

Binge eating disorder: not a form of gluttony

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ABSTRACT

In the diagnostic manual of mental disorders, Anorexia Nervosa and Bulimia Nervosa are the two distinct eating disorders included. Included in the manual is another category that includes disordered eating patterns and disorders entitled "Eating Disorders Not Otherwise Specified." Binge Eating Disorder is included in this "other" category. Binge eating is often thought to be a choice made by the eater, but research shows that this form of disordered eating has neurobiological, genetic, and psychological implications making it as uncontrollable, distinct and grave as Anorexia or Bulimia. Because of these distinct diagnostic characteristics, its association with suicidal behavior, and the chronic manifestation of this illness, Binge Eating Disorder should be considered a separate diagnostic entity.

BINGE EATING DISORDER: NOT A FORM OF GLUTTONY

In the current Diagnostic and Statistical Manual of Mental Disorders, 4th edition, text revision (DSM-IV), there are three categories for diagnosis: anorexia nervosa (AN), bulimia nervosa (BN), and eating disorders not otherwise specified (EDNOS). Each have their own diagnostic criteria making it understandable why they are the most recognized of the eating disorders, making it understandable why they would. Many argue that Binge Eating Disorder (BED), which is currently under the EDNOS diagnostic criteria, is either a non-purging form of bulimia or a specific eating pattern in reaching obesity or just an unhealthy habit of eating excessive amounts on many occasions. Although these arguments seem plausible, BED has neurobiological, diagnostic, and psychological characteristics not otherwise seen in those suffering from bulimia or obesity. For this reason, BED should be given its own diagnostic criteria, as do AN and BN.

Anorexia Nervosa is an eating disorder where an individual severely restricts their diet. Those suffering from AN will restrict the amount of food that they eat to an extremely small portion or they will exercise rigorously to keep from gaining any weight; sometimes a combination of the two is implemented [1]. Bulimia Nervosa is an eating disorder where eating patterns alternate between bingeing and purging. It is not the quantity consumed during a binge that is common among those suffering from BN, but rather the feeling of lacking control when bingeing. The binge stops

when the individual feels physically unable to continue. Subsequent feelings of guilt and self-hate motivate the purge [2]. Obesity is not characterized as a psychological disorder, as are AN, BN, and BED, however, it is undoubtedly a public health problem. An individual is considered obese when their Body Mass Index (BMI) is greater than or equal to thirty, and this high BMI is usually attained through excessive eating [3].

DRUG USE

The relationship between substance abuse and eating disorders has been investigated and there is a definite association present between the two. In the general population, 7.3% of Americans suffer from a substance use disorder. In those suffering from an eating disorder, the prevalence of also suffering from substance abuse is about 17% [4]. Up to 40% of those suffering from BN also have problems/history of substance use [5] and for those suffering from obesity the rate is approximately 25% [6]. Although the prevalence for marijuana drug use between those with BN and BED are similar, 64.7% and 68.9% respectively, the negative effects of drug and/or alcohol use for those suffering from BN and BED suggest that these two disorders are not the same. Females with BN reported more severe negative effects of alcohol/drug use than did those with BED and those without an eating disorder. With regard to the negative effects of substance use/abuse, those suffering from BED do not differ from those without an eating disorder [7]. Although rates of substance abuse are similar, the psychological effects differ, suggesting that there are different psychological characteristics differentiating BN from BED.

SUICIDAL BEHAVIOR

Those with eating disorders are at an increased risk for suicide, partially due to the comorbidity of eating disorders with major depressive disorder (MDD). Among all of the eating disorders, anorexia has the highest rate of suicide completions, but the rate of suicide attempts appear to be the same between those with AN and BN [8]. When looking more specifically at the rates of suicide for subtypes of Anorexia, the binge eating subtype has the highest rate for suicide attempts, 29.3% [8]. Those suffering from obesity do not differ from average-weight individuals with regard to suicide attempts; however, those suffering from obesity are at increased risk for suicidal ideation [9]. Mortality rates

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are 4.0% for AN, 4.9% for BN, and 5.2% for EDNOS – the category BED resides in. Although AN is understood to be one of the more fatal eating disorders in the DSM-IV-TR, those disorders that fall under EDNOS are proving to be just as fatal [10]. A history of one or more suicide attempts is associated highly and significantly with BED [11]. Whether diagnosed with BED or the binge eating subtype of AN, it seems that bingeing poses a significant threat to suicidal behavior, thus highlighting that the act of bingeing alone is a serious problem.

