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Obesity Treatment With Bariatric Surgery vs GLP-1 Receptor Agonists

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IMPORTANCE Obesity is a chronic condition with negative consequences for patients, the health care system, and society. The most effective treatment of class II and III obesity is metabolic bariatric surgery (MBS), which is usually considered a last resort. Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) have recently shown promising results.

OBJECTIVE To compare weight loss and ongoing costs associated with MBS and GLP-1 RAs in the US.

DESIGN, SETTING, AND PARTICIPANTS This cohort study used data from the Highmark Health insurance claims database and the Allegheny Health Network electronic medical record in the US. Participants were patients with class II or III obesity treated with either MBS or GLP-1 RAs who were enrolled in Highmark insurance for at least 6 months prior to index treatment and had follow-up data available for at least 12 months. Using propensity score weighting, the populations were adjusted for differences in baseline spending, health care utilization, age, sex, comorbidities, and smoking status. Data were analyzed from July 2024 to July 2025.

EXPOSURES MBS (sleeve gastrectomy or gastric bypass) vs GLP-1 RAs (dulaglutide, exenatide, liraglutide, lixisenatide, semaglutide, or tirzepatide).

MAIN OUTCOMES AND MEASURES The main outcomes were total weight loss and monthly ongoing costs (pharmacy, medical, and surgery costs) at baseline and over 2 years after index treatment. Mean adjusted costs were calculated using a linear mixed-effects model.

RESULTS Analyses included 30 458 patients (mean [SD] age, 50 [11] years; 20 118 [66.1%] female), with 14 101 undergoing MBS (mean [SD] follow-up, 34 [16] months) and 16 357 receiving GLP-1 RAs (mean [SD] follow-up, 32 [17] months). After propensity score weighting, baseline characteristics were comparable. The mean (SE) total costs over 2 years were $63 483 ($1563) for GLP-1 RAs and $51 794 ($1724) for MBS ($P < .001$). The main driver of this difference was higher sustained pharmacy costs in the GLP-1 RA group throughout year 2 of follow-up. Comparing weight loss data of 257 patients using GLP-1 RAs and 1291 patients who underwent MBS, total weight loss was greater for the MBS group (mean [SE], 28.3% [0.3%]) than the GLP-1 RA group (mean [SE], 10.3% [0.5%]) ($P < .001$).

CONCLUSIONS AND RELEVANCE These findings suggest that MBS was associated with more weight loss at lower ongoing costs compared with GLP-1 RAs in class II and III obesity. Further study is needed to determine if MBS should still be considered the last resort in treating obesity.

Invited Commentary
page 1240

Multimedia

Supplemental content

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Worldwide, the number of people living with obesity has increased drastically in the last decades, reaching an estimated 1 billion people in 2022.[1] Obesity is a major risk factor for a range of conditions[2] and a chronic condition requiring long-term management.[3,4] Patients with class II (body mass index [BMI; calculated as weight in kilograms divided by height in meters squared] ≥35) and III (BMI ≥40) obesity are most at risk for poor health outcomes,[5] with large economic consequences for health care systems and society: the total medical costs related to obesity were $260.6 billion in 2016.[6] Indirect costs of obesity caused by productivity loss due to premature mortality or absenteeism further increase the costs, which are only expected to increase in the future.[7-9] The high prevalence and adverse effects of obesity need to be addressed with prevention and treatment. Sustained, clinically meaningful weight loss contributes to a reduction in patient mortality,[10] remission of obesity-related conditions,[11-13] and decrease in cancers.[14]

The most effective treatment currently available for obesity is metabolic bariatric surgery (MBS),[10-13,15,16] which results in a durable loss of approximately 25% to 30% of total weight.[17-21] MBS is generally safe, with low complication and mortality rates,[22] and most patients experience treatment success after the first surgery.[23] Despite its success, MBS is considered a last resort when no other interventions achieve the therapeutic goals.[4,15] Recently, highly potent obesity management medications became available: glucagon-like peptide-1 receptor agonists (GLP-1 RAs), including liraglutide, semaglutide, and the dual glucose-dependent insulinotropic polypeptide/GLP-1 RA tirzepatide.[24] Semaglutide and tirzepatide in particular have shown promising outcomes, showing 18% to 25% total weight loss within 68 to 88 weeks of treatment.[25,26] As obesity is a chronic disease, maintenance of this weight loss is contingent on continued treatment with GLP-1 RAs; if the treatment is stopped, the lost weight is regained over time.[25,26]

