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Dietary and psych predictors of weight loss after gastric bypass

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ABSTRACT

Background: Identifying severely obese patients who will succeed after bariatric surgery remains challenging. Although numerous studies have attempted to identify preoperative patient characteristics associated with weight loss, the roles of many dietary and psychological characteristics are unclear. The purpose of this study was to examine preoperative dietary and psychological predictors of successful weight loss after bariatric surgery.

Materials and methods: This retrospective cohort study included all patients who underwent laparoscopic Roux-en-Y gastric bypass from September 2011—June 2013 at a single institution ($n = 124$). Patient demographics, comorbidities, dietary and psychological factors, and weight loss outcomes were extracted from the electronic medical record. Bivariate associations between these factors and successful weight loss ($\geq 50\%$ excess body weight) were examined. Factors significant at $P \leq 0.1$ were included in a multivariate logistic regression model.

Results: On bivariate analysis, absence of either type 2 diabetes or hypertension, preoperative weight <270 lbs, no intentional past weight loss >50 lbs, no previous purging or family history of obesity, and no soda consumption preoperatively were associated with successful weight loss ($P < 0.1$). On multivariate analysis, successful weight loss was inversely associated with the presence of type 2 diabetes (odds ratio [OR], 0.22, 95% confidence interval [CI], 0.06—0.73), maximum intentional past weight loss >50 lbs (OR, 0.12 [95% CI, 0.04—0.43]), and decreasing soda consumption by $>50\%$ (OR, 0.27 [95% CI, 0.08—0.99]).

Conclusions: Patients with type 2 diabetes mellitus, significant previous weight loss, and poor soda consumption habits are more likely to experience suboptimal weight loss after bariatric surgery. Additional preoperative counseling and close postoperative follow-up is warranted for these patients.

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1.   Introduction

Bariatric surgery provides significant health benefits and can vastly improve a patient's long-term health [1]. It reduces excess body weight by 50%—80%, resolves obesity-related comorbidities in most patients, improves overall quality of life, and extends lifespan [1—5]. Given these benefits, bariatric surgery is a routinely sought-out treatment option among severely obese patients in the United States. Nearly 180,000 bariatric operations were performed in 2013 [6].

Despite the generally favorable effects on weight loss for patients who undergo bariatric surgery, there is variability in individual response. Previous studies have found that younger age, male gender, lower preoperative weight and body mass index (BMI), and single marital status are associated with greater postoperative weight loss [7—13]. However, the critical dietary and psychological characteristics remain unclear. For example, binge eating, anxiety, and depression have been associated with suboptimal weight loss after bariatric surgery in some studies while others have found them to be positive predictors of successful weight loss [8,10,14—18]. Several others have concluded they have no effect on postoperative weight loss [9,19—22].

Given that most of these reports focused on either socioeconomic, dietary, or psychological characteristics, we sought to investigate each of these domains simultaneously to determine which factors predicted successful weight loss (defined as ≥50% excess body weight loss [% EBWL]) 1 y after bariatric surgery. This approach provided an opportunity to adjust for potential confounders in each of the critical domains that comprise the preoperative bariatric surgery evaluation. Dietary characteristics included current eating habits and previous dieting attempts, whereas psychological characteristics addressed each patient's mental health history and the health psychologist's initial recommendation regarding the patient's candidacy for surgery. To investigate these factors, we performed a single-institution, retrospective review of severely obese patients undergoing laparoscopic Roux-en-Y gastric bypass.

2.   Materials and methods

2.1.   Study population

All patients who underwent laparoscopic Roux-en-Y gastric bypass from September 1, 2011—June 1, 2013 at the University of Wisconsin Hospital and Clinics were identified using University of Wisconsin Hospital and Clinics Department of Surgery billing data. Patients who underwent a sleeve gastrectomy, laparoscopic adjustable gastric banding, or revisional bariatric surgery were excluded. A retrospective review was then conducted using data collected from the electronic medical record (Epic, Verona, WI). Approval from the Health Sciences Institutional Review Board at the University of Wisconsin—Madison was obtained before data collection.

2.2.   Patient demographics, obesity-related comorbidities, and weight-related characteristics

Age, race, gender, marital status, work status, highest education achieved, living situation (alone or with someone),

and smoking history were obtained from nutritionist and health psychologist preoperative assessments. Six obesity-related comorbidities were obtained from the anesthesia visit on the day of surgery and confirmed with the surgeon's preoperative history and physical, including type 2 diabetes mellitus, hypertension, obstructive sleep apnea, gastroesophageal reflux disease, hyperlipidemia, and coronary artery disease. Five weight-related characteristics were measured as follows: preoperative BMI and weight, which were collected from the anesthesia visit on the day of surgery; family history of obesity, childhood obesity, and maximum past weight loss (greatest amount of weight lost in a previous attempt) were obtained from the preoperative nutritional assessment. Inclusion of each demographic and weight-related characteristic in the analysis was based either on our literature search (i.e., preoperative weight, BMI, maximum past weight loss) or *a priori* hypothesis (i.e., demographics, family history, childhood obesity) that the characteristic was associated with weight loss after gastric bypass. The six obesity-related comorbidities were selected because, in our program, they are typically the most clinically relevant comorbidities when decisions are made about who is an appropriate candidate for gastric bypass surgery.

2.3.   Dietary characteristics

Seven dietary variables were collected from the nutritionist's preoperative assessment and the obesity questionnaire that all patients completed on entry into our bariatric surgery program. Patient-reported variables included a history of binge eating (eating an amount of food that is excessive compared with what most people would eat in similar circumstances that may be associated with a sense of lack of control eating during the episode), night eating habits (limited daily eating with concurrent eating of >25% of daily calories after the evening meal), a history of purging (self-induced vomiting or misuse of laxatives, diuretics, or enemas), emotional eating (eating in response to typically negative emotions when not physically hungry) [23—25]. Yo-yo dieting was identified if the patients reported they had lost and regained 20 pounds on two or more occasions or if reported by the nutritionist in their preoperative assessment. A "regular eating pattern" was assigned by the nutritionist if the patient indicated he or she ate a balanced three meals daily on average and refrained from erratic meal times or skipping meals. Soda consumption was categorized as nondrinkers (never consumed soda or had quit by the time of preoperative assessment and surgery date), decreased drinkers (had reduced their daily soda intake >50%), or unchanged drinkers (had not decreased their soda consumption by the time of the preoperative assessment).

2.4.   Psychological characteristics

Eight psychological variables were identified and collected from the electronic medical record, including a history of posttraumatic stress disorder (experiencing persistent anxiety, fear, helplessness, recollections, and/or flashbacks after a traumatic event), bipolar personality disorder (experiencing