Carving out success: identifying factors associated with metabolic and bariatric surgery outcomes

Jacobs, A.

II

Preoperative prerequisites

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Weight loss after bariatric surgery: a comparison between delayed and immediate qualification according to the last resort criterion

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Abstract

Introduction

In the Netherlands, patients only qualify for bariatric surgery when they have followed a 6-months mandatory weight loss program (MWP), also called the 'last resort' criterion. One of the rationales for this is that MWPs result in greater weight loss.

Objectives

To determine weight loss during MWPs and the effect of delayed versus immediate qualification on weight loss three years after bariatric surgery.

Settings

Outpatient clinic.

Methods

This is a nationwide, retrospective study with prospectively collected data. All patients who underwent a primary bariatric procedure in 2016 were included. We compared weight loss between patients who did not qualify according to the last resort criterion at screening (delayed group) with patients that qualified (immediate group).

Results

In total 2628 patients were included. Mean age was 44.4 years, 81.3% were female and baseline BMI was 42.3 kg/m2. Roux-en-Y gastric bypass (RYGB) was the most frequently performed surgery (77.0%), followed by sleeve gastrectomy (15.8%) and banded RYGB (7.3%). The delayed group (n=831, 32%) as compared with immediate group (n=1797, 68%), showed less percent total weight loss (%TWL) during the MWP (1.7% vs. 3.9%, $p<0.001$) and time between screening and surgery was longer (42.3 weeks vs. 17.5 weeks, $p<0.001$). Linear mixed model analysis showed no significant difference in %TWL at 18 ($p=0.291$, n=2077), 24 ($p=0.580$, n=1993) and 36 ($p=0.325$, n=1743) months follow-up.

Conclusion

This study shows that delayed qualification for bariatric surgery compared to immediate qualification does not have a clinically relevant impact on postoperative weight loss three years after bariatric surgery.

Introduction

According to the IFSO-criteria, patients only qualify for bariatric surgery when they have failed to lose weight or to maintain long-term weight loss despite appropriate medical care, which can be surgical and/or non-surgical [1]. In other words, bariatric surgery is considered a 'last resort' treatment. There is variation in how countries define the rules for implementation of this criterion. In several countries, such as the Netherlands, the United Kingdom and Canada, patients are required to follow a mandatory weight loss program (MWP) before they can undergo bariatric surgery [2-4].

The argument for MWPs is the assumption that they will induce preoperative weight loss, prepare patients for lifestyle changes and will therefore lead to a greater post-operative weight loss [5]. Previous studies have evaluated the effect of MWPs on various pre- and postoperative outcomes. However, research to substantiate the beneficial effect of MWPs on postoperative weight loss is still lacking.

A recent study of Schneider et al. found no significant difference in preoperative Body Mass Index (BMI) reduction, postoperative weight loss, rate of readmissions and reoperations, operative duration, hospital length and rate of follow-up between the MWP group and a control group [6]. Other studies that compared MWP groups to control groups also showed no increase in pre- and/or postoperative weight loss up to two years after surgery [7, 8]. Keith et al. even showed inferior weight loss at 24 months follow-up in the MWP group [9]. However, to our knowledge, none of these studies looked at weight loss during the MWP itself, neither did these studies have a follow-up time over 24 months and most of them had a relatively small study population (n=284 - 560).

The goal of this study is to assess weight loss during MWPs and the effect of delayed versus immediate qualification on three-year postoperative weight loss in a multi-center, nationwide bariatric population. We will compare patients who immediately qualified according to the last resort criterion because they had already followed a MWP program before, to patients who had delayed qualification and had not followed an MWP before. We will assess the differences in preoperative weight loss during the MWP and the duration of MWPs, as well as postoperative total weight loss between both study groups.

