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Original article

Predictors of a successful medical weight loss program

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Abstract

Background: Many practices are creating weight loss programs, in preparation for bariatric surgery or for patients who wish to lose weight without surgery. Preoperative weight loss may be associated with improved postoperative weight loss and resolution of co-morbidities. The aim of this study is to investigate the success of a preoperative weight loss program at a single institution and the variables associated with success in weight loss.

Methods: We enrolled patients in a once monthly multidisciplinary preoperative weight loss program and evaluated % total weight lost over the 6-month program for primary and for revisional bariatric surgical patients. Demographic characteristics, weight, program related factors, and co-morbidities were recorded. One-way ANOVA and multiple linear regression models were carried out to assess variables. Parameter estimates of multiple linear regression models were reported. Statistical significance was set at .05 and analysis was done using SAS 9.3.

Results: A total of 133 patients enrolled and completed the program over a period of 14 months. Only 50.8% of the patients lost weight with average weight loss of $.1 \pm 4.0$ lbs. Patient's sex, insurance, psychiatric history, co-morbidities, referral status, or type of counseling had no significant effect on weight loss ($P > .05$). Patients between 30 and 50 years old on average were more successful in losing weight ($P = .018$). Patients considering revisional surgery were less successful preoperatively compared to first time candidates ($P = .0007$).

Conclusion: Patients between 30 and 50 years of age, first time surgical candidates, and those with higher weights may be more successful in losing weight in a preoperative bariatric weight loss program. (Surg Obes Relat Dis 2015;■:00–00.) © 2015 American Society for Metabolic and Bariatric Surgery. All rights reserved.

Keywords:

Predictors; Medical weight loss; Success

Obesity proves to be a growing epidemic in the United States as in 2009–2010, 35.7% of adults and 16.9% of adolescents were obese (body mass index [BMI] of 30 kg/m² or higher) [1]. It has been related to the development of acute and long-term complications, such as cardiovascular disease, diabetes mellitus, osteoarthritis, and sleep apnea, and is considered the 2nd most preventable cause of death. Obesity imposes substantial burden not only to

individuals, but also to society, as the combined projected medical costs associated with treatment of preventable diseases associated with obesity is estimated to increase by \$48–66 billion/yr in the United States [2].

To combat obesity, studies have sought to examine the short- and long-term effects of medical weight loss through behavior modification [3–8]. On average, adults in the United States can accomplish long-term weight loss maintenance of at least 10 percent for at least 1 year [8–10]. One third of the lost weight is regained within the first year and the remainder is regained within 3–5 years [11]. Bariatric surgery appears to be the only efficacious treatment

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approach with successful long-term weight loss and maintenance for most morbidly obese patients. With the increase in numbers of patients undergoing bariatric surgery, there is an awareness of the importance of patient selection as a tool of predicting success after surgery. Many providers and most insurers now mandate that patients considering surgery participate in a once monthly multidisciplinary preoperative weight loss program for a period of at least 3 and often up to 6 months before surgery. Several studies have examined the benefit of preoperative weight loss programs [12–16]. In these studies, preoperative weight loss or lower BMI is associated with better outcomes postoperatively. However, there is scarcity of data on the variables that can have effect on the success of preoperative weight loss programs.

At our institution, a preoperative weight loss program is open to both candidates for surgery and those who want to lose weight without surgery, although majority of the patients enrolled are surgical candidates. We sought to analyze the success of the program and variables associated with success in the preoperative medical weight loss program for patients who are on the path for having surgery.

Methods

After Institutional Board Review, all patients that participated in a preoperative weight loss program from December 2011 to February 2013 were identified. Patients attended either a private session or group therapy on a monthly basis. The goal of the sessions was preoperative weight loss and learning about behavioral modifications that can help with weight loss preoperatively and postoperatively. In addition, patients were given information regarding various nutrition topics, food label reading, hunger cues, and additional topics. The number of sessions required is mandated by the insurance company requirements before bariatric surgery as participation ranged between 3 and 6 months. Before attending their first session, patients have met with the dietician for individualized nutrition counseling. The dietician counseled the patient on how to improve their diet before surgery and calculated energy requirements for weight loss using the Mifflin-St Jeor equation. At the beginning of each session, the patient was weighed, the BMI was calculated, and vital signs assessed. All patients were weighed on the same scale in a consistent manner, (i.e., light weight clothing and no shoes). If the patient experienced weight gain or no weight loss, s/he was counseled. Counseling consisted of a 15-minute 1:1 session with a dietician or NP to identify and address challenges. The remaining part of the sessions lasted approximately 1 hour for the group education and provided behavioral modification education and techniques via a multidisciplinary approach, involving a registered dietician, exercise specialist (physical therapist), psychologist, and surgeon or

nurse practitioner. Alternative 1:1 sessions lasted 30 minutes and were led by a nurse practitioner. The patients had a choice between group or 1:1 sessions and were assigned based on personal preference. The sessions in both groups included information about diet and healthy choices, exercise, social factors, coping mechanisms, etc with new topics monthly. Patients were asked to keep a food diary that was reviewed monthly by a dietician. Patients were encouraged to keep an exercise log.

Percent total weight change over the 6-month program and characteristics such as demographic characteristics, initial weight, program related factors, and co-morbidities were examined. A patient's weight change was measured by:

$$\frac{\text{Latest record} - \text{Earliest record}}{\text{Earliest record}} \times 100\%$$

One-way ANOVA was performed first to find factors associated with weight change. Multiple linear regression models were carried out to further study the associations after adjusting for the length of time patients were enrolled in the program and baseline weight of patients. Parameter estimates of multiple linear regression model were reported. Normality assumption was confirmed. Grubb's test was used to evaluate for outliers. Statistical significance was set at .05 and analysis was done using SAS 9.3 (SAS Institute, Inc, Cary, NC).

Results

The records of 136 patients who were enrolled in this program from December 2011 to February 2013 were reviewed. Three patients (2.2%) who did not complete the entire course of the program, 3 patients (2.2%) who entered both 1:1 and group counseling, and 4 patients (2.9%) who did not proceed to surgery afterwards were excluded subsequently. Demographic characteristics are shown in [Table 1](#). From the remaining 126 patients completing the program, the female to male ratio was 2.5:1. Average age was 43.1 years (range 18–72 years) and average BMI at the beginning of the program was $46.2 \pm 9.8 \text{ kg/m}^2$. Mean weight loss was .1 with SD of ± 4.0 . Highest weight loss was 9.2% and highest weight gain was 22.2%. Sixty-two out of the 126 patients gained weight (49.2%) versus 64 patients who experienced weight loss (50.8%). Patients with higher BMIs lost more weight. When comparing initial weight for first comers ($n = 116$) to patients requiring revisions ($n = 10$), median baseline weight for first comers was 273.1 lbs (range 177.2–466.6 lbs) and the median baseline weight for revisions was 318.4 lbs (range 219.6–525.4 lbs). No statistical significant difference was found between the 2 groups based on Wilcoxon rank sum test (P value .2371).

We further looked into different factors that could affect weight change, such as age (<30 yr, 30–50 yr, >50 yr),

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