

# Results of a Professional Medical Counseling/surveillance in Preoperative Weight Loss

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## Abstract:

**Background:** Preoperative weight loss reduces the risk for complications after bariatric surgery.

**Objectives:** To evaluate the effectiveness of a preoperative counseling program compared to general recommendations alone.

**Setting:** Obesity Surgery Unit. Reina Sofia General University Hospital. Murcia (southeast Spain).

**Methods:** Prospective, randomized controlled study including 162 patients. Participants were randomly assigned to our preoperative intensive behavioral/lifestyle program (Counseling Group: 55, 78% women) or to receive general nutritional recommendations (Reference Group: 49, 82% women). Primary endpoint was a between-group comparison of percent excess weight loss (%EWL) at 4 months.

**Results:** Counseling Group: baseline Body Mass Index (BMI) was  $45.9 \pm 7.3 \text{ kg/m}^2$  when enrolled into the education program and reduced to  $43.2 \pm 5.6 \text{ kg/m}^2$  the day before the operation. After the motivational intervention, we got an average loss of  $7.3 \pm 3.7 \text{ kg}$  of body weight and 12.4% EWL in 16 weeks.

**Reference Group:** mean BMI was  $45.5 \pm 7.3 \text{ kg/m}^2$ . The day before surgery, BMI was  $46.1 \pm 6.1 \text{ kg/m}^2$ . Over a period of 16 weeks the average weight gain was  $1.8 \pm 1.1 \text{ kg}$  and -3% EWL ( $p=0.12$ ). Weight gain was observed in 55% of these patients. The comparison of the mean %EWL in both groups did not reveal any statistically significant differences.

**Conclusions:** The educational intervention was not statistically significant more effective than general nutritional recommendations in achieving weight loss.

**Keywords:** Morbid Obesity; Preoperative Counseling Program; Bariatric Surgery; weight loss

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**Competing Interests:** The authors have declared that no competing interests exist.

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## Introduction

As part of the preoperative process for bariatric surgery, many programs recommend a strict diet, physical exercise and pre-scheduled visits to promote weight loss before the procedure[1]. Moreover, minimum 5-10% of bodyweight loss prior to surgery is a requisite in some programs as it leads to improvement in obesity-related comorbid conditions and significantly decreases surgical complications[2-5]. In addition, targeted preoperative interventions may enhance surgery outcomes for individuals with particular psychological issues (i.e., binge eating disorder). Our aim was to assess the initial results of a presurgical counseling program (“Complementary Education and Preoperative Counseling Program-Bariali”) at our institution.

## Methods

Prospective, randomized controlled study. Data was obtained from the prospective database of all subjects who were at least the age of 18 years and waiting for weight loss surgery (Roux-en-Y gastric bypass or sleeve gastrectomy) from January of 2014 to March of 2017 at the Reina Sofia General University Hospital in Murcia (Southeastern Spain). All patients were invited to take part in the study and randomly assigned to our preoperative professional medical counseling/surveillance program (“Bariali” Group) or to receive general nutritional recommendations (Reference Group). Exclusion criteria included: 1) Intellectual disability or mental disease; 2) genetic obesity syndrome; 3) Pregnancy or breastfeeding; 4) Taking a medication known to affect body weight; 5) Any prior surgical treatment of obesity; 6) Medical condition demanding a specific preoperative program; and 7) Participation in a conflicting research protocol

“Bariali” is a systematized, multi-disciplinary preoperative teaching plan that incorporates alimentary, medical, psychological and surgical interventions and education. All the educational seminars are conducted by a team of four professionals (surgeon, specialist endocrine nurse, psychologist and dietitian/nutritionist).

### 1. Group configuration:

Approximately 16 weeks before surgery, candidates are asked to join in a counseling group, normally consisting of 4-6 people. They attend a 2-hour meeting fortnightly, completing 5 sessions during a 2.5 month period. Bodyweight is measured at the onset of the educational program using a tetrapolar bioimpedance weight (Tanita BC-418MA@Tanita Corp., Tokyo, Japan).

### 2. Seminars outcome:

Meetings are separated into 3 sections: 1/ Attendees share their experiences from the last week and motivation, 2/ Presentation of new concepts, and 3/ Revision of the notions introduced in the support meetings until that time. The main concepts of weight loss surgical interventions, surgery risks and complications, expected outcomes, life style and behavior changes, physical activity, healthy eating habits and discharge instructions are all reviewed. Participants were weighed in each session and the barriers related to follow the diet planning and physical activity were commented.

## Evaluation of effectiveness

We used a self-constructed questionnaire to assess patient satisfaction and adherence to recommendations.

The strategies for the preoperative counseling program were based on the guidelines proposed in prior reports[6,7]. The subjects not included in the Intervention group received preoperative care as usual: general nutritional and life-style recommendations in a single visit,

without weight loss requirements (Reference Group).