Methods

Standard treatment

The study population consisted of adult patients who were treated at the Nederlandse Obesitas Kliniek (NOK, Dutch Obesity Clinic) and underwent a bariatric procedure in one of the seven collaborative surgical centers (Groene Hart Hospital, Onze Lieve Vrouwen Gasthuis, Rode Kruis Hospital, Haaglanden Medical Center, Sint Antonius Hospital, Zuyderland Medical Center and Vitalys, part of Rijnstate). The NOK is the largest outpatient clinic for the treatment of obesity in the Netherlands, with currently nine locations throughout the country, treating about 4000 patients surgically each year.

The pre- and postoperative counselling program at the NOK is led by an interdisciplinary team, consisting of a dietician, psychologist, physical therapist and medical doctor. These teams work together with the bariatric teams in the hospitals. Before patients can enter this program, a screening is performed by the team to evaluate if patients qualify for surgery according to the IFSO-criteria. Patients can only enter the counselling program if they qualify.

The counselling program is identical in all locations. The majority of patients follow group counselling; patients only receive individual counselling when a group is not feasible, for example with a language barrier or certain psychological disorders. The group counselling consists of a total of 19 sessions. It entails six group visits during the six weeks prior to surgery in order to prepare patients for surgery, and a comprehensive lifestyle change program of 13 sessions until 15 months after surgery [(10)]. In addition, patients have individual medical consultations with the physician and attend a yearly follow-up until five years after surgery.

This study was approved by the Medical Ethical committee (METCZ20190097).

Last resort criterion

In the Netherlands patients qualify according to the last resort criterion if they have followed a weight loss program at a dietician, general- or nurse practitioner, internist or lifestyle coach for at least six months in the past five years [(11)]. Although patients have to meet this criterion in order to get reimbursed by the health insurance companies, this is not a prerequisite for a screening for bariatric surgery at the bariatric clinics. Whether a patient qualifies according to the last resort criterion is evaluated during screening.

At the screening patients are asked whether they followed a program and if so, they have to hand over a report from the counselor (dietician, nurse, physician, lifestyle coach). Based on this report, the multidisciplinary team of the clinic decides if the patient qualifies according to the last resort criterion. If the patient qualifies, she/he will start with the preoperative counselling program (the immediate group, Figure 1).

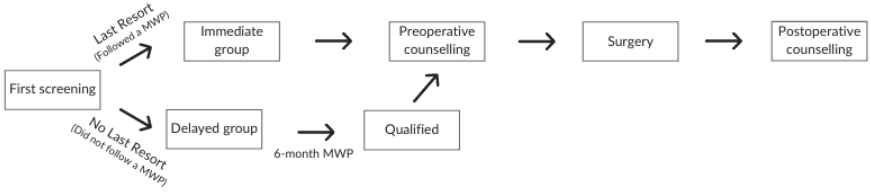


Figure 1. Flow of patients from first screening until postoperative counselling.

If the last resort criterion is not met at screening, the patient is referred to a dietician outside the clinic for a MWP and the start of the preoperative counselling program is postponed. When the patient completes the six months MWP, the report of the MWP is evaluated by the clinic. If the patient then qualifies according to the last resort criterion, the preoperative counselling is initiated (the delayed group). Thus, the immediate group consists of patients who followed a weight loss program on their own initiative, while for the delayed group a MWP is made mandatory, in order to qualify for surgery. An exception to this last resort criterion is when patients have a BMI equal to or higher than 50 kg/m^2. These patients qualify directly, despite not having followed a MWP.

Study population

This study is a retrospective analysis of prospectively collected data of all patients in treatment at all the NOK clinics. Patients were selected from the database when they underwent a primary Roux-en-Y gastric bypass (RYGB), sleeve gastrectomy (SG) or banded Roux-en-Y gastric bypass (RYGB + band) in 2016 and were treated in the preoperative group counselling program at the NOK clinic. Data was collected from May 2009 up to March 2020. Patients were excluded if they had a BMI ≥50 kg/m^2, because these patients qualified based on their BMI. Patients were also excluded if they were pregnant during the MWP or were unjustly granted as last resort although not having followed a MWP.

