



## A brief screening measure for binge eating in primary care



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### ABSTRACT

**Objective:** Binge eating disorder (BED) is associated with medical and psychiatric issues commonly seen and managed in primary care; however, the disorder typically goes undetected as there are no assessment tools feasible for use in primary care. The objective was to examine the validity of the VA Binge Eating Screener (VA-BES), a single-item screening measure for binge eating.

**Method:** The sample consisted of 116 veterans referred to a primary care-based weight management program. Participants had a mean age of 61.66 years ( $SD = 8.73$ ) and average BMI of 37.90 ( $SD = 7.35$ ). Frequency of binge eating ranged from zero to 21 episodes per week. The prevalence of BED was 7.76%. All participants completed the Questionnaire of Eating and Weight Patterns – Revised (QEWP-R) to assess for BED. They also completed the VA-BES, and measures of disordered eating and depressive symptoms.

**Results:** The VA-BES was compared to the QEWP-R to determine the sensitivity, specificity, positive predictive value, and negative predictive value for each cutpoint. Analyses revealed one cutpoint ( $\geq 2$  binge eating episodes per week) maximized these values, demonstrated excellent agreement with the QEWP-R ( $\chi^2 = 24.79, p < 0.001$ ), and had significant associations with other variables commonly associated with binge eating.

**Discussion:** This study demonstrates the utility and validity of a single-item measure to screen for binge eating in primary care. The item can quickly and easily identify binge eating, thus facilitating referral to treatment and potentially subsequent improvements in related medical and mental health comorbidities treated in primary care.

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### 1. Introduction

Binge eating disorder (BED) is characterized by recurrent episodes of eating abnormally large amounts of food with associated distress and an absence of compensatory behaviors. Given its recent inclusion in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), the disorder has been an area of increased focus of late. BED is estimated to affect 2–3% of the general population (Hudson, Hiripi, Pope, & Kessler, 2007), though within primary care the prevalence is  $>5\%$  (Johnson, Spitzer, & Williams, 2001) and among individuals with obesity and those seeking weight management treatment prevalence rates range from 17% to 49% (Bertoli et al., 2016; Niego, Kofman, Weiss, & Geliebter, 2007). BED is associated with significant psychological distress (Johnson et al., 2001) and mental health comorbidities including depression and anxiety (Javaras et al., 2008; Sheehan & Herman, 2015). Individuals who binge eat are also at higher risk for medical morbidities that are commonly seen and treated in the primary care setting, such as metabolic syndrome and cardiovascular disorders (Barnes et al., 2011a; Bulik & Reichborn-Kjennerud, 2003; Hudson et

al., 2010; Sheehan & Herman, 2015), and report higher rates of disability and impairment (Johnson et al., 2001). However, primary care providers often do not recognize the presence of binge eating in their patients (Johnson et al., 2001), and binge eating is rarely assessed in primary care (Crow, Stewart Agras, Halmi, Mitchell, & Kraemer, 2002). Undetected and untreated BED can have significant negative implications for health given that it is associated with continued weight gain (Blomquist et al., 2011), and individuals engaging in high-frequency binge eating may continue to gain weight even when concurrently participating in weight management treatment (Masheb, Lutes, Myra Kim, et al., 2015).

Fortunately, there are well-established, brief interventions for binge eating that have consistently been shown to be highly effective (Grilo & Masheb, 2005; Grilo, Masheb, & Salant, 2005; Wilson, Wilfley, Agras, & Bryson, 2010) and can often be delivered within the primary care setting given their brief and solution-focused nature (Allen & Dalton, 2011; Grilo, White, Masheb, & Gueorguieva, 2015; Schlup, Meyer, & Munsch, 2010). In order to connect patients with these effective treatments they must first be screened for binge eating and referred to treatment by their providers; however, as noted above, binge eating is not routinely assessed and is rarely detected by primary care providers, which inhibits treatment engagement. While screening measures for eating disorders and longer measures specifically assessing binge eating

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do exist, it appears that there currently are no brief screening measures for binge eating that can be used routinely in the primary care setting. This study examines the validity, sensitivity, and specificity of a single-item screening measure for binge eating among individuals with overweight/obesity that can be easily used in primary care.

## 2. Materials and methods

### 2.1. Participants

Participants were recruited from the orientation session of a primary care-based weight management group at VA Connecticut Healthcare System. In brief, patients interested in weight management treatment are referred to the VA MOVE! program, which is 16-week, group-based behavioral weight management intervention. The treatment is interdisciplinary, often co-led by dietitians and behavioral health providers, and is focused on education, motivation enhancement, problem solving, and goal setting related to dietary change and increasing physical activity. Referred patients first attend an orientation session to learn about the program and different options for participation, meaning that participants had not yet committed to or begun treatment. Data was collected from fifteen orientation sessions, held monthly or bi-monthly, between October 2014 and November 2015.

This study was approved by Institutional Review Board at VA Connecticut Healthcare System. Participants' written consent was waived with implied consent.

### 2.2. Measures

#### 2.2.1. Demographics

Age and sex was self-reported by participants on the questionnaire. Information about race, ethnicity, and BMI was extracted from electronic medical records.

