

THE PAIN OF REGAIN: PSYCHOSOCIAL IMPACTS OF WEIGHT REGAIN AMONG LONG-TERM BARIATRIC PATIENTS

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INTRODUCTION

Individuals elect to undergo bariatric surgery to achieve lasting weight loss and improvement of obesity-related chronic conditions. However, questions still arise on long-term bariatric surgery success and its effect on weight loss maintenance. Past research indicates that about a year and a half to two years post-surgery, weight loss from surgery stops, and a significant number of individuals begin the regain the weight they initially lost. Contributing psychosocial factors to weight regain are varied and may include disinhibition of eating, grazing behavior, food cravings, poor well-being, poor self-concept, lack of planned exercise, not following aftercare recommendations, and social support. Psychosocial factors such as depression, self-efficacy, and self-concept are emerging as critical variables, which impact the long-term effectiveness of bariatric surgery. One of the purposes of the present study was to gain an understanding of psychosocial variables and the influence they have on weight regain and post-bariatric follow-up.

METHOD

The researchers used an embedded **mixed methods** cross-sectional study design, **quantitative data** provided a general picture of long-term bariatric outcomes, while the **qualitative data** assisted in explaining statistical results by exploring participants' bariatric experiences.

- Participants were recruited either from public bariatric support forums ($n = 133$) or through a regional weight management center in the Midwest ($n = 534$). The final sample included 667 participants (85.9% female) who ranged from age 22 to 84 years ($M = 52.9$). The majority of participants had the Roux-en-Y Gastric Bypass (RYGB) (81%).
- Researchers developed a bariatric questionnaire addressing various post-operative outcomes in long-term bariatric patients, including dietary adherence, health impacts, perceptions of surgical success, and other psychosocial dimensions.
- Questionnaire included 12 demographic items, four milestone weights, 26 five-point Likert-scale items, and one open-ended item (Table 1).

RESULTS

Multiple Linear Regression

- A multiple linear regression analysis was conducted with weight regain as the outcome variable. The stepwise predictor-selection method was used in this study in order to build the most efficient model for the purposes of predicting weight regain.
- This process began with an initial pool of 16 candidate predictor variables, which was trimmed to a final set of six predictors using stepwise selection (criterion for variable entry: $p \leq .05$; criterion for variable removal: $p \geq .10$).
- A final set of predictors were selected after six stepwise iterations—namely, height, time since surgery, maximum post-operative weight loss, adherence to post-operative diet recommendations, self-concept/appearance, and self-concept/well-being. This final set of six predictors produced a sizable (and statistically significant) squared multiple correlation (SMC) of .276 ($F_{6, 593} = 37.612, p < .001$), with an adjusted SMC of .268 (Table 2).

Qualitative Findings

- 80% of participants ($n = 533$) provided a narrative response to the following question: "What else would you like to tell us about your bariatric surgery experience?"
- The variety in responses was diverse across many different topics regarding post-surgical outcomes. The coding process of related responses to weight regain and surgical follow-up resulted in the emergence of two major themes from the narratives: 1) weight regain after bariatric surgery is likely ($n=129$), and 2) continuing bariatric follow-up and support is needed ($n = 118$). For frequencies and examples of participant responses, see Table 3.

DISCUSSION

The results of the stepwise multiple regression revealed insight into the unique relationships weight regain has with height, amount of time since surgery, maximum post-operative weight loss, adherence to post-operative diet, self-concept/appearance, and self-concept/well-being. While holding all other predictor variables constant, the average amount of weight regain can be expected to decrease by approximately four pounds for each increase of one point on adherence to post-operative diet item. In more general terms, this implies that lower amounts of regain are associated with stricter observance of the recommended diet. In accordance with the sparse long-term literature, there is a significant positive relationship between the amount of time since surgery and regain (although fairly slight). For each month after surgery, the expected amount of regain increases by about one-tenth of a pound (or, equivalently, patients will on average gain back 1.2 pounds each year post surgery). Moreover, although all surgeons generally encourage support groups, less than a third of participants (32%; $n=216$) in the present study reported to belonging to some type (either formal or informal) of support group. There is no standard set of recommendations to which all bariatric clinics must follow, only proposed suggestions by the American Society for Metabolic and Bariatric Surgery. Many formal bariatric support groups cater to newer post-ops (usually the first year post-surgery) and because the experiences of newer post-operative patients generally differ from long-term patients, "veteran" patients may feel isolated by discussion topics at their surgical support group. A major key in preventing weight regain is continuing post-operative education and follow-up. Both before and after weight-loss surgery, patients need to be taught how to use their surgery to optimize their success involving the importance of dietary adherence, behavioral and psychological health, and physical activity. Many of the known negative psychosocial impacts of weight recidivism could potentially be mitigated by continuing education and follow-up regarding potential long-term issues that can have damaging consequences and ultimately place the patient back at the starting line.