Body weight and height

Body weight and height were assessed preoperatively at first screening and at start of the preoperative counselling (baseline, BL). Postoperatively, body weight was assessed at 3, 6, 9, 12, 18, 24, 36 months after surgery. Weight loss was calculated and reported according to the most recent guidelines: BMI in kg/m^2, change in BMI ((*ΔBMI = current BMI – preoperative BMI*)) and percent total weight loss (%TWL). For calculating %TWL, the following formula was used:

$$\%TWL = ((preoperative\ weight\ (BL) - current\ weight) / preoperative\ weight\ (BL)) * 100\%.$$

For this analysis %TWL at 3, 6, 12, 18, 24 and 36 months follow up was calculated, using the weight at start of the preoperative counselling as baseline weight.

Body weight and duration MWP

Body weight at start and end of the MWP and duration of guidance was retrospectively collected from the patients' official dietary reports.

Other measurements

Gender, age at surgery, surgical method, treatment location and the preoperative presence of comorbidities (hypertension, diabetes, dyslipidemia, obstructive sleep apnea and osteoarthritis) were also collected from the database.

Statistical analysis

Descriptive statistics were used to summarize patients' baseline characteristics. Data were checked for normality and subsequent compatible tests were used. Two study groups were formed, based on qualifying according to the last resort criterion directly at first screening (immediate group) or having a delayed approval (delayed group). Baseline characteristics of both the immediate and delayed groups were compared using independent t-tests for continuous variables and chi-square tests for nominal and ordinal variables. Skewed data were first log-transformed in order to use compatible tests. All above analyses were performed using SPSS software, version 23 (IBM Corp. Released 2015. IBM SPSS Statistics for Windows, version 23.0. Armonk, NY: IBM Corp.).

A linear mixed model was used to assess in %TWL over time and to assess differences in %TWL between both study groups up to 36 months after surgery. Gender, age at surgery, baseline BMI, baseline comorbidities, treatment location and surgical method were added to the model as confounders. Plots were created

to visualize the changes in body weight across time since operation between the two groups. The linear mixed model analyses were performed using STATA, version 16 (StataCorp. 2019. Stata Statistical Software: Release 16. College Station, TX: StataCorp LLC.).

Findings with a p-value of <0.05 were considered statistically significant.

Results

Study population

A total of 3019 patients were operated in 2016 and selected from the database, 382 patients were excluded based on a BMI ≥50 kg/m^2 at initial screening, six patients due to pregnancy during their MWP and three because of a false positive last resort.

Patient characteristics

A total of 2628 patients were eligible and included for analysis. Of this population, 1797 patients (68.4%) qualified according to the last resort criterion at first screening (immediate group), meaning they had followed a MWP for at least six months in the past five years. A total of 831 patients (31.6%) did not qualify at first screening and still had to follow a MWP first (delayed group). Mean age was significantly higher in the immediate group (45.0 years versus 43.2 years, p<0.001); there was no significant difference in sex (Table 1). Obesity-related comorbidities were more frequently seen in the immediate than in the delayed group: hypertension (39% versus 33%, p=0.002), diabetes (26% versus 12%, p<0.001), dyslipidemia (22% versus 15%, p<0.001), sleep apnea (14% versus 11%, p=0.030) and osteoarthritis (14% versus 12%, p=0.078).

Table 1. Baseline characteristics of the included population, presented as mean ± standard deviation or n (%).

Age, years	All (n=2628)	Immediate (n=1797)	Delayed (n=831)	P-value
	44.4 ± 11.2	45.0 ± 11.1	43.2 ± 11.4	<0.001[a]
Sex				
Female	2136 (81.3)	1461 (81.3)	675 (81.2)	0.964[b]
Male	492 (18.7)	336 (18.7)	156 (18.8)	
Comorbidities				
Hypertension	971 (36.9)	699 (38.9)	272 (32.7)	0.002[b]
Type II diabetes	574 (21.8)	473 (26.3)	101 (12.2)	<0.001[b]
Dyslipidemia	512 (19.5)	390 (21.7)	122 (14.7)	<0.001[b]
Sleep apnea	353 (13.4)	259 (14.4)	94 (11.3)	0.030[b]
Osteoarthritis	352 (13.4)	255 (14.2)	97 (11.7)	0.078[b]

