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Substantial Weight Gains Are Common Prior to Treatment-Seeking in Obese Patients with Binge Eating Disorder

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Abstract

This study examined weight trajectories in obese patients with binge eating disorder (BED) during the year prior to treatment initiation and explored potential correlates of these weight changes. One hundred thirty ($N=130$) consecutive, treatment-seeking, obese patients with BED were assessed with structured interviews and self-report questionnaires. Eighty-three percent (83%; $n=108$) of treatment seeking obese BED patients gained weight, and 65% ($n=84$) gained a clinically significant amount of weight (greater than or equal to 5% body weight), in the year preceding treatment. Overall, participants reported a mean percent weight gain of 8% (16.6 pounds) during the 12 months prior to treatment with a wide range of weight changes across participants (from a 52% weight gain to a 13% weight loss). A substantial proportion of patients (35%), categorized as High Weight Gainers (defined as gaining more than 10% of body weight during previous year), reported gaining an average of 16.7% of body weight. Low Weight Gainers (defined as gaining greater than 5%, but less than 10%) comprised 29% of the sample and were characterized by a mean gain of 6.9% of body weight. Weight Maintainers/Losers (defined as having maintained or lost weight during the 12 months prior to treatment) comprised 17% of the sample and reported losing on average 2.8% of body weight. These three groups did not differ significantly in their current weight and eating behaviors or eating disorder psychopathology. The majority of treatment-seeking obese patients with BED reported having gained substantial amounts of weight during the previous year. These findings provide an important context for interpreting the modest weight losses typically reported in treatment studies of BED. Failure to produce weight loss in these studies may be reinterpreted as stabilization of weight and prevention of further weight gain.

Introduction

Obesity is strongly associated with binge eating disorder (BED), the most prevalent specific eating disorder in the US, which is estimated to occur in approximately 3.5% of women and 2% of men [1]. BED is characterized by recurrent binge eating, defined as eating an unusually large amount of food while experiencing a subjective sense of loss of control,

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marked distress, and not engaging in compensatory behaviors characteristic of bulimia nervosa [2]. It is recognized as an important clinical problem associated with high levels of eating disorder psychopathology, psychological distress and medical comorbidity [1, 3], and is especially common among obese persons who seek weight loss treatment.

Treatments for BED have been very effective at reducing and eliminating binge eating [4]. Although clinical trials have reported modest associations between binge remission and weight loss [5-8], overall there is a striking disconnect between the substantial reductions in binge eating and minimal reductions in weight. Reasons for this apparent disconnect remain uncertain [9] but it has been suggested that current therapies may at least serve to reduce the likelihood of continued or further weight gains [10]. Little is known about rates of weight change among persons with BED although one community-based study of young persons with BED, with and without obesity, reported a doubling of the obesity rate over a five year period [11].

Two studies have investigated weight changes prior to treatment-seeking among obese persons with BED [12, 13]. These initial studies were consistent in suggesting that many BED patients gain substantial amounts of weight prior to treatment. The two studies, however, differed somewhat in the magnitude of weight gains and reported mixed findings regarding correlates of weight gains (e.g., one reported associations with frequency of binge eating and the other did not). A larger study with greater power is needed both to replicate those provocative findings and to clarify correlates. The present study aimed to examine weight changes among obese BED patients in the year prior to initiating treatment to gain a better understanding of weight trajectories in this obese subgroup.

Methods and Procedures

Participants

Participants were 130 consecutively evaluated, treatment-seeking obese individuals who met full DSM-IV research diagnostic criteria for BED. Participants were recruited via newspaper advertisements seeking obese men and women who binge eat for treatment studies at a medical school-based specialty clinic. Participants were aged 21 to 65 years ($M = 47.5$, $SD = 8.7$), 74.6% ($n = 97$) were female, 80.8% ($n = 105$) were Caucasian, 12.3% ($n = 16$) were Black/African-American, 2.3% ($n = 3$) were Hispanic, and 4.7% ($n = 6$) self-described as "Other." Mean BMI was 39.0 ($SD = 6.3$) and ranged from 29.0 to 55.5. Educationally, 80.8% ($n = 105$) reported at least some college.

