Weight Suppression as a Predictor Variable in Treatment Trials of Bulimia Nervosa and Binge Eating Disorder

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Abstract

Objective—The purpose of this study was to examine weight suppression (WS) as a predictor of treatment outcome among individuals with binge eating disorder (BED) and bulimia nervosa (BN).

Method—Participants were diagnosed with BED or BN and took part in separate treatment studies. The current study examined WS as a predictor of treatment completion, weight change during treatment, and symptomatic abstinence, as well as percent reduction in binge eating and purging frequency.

Results—WS did not significantly predict treatment completion or treatment outcome in either group.

Discussion—Contrary to some previous findings, these results failed to demonstrate that WS was predictive of outcome at the end of treatment in BN. In addition, WS was not predictive of treatment outcome or dropout status in BED.

Weight suppression (WS), which is defined as the difference between one's current body weight and highest adult body weight[1], appears to be problematic for many individuals diagnosed with bulimia nervosa (BN)[2]. Several studies of treatment-seeking patients with BN have shown that WS was a significant predictor of treatment completion, weight gain, and frequency of binge eating[3,1,4]. WS has also been shown to predict weight gain among college freshman women[5]. However, another study of BN showed that WS predicted weight gain but failed to predict treatment completion as well as frequency of binge eating and purging behaviors at the end of treatment[6]. To our knowledge, WS has not been examined as a predictor of treatment outcome in individuals with binge eating disorder (BED) undergoing treatment, many of whom are overweight and chronically dieting[7].

The current study had two separate aims. Given the inconsistencies in previous findings of WS in BN, the first aim of this investigation was to re-examine WS in BN in a sample of participants who received individual cognitive behavioral therapy (CBT) for BN. The second aim of this investigation was to conduct an initial examination of WS in BED using a sample of individuals receiving group CBT. WS was examined as a predictor of treatment outcome (measured by the reduction of symptom frequency as well as abstinence), weight gain, and treatment completion.

Methods

Study participants

All participants were 18 years and older, of either gender, and received a form of CBT; they were recruited by sites in North Dakota (the BED and BN samples) and Minnesota (the BED sample). Institutional review board approval was received from the University of North Dakota, MeritCare Health System, and the University of Minnesota. Written informed consent was obtained from all participants.

Study 1: Participants with BED—Overall, this study examined methods of CBT group treatment delivery to patients with BED. The participants were randomly assigned to a wait list control group, or to one of three active treatments (i.e., therapist-led, therapist-assisted, or self-help), with 15 group sessions (80 minutes each) over a 20-week period. Active treatments were identical except for method of delivery. Participants included 259 adults with a BMI ≥ 25 kg/m^2 who met full DSM-IV criteria for BED as measured by experienced assessors with the Eating Disorder Examination (EDE)[8]. Study details and procedures have been described elsewhere[9].

All participants completed the Eating Disorders Questionnaire (EDQ)[10] at the start of treatment. WS was ascertained from weight history questions of the EDQ. The frequency of binge eating episodes was measured using the EDE at baseline, end of treatment (or end of waiting period for wait list control), and at 6- and 12-month follow-up assessments. All assessment interviews were audiotaped. Interrater reliability ratings were conducted on 20% of the interviews; correlation coefficients were .955 to .982.

Study 2: Participants with BN—Overall, this study examined two methods of treatment delivery to patients with BN. The participants included 128 adults who met DSM-IV criteria for BN (purging or non-purging subtype) or eating disorder-not otherwise specified (EDNOS) with one of the following: DSM-IV criteria for BN except binge eating/purging at a minimum of once a week, or DSM-IV criteria for BN with only subjective binge eating episodes. Participants were not eligible if their body weight was below 85% of ideal weight, had experienced a change in prescribed psychotropic medication within the past six weeks, had ever received eight or more CBT sessions, abused alcohol or drugs within the past six months or were dependent in the past one month, pregnant, or had any other significant condition that would make participation unsafe (e.g., high risk of suicide, actively psychotic). The participants were randomly assigned to receive 20 sessions of CBT over a 16-week period either by face-to-face (FTF-CBT) or by telemedicine (TV-CBT)[11].

All participants completed the EDQ at the start of treatment. The frequency of binge eating episodes and compensatory behaviors was measured using the EDE at baseline, end of treatment, and at 3- and 12-month follow-up assessments. Participants completed self-assessment questionnaires, including a Binge-Purge Recall form bi-weekly during treatment and at 3- and 12-month follow-ups.

Statistical Analysis

All analyses were conducted using SPSS for Windows Version 17.0 (SPSS Inc., Chicago, Illinois). Primary outcome variables were completion of treatment, change in weight, abstinence rates from binge eating and purging, and change in number of binge-purge episodes as determined from the EDE at end-of-treatment. WS was treated as a continuous variable for the initial analyses and then transformed into a dichotomized variable using the median.

The following research questions were addressed. Does WS predict: (1) treatment completion; (2) weight change during treatment; (3) abstinence from binge eating or abstinence from binge eating and purging; and (4) percent reduction in frequency of binge eating or percent reduction in frequency for binge eating and purging. WS, calculated as the difference between highest adult body weight and current weight at start of treatment, was the independent variable for all analyses. We conducted logistic regression with treatment completion and abstinence from binge eating (BED and BN samples) and purging (BN sample only) as the dependent variables (DVs). We used linear regression with change in weight and percent reduction in frequency of binge eating and purging as the DVs.