[a] student's *t* test; [b] χ^2 test;

Results Mandatory Weight Loss Program

Average duration of the MWP was 36.7 weeks in the immediate group and 23.0 weeks in the delayed group (p<0.001; Table 2). Patients in the immediate group lost on average 5.0 kg during their MWP and patients in the delayed group 2.3 kg (p<0.001). Weight loss per week during the MWP was 0.14 kg in the immediate group and 0.10 kg in the delayed group (p<0.001). When looking at weight change between first screening and start of the preoperative counselling, patients in the immediate group gained on average 0.5 kg (±2.8) and those in the delayed group gained 0.1 kg (±6.1, p=0.028). Patients in the delayed group had a significantly longer time between screening and start of the preoperative counselling (33.4±2.0 versus 9.7±1.8 weeks, p<0.001) and between screening and surgery (42.3±1.8 versus 17.5±1.4 weeks, p<0.001).

Table 2. Perioperative data, presented as mean ± standard deviation or n (%).

	All (n=2628)	Immediate (n=1797)	Delayed (n=831)	P-value
Mandatory weight loss program				
Duration, weeks	30.8 ± 2.2	36.7 ± 2.4	23.0 ± 1.5	<0.001 [a]
Weight change during MWP, kg	-4.0 ± 7.9	-5.0 ± 8.8	-2.3 ± 5.9	<0.001 [a]
Weight change per week MWP, kg	-0.13 ± 0.3	-0.14 ± 0.3	-0.10 ± 0.3	<0.001 [a]
%TWL during MWP	3.1 ± 6.4	3.9 ± 7.2	1.7 ± 4.5	<0.001 [a]
First screening				
Weight, kg	121.7 ± 15.8	121.7 ± 15.8	121.7 ± 15.7	0.986 [a]
BMI, kg/m^2	42.1 ± 3.6	42.1 ± 3.6	42.3 ± 3.5	0.205 [a]
Time screening to start preoperative counselling, weeks	14.3 ± 2.3	9.7 ± 1.8	33.4 ± 2.0	<0.001 [a]
Time screening to surgery, weeks	23.1 ± 1.8	17.5 ± 1.4	42.3 ± 1.8	<0.001 [a]
Start preoperative counselling				
Weight, kg	122.0 ± 16.2	122.2 ± 16.1	121.8 ± 16.5	0.594 [a]
BMI (Baseline), kg/m^2	42.3 ± 3.8	42.3 ± 3.7	42.4 ± 4.0	0.680 [a]
Weight change since screening, kg	0.4 ± 4.2	0.5 ± 2.8	0.1 ± 6.1	0.028 [a]
%TWL since screening	-0.3 ± 3.4	-0.4 ± 2.3	-0.1 ± 5.0	0.052 [a]
ΔBMI since screening, kg/m^2	0.1 ± 1.4	0.2 ± 1.0	0.0 ± 2.1	0.033 [a]
Time start counselling to surgery, weeks	7.3 ± 1.9	7.3 ± 1.8	7.4 ± 2.1	0.102 [a]
Surgical method				0.055 [b]
RYGB	2023 (77.0)	1366 (76.0)	657 (79.1)	
SG	414 (15.8)	286 (15.9)	128 (15.4)	
Banded RYGB	191 (7.3)	145 (8.1)	46 (5.5)	

MWP = mandatory weight loss program; BMI = body mass index; %TWL = percent total weight loss; ΔBMI = change in BMI;RYGB = Roux-en-Y gastric bypass; SG = sleeve gastrectomy.
[a] student's t test; [b] χ2 test

Follow-up

Follow-up rate was only comparable at the 3-month follow-up moment (Table 3). At all other follow-up moments, patients in the immediate group had significantly higher follow-up rates. The highest follow-up rate for both groups was at 6 months follow-up (immediate: 98.4% versus delayed: 97.0%, p=0.010). Follow-up decreased in both groups over time to respectively 68.6% versus 61.4% at 36 months after surgery (p<0.001). Patients lost to follow-up, were on average younger (42.1±11.5 years) compared with followed patients (45.6±10.9 years, p<0.001) and more males than females were lost to follow-up (38.2% versus 32.5%, p=0.016).