We intend to analyze whether participation in a pre-surgical professional medical counseling/surveillance program could increase weight loss by meeting treatment recommendations in subjects who are candidates for a bariatric procedure. To determine weight loss outcomes, baseline body weight and Body Mass Index (BMI) from the initial appointment were compared with the patients' values at the day before the surgical intervention in each group. Primary endpoint was a between-group comparison of percent excess weight loss (%EWL) at 16 week.

Descriptive statistics are presented as absolute values and percentages for categorical variables, and their means and standard deviations for continuous variables. We tested differences in variables under study with the use of the two-tailed Student's t-test. A p value of less than 0.05 was considered significant. Data were analyzed using SPSS version 19.0 for Windows.

The study was authorized by the Research Ethics Committee of the hospital and all participants provided informed consent.

## Results

In the study period, 162 patients underwent bariatric surgery and 104 of them were enrolled preoperatively. Age varied from 22 to 61 years ( $43.2 \pm 11$  years) and the gender distribution was predominantly female (76%). The randomization did not show significant differences at baseline between the Reference group and the Intervention group in age, gender, comorbidities (Table 1) or BMI. All procedures were completed by laparoscopy and there was no deaths. Weight data before and after educational intervention are shown in Table 2.

**Table 1** Sociodemographic and clinical characteristics at baseline.

	Counseling group	Reference group
Study population (N = 104)	55	49
<b>Gender</b>		
Male	12	9
Female	43	40
Age (Mean $\pm$ SD)	$40.6 \pm 13.1$ (range 27–58) years ( $44.2 \pm 13.2$ M, $40.1 \pm 9.3$ F)	$43.2 \pm 15$ (range 22–61) years ( $42.4 \pm 16.9$ M, $43.7 \pm 13.3$ F)
<b>Comorbidities</b>		
Type 2 Diabetes	6 (11 %)	6 (12%)
Hypertension	21 (38%)	17 (34.7%)
Dyslipidemia	28 (51%)	23 (47%)
Sleep apnea	28 (51%)	24 (49%)
Arthropathy	30 (54.5%)	27 (56%)

**Table 2** Weight data before and after counseling

	Counseling group	Reference group	p
BMI 1 (kg/m <sup>2</sup> )	45.9±7.3 kg/ m <sup>2</sup> (47.2±8.8 M, 45.7±4.2 F)	45.2±7.3 kg/ m <sup>2</sup> (47.3±9.1 M, 44.8±5.6 F)	0.97
BMI 2(kg/m <sup>2</sup> )	43.2±5.6 kg/ m <sup>2</sup> (43.1±6.2 M; 43.6±2.7 F)	46.8±6.1 kg/ m <sup>2</sup> (48.8±11.2 M; 46.5±4.1 F)	0.07
Preoperative Body Weight 1 (kg±SD)	126,8±11.9kg (142.9±15.4 M; 125.6±11.3 F)	125.3±19.6kg (144,8±16.4 M; 122,7±12.1F)	0.2
Preoperative Body Weight 2 (kg±SD)	119,5±17.1kg (130.1±18.5 M; 116.5±20.1 F)	127.1±24.4kg (146,5±11.3 M; 124±12.1F)	0.09
Preoperative Body weight outcomes (kg)	-7.3 ± 3.7	1.8±1.1	0.088
Mean percent change in weight (%EWL)	-12.4%	3.03%,	0.12

**Intervention Group Results:**

Of 86 eligible patients, 55 (63.9%) agreed to participate in the intervention group. BMI1 was 45.9±7.3kg/m<sup>2</sup> at the enrollment visit of the

program. At the time of surgery, BMI2 was 43.2±5.6kg/m<sup>2</sup>. After the motivational intervention, we got an average loss of 7.3±3.7kg and 5.9% (p=0.044) of body weight in 4 months (average: 12.4% EWL). Weight loss was observed in 46 (84%) of the patients from the intervention group. The change in weight from baseline differed significantly between sexes (p<0.05), with a higher loss in males. The rate of patients who agreed to join the educational groups reached 63.9% and 51(93%) patients attended at least three sessions. At the end, 50 subjects (91%) recognized that the program had been a useful training tool to prepare the operation. One person achieved successful weight loss and withdrew from the Bariatric Surgery Program after completing the preoperative intervention. The mean operative time was 109±31 minutes and hospital stay was 4.3±2.9 days.

**Reference group Results**

After exclusions, the Reference group comprised 49 patients. BMI1 was 45.5±7.3kg/m<sup>2</sup> at the baseline examination visit of the Bariatric Surgery Program. The day before surgery, BMI2 was 46.1±6.1kg/m<sup>2</sup>. This means that over a period of 4 months the average weight gain was 1.8±1.1kg and -3% EWL (p=0.12). Weight gain was observed in 27 (55%) of the patients from this group.