Both MBS and GLP-1 RAs have demonstrated successful weight loss in obesity management and glycemic control.[27] They are also associated with substantial costs: MBS has high initial costs associated with the surgery, whereas GLP-1 RAs require recurrent payments to ensure ongoing medication. We aimed to compare the ongoing long-term health care costs and utilization as well as the clinical outcomes of MBS and GLP-1 RAs.

Key Points

Question How do bariatric surgery and glucagon-like peptide-1 receptor agonists (GLP-1 RAs) compare as obesity treatments regarding weight loss, ongoing costs, and health care utilization in a clinical setting?

Findings This cohort study of 30 458 patients from an insurance database in the US found that compared with GLP-1 RAs, bariatric surgery was significantly associated with greater weight loss while saving approximately $11 689 in ongoing costs over 2 years.

Meaning These findings suggest that bariatric surgery was associated with more effective, durable treatment of class II and III obesity at lower costs than GLP-1 RAs.

Methods

This cohort study was approved by the Allegheny Health Network institutional review board with exempt status per 45 CFR 6.104 (d). This study followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guideline.

Study Design

This retrospective cohort study compares the efficacy and economic outcomes associated with GLP-1 RAs with MBS for weight management and the alleviation of obesity-related comorbidities. Data of patients who underwent obesity treatment between 2018 and 2023 were retrieved from the Highmark Health claims database as part of health claims, as well as from the Allegheny Health Network electronic health records (EHRs) collected during health care encounters.

The primary data source for this study was an administrative database housing insurance claims of a large Blue Cross Blue Shield licensee. Information on health care encounters, both medical and pharmacy, are recorded in the database, including the diagnoses, procedures, and negotiated costs associated with each claim. During the study years, the database contained between 5 and 7 million members, most of whom lived in the northeast region of the US. In addition, the integrated health organization, Allegheny Health Network, includes a 14-hospital system located in western Pennsylvania with access to EHRs. Data in the EHRs were joined to claims data for a subset of health plan members receiving care in that network.

Patients were included if they had a diagnosis of obesity in their claims history. Patients in the GLP-1 RA cohort were prescribed dulaglutide (25% of the population), exenatide or exenatide extended release (1%), liraglutide (17%), lixisenatide (1%), semaglutide (45%), or tirzepatide (11%). Patients in the MBS cohort underwent sleeve gastrectomy or gastric bypass surgery. Included patients were enrolled in the health plan for at least 6 months prior to the index treatment (ie, the day the patient underwent MBS or first filled their GLP-1 RA prescription), and had follow-up data available for at least 1 year. Patients were excluded from the analysis if they were treated with both GLP-1 RAs and MBS, or if they did not have a diagnosis of obesity in their claims during either the 6-month baseline period or on the date of the index treatment.

