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Emotional eating, marital status and history of physical abuse predict 2-year weight loss in weight loss surgery patients

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ABSTRACT

Background: Weight loss surgery (WLS) is an effective weight loss treatment for individuals with severe obesity. Psychosocial factors can affect short-term WLS outcomes. This study sought to identify psychosocial predictors of medium-term outcomes.
Methods: In this prospective study, 250 consecutive WLS candidates were evaluated between January 1, 2010 and December 31, 2010. Each completed baseline medical, surgical, and psychological evaluations as part of standard of care. Two hundred and four patients had surgery (81.6%). Successful surgical outcome was defined as ≥50% excess weight loss two years post-surgery.
Results: Comparison of study sample (n = 80) and those lost to follow-up (n = 124) revealed negligible differences across baseline characteristics. At follow-up, 60% (n = 48) of the sample was classified as a success with an average of 72.58% (std dev = 13.01%) excess weight lost. The remaining 40% (n = 32) was classified as a failure with an average of 33.98% (std dev = 13.19%) excess weight lost. Logistic regression revealed that pre-surgical marital status, emotional eating, and history of physical abuse were independently associated with outcome variables, $p < 0.05$.
Conclusions: Being married, perhaps as a proxy for social support, is associated with 6.9 times increased odds of medium-term WLS success and emotionally driven disordered eating patterns are associated with 7.4 times increased odds of medium-term WLS success. A history of physical abuse is associated with an 84% decreased odds of successful medium-term outcomes. Further research that studies both the quality and impact of spousal support on weight loss as well as longer-term effects of emotional eating on outcomes is needed. Addressing longer-standing consequence of abuse may improve WLS outcomes.

1. Introduction

Though weight loss surgery (WLS) is an effective treatment for significant and sustained weight loss for obesity, WLS outcomes are variable. In a recent multicenter observational cohort study, 3-year post-surgical weight change revealed 5 weight change trajectory groups (Courcoulas et al., 2013). Patients received one of two surgical procedures, Roux-en-Y gastric bypass (RYGB) or laparoscopic adjustable gastric band (LAGB). RYGB involves both restricting the stomach pouch and re-routing the intestinal tract to the new stomach pouch. It is considered to be both restrictive and malabsorptive in its effect. LAGB involves placing a band around the upper end of the stomach creating a small pouch and a narrow passage into the rest of the stomach. It is considered a restrictive procedure. All WLS patients experienced the greatest amount of weight loss during the first year after surgery. For patients who had the RYGB all groups experienced weight loss in the first 6 months. One group started to regain weight at 6 months, another group maintained weight loss achieved at 6 months and the other 3 groups continued to lose weight, but at variable rates. After 2 years all groups demonstrated some weight regain, although for the majority of the patients the weight regain was small in comparison with total weight loss. For patients who had LAGB, the majority of patients achieved the greatest weight loss in the first 6 months with a slowing and stabilization of weight loss after 2 years. However, the second most common pattern revealed weight loss during the first 6 months and then weight regain through the 3 year period. Another group exhibited steady weight loss through the first 2 years with slight weight regain after 2 years. Only a small portion of the sample showed continual weight loss through the 3 year period. Several longer term

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studies have found that the greatest weight loss occurs 1–2 years post-surgery followed by a pattern of gradual weight gain that stabilizes after 10 years (Christou, Look, & Maclean, 2006; Sjostrom et al., 2007).

Weight regain is common and occurs in 20–35% of patients (Christou et al., 2006). Growing literature highlights the role of extra-surgical factors in affecting WLS outcomes. Researchers have sought to determine factors associated with outcomes to inform patient selection and treatment options. Patient behaviors that have been associated with less weight loss include low attendance at follow-up appointments (Dixon et al., 2009; Pontiroli et al., 2007), limited or delayed return to physical activity (Hatoum, Stein, Merrifield, & Kaplan, 2009), and maladaptive eating habits (Colles, Dixon, & O'Brien, 2008). However, eating behaviors appear to play a complex role in WLS patients and likely change from the pre-operative to the post-operative period (White, Kalarchian, Masheb, Marcus, & Grilo, 2010). It is not surprising that pre-surgical eating behaviors are inconsistent predictors for post-surgical outcomes (Alger-Mayer, Rosati, Polimeni, & Malone, 2009; White, Masheb, Rothschild, Burke-Martindale, & Grilo, 2006).

Psychiatric status pre-surgically is more consistently implicated with WLS outcomes.

Patients who have experienced an Axis I disorder, particularly a mood or anxiety disorder, exhibit poorer WLS outcomes compared to patients without psychiatric comorbidity — at least in the short-term (Kalarchian et al., 2008). Patients with two or more psychiatric disorders have even significantly less weight loss (Kinzl et al., 2006). In a recent prospective study using structured clinical interviews, patients with pre-operative lifetime anxiety as well as patients with both depression and anxiety at the time of pre-operative evaluation exhibited less weight loss after surgery compared to patients without psychiatric comorbidity (de Zwaan et al., 2011). Of note, an earlier systematic review suggests that *severity* of psychiatric symptoms is more relevant to surgical outcome than the *specificity* of the disorder (Herpertz, Kielmann, Wolf, Hebebrand, & Senf, 2004).