PSYCHOLOGICAL PROFILE

Emotional arousal has an effect on human eating behavior. Those suffering from eating disorders and/or obesity often find it difficult to identify or describe their feelings. They are usually unaware of the relationship between their feelings and their behaviors, such as their eating patterns [12].

The psychological manifestations of BED are unique to its diagnosis. Mental health summaries are usually low with those suffering from BED, whereas those with obesity had normal profiles for psychological comorbidities, mental health-related quality of life, and most personality measures. When compared to those suffering from obesity, differences are seen in a wide array of measures. With regard to novelty seeking, those with BED score higher than those with obesity. When measuring cooperativeness, those with BED score low, whereas those with obesity score high. The most important correlation was measured using the Patient Health Questionnaire (PHQ). Self-directedness, as measured through the PHQ, was found to be negatively correlated with BED, proving to be a measure that can be used as a psychotherapeutic target because of the strong association [11]. The only measure that was the same between those with obesity and BED was reward sensitivity [13]. Also important are the psychological comorbidities present in the population suffering from BED. There is a significantly stronger association for psychological comorbidities with BED than those suffering from obesity alone. Those with BED are at a significantly higher risk for major depressive disorder, generalized anxiety disorder, panic attacks, and a history of at least one suicide attempt [11]. Those with weight problems do not usually show signs of psychological maladjustment, which is one of the biggest reasons for why BED differs from obesity and weight issues in general.

GENETICS

Results from recent studies have suggested a genetic component to BED due to clear aggregation in families. A study investigating the heritability of binge eating in twins found it to be about forty-one percent. Results indicated that there are additive genetic effects responsible for BED, making its heritability fall between thirty and eighty percent [14].

Almost fifty percent of those suffering from obesity report also having symptoms of binge eating. The genetic variance between obesity and BE is approximately +0.34, suggesting a modest overlap in the genes involved in each illness. Obesity exists without binge eating and binge eating

occurs without obesity thus implying that the genetic and environmental factors contributing to their pathologies are different [15]. BED shows to be moderately influenced by additive genetic and distinctive environmental factors [16].

Dopamine pathways regulate the anticipated reward and subsequent pleasures experienced from such behaviors. When dopamine activity increases, there is a stronger reinforcement to rewards, whether they are natural or pharmacological. The Taq1A genotype has been found to deal with reward sensitivity. In those suffering from BED or obesity, those found to have the A1 allele were found to be more reward sensitive than those who did not possess the allele. Those with the A1 allele had reduced dopamine function caused by almost a 40% reduction in D2DA receptor density [13].

The Dopamine D4 receptor gene also seems to be relevant for the study of BED and BN. Polymorphisms of this gene, more specifically the 7 repeat allele is associated with BED and BN. Women with BN with the 7 repeat of the allele had greater weight gain than those without this repeat. The carriers of this allele also had elevated rates for binge eating [17]. The difference in phenotype as presented in relation to the DAD4 allele suggests that BED and BN differ genotypically thus providing further evidence that they are not the same.

NEUROBIOLOGY

Corticotropin releasing hormone (CRH) is the main regulating hormone of the hypothalamic-pituitary adrenal axis (HPA), which is activated with exposure to stressors. Mechanistically, CRH leads to the secretion of cortisol, a glucocorticoid, through the activation of Adrenocorticotrophic hormone (ACTH) secretion. Cortisol levels are positively related to central fat distribution; chronic levels of cortisol, following chronic physical or psychological stress for example, can produce insulin, which promotes visceral fat accumulation. Due to this relationship, cortisol has been implicated as having a role in disordered eating [12].