Table 3. Postoperative results, presented as mean ± standard deviation or n (%).

	Follow-up	%TWL	ΔBMI
3 months follow-up			
Immediate	1717 (95.5)	19.3 ± 4.0	-8.1 ± 1.8
Delayed	790 (95.1)	18.5 ± 4.1	-7.8 ± 1.9
6 months follow-up			
Immediate	1768 (98.4)	26.3 ± 5.2	-11.1 ± 2.4
Delayed	806 (97.0)*	25.7 ± 5.1	-10.9 ± 2.5
9 months follow-up			
Immediate	1758 (97.8)	31.2 ± 6.5	-13.2 ± 3.1
Delayed	799 (96.1)*	30.7 ± 6.4	-13.0 ± 3.1
12 months follow-up			
Immediate	1724 (95.9)	32.8 ± 7.0	-13.9 ± 3.4
Delayed	776 (93.4)*	32.3 ± 6.9	-13.7 ± 3.4
18 months follow-up			
Immediate	1458 (81.1)	33.6 ± 8.0	-14.3 ± 3.8
Delayed	619 (74.5)*	33.4 ± 7.9	-14.1 ± 3.8
24 months follow-up			
Immediate	1410 (78.5)	32.9 ± 8.3	-13.9 ± 3.9
Delayed	583 (70.2)*	32.9 ± 8.6	-13.9 ± 4.1
36 months follow-up			
Immediate	1233 (68.6)	30.8 ± 8.9	-13.1 ± 4.2
Delayed	510 (61.4)*	31.3 ± 8.8	-13.2 ± 4.2

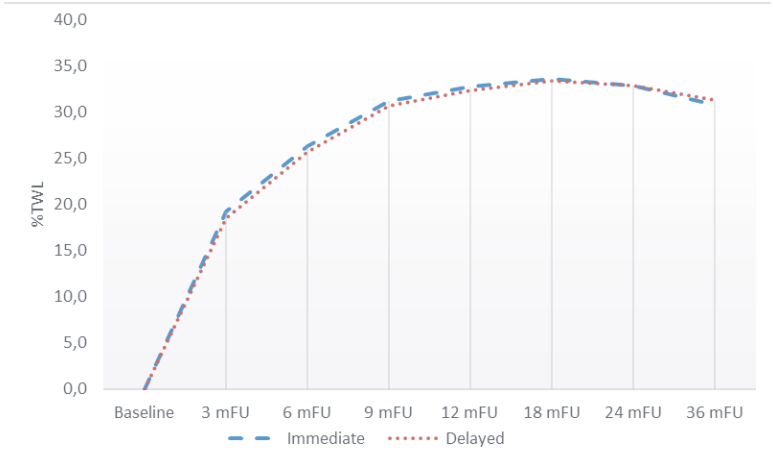
%TWL = percent total weight loss; ΔBMI = change in BMI
* Significant difference in follow-up rate compared to immediate group with χ^2 test

Postoperative weight loss

There were no significant differences in baseline BMI and surgical method between the two groups (Table 2). Postoperative weight loss for both study groups (calculated as %TWL) showed a similar pattern at all follow-up moments (Figure 2). Greatest weight loss was achieved at 18 months follow-up in both groups.

