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Binge Eating Disorder

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Abstract

This paper is a comprehensive overview of binge eating disorder. Diagnostic criteria, prevalence, and co-morbidities are addressed and research related to risk factors is summarized. The second half of this paper will describe various treatment modalities including cognitive behavioral therapy, dialectical behavioral therapy, interpersonal therapy, motivational interviewing and their efficacy for treating binge eating disorder.

Key words: binge eating, eating disorders, binge eating disorders

Introduction

Eating and feeding disorders are important health issues today and are “characterized by a persistent disturbance of eating or eating-related behavior that results in the altered consumption or absorption of food and that significantly impairs physical health or psychosocial functioning” (Diagnostic and Statistical Manual of Mental Disorders (DSM-5), 2013, p.329). The DSM-5 includes six separate and unique eating disorders: anorexia nervosa, bulimia nervosa, binge eating disorder (BED), avoidance/restrictive food intake disorder, pica and rumination disorder. The focus of this paper will be binge eating disorder and will include its diagnostic criteria, risk factors, co-morbidities, and treatments in both adults and adolescents.

Binge eating disorder is the most common of all the eating disorders but often goes unrecognized and untreated (Guerdjikova, Mori, Casutnigo, & McElroy, 2017). Before the 5th edition of the Diagnostic and Statistical Manual (DSM-5) was published in 2013 it was not recognized as a separate disorder and was listed as Eating Disorder not Otherwise Specified (EDNOS) needing further definition (Amianto, Ottone, Daga, & Fassino, 2015).

The first reference of Binge Eating Disorder was in 1959 by Albert Stunkard who referred to obesity as not just one disease but an end stage of a variety of other conditions. He described three types of eating patterns, the first being night-eating syndrome characterized by lack of hunger in the morning, the next being the eating binge, which is characterized by a large amount of food being consumed in a wild manner, and lastly eating without becoming full, which is the result of a central nervous system disease (Stunkard, 1959).

Diagnostic Criteria

Binge eating disorder has several defining characteristics. First, it involves recurrent episodes of binge eating within a specific time frame (such as two hours) and eating an amount of food that is clearly more than what other people would eat in the same situation in the same

amount of time (American Psychiatric Association, 2013). Another defining characteristic is a sense of loss of control during the eating episode. Binge eating disorder is associated with “eating much more rapidly than normal, eating until feeling uncomfortably full, eating large amounts of food when not feeling physically hungry, eating alone because of feeling embarrassed by how much one is eating, and feeling disgusted with oneself, depressed, or very guilty afterward” (American Psychiatric Association, 2013 p. 350). BED is also associated with “marked distress” and needs to occur at least once a week for three months (American Psychiatric Association, 2013). Unlike those with the eating disorder Bulimia Nervosa, those with BED do not use methods such as vomiting or laxatives to attempt to compensate for the excessive calories consumed, although dieting can precede and/or follow the development of BED (American Psychiatric Association, 2013).

Other Features

As mentioned previously, the DSM-V describes a binge as eating more food in a discrete amount of time than other people consume would in the same time, but since there is no set standard, it may be difficult to know whether an amount of food is larger than what others would eat in the same amount of time (Forney, Holland, Joiner, Keel, 2015). A systematic review conducted by Wolfe, Baker, Smith & Kelly-Weeder (2009) looking at binge eating characteristics found that during a binge in laboratory studies individuals with bulimia and binge eating disorder consumed anywhere from 3,000-4,5000 calories with a maximum of around 7,000 calories (Wolfe et al., 2009). In studies conducted by utilizing food diaries the caloric range for a binge was between 1173-2799. Researchers Forney et al. (2015) conducted a study examining how many calories are consumed in a sitting for individuals that are not diagnosed with binge eating disorder or Bulimia. Participants were on average 19 years old with BMI's ranging from 18-32 for men and 21-32 for women. Researchers found that participants

considered normal food consumption for woman ranged from 413 to 1,074 calories depending on the type of food that was being consumed. Study participants consumed the most calories when eating foods such as potato chips and corn chips, then pizza, pasta and macaroni and cheese. Participants only consumed about 400-600 calories when eating foods such as chocolate bars, hamburgers, mashed potatoes, cake, cookies and ice cream. For men, the caloric range was 466 to 1611 in a normal food consumption episode. Similar to woman, chips and macaroni cheese were the highest caloric item consumed and chocolate bars was the lowest. This study showed that men have a higher threshold for what is considered normal. The results of this study suggest that it's important to take into consideration both gender and the amount and type of food being consumed to determine if it fits the diagnostic criteria for a binge eating episode (Forney, Holland, Joiner, & Keel, 2015).