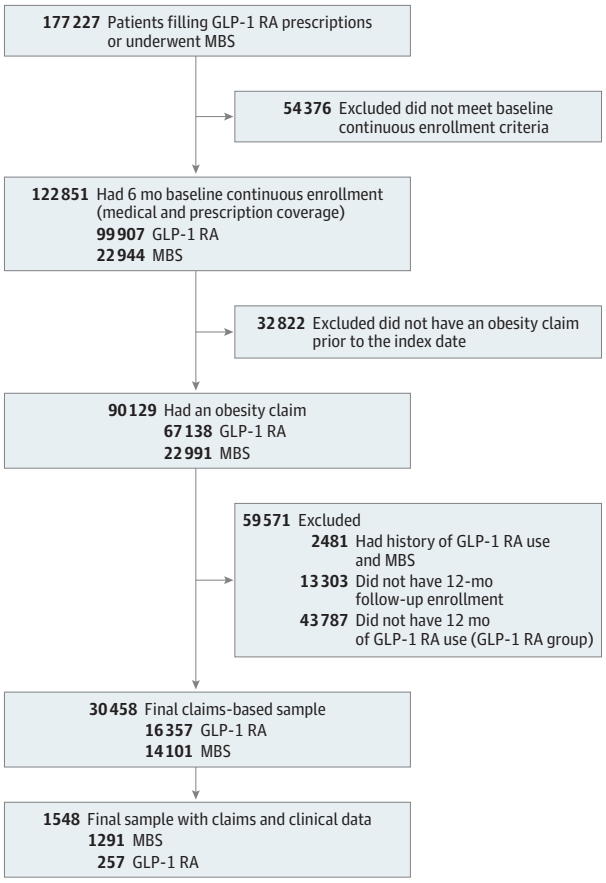
Baseline Data

The baseline was the time period 6 months prior to the index treatment. Patient data extracted from the database at baseline were patient age, sex, comorbidities (based on a diagnosis in the patient's claims history present before baseline), tobacco smoking status, emergency department (ED) visits, inpatient stays, and outpatient visits. These covariates were used for propensity score matching.

Outcomes

The economic outcomes were the mean total costs per month at baseline and within the first and second year after index

Figure 1. Patient Selection Flow Diagram



GLP-1 RA indicates glucagon-like peptide-1 receptor agonist; MBS, metabolic bariatric surgery.

treatment, as well as the total costs over 2 years. Total costs were the sum of medical costs (for consultations, surgical procedures, and other services or care) and pharmacy costs (for medications and drugs). Importantly, the costs of the index day itself (ie, the day of the surgery or the first filling of the GLP-1 RA prescription) were included in the postintervention analyses.

Weight loss outcomes included the percentage of people experiencing sustained weight loss as well as total and excess weight loss. Sustained weight loss was defined as a person reaching a goal of losing 5% or 10% of their starting weight and staying below that threshold until the end of their follow-up period. The follow-up period analyzed was at least 24 months after the index treatment. The time point of the index treatment is the reference for calculating changes in weight. Patients are encouraged to lose weight prior to undergoing MBS during the 6-month baseline phase, whereas a GLP-1 RA prescription has no such precondition. The mean weight loss was calculated using the last available follow-up weight measurement for each patient. Weight was measured as part of regular care a mean of 12 times, ie, every 65 days. Secondary outcomes were health care utilization (inpatient stays, outpatient visits, and ED visits), as well as changes in the rates of obesity-related comorbidities at follow-up.

Statistical Analysis

Data analysis was performed in R version 4.2.3 (R Project for Statistical Computing) using the R packages tidyverse, data.table, arrow, gtsummary, furniture, and WeightIt.[28-30] Continuous outcomes are presented as mean, median, and SE of the mean; categorical outcomes are presented as counts and percentages. P values were 2-sided, and $P < .05$ was considered statistically significant. Statistical significance was determined using Wilcoxon rank-sum tests for complex survey samples or χ^2 test with Rao-Scott second-order correction comparisons, also applying previously calculated propensity weights. We calculated the means of outcomes and compared between the baseline period and the first and second year of follow-up.

As a claims- and EHR-based dataset, adjustments for confounding factors were required. Cost data, health care utilization, and comorbidities at follow-up were available for the full patient cohort, and weight loss data were available for only a subset of patients; therefore, separate adjustments were performed for each patient cohort set. In the full cohort, propensity score weighting for the average treatment effect using generalized linear models was used to adjust for differences in the populations at baseline regarding spending, health care utilization (ED visits, outpatient visits, and inpatient stays), patient age, patient sex, comorbidities (diabetes, hypercholesterolemia, hyperlipidemia, hypertension, coronary artery disease, rheumatoid arthritis, peripheral artery disease, joint diseases, depression, and sleep apnea), and tobacco smoking status. The weight loss subset was additionally adjusted for differences in baseline BMI and weight. Propensity score weights were used for all presented outcome comparisons.