Unadjusted linear mixed model analysis showed patients in the immediate group had a significantly lower %TWL over time, compared to patients in the delayed group (β=-0.159, 95% CI=-0.277 – -0.041, p=0.008). Then the model was adjusted for gender, age at surgery, baseline BMI, type of surgery, comorbidities and treatment location. Each follow-up moment was compared with baseline. This second model showed that %TWL was significantly higher in the immediate group up to 12 months follow-up. The highest difference was 3 months after surgery: β 0.651, 95% CI 0.186 – 1.116, p=0.006 (Table 4). After that the differences were smaller. At 18, 24

and 36 months follow-up, the differences between the groups were not statistically significant (Table 4).



	Baseline	3 mFU	6 mFU	9 mFU	12 mFU	18 mFU	24 mFU	36 mFU
Observed cases: immediate group	1792	1717	1768	1758	1724	1458	1410	1233
Observed cases: delayed group	829	790	806	799	776	619	583	510

Figure 2. Percent total weight loss (%TWL) over time, measured at specific follow-up moments.

mFU: months follow-up

Table 4. Difference in total weight loss (%TWL) for immediate and delayed qualification with adjusted linear mixed model analysis.

	β-coefficient	95% CI (lower bound – upper bound)	P-value*
3 months follow-up			
Immediate	0.651	0.186 – 1.116	0.006
Delayed	Reference group		
6 months follow-up			
Immediate	0.592	0.130 – 1.054	0.012
Delayed	Reference group		
9 months follow-up			
Immediate	0.497	0.034 – 0.959	0.036
Delayed	Reference group		
12 months follow-up			
Immediate	0.497	0.030 – 0.963	0.037
Delayed	Reference group		
18 months follow-up			
Immediate	0.268	-0.230 – 0.765	0.291
Delayed	Reference group		
24 months follow-up			
Immediate	0.143	-0.363 – 0.649	0.580
Delayed	Reference group		
36 months follow-up			
Immediate	-0.265	-0.794 – 0.263	0.325
Delayed	Reference group		

CI: confidence interval
* Adjusted for gender, age at surgery, baseline BMI, type of surgery, comorbidities and treatment location.

Discussion

The goal of this study was to determine weight loss during MWPs and the effect of MWPs on postoperative weight loss up to three years after bariatric surgery. We compared patients that had already followed a MWP at first screening and therefore immediately qualified according to the last resort criterion (immediate group) to those who did not yet qualify and still had to follow a MWP before they qualified for surgery (delayed group).

Our results show that there was no clinically relevant difference in TWL up to 36 months after surgery. Patients in the immediate group had a statistically significant greater weight loss up to 12 months follow-up, however these differences were not clinically relevant (maximum difference 0.65 %TWL). Moreover, weight

loss at 18, 24 and 36 months follow-up was comparable (not statically significant, nor clinically relevant) in both groups. Patients in the immediate study group lost on average more weight during the MWP than patients in the delayed group. This is likely explained by the fact that the total duration of the MWP was also longer in the immediate group. Average time between first screening and surgery was more than twice as long for the delayed group (42.3 weeks), compared to 17.5 weeks in the immediate group.

Previous studies evaluating the effect of MWPs on weight loss also could not ascertain a beneficial effect of MWPs on postoperative weight loss [6-9, 12]. However, these study populations were relatively small and follow-up was mostly short (one year). Our results show that in a very large, nationwide bariatric population, there is no difference in three-year weight loss if patients are referred to a MWP directly before they undergo bariatric surgery. This is a great addition to a very recent study by Talishinskiy et al., which evaluated the effect of MWPs on postoperative weight loss in over 3000 patients one year after sleeve gastrectomy [13]. They reaffirmed the current thought that MWPs do not lead to superior postoperative weight loss.

A possible explanation why we saw only very small differences in postoperative weight loss up to 36 months, is that weight loss during a MWP is not the same as preoperative weight loss. Patients may regain the weight they lost during the MWP before the surgery itself takes place. In this study patients lost on average 4.0 kg during their MWP, however, this weight loss completely vanished when they started the preoperative counselling. On average, patients then even gained weight. This suggests that weight loss during a MWP is only for very short term and will therefore not result in greater postoperative weight loss. To our knowledge, this is the first study to study weight loss during the MWPs, so we cannot compare these results to other studies.