While not specifically mentioned in the DSM-5 as a diagnostic characteristic, overvaluation, (which can be defined as basing your self-worth on your size and weight) is very common among those with BED (Grilo, White & Masheb, 2013). A study examining ethnically diverse BED patients in the primary care setting found that 68% of the participants had clinical overvaluation. They also found that that overvaluation was significantly associated with higher levels of eating disorder psychopathy and poorer psychological functioning (Grilo, White & Masheb, 2013).

Two other features of BED that are common but not mentioned in the DSM-5 are body checking and body avoidance. Body checking is checking or measuring certain parts of one's body for fat and body avoidance is wearing clothes that hide one's body, or purposely avoiding mirrors to not see one's image (Reas, Grilo, Masheb, & Wilson, 2005). A study conducted by Reas et al. (2005) examining body checking/body avoidance in BED patients found that 57.4% of the study participants pinch their body to check for fat and 53.8% of the participants avoid

wearing clothing that makes them aware of their body size. Women reported a much higher level of body avoidance than men.

Wolfe et al. (2009) describe other features of binge eating. Most commonly binged food includes snack and desserts that are high in fats and carbohydrates. Binges usually at home and while alone, particularly in the afternoon and evening. Binge episodes are often preceded by a variety of feelings including, but not limited to, loneliness, boredom, anger, stress, irritability and frustration. Many people report being free of negative feeling while eating but are often experience guilt, shame and disgust afterward (Wolfe, et. al., 2009)

Prevalence

In a survey of adults from 14 countries (United States, New Zealand, Latin America and Europe) the lifetime prevalence of binge eating disorder is 1.9% (Kessler et al., 2013). The same study found the lifetime prevalence of BED in the United States is 2.6% (Kessler, et. al., 2013). A separate study conducted by Udo & Grilo (2018) looking at adults in the United States found a life time prevalence rate of 0.85 percent of BED. Both studies found that BED is more common in woman than in men although the gender gap is not as large as the gap for Anorexia Nervosa (Kessler et al., 2013; Udo & Grilo, 2018). Kessler et al (2013) found the median age for diagnosis of BED was 23 years old and Udo & Grilo (2018) obtained a similar result and found the median age was 25.4. Neither study found a significant difference in BED occurrence rates associated with race, marital status, or employment status (Kessler, et al., 2013; Udo & Grilo, 2018).

In a cross-sectional survey of adolescents in the United States, researchers found a lifetime prevalence of BED of 1.6 percent (Swanson, Crow, Le Grange, Swendsen, & Merikangas (2011). Like adults, BED was found to be more common in female adolescents than males (Swanson et al. 2011). Unlike the research on adults, there is a higher incidence of

adolescents with BED in ethnic minorities than in non-Hispanic white adolescents. Factors like socioeconomic status, parental education, parental (guardian) marital status were not significantly associated with BED (Swanson et. al, 2011).

Co-Morbidity

Both physical and mental co-morbidities associated with Binge Eating Disorder. Many of these disorders are associated with obesity which is prevalent in patients with BED, as approximately 50 percent of individuals with BED have a higher than normal body mass index (BMI) (Kessler, 2013; Udo & Grilo, 2018). In a review examining people with BED and specific medical conditions, Olguin et al.(2017) found BED is associated with type 2 diabetes, hypertension, dyslipidemia, asthma, gastrointestinal issues, sleep problems, pain disorders, and in women pregnancy complications, menstrual dysfunction, and polycystic ovary syndrome. Kessler et al (2013) also found significant association between BED and musculoskeletal conditions, and ulcers.

The World Health Organization Mental Health Survey (Kessler et al, 2013) found that 79 percent of those with BED also met the criteria for another DSM-5 disorder and 49 percent met the criteria for three or more comorbid disorders. Eighteen point six percent had a specific phobia, 42.2 percent a major depressive episode, 46.1 percent another mood disorder, and 12.3 percent bi-polar disorder. Additionally, 16.4 percent had a generalized anxiety disorder, 15.3 percent panic disorder, 13.7 percent posttraumatic stress disorder, 18.4 percent separation anxiety disorder. Substance abuse occurred in 21.7% of those with BED and 10.8 percent had attention -deficit /hyperactivity disorder, 6.6 percent conduct disorder, 8.6 percent oppositional defiant. Another study conducted in Sweden looked at co-occurring psychological conditions in 11,000 people seeking eating disorder treatment found the highest levels co-morbidity was in BED patients, specifically mood and anxiety disorders (Ulfebrand, Birgegard, Norring, Hogdahl,

