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Surgery for Obesity and Related Diseases ■ (2018) 00–00

SURGERY FOR OBESITY  
AND RELATED DISEASES

Original article

## Short-term changes in affective, behavioral, and cognitive components of body image after bariatric surgery

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Received July 13, 2017; accepted December 30, 2017

### Abstract

**Background:** Many bariatric surgery candidates report body image concerns before surgery. Research has reported post-surgical improvements in body satisfaction, which may be associated with weight loss. However, research has failed to comprehensively examine changes in affective, behavioral, and cognitive body image.

**Objectives:** This research examined (1) short-term changes in affective, behavioral, and cognitive components of body image from pre-surgery to 1- and 6-months after bariatric surgery, and (2) the association between percent weight loss and these changes.

**Setting:** Participants were recruited from a private hospital in the midwestern United States.

**Methods:** Eighty-eight females (original N = 123; lost to follow-up: n = 15 at 1-month and n = 20 at 6-months post-surgery) completed a questionnaire battery, including the Body Attitudes Questionnaire, Body Checking Questionnaire, Body Image Avoidance Questionnaire, and Body Shape Questionnaire, and weights were obtained from patients' medical records before and at 1- and 6-months post-surgery.

**Results:** Results indicated significant decreases in body dissatisfaction, feelings of fatness, and body image avoidance at 1- and 6-months after bariatric surgery, with the greatest magnitude of change occurring for body image avoidance. Change in feelings of fatness was significantly correlated with percent weight loss at 6-months, but not 1-month, post-surgery.

**Conclusions:** These findings highlight the importance of examining short-term changes in body image from a multidimensional perspective in the effort to improve postsurgical outcomes. Unique contributions include the findings regarding the behavioral component of body image, as body image avoidance emerges as a particularly salient concern that changes over time among bariatric surgery candidates. (Surg Obes Relat Dis 2018;■:00–00.) © 2018 American Society for Metabolic and Bariatric Surgery. All rights reserved.

### Keywords:

Bariatric surgery; Weight loss; Body image dissatisfaction; Body checking; Body image avoidance; Feelings of fatness

Research suggests that individuals seeking bariatric surgery experience more emotional and psychological

distress, including greater issues with depression, anxiety, binge eating, and self-esteem, than non-surgery-seeking morbidly obese adults in the general population [1–4]. Another salient issue within the bariatric surgery population is body image, a multidimensional construct typically defined by perceptual (e.g., the estimation and/or distortion of body size) and attitudinal (e.g., affective, behavioral, and

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cognitive) dimensions [5]. Individuals seeking bariatric surgery are likely to exhibit disturbances in the way they experience, think, and feel about their body [6,7], and these concerns regarding body appearance serve, in part, as motivation to pursue surgery [8].

According to Reas and Grilo [5], the attitudinal dimension of body image represents distinct psychologic phenomena that manifest in differing ways for individuals who are invested in their body appearance. The affective and cognitive components of body image focus on how individuals think (cognitive) and feel (affective) about their bodies. One common manifestation of these body image components is body dissatisfaction, or the concern and general feelings of displeasure toward the shape and size of one's body (combination of both affective and cognitive components) [5,9]. The behavioral component of body image focuses on the extent to which individuals engage in specific behavioral manifestations of body image, such as body checking or body avoidance [5].

When considering these body image dimensions in bariatric surgery populations, several studies have demonstrated that candidates exhibit high levels of body dissatisfaction before surgery [10–12]. To our knowledge, only one study has examined the behavioral component of body image: Grilo and colleagues [13] found that before surgery, patients seeking gastric bypass frequently avoided clothing that made them aware of their body shape (i.e., body avoidance) and engaged in frequent body checking behaviors, such as pinching areas of their body to check for fat. Despite evidence documenting the presence of multiple dimensions of body image disturbance before surgery, research has only examined post-surgery changes in the affective and cognitive components of body image, noting decreases in body dissatisfaction [12,14–17], feelings of fatness [12], and negative beliefs about body image [14,16] over time periods ranging from 1 week to  $\geq 4$  years after surgery. Thus, there are several reasons to examine changes in the behavioral components of body image. Among obese persons who participated in a behavioral weight control treatment, body checking and body image avoidance are frequent and are associated with low self-esteem and less success in achieving weight loss goals [18]. Given these findings, body checking and body image avoidance may also be important dimensions to examine among bariatric surgery populations, particularly because these behaviors may become important postsurgical treatment targets [18].

Second, it is unclear whether changes in these multidimensional components occur primarily as a function of weight loss. Some studies have found post-surgical weight loss to be associated with changes in body image, with moderate effect sizes ranging from .30 to .37 [14,17], suggesting the improvements in body image and weight loss coincide. Interestingly, significant decreases in body image and negative beliefs have also been observed in time periods as short as 5- to 6-months post-surgery [16,17],

suggesting some aspects of body image may improve before maximum weight loss has occurred. While body image may be a primary motivation for the pursuit of surgery, additional research on the association between weight loss and change in body image in the short term may help to inform post-surgical psychoeducation and treatment recommendations.

Given these issues, the purpose of the present study was two-fold: (1) examine short-term changes in the affective, behavioral, and cognitive components of body image from pre-surgery to 1- and 6-months post-surgery, and (2) determine whether percent weight loss is associated with changes in multiple components of body image after surgery. It was hypothesized that all aspects of negative attitudinal body image (i.e., affective, behavioral, and cognitive components) would decrease after surgery and that greater percent weight loss (%WL) would be associated with greater changes in body image.

## Methods

### Participants

Participants were 88 females (mean<sub>Age</sub> = 46.5 yr, standard deviation<sub>Age</sub> = 10.5; 97.7% self-identified as “white” and 2.3% as “black”) seeking either laparoscopic Roux-en-Y gastric bypass (n = 18) or laparoscopic gastric banding (n = 70) weight loss surgery at a private hospital in the midwest United States.

Only women were included in analyses, as there are sex differences in the nature of body image [19] and a majority of the body image measures have been validated primarily among women. The original data set included 123 females; however, 35 participants were dropped from analyses because they did not provide data for the 1- (n = 15) or 6-month (n = 20) follow-ups.

Dropped participants did not significantly differ from included participants in age, pre-surgical body mass index, or pre-surgery scores on the various body image measures (*t* values ranging from .22 –1.69, *P* values ranging from .09 –.82).

### Measures

In addition to a demographic questionnaire, participants completed the following questionnaires: These values are now provided in text and not in Table 1.

#### *Affective and cognitive manifestations of body image*

Body attitudes questionnaire. The body attitudes questionnaire (BAQ) [20] is a 44-item self-report measure that assesses attitudes about one's body size and shape. The subscale “Feeling Fat” was used to measure the affective-only component of body image. Items are rated on a 5-point Likert scale, with higher scores indicating greater feelings

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