Results

BED Study Results

Mean age of participants was 47.1 years (SD = 10.4, range 19 – 65) and 87.6% were women. Of the 259 randomized participants, 191 (74%) were assessed at end of treatment. WS did not significantly predict treatment completion, (B = .009, SE = .009, OR = 1.009, p = .342). WS failed to predict change in weight during treatment, (B = .007, SE = .018, p = .701).

Of the participants who completed treatment, WS failed to predict abstinence from binge eating, (B = −.017, SE = .010, OR = .983, p = .077). Abstinence was defined as no objective binge eating episode (OBE) on the EDE in the past 28 days. Abstinence rates for those who completed treatment ranged from 10% to 55% depending on treatment group. In addition, we repeated this analysis with the last observation carried forward for 225 participants and found comparable results. Finally, WS was not a significant predictor of the percent reduction in frequency of binge eating episodes (B = .404, SE = .207, p = .053).

Each analysis was repeated with WS as a dichotomized variable for 225 participants based on the median of 5.0 pounds: 110 participants were below and 115 participants were at or above the median. The results were comparable to results using WS as a continuous variable (i.e., not significant).

BN Study Results

Mean age of participants was 29.0 years (SD = 10.7, range 18 – 60) and 98.4% were women. Of the 128 randomized participants, 80 (63%) were assessed at end-of-treatment. WS did not predict treatment completion (B = .005, SE = .007, OR = 1.005, p = .518). WS failed to predict change in weight during treatment (B = .019, SE = .026, p = .470).

Of the participants who completed treatment, WS failed to predict abstinence from binge eating (B = −.006, SE = .009, OR = .994, p = .470), purging (B = .005, SE = .009, OR =1.005, p = .585), as well as binge eating and purging combined (B = .008, SE = .009, OR = 1.008, p = .392). Abstinence was defined as no reports of OBE, purging (vomiting, laxative abuse, diuretic abuse), or combined binge eating and purging in the previous 28 days. The abstinence rates for those who completed treatment were as follows at end of treatment: face-to-face group 69.2% OBE, 53.8% purging, 46.2% OBE and purging; telemedicine group 56.1% OBE, 41.5% purging, 36.5% OBE and purging. In addition, we repeated this analysis with the last observation carried forward for 119 participants and found comparable results. Finally, weight suppression did not predict the percent reduction in frequency of binge eating and purging episodes, (B = −.092, SE = .229, p = .899).

Each analysis was repeated with WS as a dichotomized variable for 119 participants based on the median of 12.0 pounds: 56 participants were below and 63 participants were at or above the median. The results were comparable to results using WS as a continuous variable (i.e., not significant).

Discussion

Some but not all previous studies have found WS to be a significant predictor of treatment completion, treatment outcomes, and weight gain among women with BN[1,3]. However, WS failed to be a significant predictor of treatment completion, weight change during treatment, abstinence and reduction in binge eating and purging among those with BED and BN in the current study. These findings may be explained by differences between the participants in the current study and the participants in the previous studies. For example, those in previous studies may have had higher levels of WS, which was associated with rapid weight gain during treatment.

Another explanation may be due to small changes in weight during treatment among participants of the current study (i.e., little variability in WS). WS was calculated at the start of treatment and participants were divided into high and low WS groups based on a median split. Table 1 presents data for participants that completed treatment, including mean weight change between the start and the end of treatment for participants with BED was an increase of 3.9 pounds (1.77 kg) for those with high WS and a loss of .7 pounds (.32 kg) for those with low WS. Similarly, mean weight change between the start and the end of treatment for participants with BN was an increase of 2.5 pounds (1.13 kg) for those with high WS and an increase of 1.4 pounds (.64 kg) for those with low WS. These findings parallel findings by Lowe and colleagues (2006), such that individuals with high WS gained more weight over time[5]. While the study by Lowe and colleagues (2006) showed WS to be a significant

predictor of the amount of weight gained when tested as a continuous variable, the current study did not find this[5].

Weight suppression has been referred to as "significant diet-induced weight loss" sustained over time[12] and defined as the difference between current weight and highest adult weight[13]. This concept has been used to categorize those who are dieting as those who are weight suppressing, which were individuals with a current weight of 10 or more pounds below their maximum historic weight and whose age at maximum weight was at least one year earlier than their current age[14]. Perhaps using more specific definitions of WS would reduce inconsistent findings across studies and be helpful for future studies.

Limitations of the current study include reliance upon self-report and selection bias due to dropout. It is possible that those who took part in the current treatment programs learned to overcome their pattern of weight cycling. Next steps for research may include using more stringent definitions of WS, exploring WS among non-clinical samples, and examining history of weight loss efforts.

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Table 1

Change in weight during the study by high and low weight suppression

Study by	Sample	Length of Study	High WS Weight Change	Low WS Weight Change
Peterson et al., 2009	BED N = 259	20 weeks	Increase 1.77 kg	Decrease .32 kg
Mitchell et al., 2008	BN N = 128	16 weeks	Increase 1.13 kg	Increase .64 kg
Lowe et al., 2006	College Freshmen N = 69	32 weeks	Increase 2.97 kg	Increase 1.20 kg