& Hausswolff-Juhlin, 2015). Personality disorders are also common in patients with BED. In a meta-analysis conducted by Friborg et al (2014) researchers found 29 percent of patients with BED were also diagnosed with a personality disorder (12 percent avoidant, 10 percent Obsessive Compulsive, and 11 percent Borderline). Additionally, a Swedish longitudinal study conducted by Welch et al. (2016) found BED was associated with an elevated risk for a suicide attempt, in those with and without obesity. Another cross-sectional study by Carano et al. (2012) looking at relationships between alexithymia, suicide ideation and BED found that almost 30% of the individuals studied with BED reported suicidal ideation.

In addition to the above conditions, Udo & Grilo (2018) found that 53.7% of individuals with BED also reported some type of impairment of psychosocial functioning. Persons with BED report a lower quality of life and higher psychological stress when compared to persons without BED (Amianto et al. 2015). In adolescents, 79.8 percent of adolescents with binge eating disorder have a co-occurring DSM-V disorder: 35.4 percent of adolescents with BED also had a mood disorder, 9 percent were diagnosed as bi-polar, 45.3 percent had an anxiety disorder, and 7.1 percent had agoraphobia. Also, like adults with BED, 62.6 percent of adolescents reported psychosocial impairment from their BED and 8.7 percent reported severe impairment (Swanson et al., 2011).

Risk Factors

Genetics

Genetic factors are thought to play a significant role in the etiology of BED with heritability estimates that range from 45-57% (Mayhew et. al., 2018; Saules, Carey, Carr & Sienko, 2015). A variety of methods have been used to study the genetic basis for eating disorders and yet a clear genetic basis has not been found. Kirkpatrick et al. (2016) recently identified a gene strongly associated with binge eating. The action of this gene is limited and it is

unlikely that BED is associated with a single gene disorder. Rather numerous genes are likely to contribute to vulnerability but whether or not BED will occur is likely to be influenced by gene to gene interaction such that one gene might provide vulnerability to BED and another gene might be protective (Mayhew, 2018). Mazzeo & Bulik (2009) point out that much of the research on eating disorders has focused on environmental and social causes such as unrealistically thin images of women in the media or poor parenting. They caution against such oversimplification of a complex phenomenon. Genetic vulnerability (such as a genetic tendency for obesity) may increase the risk for BED and environmental factors may either enhance the risk or exert a protective effect (Mazzeo & Bulik, 2009).

Neurobiologic & Neuroendocrine Influence

Neuroimaging studies comparing non-BED obese women with BED women have found increased activation of certain regions of the brain in BED women when presented with food stimuli (Guerdjikova, Mori, Casuto & McElroy, 2017). Saules et al. (2015) summarized other changes including hypersensitivity to stimuli mediated by the neurotransmitter dopamine, reporting that women with BED had a greater concentration of dopamine receptors in the striatum, one of the regions of the brain involved in the reward system.

Additionally, the role of ovarian hormones has also been explored in BED. Guerdjikova et al. report that high levels of progesterone and low levels of estradiol were associated with binge eating and emotional eating in both women with bulimia nervosa as well as healthy women. They also note that binge eating and dysfunctional eating behaviors were higher during the luteal phase of menstruation and that estradiol and progesterone levels correlated with disordered eating including dietary restraint, impulsivity and BMI. Although not specific to BED, ovarian hormones which act as transcription factors for many genes in several

neurobiological systems are thought to be associated with dysregulated eating (Guerdjikova et al., 2015)

Puberty

Puberty in general and early onset of puberty in girls has been identified as a risk factor for eating disorders, especially for anorexia nervosa and bulimia nervosa. Puberty associated risk factors include increased adiposity, increased body dissatisfaction, decreased self-esteem, and mood changes all of which are associated with eating disorders (Klump, 2013). Girls are thought to be more affected by puberty than boys because puberty often causes increased deposition of fat which conflicts with the societal value of thinness while in boys, pubertal changes increase muscle mass which moves them closer to the societal ideal. Studies have shown mixed association of pubertal status in boys although boys were also affected by body dissatisfaction and weight and shape concerns (Klump, 2013). Guerdjikova et al. (2017) suggest that the effects of estrogens “facilitate the development of BED in genetically vulnerable females.” Klump (2013) also suggests that the increased risk of eating disorders for girls during puberty is at least in part mediated by estrogen and other ovarian hormones as discussed above.