Assessment and Measures

The study received full review and approval by the Yale institutional review board and all participants provided informed-written consents. Assessment procedures were performed by trained doctoral-level research-clinicians. BED diagnosis was based on the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I/P) [14] and confirmed with the Eating Disorder Examination interview (EDE) [15]. Participants' ages were obtained, and heights and weights were measured at the initial assessment appointment using a wall-mounted stadiometer and a high capacity digital platform scale, respectively. Participants also completed the following assessments *prior to* the measurement of height and weight:

Weight Trajectories—Participants were asked to report their weight at four time points: current, 3 months ago, 6 months ago and 12 months ago. Self-reported current weight and measured weight, both obtained at the initial assessment, were correlated and described below in the Results section.

Eating Disorder Examination (EDE)[15]—The EDE is a well-established and reliable investigator-based interview method for assessing eating disorder diagnoses and related symptomatology in BED [16,17]. The EDE assesses different forms of overeating, including *objective bulimic episodes (OBEs*; binge eating defined as consuming unusually large quantities of food with a subjective sense of loss of control), *objective overeating episodes (OOEs*; unusually large quantities of food without a subjective sense of loss of control) and subjective bulimic episodes (SBEs; subjective sense of loss of control but a normal or small amount of food). The EDE also comprises four subscales (dietary restraint, eating concern, weight concern and shape concern) and a global total score that reflect eating disorder psychopathology.

Questionnaire for Eating and Weight Patterns-Revised (QEWP-R)[18]—The QEWP is a self-report measure that was used in the present study to obtain participants' reports of self-reported current height and weight, highest adult weight, age at which first overweight, and age at which binge eating began. This measure was administered prior to obtaining measured height and weight.

Statistical Analyses

To examine participants' pre-treatment weight gain trajectories, Percent Weight Change was calculated by subtracting participants' self-reported weight 12 months ago from their current measured weight, and dividing by their weight 12 months ago: [(current weight - weight 12 months ago) / weight 12 months ago]. Percent Weight Change frequencies were examined and participants were categorized into three groups: High Weight Gainers, Low Weight Gainers and Weight Losers. High Weight Gainers gained 10% or more of their body weight in the past 12 months. Low Weight Gainers gained greater than or equal to 5%, but less than 10% of their body weight in the past 12 months. Weight Maintainers/Losers maintained or lost weight in the past 12 months. Analyses of variance (ANOVAs) and Pearson's bivariate correlations (with Kendall's tau-b correction for nonparametric variables) were performed to assess for differences among the weight gain groups and explore associations between Percent Weight Change and variables of interest.

Results

Accuracy of Self-Reported Weight

Participants' self-reported and measured weight at initial assessment were highly and significantly correlated ($r = 0.997$, $p = 0.0001$). A paired-samples t -test revealed that the mean difference between self-reported and measured weight was significant ($t(126) = -4.22$, $p < 0.0001$). The mean weight discrepancy (measured weight minus self-reported weight) was modest (1.4 pounds ($SD = 3.9$); on average, participants reported a lower self-reported weight ($M = 242.7$, $SD = 48.0$) than their measured weight ($M = 244.2$, $SD = 47.6$). On average participants underestimated their weight by approximately one and a half pounds.

Weight Trajectories during the Year Prior to Seeking Treatment

Eighty-three percent (83%; $n = 108$) of participants gained weight compared to 17% ($n = 22$) of participants who lost weight or whose weight stayed the same in the year preceding treatment. Sixty-five percent (64.6%; $n = 84$) gained a clinically significant amount of weight (greater than or equal to 5% body weight). On average, participants gained 4.1% ($SD = 4.0$) of body weight from 3 months prior, 6.3% ($SD = 6.9$) from 6 months prior, and 8.0% ($SD = 8.8$) from 12 months prior to initiating treatment. Figure 1 summarizes the distribution of Percent Weight Change (i.e., gains and losses) reported by participants during the 12 months prior to seeking treatment. Percent Weight Change ranged from a 52% weight gain to a 13%

weight loss with a mean Percent Weight Gain of 8.0% ($SD = 8.8$). In pounds, weight changes ranged from a 57.8 pound weight gain to a 29.5 pound weight loss with a mean weight gain of 16.6 pounds ($SD = 16.5$).

Current BMI and Weight Trajectories of High and Low Weight Gainers, and Weight Maintainers/Losers

High Weight Gainers (those who gained 10% or more of body weight), Low Weight Gainers (those who gained greater than or equal to 5%, but less than 10% of their body weight) and Weight Maintainers/Losers (those who maintained or lost weight) comprised 35.4% ($n = 46$), 29.2% ($n = 38$) and 16.9% ($n = 22$) of the sample, respectively. Those who gained a marginal amount of weight (less than 5%), and comprised 18.5% ($n=24$) of the sample, were dropped from the subsequent analyses.