Some differences in baseline characteristics were observed between the study groups. The difference in the presence of comorbidities between the study groups can be explained by the Dutch medical guidelines. Lifestyle interventions are always the first step in the treatment for obesity and its related comorbidities [14]. Patients who suffer from these comorbidities, seem to be referred sooner by their general practitioner or medical doctor for a dietary intervention than patients without comorbidities.

The significant delay in adequate treatment we saw in this study, results in patients suffering from obesity and its related comorbidities even longer. Many patients who suffered from obesity-related comorbidities at screening, did not directly qualify according to the last resort criterion and were therefore delayed for surgery. Studies show that delaying surgery leads to a reduced survival and higher costs compared with prompt surgery [15, 16]. Furthermore, several studies have shown that this delay may lead to an increased surgery dropout [17, 18]. This insinuates that the current setup of the MWPs does not improve treatment outcome.

Remarkably, compliance to follow-up in this study was significantly higher in the immediate group. A possible explanation for this could be that behaviour preoperative is a predictor for behaviour postoperative. Patients that followed a non-surgical weight loss program on their own initiative, might be more compliant to the surgical program. However, previous studies that determined predictors for a high postoperative compliance to follow-up, did not evaluate the effect of dietary history [19-21]. Therefore, this hypothesis can neither be affirmed nor rejected. Predictors that were found to be associated with compliance to follow-up were older age, higher preoperative BMI and the female gender [19-21]. In our study, we saw higher compliance to follow-up for patients with an older age and for women, but not for patients with a higher preoperative BMI, although the difference in BMI was small.

Our study has the benefit of assessing weight loss during MWPs in a large, multicenter, bariatric population. However, there is a limitation that might affect interpretation of the results. We compared two study groups that both followed a MWP on different moments. It would have been more optimal if we compared a MWP group to a non-MWP group. Unfortunately, this was not feasible, as following a MWP is a nationwide criterion for bariatric surgery in The Netherlands. A second limitation is the fact that we only evaluated weight loss and did not include comorbidity resolution or quality of life. Lastly, it is important to address that, despite the use of a linear mixed model, there could still be some residual confounding of factors that were not measured. Despite these limitations, we think our findings still contribute to the growing belief that delaying surgery and referral to a dietician does not lead to greater postoperative weight loss.

As stated in the introduction, the argument for MWPs is the assumption that they will induce preoperative weight loss, prepare patients for lifestyle changes and will therefore lead to higher postoperative weight loss. Based on this study and previous

studies, MWPs in its present form do not seem to improve pre- or postoperative weight loss [6-9].

Studies do show that weight loss prior to bariatric surgery is associated with a reduction of postoperative complications as well as sustained improved postoperative weight loss [22, 23]. Moreover, preoperative cognitive behavioral programs can result in improvement of weight loss, eating behavior and depressive symptoms [24]. This suggests that the goal of MWPs is valid, but the current form of the MWPs does not result in the proposed goals. An ideal MWP should be developed based on the current knowledge of the effects of preoperative weight loss and cognitive behavioral therapy on outcomes after bariatric surgery. We would recommend additional observational studies to evaluate the effect of new MWPs in terms of weight loss, comorbidity resolution and quality of life to further optimize care.

In addition, the current qualification for a last resort can be discussed. In line with the recent policy change of one of the largest insurance companies in the United States and the previous position statement of the ASMBS, we therefore recommend insurance companies and other policymakers in other parts of the world to renounce the current definition of MWPs as a criterion for bariatric surgery and let the healthcare professional determine the need for additional care before bariatric surgery. This will make bariatric surgery more accessible.

Conclusion

Our study shows that delayed qualification for bariatric surgery does not lead to weight loss before starting a bariatric program and does not lead to greater postoperative weight loss up to three years after bariatric surgery, when compared to patients who followed a weight loss program a longer time before surgery.

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