Mean adjusted total, medical, and pharmacy costs, as well as health care utilization and comorbidities at follow-up, were estimated using separate generalized linear mixed models after adjusting for the propensity-matched weights and accounting for the repeated measures using random intercepts per patient. Poisson distributions and natural logarithm links were used to adjust for the nonnormal distributions in each model. An offset was applied within the models using the natural logarithm transformation of the follow-up time.

Weight loss outcomes were compared between patients who underwent MBS and patients who used GLP-1 RAs with a BMI of 40 or greater to ensure that the starting BMI was comparable between groups. The weight loss outcomes were bivariate comparisons between GLP-1 RAs and MBS. Data were analyzed from July 2024 to July 2025.

Results

Study Population

The analysis included 30 458 patients (mean [SD] age, 50 [11] years; 20 118 [66.1%] female), of whom 14 101 underwent MBS and 16 357 filled GLP-1 RA prescriptions for at least 1 year (**Figure 1**). The mean (SD) follow-up period was 34 (16) months for MBS and 32 (17) months for GLP-1 RA. The characteristics of the entire population before and after adjustment according to propensity score weighting are shown in

Table 1. Propensity Score–Weighted Costs per Month for GLP-1 RA and MBS Groups

Outcome	Cost, mean (SE), $		Difference, $	*P* value
	GLP-1 RAs (n = 16 357)	MBS (n = 14 101)		
Total costs per month				
Baseline	1601.32 (97.27)	1673.29 (102.59)	−72.06	.61
0-1 y	2841.83 (130.29)[a]	3161.49 (143.63)[a]	−319.66	.10
1-2 y	2448.42 (27.46)[a]	1154.68 (85.82)[a]	1293.74	<.001
Pharmacy costs per month				
Baseline	664.90 (63.36)	198.95 (35.96)	465.95	<.001
0-1 y	1861.15 (106.00)[a]	132.58 (29.35)[b]	1728.57	<.001
1-2 y	1551.03 (99.26)[a]	114.57 (27.66)[b]	1436.46	<.001
Medical costs per month				
Baseline	934.58 (73.48)	1427.97 (93.75)	−493.39	<.001
0-1 y	1018.67 (76.78)[b]	2914.44 (138.11)[a]	−1895.77	<.001
1-2 y	984.61 (77.40)[b]	1005.76 (79.02)[a]	−21.15	.85
Costs over 2-y follow-up period				
Total costs	63 483.00 (946.50)	51 794.04 (1376.70)	11 688.96	<.001
Pharmacy costs,	40 946.16 (1231.56)	2965.80 (342.06)	37 980.36	<.001
Medical costs	24 039.36 (925.08)	47 042.40 (1302.78)	−23 003.04	<.001

Abbreviations: GLP-1 RA, glucagon-like peptide-1 receptor agonist; MBS, metabolic bariatric surgery.

[a] Compared to baseline: *P* < .001.

[b] Compared to baseline: *P* > .05.

Table 2. Weight Loss Outcomes for GLP-1 RAs and MBS Within the Follow-Up Period

Outcome	GPL-1 RAs (n = 257)	MBS (n = 1291)	*P* value[a]
Total weight loss, mean (SE) [median]	10.3 (0.5) [9.2]	28.3 (0.3) [28.4]	<.001
Patients with 5% sustained weight loss, No. (%)	184 (71.6)	1275 (98.8)	<.001
Patients with 10% sustained weight loss, No. (%)	118 (45.9)	1239 (96.0)	<.001

Abbreviations: GLP-1 RA, glucagon-like peptide-1 receptor agonist; MBS, metabolic bariatric surgery.

[a] *P* values were calculated using Wilcoxon rank sum test for complex survey samples or χ^2 test with Rao-Scott second-order correction.

eFigure 1 in Supplement 1. The unadjusted groups showed differences across several variables; after propensity score weighting, all variables were balanced between the MBS and GLP-1 RA groups.