At the time of assessment for treatment there were no significant differences in measured BMI among the three groups ($F(2, 97) = 0.45, p = .641$). High Weight Gainers had a mean BMI of 39.1 ($SD = 6.2$), Low Weight Gainers had a mean BMI of 38.2 ($SD = 6.7$), and Weight Maintainers/Losers had a mean BMI of 39.8 ($SD = 6.7$).

Significant differences in Percent Weight Change were observed among the three groups from 3 months ($F(2, 103) = 22.7, p < .0001$), 6 months ($F(2, 103) = 31.6, p < .0001$), and 12 months ($F(2, 103) = 98.1, p < .0001$) prior to treatment initiation. Post hoc analyses using Tukey's B revealed significant differences existed between each group comparison at all three time points (3, 6 and 12 months). Mean Percent Weight Change at each time point, for each group, is depicted in Figure 2. On average, High Weight Gainers gained 6.9% ($SD = 4.2$) of body weight from 3 months prior, 11.6% ($SD = 7.5$) from 6 months prior, and 16.7% ($SD = 7.9$) from 12 months prior to initiating treatment. Low Weight Gainers gained 3.4% ($SD = 3.0$) of body weight from 3 months prior, 4.9% ($SD = 3.4$) from 6 months prior, and 6.9% ($SD = 1.4$) from 12 months prior to initiating treatment. Weight Maintainers/Losers gained 1.1% ($SD = 2.9$) of body weight from 3 months prior, stayed roughly the same (0.0% change; $SD = 5.3$) from 6 months prior, and lost 2.8% ($SD = 3.5$) from 12 months prior to initiating treatment.

Associations with Current and Historical Eating Disorder Constructs

ANOVAs were performed for the three groups on current and historical weight variables including age, current BMI, highest adult weight, age first overweight, and age of binge eating onset (see Table 1). ANOVAs were also performed for the three groups on current eating behaviors including OBEs, OOE and SBEs during the prior three months, and EDE subscales (see Table 2). No significant differences among the three groups were found on any of these variables.

Discussion

This study of weight change in obese persons with BED in the year prior to treatment initiation revealed several important findings. First, 83% ($n=108$) of participants gained weight compared to 17% ($n=22$) of participants who lost weight or whose weight stayed the same in the year preceding treatment. Sixty-five percent (65%) gained a clinically significant amount of weight (greater than or equal to 5% body weight). On average, the weight gain was 8% of initial body weight. Second, we observed a wide distribution of weight change ranging from a 52% weight gain to a 13% weight loss. Third, High Weight Gainers and Low Weight Gainers each comprised approximately one-third of the sample. While the three comparison groups arrived for treatment with comparable BMIs, the mean

percent weight gains for these three groups were significantly different at 3, 6 and 12 months prior to treatment initiation.

In terms of average weight gain in pounds we observed a mean gain of 16.6 in pounds in the present study. This is similar to the average weight gain of 15.1 pounds reported by Blomquist and colleagues [13] in a similar clinical sample of obese patients with BED with comparable mean BMI. It is higher than the mean 9.5 pound weight gain reported in a primary care sample of obese patients with BED characterized by a lower mean BMI and lower mean age [12]. These mean weight gains, and the wide distribution of weight change observed in this study, replicated those two previous studies examining weight trajectories in the year prior to treatment among obese patients with BED [12, 13]. Fairburn and colleagues found an average weight gain of 9.2 lbs (SD=21.6) with an increase in obesity rates from 22% to 39% over the course of 5 years [11]. However, that community sample was substantially younger and included many participants who were not yet obese and thus differed considerably from participants in all BED treatment studies. With regard to associations between weight change in the year prior to treatment initiation and binge eating, the current study did not replicate those significant findings reported in previous studies with smaller sample sizes of obese patients with BED [12, 13].