Age

As discussed above, the average age of diagnosis of BED is 23, which is older than the age of onset of other eating disorders. Reas and Grilo (2015) reported differences in age of diagnosis in three specific subgroups of women with BED. Those who noted being overweight before the onset of binge eating (63%) developed binge eating at age 23 and were diagnosed with BED at 27.3 years. The subgroup that engaged in dieting first (17%) were diagnosed at age 29.4 and the subgroup in whom binge eating preceded overweight and dieting (16%) met diagnostic criteria at the average age of 19 years. These authors also report on previous studies which revealed that in children aged 6-13 years of age, overweight preceded dieting and loss of control

in 63% of the sample. In addition, overweight children engaged in binge eating and inappropriate dieting more frequently than non-obese children. Marcus and Kalarchian (2003) reviewed research on binge eating in children and found that loss of control was an important variable in childhood while dieting was not.

Saules et al.(2015) noted that the rates of BED are lower in elderly individuals however this may be related to limitations in population-based research including recall bias, increased morbidity and mortality and restricted access to studies. Ageism may also be a factor. Guerdjikova (2015) commented that many studies have exclusionary criteria related to age and notes that this is unfortunate because elderly individuals report similar levels of binge eating, distress related to binge eating, concern related to weight and shape, psychiatric comorbidity and obesity although the elderly report later age of onset, longer duration and less medical morbidity. Mangweth-Matzek, Hoek, Rupp and others (2014) found fewer women aged 40-60 met criteria for full criteria for an eating disorder but women with sub-threshold disordered eating had similar levels of comorbid psychopathology when compared with women who met full diagnostic criteria.

Gender

Although BED is more common in women, the female to male ration is more balanced (6:4) than in other eating disorders (9:1 in anorexia nervosa and bulimia nervosa) (Saules et al. 2015). Men are as likely as women to overeat but are less likely to report loss of control and therefore less likely to meet diagnostic criteria for BED even though they experience as much clinical impairment as women (Saules et al, 2015). Males and females appear to be more similar than different when meeting criteria for BED (Guerdijkova, 2017). Men and women were similar in relation to eating disturbances, shape and weight concerns, interpersonal problems and self-esteem. Women were more likely to report eating in response to negative emotions such as

anger, frustration and anxiety while men were more likely to have experienced substance use disorder at some point in their life (Guerdijkova et. al. 2017). Udo, McKee, White et al, (2013) found that men and women with BED did not differ on weight or binge eating nor on emotional eating scores, perceived stress depressive symptoms or self-control, but women reported earlier onset of overweight and dieting while men engaged in more strenuous exercise. Men were more likely to experience metabolic syndrome, a constellation of symptoms including increased blood pressure, high blood sugar, excess body fat, and altered lipid levels that together increase the risk of heart disease, stroke and diabetes.

Obesity

Approximately fifty percent of persons with BED are also obese. Since obesity and BED tend to co-occur, it is difficult to separate the impact of obesity on health from the impact of BED (Saules et al., 2015). These authors also note that many BED patients report a significant weight gain in the year before seeking treatment. Person with BED take in more calories in the setting of observed eating than non-BED obese counterparts (Saules, et al. 2015). Obesity is a risk factor as early onset of obesity is significantly related to both dieting and binge eating. In a study conducted by Reas & Grilo (2007), 67% of treatment-seeking adults became overweight prior to starting dieting or binge eating behaviors and 17 percent of adults in the study dieted first then became overweight and then began binge eating.

Impulsivity and Compulsivity

Impulsivity refers to decision-making with limited forethought and is related to increased drive toward rewards and often results in poor decision-making (Kessler, Hutson, Herman and Potenza, 2016). Compulsivity is the tendency for repetitive and persistent actions that are not necessarily goal-directed and may persist in spite of negative results. Kessler, et al. go on to state that both impulsivity and compulsivity are associated with BED. In comparison to non-

BED obese and normal weight individuals, those with BED have evidence of increased impulsivity, decreased self-control and difficulty shifting attention reflecting compulsivity. The tendency toward impulsiveness may be related to the diminished control during binge-eating episodes and elevated scores on impulsivity scales correlated with larger food intake (Kessler, et. al., 2016). These authors also suggest that low self-esteem and depressive symptoms are associated with impulsiveness.