Table 1. Self-reported Participant Anthropometrics (Pre-surgery & Current)

Characteristic	n	M	SD
Age (years)	665	52.93	12.80
Time since surgery (months)	661	70.40	43.21
Weight on the day of surgery (lbs.)	666	284.42	55.88
BMI ^a on the day of surgery	665	46.41	7.63
Lowest weight achieved (lbs.)	665	165.06	39.33
Lowest BMI ^a achieved	664	26.88	5.53
Current weight (lbs.)	667	185.27	45.18
Current BMI ^a	666	30.18	6.35
Current post-surgery weight loss ^b (lbs.)	667	109.90	43.97
Max. post-surgery weight loss ^c (lbs.)	665	130.18	42.94
Current post-surgery regain ^d (lbs.)	665	20.15	21.28

^aBody Mass Index (BMI) formula: $\text{weight (lbs.)} / [\text{height (inches)}]^2 \times 703$
^bCurrent weight loss formula: $\text{current weight (lbs.)} - \text{lowest weight (lbs.)}$
^cMax. weight loss formula: $\text{highest weight (lbs.)} - \text{lowest weight (lbs.)}$
^dRegain formula: $\text{current weight (lbs.)} - \text{lowest weight (lbs.)}$

Table 2. Intercept & Regression Weight Estimates: Final Regression Model

Model Term	b	SE	β	t	p
Intercept	3.815	14.664		.260	.795
Height	.615	.218	.103	2.821	.005
Time since surgery	.099	.018	.204	5.462	.000
Maximum post-operative weight loss	.081	.018	.167	4.551	.000
Adherence to post-operative diet	-3.969	.694	-.213	-5.716	.000
Self-concept/appearance	-4.351	.947	-.194	-4.594	.000
Self-concept/well-being	-2.469	.957	-.111	-2.579	.010

Note. Variables removed from the model were Age, Gender, Weight at surgery, Amount of exercise, Daily fluid intake, Daily protein intake, Daily vitamin intake, Freq. of use of face-to-face support group, Freq. of use of online support group(s), and Self-concept/self-esteem.

Table 3. Qualitative Responses Related to Weight Regain and Bariatric Follow-up

Major Themes and Subthemes	n	Examples
1. Regain after Bariatric Surgery is Likely	129	
◆ <i>Negative emotions associated with weight regain</i>	45	"I'm very unhappy that that I have put weight back on and even though I'm not close to my high weight, I feel like I look like I am and I have the same horrible feelings I had before my surgery."
◆ <i>Self-blame</i>	31	"I'm very dissatisfied with my weight loss because it's my fault I've gained...It's not easy for some of us to use the tool we were given. I always eat with my eyes...I'm a mess."
◆ <i>Confusion regarding regain</i>	28	"I eat hardly anything because I still vomit, yet I am gaining weight steadily." "I've gained 20-30 pounds in the last year or so...I am trying to figure out what I am doing wrong."
2. Bariatric Follow-up and Support	118	
◆ <i>Lack of education/ Feeling unprepared</i>	41	"I hope that the research will take into account the duration of time that has passed since surgery. It would be a great asset if the Doctors would follow up on progress for than just a year...It would be very helpful."
◆ <i>Formal support groups cater to "newbies" (newly post-ops)</i>	29	"Face to face groups are newbies with stars in their eyes. The group leader minimizes my participation, because she does not want me to verbalize what it feels like to have gained back half my weight loss."
◆ <i>General barriers to support group engagement</i>	48	"I need a supportive environment, whether online or face to face meetings, but I live an hour away [from clinic area]."

References

Please contact Angela Geraci at AAG05@aol.com for references and questions.