Our research findings should be interpreted in light of the following strengths and limitations. Strengths include a thorough assessment of BED with the administration of established structured interviews by specialist doctoral-level research-clinicians as well as the consecutive assessment of men and women who were seeking treatment specifically for binge eating and weight loss. The present study utilized a larger patient sample than the previous studies and analyzed associations with percent weight loss as opposed to absolute weight loss in pounds [12, 13]. The use of percent weight loss will make comparisons with samples of different mean weights possible. In addition, we performed analyses with participants who had gained the most clinically significant weight (i.e., 10% or greater body weight) and found no further associations with historical or current eating disorder features. In terms of limitations, we note a lack of comparison groups which prevented us from determining whether the overall weight gain trajectory of our sample of treatment-seeking patients differs from non-treatment seeking patients with BED, or from obese non-BED individuals seeking treatment for weight loss only. This investigation also relied on self-report data for weight trajectories in the 12 months prior to seeking treatment. While self-report weights are often-times biased, we observed a high degree of accuracy between participants' self-reported and measured weights at the time of evaluation and note that previous research with this specific patient group has found that these patients tend to be accurate reporters of their weight [19].

With these strengths and weaknesses in mind, we offer several conclusions. The reported overall mean percent weight gain for this sample (8%) during the year prior to seeking treatment, and the finding that one-third of subjects reported a 10% or greater weight gain, provide a potential new context for interpreting both treatment-seeking and weight-loss outcomes in treatment studies for BED. Given that such a substantial subgroup of individuals gain 10% or more of body weight prior to initiating treatment, it may be that rapid weight gain amongst binge eaters is an important factor in the identification of individuals most in need of intervention. With regard to weight loss, it remains unclear why participants in clinical trials for BED do not lose more weight despite very large reductions in the frequency of, and high rates of remission for, binge eating. Failure to produce weight loss in these studies may be reinterpreted as a stabilization of weight and prevention of further weight gain. In other words, it may be that these treatments are serving to decrease the escalation of more severe obesity rather than serving as weight loss treatments. Finally, more research is needed to elucidate factors associated with such marked weight gains and

to determine the potential impact of weight trajectory on treatment outcomes for individuals with BED.

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References

1. Hudson JI, et al. The prevalence and correlates of eating disorders in the National Comorbidity Survey Replication. *Biol Psychiatry*. 2007; 61(3):348–58. [PubMed: 16815322]
2. American Psychiatric Association. Diagnostic and Statistical Manual - Text Revision. American Psychiatric Association; Washington, DC: 2000.
3. Allison KC, et al. Binge eating disorder and night eating syndrome: a comparative study of disordered eating. *J Consult Clin Psychol*. 2005; 73(6):1107–15. [PubMed: 16392984]
4. Wilson GT, et al. Psychological treatments of binge eating disorder. *Arch Gen Psychiatry*. 2010; 67(1):94–101. [PubMed: 20048227]
5. Wilfley DE, et al. A randomized comparison of group cognitive-behavioral therapy and group interpersonal psychotherapy for the treatment of overweight individuals with binge-eating disorder. *Arch Gen Psychiatry*. 2002; 59(8):713–21. [PubMed: 12150647]
6. Agras WS, et al. One-year follow-up of cognitive-behavioral therapy for obese individuals with binge eating disorder. *Journal of Consulting and Clinical Psychology*. 1997; 65:343–347. [PubMed: 9086701]
7. Grilo CM, Masheb RM, Salant SL. Cognitive behavioral therapy guided self-help and orlistat for the treatment of binge eating disorder: a randomized, double-blind, placebo-controlled trial. *Biol Psychiatry*. 2005; 57(10):1193–201. [PubMed: 15866560]
8. Grilo CM, et al. Cognitive-behavioral therapy, behavioral weight loss, and sequential treatment for obese patients with binge-eating disorder: a randomized controlled trial. *J Consult Clin Psychol*. 2011; 79(5):675–85. PMID: PMC3258572. [PubMed: 21859185]
9. Walsh BT. The importance of eating behavior in eating disorders. *Physiol Behav*. 2011; 104:525–529. [PubMed: 21570418]
10. Yanovski SZ. Binge eating disorder and obesity in 2003: could treating an eating disorder have a positive effect on the obesity epidemic? *Int J Eat Disord*. 2003; 34(Suppl):S117–20. [PubMed: 12900992]
11. Fairburn CG, et al. The natural course of bulimia nervosa and binge eating disorder in young women. *Arch Gen Psychiatry*. 2000; 57(7):659–65. [PubMed: 10891036]
12. Barnes RD, Blomquist KK, Grilo CM. Exploring pretreatment weight trajectories in obese patients with binge eating disorder. *Compr Psychiatry*. 2011; 52(3):312–8. [PubMed: 21497226]
13. Blomquist KK, et al. Exploring weight gain in year before treatment for binge eating disorder: a different context for interpreting limited weight losses in treatment studies. *Int J Eat Disord*. 2011; 44(5):435–9. [PubMed: 20635382]
14. First, MB., et al. Structured clinical interview for DSM-IV Axis I Disorders - Patient Version (SCID-I, Version 2.0). New York State Psychiatric Institute; New York: 1996.
15. Fairburn, CG.; Cooper, Z.; O'Connor, ME. Eating Disorder Examination (Edition 16.0D). In: Fairburn, CG., editor. *Cognitive Behavior Therapy and Eating Disorders*. Guilford Press; New York: 2008.
16. Grilo CM, et al. Reliability of the Eating Disorder Examination in patients with binge eating disorder. *Int J Eat Disord*. 2004; 35(1):80–5. [PubMed: 14705160]
17. Grilo CM, Masheb RM, Wilson GT. A comparison of different methods for assessing the features of eating disorders in patients with binge eating disorder. *J Consult Clin Psychol*. 2001; 69(2):317–22. [PubMed: 11393608]
18. Spitzer, RL.; Yanovski, SZ.; Marcus, MD. The questionnaire on eating and weight patterns-revised (QEWPR). New York State Psychiatric Institute; New York: 1993.