Attentional Disorders

Research shows that overweight women with BED demonstrate increased attention to food-related stimuli than non-BED obese women (Kessler, Hutson, Jereman and Potenza, 2015; Schmitz, Naumann, Trentowski and Svaldi, 2014). Persons with BED appear to have greater vigilance for food stimuli and preferentially direct their attention to food compared to non-BED women. Both BED and non-BED obese woman had difficulty disengaging from food stimuli (Schmitz, et. al., 2014)

Environmental Factors

United States is a culture with a preoccupation with weight and body image (Forman, Yager, & Solomon, 2017). Magazines commonly include stories about how to lose weight or tone a specific muscle group and actors and models generally have thin bodies that are very difficult to achieve and maintain. Computer programs are used to “perfect” photographs of women’s bodies to make them look better. Preoccupation with weight loss and equating thinness with self-esteem can negatively affect maturing adolescents (Forman, Yager & Solomon, 2017).

Family Functions

A study conducted by Allen et al. (2014) used participants from the Western Australia Pregnancy Cohort and followed children from pre-birth to age 20. The researchers found that being female and being thought of as overweight by one’s parents at age 10 was a risk factor for

early onset BED by age 14. Researchers also studied the same cohort to determine if early onset of binge eating would predict binge eating disorders between ages 14-20 but found that parental weight concerns were not as significant in the development of a later onset disorder. Weight and shape concerns were most important (Allen et al., 2014). In a systematic review of children 12 and under, Saltzman & Liechty (2016) found that weight-related teasing and parental emotional non-responsiveness (specifically maternal ignoring) was associated with development of BED. The same study found that there was no significant association between the development of BED and parent weight, education and race/ethnicity. The authors of this review emphasize the need for further research in this area, specifically on parent eating and feeding practices (Saltzman & Liechty, 2016).

Adverse Childhood Experiences

Another factor that can influence the development of BED is trauma experienced as a child. In a meta-analysis of ten retrospective studies conducted by Palmisano, Innamorati & Vanderlinden (2016), nine strongly supported the association between childhood trauma and the development of obesity and BED in adulthood (Palmisano et al. 2016). The authors speculated on the factors that mediated the relationship between adverse childhood events and obesity and BED. Stressful events in childhood may be associated with increased activation of the stress response resulting in elevated secretion of cortisol and increased fat deposition. Other potential explanations included depression, poor coping and emotional dysregulation which may be associated with stress-induced emotional eating. In another study conducted by Afifi et al. (2017) using a nationally representative data sample from the National Epidemiologic Survey on Alcohol and Related Conditions researchers found that women with BED reported all types of childhood maltreatment (hard physical punishment, physical abuse, sexual abuse, emotional abuse, emotional neglect, physical neglect, exposure to intimate partner violence, and any family

dysfunction), the highest rates being in sexual and emotional abuse. Men with BED reported only two types of abuse, sexual and physical neglect.

Treatment

There are several methods of treatment for BED including psychotherapy, medication, or a combination of both. For the purposes of this paper the focus will be on therapeutic methods of treatment although the Food and Drug Administration has approved one medication, Lisdexamfetamine to treat BED (also used to treat ADHD), and studies have shown some efficacy of second-generation anti-depressants such as fluoxetine and the anti-seizure medication topiramate in lessening the amount of binge eating episodes (Berkman et al., 2015).

Cognitive behavioral therapy

Cognitive Behavioral Therapy (CBT) is a type of psychotherapy that focuses on identifying connections between thoughts, feelings and behaviors and works to change negative thoughts and feelings to reduce associated negative behaviors (Berkman et al., 2015). Specifically, CBT for BED focuses on the impact of excessive negative body image and weight concerns that contribute to binge eating as well the negative impact on self-esteem (Mitchell, Devlin, De Zwann, Crow, & Peterson, 2008). Some specific CBT therapeutic techniques used with BED include: monitoring eating behavior by utilizing a food diary, promoting a regular pattern of eating, recognizing high risk binge eating situations and identifying coping mechanisms, addressing and reframing cognitive distortions about weight and body shape, and lastly, relapse prevention (Sysko, Yager, Solomon, 2017). CBT is the most studied treatment with the most evidence of effectiveness in treating BED (Grilo et al. 2014; McIntosh et al. 2016; Wilson, Grilo, Vitousek, 2007). There are two types of CBT that will be discussed in this paper, therapist-led and self-guided.