Those suffering from AN have abnormal HPA axis functioning. It is not completely clear whether this is due to starvation and weight loss or from AN itself. Those with AN have increased plasma cortisol levels and decreased rates of cortisol metabolism. As a result of abnormal HPA axis regulation, there is an increase in HPA axis arousal. Those suffering from BN have increased rates of cortisol and prolactin secretions and a decrease in growth hormone secretion only during their bingeing and purging periods. Their average cortisol, prolactin, and growth hormone levels in a complete twenty-four hour cycle are not different than those without BN. Unlike AN, BN doesn't demonstrate a clear association between symptomatology and HPA axis abnormalities. Stress is the most common trigger reported for binge eating, so it is not surprising that those who binge eat have HPA function differences. Those with BED and/or obesity have higher levels of cortisol. Those with BED are dexamethasone suppressors – a glucocorticoid clinically used to measure HPA activity. Even after treatment, hyperactivation of the HPA axis persisted. Obese females with BED show increased cortisol response to stress whereas obese females

without BED do not [12].

Brain-derived neurotrophic factor (BDNF) is the most abundant neurotrophin in the brain. It regulates and promotes neuronal outgrowth, repair, and differentiation as well as playing an important role in synaptic connectivity. Evidence shows that BDNF has a role in eating, suggesting its involvement with dysfunction either as an influence or a vulnerability for disordered eating. BDNF levels were significantly lower in AN and BN compared to healthy sex-matched controls, yet no significant difference between healthy controls and those with BED was observed. BDNF is positively and significantly correlated to body weight and body mass index (BMI). Ironically, normal-weight females with BN also had low BDNF levels, which is not the expected relationship between weight and BDNF. Many have postulated that BDNF levels are more a result of nutrition than of weight or BMI. Those with AN or BN either restrict their calories or use compensatory behaviors to expel unwanted calories; employing either method will undoubtedly result in loss of nutrients. Those suffering from BED are not losing those nutrients, although their caloric intake during binge episodes is equally unhealthy [18].

DIAGNOSTIC CHARACTERISTICS

The prevalence of AN and BN in women is much higher than the prevalence in men. AN usually manifests during puberty, where as BN appears in late adolescents. Thirty percent of patients with AN will later develop BN, but the opposite sequence is less common. There is a high comorbidity with OCD, MDD, and GAD [17]. Those suffering from BED experience more emotional distress and perceived loss of control before bingeing episodes in comparison to those

without BED. Unlike AN and BN, BED is found equally among men and women. Individuals suffering from BED are more likely than obese non-BED individuals to binge eat daily in a natural environment. BED is associated with greater health impairments and more severe symptoms. Obese binge eaters had significantly greater health dissatisfaction than those who were only obese. Eighty-five percent of patients with BED recovered within 5 years, which is a much better prognosis than most other eating disorders. BED is a disorder that is highly stable and more chronic than AN or BN because although the rate of recovery is higher and the risk of crossing over to other disorders is lower, there is a chronic pattern of remission and relapse evident with this diagnosis [19].

CONCLUSION

The only absolute similarity between AN, BN, and BED is that they are each diagnosis that represent a different form of disordered eating. Each disorder is its own distinct set of characteristic whether it is psychological, behavioral, biological, or genetic. All three disorders lead to health risks and can often times be fatal. BED, although it shares similarities with BN, is different and should be recognized as such. BED is not just a “pattern” leading to obesity. It is a self-destructive lifestyle that deserves to be recognized with the same level of priority and legitimacy as would AN and BN. Very little research has been done investigating causes and consequences of BED, which may be a result of its non-distinct diagnostic criteria. Due to the chronic nature of this illness, its psychological implications, and its fatality, BED should be included in the DSM-V as a separate eating disorder.

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Received 12 May 2011, accepted 10 July 2011
Straipsnis gautas 2011-05-12, priimtas 2011-07-10