Costs

The mean adjusted total costs, including pharmacy and medical costs, were calculated for the full dataset (**Table 1**; eFigure 2 in Supplement 1). During the 6-month baseline period, total costs per month were similar among the MBS (mean [SD], $1673.29 [$102.59]) and GLP-1 RA (mean [SD], $1601.32 [$97.27]) groups (*P* = .61). The monthly pharmacy costs were higher for patients using GLP-1 RAs, and the monthly medical costs were higher for patients who underwent MBS. Over the 2 years following index treatment, total monthly costs significantly increased vs baseline for the GLP-1 RA group (mean [SE]: year 1, $2841.83 [$130.29]; *P* < .001; year 2, $2448.42 [$27.46]; *P* < .001). While MBS group costs were higher vs baseline in year 1 (mean [SE], $3161.49 [$143.63]; *P* < .001), mostly due to the short-term costs of the surgery, the year 2 costs were dramatically lower (mean [SE], $1154.68 [$85.82]; *P* < .001). Summed over the entire 2-year period, the mean (SE) total costs were $63 483.00 ($946.50) for GLP-1 RAs and $51 794.04 ($1376.70) for MBS, resulting in mean cost savings of $11 689 with MBS (*P* < .001). The main driver was savings in pharmacy costs. As the purposes of the prescriptions the patients were given were not known, we performed a substudy of patients within the group who had no claims history of diabetes. The findings of this obesity-only analysis were similar to those in the full study (eFigure 4 in Supplement 1).

