OF BED

To help overcome the barriers that contribute to missed diagnoses of BED, clinicians can use a combination of assessment questions and screening tools to collect information on patients' eating habits, weight concerns, and comorbid conditions.

Clinical Assessment

Health care providers in primary care settings can play a major role in recognizing and diagnosing BED. It is very important to ask patients about their eating habits, as patients are unlikely to be forthcoming about their binge eating. Many clinicians routinely ask patients about their appetite and weight but not about eating habits and binge-eating episodes.[5]

Screening should be considered for patients who are overweight or obese or who are seeking treatment for weight loss, as well as for patients who may be presenting with mood or anxiety disorders, substance abuse, or impulse-control issues.[5] A reluctance to discuss eating habits may be a sign that patients should be screened for BED.[5]

Screening Tools

Ideally, every patient should be screened for BED, although time constraints may make this difficult. However, including even 1 brief screening question on a review of systems waiting room form (such as "Do you ever have episodes of binge eating?" or "Do you ever feel a loss of control over how much you eat?") can alert clinicians to the need for further assessment.

Table 3. Screening Tools for Binge-Eating Disorder (BED)

Screening Tool	Year Released	No. of Items	Administered by	Specific to BED
Binge Eating Scale (BES)[32]	1982	16	Patient	Yes
Eating Disorder Examination (EDE)[33]	1993	28	Clinician	No
Eating Disorder Examination Questionnaire (EDE-Q)[34]	1994	28	Patient	No
SCOFF[35]	1999	5	Clinician or patient	No
Eating Disorder Screen for Primary Care (ESP)[36]	2003	5	Clinician	No
Eating Loss of Control Scale (ELOCS)[37]	2014	18	Patient	No
Questionnaire on Eating and Weight Patterns (QEWP-5)[38]	2015	26	Patient	No
Yale-Brown Obsessive Compulsive Scale Modified for Binge Eating (YBOCS-BE)[39]	2015	10	Clinician	Yes
Eating Disorder Assessment for *DSM-5* (EDA-5)[40]	2015	Variable	Clinician	No
7-item Binge-Eating Disorder Screener (BEDS-7)[41]	2016	7	Patient	Yes

Abbreviation: *DSM-5* = Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition.

A number of screening and assessment tools have been developed (Table 3).[32–41] Below, the older scales are described first, followed by more recently updated and developed scales.

Binge Eating Scale. The Binge Eating Scale[32] is a 16-item, self-report questionnaire that assesses behavioral, affective, and attitudinal components of the subjective experience of binge eating.

Eating Disorder Examination. The Eating Disorder Examination[33] (EDE) is a semistructured, clinician-administered interview for assessing a wide variety of overeating behaviors, compensatory behaviors, and behavioral and cognitive features of eating disorders within the previous 28 days. It collects data on binge frequency, amount of food eaten, and perceived loss of control, as well as cognitive symptoms such as body dissatisfaction, overvaluation of shape and weight, and fear of eating in front of others.[42]

Because the EDE can be time-consuming and requires training to administer, a self-report questionnaire[34] known as the EDE-Q[43] was created. The EDE-Q assesses the same features as the EDE and includes the same 4 subscales: dietary restraint, eating concern, weight concern, and shape concern, and an overall global score. Patients rate items on a 7-point scale, and higher scores indicate greater severity or frequency.[43]

In a comparison study,[34] the self-report EDE-Q resulted in higher scores than the clinician-administered EDE for areas including binge eating and patient concerns about shape. More recently, an online self-report version of the Eating Disorder Questionnaire (EDQ-O) was assessed for its validity in classifying *DSM-IV-TR* criteria for eating disorders.[44] While it performed acceptably, it yielded a relatively low sensitivity for BED.

SCOFF Questionnaire. The SCOFF[35] is a clinician-administered, 5-item questionnaire that was created for non-specialists to assess anorexia nervosa and bulimia nervosa. For more information on the SCOFF, including an explanation of the acronym, see "Binge-Eating Disorder and Comorbid

Conditions: Differential Diagnosis and Implications for Treatment" by Leslie Citrome, MD, MPH, in this supplement.[45] Although the SCOFF is not specific for BED, it is useful because several of the items pertain to BED (losing control while eating, eating until uncomfortably full, and food dominating the patient's life).