Therapist-Led CBT

Therapist-led CBT has a therapist involved in each session to provide psychoeducation, assist participants in learning new skills, and to provide support (Brownell, 2015). In a study conducted by Dingemans, Spinhoven & Furth (2007) they found that after 15 group sessions conducted by a therapist trained in CBT, 63 percent of the participants had obtained abstinence from binge eating by the end of treatment, and the frequency of binge eating episodes had dropped by 86 percent. In another study comparing group CBT with the drug fluoxetine, researchers found that CBT combined with a placebo drug was more effective at obtaining binge eating abstinence than CBT combined with fluoxetine and fluoxetine by itself at the 12-month follow-up (Grilo, Crosby, Wilson, & Marsheb, 2012). Devlin et al. (2005) compared CBT and fluoxetine on individuals already receiving behavioral weight loss therapy (BWL). Results of this study found that there was no benefit to adding fluoxetine to the BWL on binge eating rates, but adding individual therapist-led CBT to BWL did increase binge eating abstinence rates (62 percent compared with 33 percent who received just BWL) (Devlin et al., 2005). Another study looking at the drug topiramate and CBT found that those randomly assigned to receive CBT and topiramate achieved greater rates of binge eating remission than those that received CBT and the placebo (83.8 percent compared with 61.6 percent) (Claudino et al., 2007).

In a third study comparing CBT and Behavioral Weight Loss (BWL) researchers found that 44 percent of the participants in the CBT group achieved remission at the end of treatment and 51% had achieved abstinence from binge eating at 12-month follow-up compared to 38 percent of the participants assigned to the BWL group at the end of treatment and 35.6 percent at 12 months (Grilo, Masheb, Wilson, Gueorguieva, & White, 2011). The participants assigned to the CBT group were subjected to a three-phase program that focused on education about binge eating disorder, factors that may maintain eating issues and specific behavior planning to develop

normal eating habits (Grilo et al. 2011). In the BWL group the treatment was based on the LEARN program for weight loss management, which focuses on making healthy changes in lifestyle, exercise, attitudes, relationships, and nutrition (Grilo et al, 2011).

In another study looking at the efficacy of group CBT versus individual CBT, Ricca et al. (2010), found that at the end of treatment there was very little difference between the two groups with 51.4 percent of those in the individual CBT group achieving abstinence and 50 percent of the group CBT obtaining abstinence. Lastly, in similar study comparing three ways of administering CBT, (self-help, therapist-led and therapist assisted), at the end of the 20 weeks of treatment the therapist-led CBT and the therapist assisted CBT had higher binge eating abstinence rates than the self-help treatment group. The therapist-led group also showed higher rates of abstinence at the follow up assessments at six and twelve months (Peterson, Mitchell, Crow, Crosby, Wonderlich, 2009).

Self-Help CBT

While the above studies showed therapist-led CBT may be the most effective type of CBT treatment for BED, self-help CBT is another option. Self-help CBT is a manualized intervention that leads the individual through the treatment program similar to what a therapist but without the direct guidance and feedback of a therapist (Brownell et al., 2015). A study conducted by Grilo et al., (2014) in the primary care setting looked at self-help cognitive behavioral therapy compared with the medication sibutramine. They found at the end of treatment of those that who received self-help CBT, 24 percent achieved abstinence from binge eating, compared with the 38.5 percent whom received the medication and 23.1 percent who received a combination of the medication and self-help CBT. At the six-month follow-up those in the self-help CBT group had achieved remission rates of 40 percent compared with 19.2

percent for the medication group and 50 percent for the group that received a combination of the two. Similar rates occurred at 12 months recheck.

In another study conducted by Grilo & Masheb (2005) comparing guided self-help CBT and BWL they found that not only did the self-help CBT group have a higher percentage of participants that completed treatment (87% of self-help versus 66% BWL), it provided higher remission rates, with 46 percent of the participants obtaining abstinence in the self-help CBT group compared with only 18.4 percent of the BWL group and 13.3 percent for the control group.

Another study completed by Carrard et al., (2011) looked at self-help CBT through the internet. This may be a good option for those with BED and limited access to mental health services or for the 50 percent of people that have BED but do not seek treatment in person, perhaps because of strong feelings of shame or denial. The self-help CBT program consisted of 11 modules (introduction, motivation, daily self-monitoring, binge-triggers, meal plans, strategies, physical activity, problem solving, assertiveness, automatic thoughts, cognitive restructuring, and relapse prevention) and two psychologists provided weekly feedback and guidance to the participants as well as answered any questions via email (Carrard et al., 2011). After six months, 35.1 percent of participants in the internet self-help CBT group had obtained abstinence from binge eating versus 18 percent assigned to the control group.