With WLS becoming the treatment of choice for the severely obese, it is increasingly important to identify factors that affect outcomes, both positively and negatively. Livhits et al. (2012) highlight markers most consistently negatively associated with post-operative weight loss: higher BMI and personality disorders. A recent review (Hsu et al., 1998) examined the available literature on the association between WLS outcomes and pre-operative body mass index (BMI), pre-operative weight loss, eating disorders, psychiatric disorders and substance misuse and arrived at a similar conclusion. They found mandatory pre-operative weight loss to be positively associated with weight loss; whereas, a higher pre-operative BMI (>50) and personality disorder were negatively associated with weight loss. Nonetheless, the authors caution that further study is needed to investigate pre-surgical factors' predictive utility in identifying post-surgical differences in weight loss.

To date, the available literature provides an incomplete and sometimes confusing picture of psychosocial factors associated with weight loss surgery outcomes. Furthermore, much of the available data has focused on shorter term outcomes. Identification of predictive factors has the potential to inform the selection process, and perhaps more importantly, to proactively identify patients who may benefit from tailored treatment plans to improve outcomes. The purpose of the present study was to examine the potential of pre-surgical psychosocial functioning to influence medium-term outcomes among individuals who underwent WLS.

2. Methods

2.1. Participants

Two hundred fifty consecutive bariatric surgery candidates presented at a large academic medical center in the southeastern United States for consideration of WLS between January 1, 2010 and December 31, 2010. Two hundred and four (N = 204) underwent surgery at the study institution. Of those WLS patients who underwent surgery, 189 would have been eligible for a 2-year follow-up appointment with the bariatric surgery program by the study close (April 30, 2013). Unfortunately, a large portion of the eligible study sample was lost to follow-up due to failure to attend their routine 2-year clinical follow-up visit. Eighty (n = 80; 42.3%) patients comprised the final sample by meeting the following inclusion criteria: 1) having completed a baseline, pre-surgical evaluation, 2) having undergone WLS, 3) having had sufficient time lapsed (i.e., at least 2 years) between completing the pre-surgical evaluation and having undergone WLS, and 4) having attended the scheduled two-year follow-up appointment (Fig. 1). Table 1 provides a comparison of baseline demographic, medical and psychosocial characteristics of the final study sample (n = 80) and those patients who were lost to follow-up (n = 109; 57.7%).

2.2. Procedure

In this prospective study, patients completed a comprehensive pre-bariatric surgery evaluation and were evaluated at scheduled intervals post-WLS. As part of routine clinical practice, a bariatric surgeon coordinated a standard medical assessment, and a bariatric psychologist conducted an extensive psychosocial evaluation. The surgeon's evaluation included a physical exam, discussion of the procedure and expected outcomes. The bariatric psychologist's evaluation included a semi-structured interview and self-report measures of psychological status. Included with the semi-structured interview were self-reported responses to demographic information, history of emotional eating, and history of emotional, physical or sexual abuse. Upon successful completion of the evaluation and any recommended pre-surgical treatment, patients underwent the medically recommended surgical intervention: RYGB, sleeve gastrectomy, or LAGB. Following surgery, patients were scheduled for routine clinical exams at one week, one month, three months, six months, twelve months, eighteen months, and twenty-four months. Medical assessments at these evaluations included assessment of body weight and medical comorbidities.

All data were collected with full approval from the Institutional Review Board. Participants' personal health information was handled ethically and in accordance with Health and Human Services regulations.

2.3. Measures

The Minnesota Multiphasic Personality Inventory-2 (MMPI-2) is a 567 item self-report, widely-used, criterion group measure used to assess personality functioning as well as current psychological symptomatology. The items are in a true/false format and derive three validity and 10 clinical scales. Reliability coefficients have been calculated for the individual scales with good reliability up to a one month interval (coefficient $\alpha > 0.70$) (Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989). An abbreviated 370 items version of the MMPI-2 was utilized in this study to shorten the overall psychological evaluation and to reduce patient burden (Butcher & Hostetler, 1990). The abbreviated version does not impact the scoring or interpretation of the validity and clinical scales.

The Center for Epidemiological Studies 10-item Depression scale (CESD-10) is a 10-item self-report questionnaire which assesses symptoms of depression, including depressed mood, happiness, and lethargy. Scores range from 0–30 and any score ≥10 is considered clinically significant. It demonstrates good convergent validity (e.g., negative correlation with positive affect and positive correlation with poor health) and test–retest reliability (Andresen, Malmgren, Carter, & Patrick, 1994).

The Beck Anxiety Inventory (BAI) is a 21-item self-report questionnaire used for measuring the severity of an individual's anxiety over the past week. Items are ranked on a 4-point scale for a maximum total score of 63. Scores are group into minimal (0–7), mild (Alger-Mayer et al., 2009; de Zwaan et al., 2011; Herpertz et al., 2004; Kalarchian et al., 2008; Kinzl et al., 2006; Livhits et al., 2012; White