Eating Disorder Screen for Primary Care. The Eating Disorder Screen for Primary Care[36] is composed of 5 screening questions derived from other studies. While this short assessment tool is not specific for BED, it does ask patients about eating in secret, family history of eating disorders, and feelings about weight.

Eating Loss of Control Scale. The Eating Loss of Control Scale[37] is an 18-item, self-report questionnaire that assesses the feelings and experiences of loss of control of eating in individuals with BED.

Questionnaire on Eating and Weight Patterns. The Questionnaire on Eating and Weight Patterns (QEWP) was first developed in 1992,[46] revised in 1993 (QEWP-R),[47] and revised again in 2015 to incorporate *DSM-5* criteria (QEWP-5).[38] The QEWP-5 is a self-report instrument that obtains information about eating disorder criteria, dieting, and weight history.[38] A study that compared both the EDE-Q and the QEWP-R with the EDE[43] found both self-report questionnaires to be potentially useful for assessing BED in obese primary care patients (N = 66).

Yale-Brown Obsessive Compulsive Scale Modified for Binge Eating (YBOCS-BE). The Yale-Brown Obsessive Compulsive Scale Modified for Binge Eating[39] (YBOCS-BE) is a version of the YBOCS modified to measure the obsessiveness of binge-eating thoughts and the compulsiveness of binge-eating behaviors. It is a clinician-administered scale consisting of 10 items and is used predominantly as a measure of treatment benefit in clinical trials.

Eating Disorder Assessment for DSM-5. The Eating Disorder Assessment for *DSM-5*[40] (EDA-5) is a semistructured, clinician-administered interview for eating disorders based on *DSM-5* criteria. A high rate of agreement with the EDE interview was found, indicating that the EDA-5 may be useful for assessing anorexia nervosa, bulimia nervosa, and BED.[40]

7-item Binge-Eating Disorder Screener. The 7-item Binge-Eating Disorder Screener[41] (BEDS-7) is a self-report scale with 7 items based on the *DSM-5* diagnostic criteria for BED. This brief scale can be incorporated into primary care practice to identify patients who are in need of further assessment or referral for BED.

The best assessment tool for clinical practice is one that is brief and easy to administer, preferably by patient self-report.

Differential Diagnosis

A positive score on a screening questionnaire is not a diagnosis but is an indicator that further assessment is necessary. In particular, clinicians must distinguish BED from other eating disorders. It is especially important to ask if the patient engages in regular compensatory behaviors, such as purging, laxative use, excessive exercise, or fasting, which suggest a diagnosis of bulimia nervosa. If these behaviors are present along with severe underweight, a diagnosis of anorexia nervosa should be considered. It is also important to rule out bingeing that is secondary to another psychiatric disorder.[4] For example, patients with atypical depression may have reverse vegetative symptoms, such as increased appetite and weight gain, and bingeing may be present. Another example is patients with premenstrual dysphoric disorder who may binge premenstrually. In neither of these cases would patients meet full criteria for BED.

Treatment Options

Once a diagnosis of BED has been confirmed, treatment options can be explored, including psychotherapy (eg, cognitive-behavioral therapy, interpersonal therapy) and pharmacotherapy.[5,48] The goals for treatment are to decrease binge-eating behavior; address emotional issues, such as shame, guilt, and low self-esteem; treat comorbid psychopathology; and, when appropriate, address weight concerns. For many patients, BED can be managed in a primary care or general mental health care setting; however, referral to a specialist may be considered as needed.[5]

CONCLUSION

There are significant unmet needs regarding BED awareness, diagnosis, and treatment. Health care providers must become familiar with the disorder and its diagnostic criteria to improve rates of screening, identification, and treatment. Communication barriers and the reluctance of patients to volunteer information about their eating habits may be overcome by using appropriate assessment questions, screening tools, and a nonjudgmental attitude. Early recognition and accurate diagnosis may help mitigate the long-term impact of BED and are critical steps to achieving optimal outcomes for patients with BED.

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