#### 2.2.2. Questionnaire of Eating and Weight Patterns – Revised (QEWP-R)

The QEWP-R is a 28-item self-report measure that assesses symptoms of eating and weight disorders (Spitzer, Yanovski, & Marcus, 1993). Studies have supported its psychometric properties and its ability to identify individuals who binge eat (Barnes, Masheb, White, & Grilo, 2011b; Elder et al., 2006).

#### 2.2.3. Patient Health Questionnaire (PHQ-2)

The PHQ-2 is a commonly used screening measure for depression in the primary care setting. The two-item measure assesses the frequency of depressed mood and anhedonia during the previous two weeks, and has demonstrated good sensitivity for detecting major depression in patients seen in primary care (Arroll et al., 2010).

#### 2.2.4. Eating Disorder Examination Questionnaire (EDEQ)

The EDEQ (Fairburn & Beglin, 1994) is a 28-item questionnaire based on the Eating Disorder Examination interview (Fairburn & Cooper, 1993), with which it has demonstrated good concordance (Grilo, Masheb, & Wilson, 2001). It assesses both behavioral and cognitive symptoms of eating disorder diagnoses. We used an abbreviated version of the EDEQ which has demonstrated good internal consistency and concurrent validity (Grilo, Henderson, Bell, & Crosby, 2013).

#### 2.2.5. Emotional Overeating Questionnaire (EOQ)

The EOQ is a 9-item questionnaire assessing the frequency with which individuals eat in response to various emotions (Masheb & Grilo, 2006). The EOQ has good concurrent validity with measures of eating disorder symptomatology.

#### 2.2.6. Binge eating

The MOVE!23 questionnaire is a clinical tool developed to assess the individual needs of patients participating in VHA's national MOVE!

weight management program. The questionnaire assesses various factors that can impact weight management, including medical and mental health comorbidities, eating behaviors, physical activity, and social support. Only the item assessing binge eating, here called the VA Binge Eating Screener (VA-BES), was used in this study. The item asks, "On average, how often have you eaten extremely large amounts of food at one time and felt that your eating was out of control at that time?" Response options are: "Never," "<1 time/week," "1 time/week," "2–4 times/week," "5+ times/week."

### 2.3. Analyses

Screening positive for BED was determined by the QEWP-R, which has been shown to effectively identify the presence of binge eating (Barnes et al., 2011b; Celio, Wilfley, Crow, Mitchell, & Walsh, 2004; Elder et al., 2006). We tested different cutoffs for screening positive on the VA-BES compared to the QEWP-R as the reference. Chi-square analyses were used to determine agreement between the VA-BES and the QEWP-R for the different cutoff points, and sensitivity and specificity was calculated for each, as were the positive and negative predictive value. Sensitivity refers to the percentage of individuals with a condition that screen positive for the condition; in other words, a "true positive." Specificity refers to the percentage of individuals without a condition that screen negative for the condition; in other words, a "true negative." Positive predictive value refers to the percentage of individuals who screen positive for a condition who do in fact have the condition according to the reference standard (in this case, the QEWP-R). Negative predictive value refers to the percentage of individuals who screen negative for a condition who truly do not have the condition according to the reference standard. After selecting the cutoff with the best agreement with the QEWP-R, we then used *t*-tests to examine the relationship between a positive screen on the VA-BES and measures of depressive symptoms, eating disorder symptoms, and emotional overeating.

## 3. Results

There were 126 veterans who completed questionnaires; of these, 116 provided sufficient information for analyses. Participants had a mean age of 61.66 years ( $SD = 8.73$ ) and average BMI of 37.90 ( $SD = 7.35$ ). Most participants were male (88.8%) and not Hispanic (93.1%). Roughly three-quarters of participants identified as white or Caucasian, 20.9% identified as black or African American, and 5.2% identified as "other." Frequency of binge eating, as assessed by the QEWP-R, ranged from zero to 21 episodes per week. The prevalence of BED, as assessed by the QEWP-R, was 7.76%.

Table 1 displays the sensitivity, specificity, positive predictive value, and negative predictive value for different cutoffs of the VA-BES (any binge eating,  $\geq 1$  episode per week,  $\geq 2$  episodes per week,  $\geq 5$  episodes per week) when compared with the QEWP-R as a reference. Analyses demonstrate that the first three proposed cutoffs have equal sensitivity (true positive), but that a cutoff of  $\geq 2$  episodes per week had the highest sensitivity of those cutoff points. While a cutoff point of  $\geq 5$  episodes per week had superior sensitivity, its specificity (true negative) was poor. The cutoff of  $\geq 2$  episodes per week also had the highest negative predictive value, and fair positive predictive value. There was also a significant relationship between the QEWP-R and the VA-BES using the cutoff of  $\geq 2$  episodes per week,  $\chi^2 = 24.79$ ,  $p < 0.001$ . Therefore, we selected  $\geq 2$  episodes per week as the optimal cutoff for screening positive on the VA-BES. The prevalence of BED, as assessed by the VA-BES was 22.41%. Comparisons of those screening positive and negative on the VA-BES using this criterion are displayed in Table 2. Those screening positive for binge eating had significantly higher scores on measures of depressive symptoms, emotional overeating, weight concern, and shape concern. There were no significant differences in restraint. Those who screened positive on the VA-BES were significantly younger than those who did not, and tended to have a higher BMI. There were no

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