Another internet-based self-help CBT study constructed by Wagner et al. (2016) found that at the three-month follow-up 47% of the patients reported recovery from binge eating, at six months 42% reported recovery and at twelve months 45 percent reported recovery. The guided therapy with intensive therapist contact included 11 writing assignments and feedback from a therapist, daily eating and activity diaries, week planning, and psychoeducation.

Dialectical Behavior Therapy

Dialectical Behavioral Therapy (DBT) is another type of therapy that has shown efficacy for treating BED. Like CBT, this has been studied both as a therapist-led group option and as a guided self-help option. DBT was originally designed to treat borderline personality disorder but has been adapted to treat many other disorders. It may be especially helpful for treating clients with both BED and borderline personality disorder or substance abuse disorder (Sysko et al., 2018). DBT is similar to CBT and is based on teaching skills for dealing with troublesome behaviors, such as binge eating, that are related to emotional dysregulation (Sysko et al., 2018). In a study conducted by Safer, Robinson, & Jo (2010) they compared DBT for BED group therapy to an active comparison group therapy (ACGT). The DBT for BED involved participants receiving 20 sessions of group DBT. Two of the sessions were orientation/introduction and 16 sessions taught the main DBT concepts of mindfulness, emotional regulation and distress tolerance. Some specific skills taught included nonjudgmental observation, how emotions function, and decreasing vulnerability to negative emotions, increasing positive emotions and how to act opposite to one's current emotion. The last two sessions were about relapse prevention and a review of previously learned material. The participants showed that at the end of treatment 64% were abstinent from binge eating and 51% were at the 3-month mark, 52% at the 6-month mark, and 64% by the 12-month mark.

Self-help DBT has also been explored. In a study conducted by Masson, Von Tanson, Wallace, and Safer, (2013) participants were provided a DBT self-help manual designed to teach participants three skills (and core elements of DBT), mindfulness, distress tolerance, and emotional regulation (Mason et al. 2013). Participants also had an orientation session and six bi-weekly phone calls to check on their progress and provide them the opportunity to ask any questions (Mason et al., 2013). Results showed that of those that stayed in the treatment group and completed the treatment (30 percent dropped out) 40% achieved abstinence from binge

eating after 13 weeks compared to 3.3 percent in the control group. At the six-month check-up 30 percent reported binge abstinence (Mason et al., 2013).

Interpersonal Therapy

Therapy approaches treatment for BED from a different theoretical perspective.

Interpersonal therapy was first used as a treatment for depression and has been adapted to treat many other mental health issues. According to this theoretical perspective binge eating is the result of an unresolved interpersonal problem that stems from one of the four potential areas: 1) unresolved grief from the loss or disappearance of a loved one, 2) an interpersonal role dispute with a significant other over different expectations about the relationship, 3) role transition, or a major change in one's life such as new relationship or loss of a relationship (like a marriage or divorce) a new occupation, change in physical health or change in socioeconomic status, or 4) interpersonal inadequacies (such as social isolation and lacking meaningful relationships) (Sysko, et al., 2018; Wifley et al, 2002)

The goal of interpersonal therapy is to identify an interpersonal problem area that is closely related to binge eating, and work on changing that problem and not necessarily focus on changing the binge eating behavior. In a study conducted by Wifley et al. (2002) they compared the effectiveness of group interpersonal therapy and group cognitive behavioral therapy. In the first part of treatment in the interpersonal therapy group the focus was on reviewing the client's interpersonal history trying to identify the interpersonal problem related to the start and continuation of BED. In this study, 60.5 percent identified interpersonal deficits, 29.6 percent interpersonal role disputes, 6.2 percent grief and 3.7 percent role transitions as their problem area. The next part of treatment focused on how to help the participants make changes in that area. Overall, the results of the study showed that at the end of treatment 82% of CBT participants and 74% of IPT clients were abstinent from binge eating. At the 12-month follow-up

72 percent of CBT clients and 70% of IPT clients reported abstinence (Wifley et al, 2002). In a follow-up study conducted by Hilbert et al, they assessed 58 of the study participants from the original Wifley et al., 2002 study, four years later. Researchers found both treatments were beneficial with 52% of those in the CBT group achieving remission and 76.7% achieving remission in the IPT group. Interestingly, The CBT group showed a significant decline in abstinence from post treatment and one-year follow-up to long-term follow compared with the IPT group in which abstinence from binge eating rates did not change (Hilbert, et al.2012). The authors of this study theorize that focusing on improving interpersonal relationships in individuals with BED might be more beneficial than CBT which is more focused on treating the eating disorder (Hilbert et al., 2012).