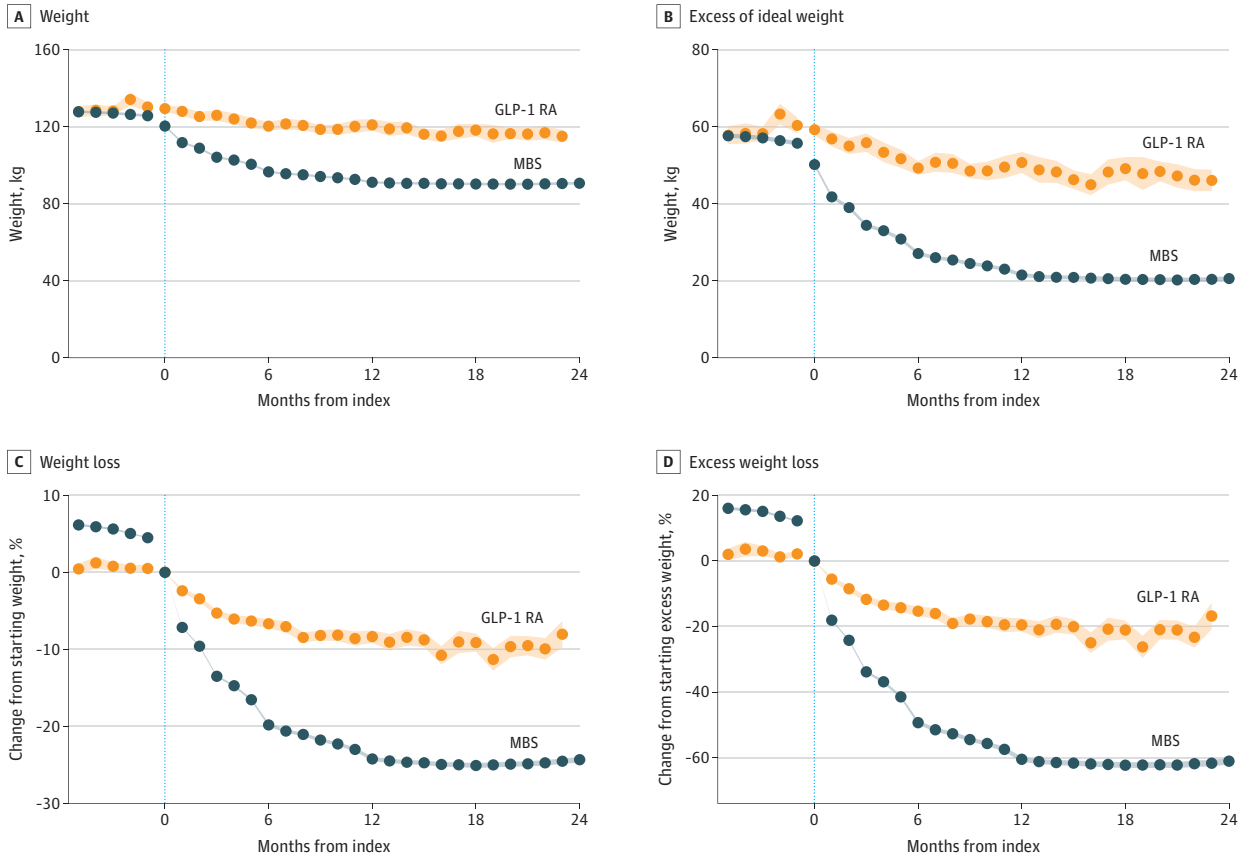
Weight Loss Outcomes

When analyzing the subsets with EHR data and a starting BMI of 40 or greater, weight loss data were available for a smaller set of 1291 patients who underwent MBS and 257 patients who used GLP-1 RAs, representing 9.2% and 1.6% of the entire study population, respectively. Propensity score weighting was also performed for this subset of patients (eFigure 3 in Supplement 1). At baseline, the MBS groups had a mean (SE) BMI of 45.2 (0.2) compared with 46.1 (0.5) for the GLP-1 RA group.

MBS outperformed GLP-1 RAs in weight loss (**Table 2**). Most patients (1239 patients [96.0%]) treated with MBS experienced a sustained loss of at least 10% of their total body weight, and nearly all patients who underwent MBS (1275 patients [98.8%]) lost at least 5% of their starting body weight. By comparison, 184 patients (71.6%) reached at least 5% sustained weight loss and 118 patients (45.9%) reached at least 10% sustained weight loss with GLP-1 RA therapy (*P* < .001 for both comparisons).

Within the 2-year follow-up period, people treated with MBS lost significantly more weight than people using GLP-1 RAs (**Figure 2**). Based on the last available weight measurement for each patient, MBS was associated with a mean (SE) total weight loss of 28.3% (0.3%) compared with 10.3% (0.5%)

Figure 2. Mean Weight Loss Outcomes at Baseline and During Follow-Up Period for Metabolic Bariatric Surgery (MBS) and Glucagon-Like Peptide-1 Receptor Agonists (GLP-1 RAs)



Shading indicates SE.

for GLP-1 RAs ($P < .001$). Similarly, excess weight loss was substantially higher after MBS, at a mean (SE) of 62.8% (0.2%) compared with 26.3% (0.2%) with GLP-1 RAs ($P < .001$). The findings of the obesity-only analysis of patients without a diabetes diagnosis were very similar to those of the full study (eFigure 5 in Supplement 1).

Additional Outcomes

Health care utilization rates and documented comorbidities in health care claims data were available for the full dataset. Both groups were adjusted for baseline differences using propensity score weighting (eTable 1 in Supplement 1), so differences at follow-up could be attributed to the treatment. MBS was consistently associated with fewer obesity-related comorbidities and lower health care resource utilization than GLP-1 RAs (**Table 3**). Compared with GLP-1 RAs, MBS was associated with 25% fewer inpatient stays (mean [SE] stays, 0.016 [0.001] vs 0.012 [0.001]; $P = .002$), 27% fewer outpatient visits (mean [SE] visits, 0.703 [0.018] vs 0.524 [0.021]; $P < .001$), and 38% fewer ED visits (mean [SE] visits, 0.078 [0.004] vs 0.051 [0.002]; $P < .001$) per patient per month. Length of stay was similar between groups. Except for the rate of coronary artery disease, the rate of comorbidities at baseline in the weighted populations was comparable between the MBS and GLP-1 groups. The rate of obesity-related comorbidities at the last available follow-up for each patient, including hypercholesterolemia, hyperlipidemia, coronary artery disease, and sleep apnea, was significantly lower with MBS than GLP-1 RAs (Table 3), suggesting that MBS may have helped to prevent the onset of these conditions.