The mean operative time was 118±49 minutes and hospital stay was 4.1±3 days. Patients in the control group were not asked to fill out any satisfaction questionnaire.

The comparison of the mean percent change in weight in both groups of the study did not reveal any statistically significant differences.

**Discussion**

While the advantages of presurgical weight loss and adequacy of dietary patterns in surgery are well recognized, nutritional programs have hardly been evaluated. Even though bariatric surgery is considered "behavior-modifying", surgeons focus almost exclusively on technical considerations rather than behavioral or physiological differences when they compare surgical outcomes between different operations and even different pre- and post-operative treatment plans.

Currently, there are no accepted standards for the preoperative diet. As far as we know, psychological well-being, physical exercise and healthy eating habits seem to be associated with weight loss and postsurgical sustained improvement in quality of life[8-11]. But adherence to the recommended life-style from the first visit to the day of surgery varies among patients and –as in the current study- a significant number of them even gain weight. The reasons for this are not well understood, but often attributed to preoperative psychosocial characteristics and/or eating behaviors as well as poor adherence to the recommended diet[12].

Herein we cannot demonstrate that the educational program, with frequent appointment and the standard nutritional intervention achieved to promote weight loss and improvement of eating quality in morbid obese patient during preoperative period. Several studies[5,8,13-17] but not all[18] have reported an effect of attendance to support group meetings aimed at reinforce and guidance for life style changes on weight loss before and after the bariatric operation and links it to a shorter hospital stay and more rapid postsurgical weight loss. Participation in such groups seems to be related to degree of preoperative weight loss.

Men who participated in a counseling group lost significantly more weight over time than did women. This result is not particularly surprising, as men have been found to lose more weight than women in other studies of bariatric surgery as well as studies of behavioral and pharmacological treatments for obesity[19]. This difference is typically attributed to metabolic differences between the genders, although obese men, and their response to weight loss, surgical or otherwise, are studied far less frequently.

During the intervention, subjects relate to other preoperative participants as well as to patients who have undergone weight-loss surgery. Close communication with operated patients is especially helpful, as it gives first-hand explanations and tips for adjustment to the intense life-style modifications in physical exercise and diets. Candidates must be completely informed about the procedure and the behaviour changes that they will still need to introduce prior to surgical intervention and why. we pretend to reduce their level of anxiety, improve their adherence to the program and increase their satisfaction.

This initiative aims to improve their adherence to the guidelines, reduce their anxiety and, ultimately, increase their level of satisfaction. Candidate to bariatric surgery must have realistic expectations, be motivated and able to conform to the strict postop dietary and exercise recommendations, and demonstrate a commitment to succeed by attending all scheduled appointments. In the last seminar patients were asked for their opinion on the utility of the intervention in terms of the preparation and understanding of the possible consequences of surgical treatment of obesity and the recommendations concerning dietary habits and physical activity[18]. Our results were a high level of adherence to the program (93%) and almost all patients who participated in the program (91%) were satisfied.

While providing constructive information, the present study has a number of limitations. Perhaps most critically, the time interval between the end of the preoperative intervention and the surgery day was not standardized and follow-up period varied among patients. In terms of study design, patients in the Counseling Group self-selected participation, rendering whether the weight loss results are due to the intervention or selection bias unclear. It is reasonable to question the effectiveness of a preoperative intervention with this relatively low attendance rate. However, the response rate to these counselling sessions varies between 26% and 39%[17, 20], while in our study, near to 64% accepted inclusion to counselling condition. To try to improve our results we have created a Facebook support group. The Bariatric Surgery Facebook Group is an online tool for any prospective or post-surgery patients, their friends and family. The Group page is a forum for group members to share stories, view videos, get information, and give support, and is accessible any time of day. Nutrition and exercise tips, online discussions, and news items are available. The page is monitored by obesity specialists at Reina Sofia staf.

We have convinced ourselves that our 10 hour pre-operative educational program is the minimal that patients should be exposed to. We can now suggest a hypothesis for a pre-operative program that goes well

beyond a minimum and compare it to our current program in a new randomized controlled trial using a predetermined set of interactions, validated questionnaires, and laboratory and metric data to measure nutritional and exercise parameters.

Anyway, we think that this preoperative educational program can help the patient to decide if this surgery is right for him. It is a good system for demonstrate the ability and commitment to make dietary and exercise changes and seems to prevent “the last supper” syndrome or weight gain prior to surgery.

## Conclusions

A review of the current scientific evidencesuggests thatpreoperative weight loss really benefits patientsseeking bariatric surgery. However, there is a lack of consensus on which is the most effective system to obtain it.

Despite our results in this study,and on the basis of our experience, we consider that a preoperative professional medical assessment /counseling program could be successful in promoting preoperative weight loss in certain groups of patients. These persons should be recognized and recommended some type ofpresurgical preparation, weight loss program or lifestyle strategy adapted to their needs

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