19. Masheb RM, Grilo CM. Accuracy of self-reported weight in patients with binge eating disorder. *Int J Eat Disord*. 2001; 29(1):29–36. [PubMed: 11135330]

Figure 1.
Weight changes during the year prior to initiating treatment by percentage of sample.

Figure 2.

Mean percent weight changes from 3, 6 and 12 months prior to treatment initiation for High Weight Gainers ($n = 46$), Low Weight-Gainers ($n = 38$), and Weight Maintainers/Losers ($n = 22$).

Table 1

Comparison of weight groups on current and historical weight variables

	Weight Maintainers/Losers		Low Weight Gainers		High Weight Gainers		F	P
	Mean	SD	Mean	SD	Mean	SD		
Current Age	46.50	11.33	47.45	8.15	47.62	8.11	0.12	0.88
Current BMI	39.80	6.72	38.19	6.07	39.06	6.16	0.45	0.64
Highest Weight	267.18	74.98	243.89	61.17	263.5	56.11	1.39	0.25
Age 1st overweight	19.82	10.54	21.63	16.95	15.24	8.25	2.67	0.08
Age of 1st binge	26.05	13.05	24.37	13.65	21.86	10.63	0.93	0.40

Table 2

Comparison of weight groups on current eating behaviors and eating disorder psychopathology

	Weight Maintainers /Losers		Low Weight Gainers		High Weight Gainers			
	Mean	SD	Mean	SD	Mean	SD	F	p
Eating Episodes								
OBEs Month 1	15.77	9.24	17.82	14.95	20.72	15.43	1.01	0.37
OBEs Month 2	16.18	9.03	18.05	15.20	19.74	14.90	0.50	0.61
OBEs Month 3	16.45	8.63	16.63	15.24	20.24	17.34	0.77	0.47
OOEs Month1	2.91	5.82	7.45	12.92	4.98	8.05	1.60	0.21
OOEs Month 2	3.09	6.13	7.29	12.34	4.57	7.20	1.66	0.20
OOEs Month 3	3.27	6.41	6.76	12.04	4.74	7.64	1.07	0.35
SBEs Month 1	12.50	17.76	14.39	14.74	13.7	19.45	0.08	0.92
SBEs Month 2	12.41	17.74	14.97	16.49	12.33	18.10	0.28	0.76
SBEs Month 3	13.68	21.60	13.63	15.21	12.41	18.07	0.06	0.94
EDE subscales								
Eating Concern	2.06	1.27	2.31	1.46	2.33	1.36	0.31	0.74
Weight Concern	3.35	1.27	2.99	1.01	3.27	1.14	0.96	0.39
Shape Concern	3.74	1.18	3.24	1.06	3.76	1.11	2.59	0.08
Restraint	1.65	1.32	1.90	1.32	1.60	1.36	0.54	0.58

Note: OBEs=objective bulimic episodes; OOE=objective overeating episodes; SBEs=subjective bulimic episodes; EDE=Eating Disorder Examination.