Discussion

To our knowledge, this cohort study was the first claims- and EHR-based study comparing both clinical and economic outcomes associated with MBS and GLP-1 RAs for obesity management. We found that although GLP-1 RAs were associated with weight loss and reduced risk of obesity-related comorbidities, MBS was associated with better outcomes, both in terms of durable weight loss and preventing obesity-related comorbidities in the first 2 years following index treatment. Furthermore, our analysis found that the ongoing expenses and health care utilization were much higher for GLP-1 RAs than for MBS in the 2 years assessed here.

Previous studies found that MBS is associated with durable long-term loss of 25% to 30% of total weight.[17-21] This is in line with the mean 28.3% total weight loss

Table 3. Health Care Utilization and Obesity-Related Comorbidities Within the Follow-Up Period After Index Intervention

Characteristic	GLP-1 RA (n = 16 357)	MBS (n = 14 101)	*P* value[a]
Health care utilization, mean (SE) [median], No. per patient per mo			
Inpatient stays	0.016 (0.001) [0]	0.012 (0.001) [0]	.002
Outpatient visits	0.703 (0.018) [12]	0.524 (0.021) [7]	<.001
Emergency department visits	0.078 (0.004) [1]	0.051 (0.002) [0]	<.001
Mean length of stay for inpatient stays , d	3.97 (3.49) [3.00]	3.51 (3.02) [3.00]	.58
Comorbidities at follow-up, No. (%)			
Hypertension	12 186 (74.5)	8561 (60.7)	<.001
Hypercholesterolemia	3320 (20.3)	1608 (11.4)	<.001
Hyperlipidemia	11 434 (69.9)	6938 (49.2)	<.001
Rheumatoid arthritis	507 (3.1)	296 (2.1)	.005
Joint disease	6674 (40.8)	4525 (32.1)	<.001
Depression	5709 (34.9)	3976 (28.2)	<.001
Coronary artery disease	2602 (15.9)	1551 (11.0)	<.001
Peripheral artery disease	1291 (7.9)	691 (4.9)	.01
Sleep apnea	8080 (49.4)	4879 (34.6)	<.001

Abbreviations: GLP-1 RA, glucagon-like peptide-1 receptor agonists; MBS, metabolic bariatric surgery.

[a] *P* values were calculated using Wilcoxon rank sum test for complex survey samples or χ^2 test with Rao-Scott second-order correction.

observed for the MBS group in this study. The mean 10.3% total weight loss for the GLP-1 RAs group in this study is lower than the 15% to 25% mean total weight loss within the time frame of 1 to 2 years reported in randomized clinical trials.[25,26,31] However, a previous observational study reported 12.2% weight loss associated with GLP-1 RAs,[32] and another reported a much lower mean total weight loss of approximately 4.4% with weekly semaglutide injections.[33] This discrepancy may be related to conditions and populations in observational studies that reflect the reality of treatment, whereas randomized clinical trials are much more selective and tightly controlled.[34,35] Furthermore, the data for the different GLP-1 RAs in our study were pooled across different drugs and different routes of administration (oral or injection). Another contributing factor to the differences observed in GLP-1 RA studies is that tirzepatide is considered more effective than semaglutide[25,26,36]; semaglutide is considered more effective than exenatide, liraglutide, or dulaglutide[37]; and semaglutide injections may have a slightly larger effect than oral semaglutide.[33] The GLP-1 RA data available for our study included less effective GLP-1 RAs for 44% of the population, whereas 56% of the population received the more effective GLP-1 RAs.[36-38] Therefore, the weight loss results reported here are likely to underestimate the effect of the newer, more potent GLP-1 RAs semaglutide and tirzepatide.[36-38]

Successful and durable weight loss with GLP-1 RAs is only possible with continued treatment; if the drug is discontinued, the lost weight is slowly gained back.[25,26] Although severe adverse effects of GLP-1 RAs are relatively rare, milder adverse effects, such as nausea and gastrointestinal issues, are common and caused many patients to discontinue GLP-1 RA injections during clinical trials.[39,40] Analyses of claims and EHR data showed poor persistence and adherence to GLP-1 RAs as an obesity management medication: between one-half and two-thirds of patients discontinued using the drugs within the first year.[33,41] Some of these patients may eventually have MBS to achieve durable weight loss, and so far there is insufficient evidence to recommend preoperative use of obesity management medication.[42] Prior costs associated with GLP-1 RAs in these cases could be considered a waste. Further research is needed to determine whether certain patient subgroups are likely to not have success with or discontinue GLP-1 RAs from a cost and clinical perspective.