In a study conducted by Wilson et al. (2010) researchers looked at both the short- and long-term outcomes of IPT, guided self-help CBT, and BWL. Both the participants in the IPT group and the BWL group were provided with 19 weekly hour individual sessions. The self-guided CBT participants were provided a copy of Fairburn's book *Overcoming Binge Eating* and were also provided with 10, 25-minute sessions. The results of the study showed that IPT, BWL, and self-guided CBT provided similar results at post-treatment follow-up and one-year follow-up but both IPT and CBT were more effective at the 2-year follow-up (Wilson et al., 2010).

As the above studies demonstrate, IPT has efficacy for treating BED comparable to CBT (Hilbert et al., 2012; Wifley et al. 2002; Wilson et al., 2010). CBT is the recommended first line treatment for BED and IPT is the second treatment recommended, although some argue that either CBT or ITP could be the first choice (Miniati, Callari, Maglio & Calugi, 2018). CBT has fast-acting efficacy but in the very limited studies examining IPT and BED, IPT seems to produce longer lasting results (Miniati et al., 2018). This could be because IPT focuses on

identifying and improving interpersonal issues which are common in individuals with eating disorders (Hibert et al., 2012; Miniati et al., 2018).

Motivational Interviewing

The last treatment option that will be discussed in this paper is motivational interviewing (MI). Motivational interviewing was first used in the field of addictions but is now widely used to treat many conditions. The basic assumptions of motivational interviewing include that ambivalence about change is normal and that ambivalence can be resolved by working through a client's inner motivation and values. The relationship between counselor and client is a partnership in which each person brings their own expertise, and the counseling style is one that is empathetic and supportive versus authoritarian and argumentative which allows the best opportunity for change to occur (SAMHSA, 1999). MI can be combined with other types of therapy, which is known as adapted MI. It was first considered as a treatment option for eating disorders because many people with eating disorders express ambivalence about change and resistance to treatment similar to those with substance abuse issues (Cassin, Von Ranson, Heng, Brar, Wojtowicz, 2008). In a study conducted by Cassin et al. (2008) researchers focused on Canadian women with a diagnosis of BED. The control group received a self-help hand book only entitled *Defeating Binge Eating* which includes section such as: what binge eating is, learning to take small steps, understanding hunger and cravings, and working with food and feelings. The adapted-MI group received the self-help handbook but also received one individual adapted-MI session. The protocol of the adapted MI included elements such as: eliciting concerns about binge eating (i.e. physical health, mental health, etc.), exploring ambivalence, discussing the transtheoretical model of change, writing down the pros and cons of continuing binge eating versus leaving, boosting self-efficacy (using past examples of times participant did well in tough situations), and exploring values. The results of the study showed that after two

months 27.8% of the women in the adapted-MI group were abstinent from binge eating versus 11.1% in the control group.

Conclusion

Binge eating disorder is the most prevalent eating disorder in the United States and is characterized by uncontrolled episodes of eating followed by strong feelings of shame or distress afterwards. Binge eating disorder is associated with multiple physical and mental co-morbidities. Diagnosis typically occurs in the early 20's and risk factors for developing BED include genetic predisposition, neurobiological and neuroendocrine influences, female gender and early onset of puberty. Individuals with BED also been shown to have decreased levels of self-control and increased levels of impulsivity and they pay more attention to food than those without BED. There is a strong relationship between adverse childhood experiences, such as physical, sexual, or emotional abuse, and the development of BED. Having a parent that believes you are overweight around age 10 can also be a risk factor for early development of BED (around age 14). Being teased and having emotional non-responsive parents are also risk factors. Binge eating disorder can be treated by psychotherapy, medication, or a combination of both. Therapist-led CBT has been studied the most and has been proven very effective. Another form of psychotherapy, IPT, also has produced promising results in treating BED but has been less well studied.. Other treatment options with limited research include DBT and MI. There is one medication that has been approved by the FDA for the treatment of BED, Lisdexamfetamine, and second-generation anti-depressants and the anti-seizure medication topiramate have also been used to treat BED. Although the understanding of BED has increased in recent years, more research is needed, especially in regard to treatment modalities, such as DBT and MI, which have early evidence of effectiveness but lack sufficient supporting evidence at this time.

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