The chronic nature of obesity requires long-term (and potentially lifelong) treatment with GLP-1 RAs to achieve durable weight loss, accruing costs every month. In contrast, the monthly expenses are much lower after MBS. Our study quantified the running costs in the first 2 years after the initial treatment for both GLP-1 RAs and MBS and found that the mean ongoing costs for GLP-1 RAs over 2 years were $11 689 (nearly 23%) higher than those for MBS. Cost analyses show that the break-even point for MBS is approximately 15 months from the start of treatment for these patients. These findings are similar to a previous study that reported that MBS costs break even with the costs for GLP-1 RAs within 1 to 1.5 years (depending on the drug prescribed and the MBS procedure),[43] meaning that MBS is more cost-effective in the long-term.

We also observed that MBS was associated with fewer obesity-related comorbidities and reduced health care utilization at follow-up more markedly than GLP-1 RAs. This suggests that the lifetime costs for comorbidity treatment and health care utilization may also be substantially lower after MBS than with GLP-1 RA treatment.

Limitations

Our study has some limitations. First, the follow-up data were available for different time frames. Although we used per-month cost metrics to reduce the bias introduced by different follow-up times, some influence is likely to remain. Second, the mean weight loss we reported was not calculated at a certain time point, but as a mean across the last available follow-up point for each patient. Clinical data were only available for a smaller population, as they were sourced from a

different database than the cost data. A baseline comparison of the clinical subsample showed differences across baseline characteristics, including age, sex, and comorbidities. Therefore, extrapolating the clinical results to the full population may not be appropriate without further analysis. Third, the purpose of the prescription is not known consistently in claims data and therefore was not used as part of the selection criteria. This limitation was addressed by the obesity-only analyses we conducted of patients with no claims history of diabetes. In this substudy, the findings on cost and weight loss were highly similar to those in the full study. As our results are based on US data, they may not be directly transferable to other countries with different health care systems and cost structures. Furthermore, we did not analyze the role of GLP-1 RAs as potential adjuvant therapy before or in addition to MBS.[42] Additionally, claims and EHR data are inherently diverse. This has the advantage of showing the outcomes associated with MBS and GLP-1 RAs in routine clinical application and reflecting clinical practices in obesity management more closely than randomized trials, but it also has the potential disadvantage of introducing biases and confounding factors.[35] Although we tried to address some of the confounders using propensity score weighting and linear mixed-effects models, it is possible that not all confounding factors were considered.

Conclusions

This cohort study found that the costs and health care utilization up to 2 years after MBS were much lower than those for continuous treatment with GLP-1 RAs. In a smaller subpopulation with clinical data available, MBS was found to be associated with significantly greater body weight reduction, as well as reductions in obesity-related comorbidities, than GLP-1 RAs over the follow-up period of 2 years. These findings should be confirmed in a large representative sample. Surgical treatment may offer greater effectiveness at a lower cost than obesity management medication for the durable treatment of obesity. Further study is needed to determine whether there are patient subgroups that would benefit from an earlier referral to surgery.

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Concept and design: Barrett, Richards, LeJeune, Eid.
Acquisition, analysis, or interpretation of data: Barrett, Hafermann, Richards, Eid.
Drafting of the manuscript: Barrett, Hafermann, Richards, LeJeune.
Critical review of the manuscript for important intellectual content: Barrett, LeJeune, Eid.
Statistical analysis: Barrett, Richards.
Obtained funding: Eid.
Administrative, technical, or material support: LeJeune, Eid.
Supervision: Barrett, Eid.

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