Published in final edited form as:

Obes Surg. 2020 January ; 30(1): 374–377. doi:10.1007/s11695-019-04092-z.

Impact of Statewide Essential Health Benefits on Utilization of Bariatric Surgery

Karan R. Chhabra, MD MSc^{a,b,c,*}, Zhaohui Fan, MD MPH^b, Grace F. Chao, MD^{a,b,d}, Justin B. Dimick, MD MPH^{b,e}, Dana A. Telem, MD MPH^{b,e}

^aNational Clinician Scholars Program at the Institute for Healthcare Policy and Innovation, University of Michigan, Ann Arbor, MI

^bCenter for Healthcare Outcomes and Policy, University of Michigan, Ann Arbor, MI

^cDepartment of Surgery, Brigham and Women's Hospital, Boston, MA

^dDepartment of Surgery, Yale School of Medicine, New Haven, CT

^eDepartment of Surgery, University of Michigan, Ann Arbor, MI

Abstract

In response to concerns about inadequate insurance coverage, bariatric surgery was included in the Affordable Care Act's essential health benefits program—requiring individual and small-group insurance plans in 23 states to cover bariatric surgery. We evaluated the impact of this policy on bariatric surgery utilization using IBM MarketScan commercial claims data from 2009–2016. In multiple-group interrupted time-series analyses, we found that bariatric surgery utilization increased in all states after ACA implementation, but that this increase was no greater in states with a bariatric surgery essential health benefit. Our findings suggest that the essential health benefits program may have been too narrow in scope to meaningfully increase bariatric surgery utilization at the population level.

*Correspondence to: Karan R. Chhabra, MD MSc, kchhabra@bwh.harvard.edu, 2800 Plymouth Road, Building 14, Room G100, Ann Arbor, MI 48109, 201.218.5831 (c), 734.647.3301 (f).

Other authors' address: 2800 Plymouth Road, Building 16, 016-100N-28, Ann Arbor, MI 48109

Dr. Dimick is a cofounder of ArborMetrix, Inc., a company that makes software for profiling hospital quality and efficiency, which had no role in the work herein. Dr. Telem receives consulting fees from Medtronic. All other authors declare that they have no conflict of interest.

Ethical Approval Statement

For this type of study formal consent is not required.

Informed Consent Statement

Does not apply.

Disclosures: Dr Dimick is a cofounder of ArborMetrix, Inc, a company that makes software for profiling hospital quality and efficiency, which had no role in the work herein. Dr. Telem receives consulting fees from Medtronic.

Publisher's Disclaimer: This Author Accepted Manuscript is a PDF file of a an unedited peer-reviewed manuscript that has been accepted for publication but has not been copyedited or corrected. The official version of record that is published in the journal is kept up to date and so may therefore differ from this version.

Introduction

Less than 1% of eligible patients undergo bariatric surgery (1). Though it has proven safe and effective for obesity and associated diseases, the average cost of bariatric surgery ranges from \$15,000 to \$25,000 (2), making it unaffordable for most patients without insurance coverage. At one institution, lack of insurance coverage accounted for nearly half of referred patients not proceeding to bariatric surgery (3). In response to concerns about inadequate insurance coverage, bariatric surgery was included in the Affordable Care Act's (ACA's) essential health benefits (EHB) program, established in 2012. The act allowed states to select a "benchmark" insurance plan that set the standard for insurance benefits in each state. All states were required to include coverage for some form of obesity screening and counseling, but the decision to cover obesity treatment—including bariatric surgery—was left to the individual states (4). Twenty-three states chose benchmark plans that covered surgery—thus requiring all non-grandfathered plans in the individual and small-group insurance markets of those states to cover bariatric surgery (5).

Few studies have examined how insurance coverage affects patient access to bariatric surgery. The policy was designed to increase access to the services covered by each state's benchmark plan, but the impact of the EHB policy on utilization of bariatric surgery has not been evaluated. As only 23 states expanded coverage, our aim was to take advantage of this natural experiment by comparing bariatric surgery utilization pre- and post-expansion within EHB states and versus "control" states that did not expand coverage. We hypothesize that states with this EHB expansion would have a significant increase in bariatric surgery utilization in comparison to states who did not adopt the expansion.

Materials and Methods

We used IBM MarketScan Commercial Claims for our analysis. The MarketScan database contains inpatient, outpatient, pharmaceutical, and physician claims as well as patient-level spending data for more than 40 million patients with employer-sponsored insurance.(6) We selected this dataset for two reasons: 1) Bariatric surgery patients are predominantly privately insured; 2) The "exposure" variable (presence of a statewide bariatric surgery EHB) requires a database spanning multiple states.

Our study population was made up of commercially insured patients age 18-64 who underwent laparoscopic bariatric surgery from January 2009 to December 2017. Patients aged 65 and older were dropped in order to exclude the Medicare-eligible population, as they were not targeted by this policy. We additionally excluded revisional procedures, patients with unknown state of residence, and residents of states that already required coverage for bariatric surgery during the study period.

The primary outcome was utilization of bariatric surgery per 100,000 Marketscan patients per quarter. Trends in EHB states and control states were compared via interrupted time series analyses. SAS 9.4 (Cary, NC) was used for data extraction, data management, and descriptive analysis. Stata 15 was used for regression analyses (College Station, TX).

Results

We identified 158,694 patients who underwent bariatric surgery during the study period. Of these, 70,612 resided in EHB states, and 88,082 in control states. At baseline, utilization was equivalent in EHB and control states (see Table): 11.5 operations / 100,000 Marketscan lives. At the end of the study period, utilization rose similarly in both EHB and control states.

Utilization accelerated following the EHB announcement in both EHB and control states (see Figure). However, the rise in EHB states was not significantly faster than in control states ($p = 0.32$). Following EHB implementation, the trend in bariatric surgery utilization slowed significantly in EHB states but was statistically unchanged in controls.

Conclusion

The EHB program was meant to increase access to bariatric surgery, but this analysis suggests it did not have the intended effect at the state level. Utilization of bariatric surgery increased in all states after ACA implementation, and this increase was no greater in states with a bariatric surgery EHB.

One reason may be the complexity of insurance benefits for bariatric surgery: even if insurance plans theoretically cover surgery, they may limit coverage to individuals by requiring arduous pre-operative workups including specialist consultations, laboratory evaluations, and documented weight loss attempts. Such pre-operative requirements can either objectively disqualify patients from coverage or represent an insurmountable hurdle due to time or financial constraints (7-9). Another reason the EHB was unsuccessful may be that it applied primarily to less generous ACA marketplace plans. Lower reimbursement rates in these plans may have also limited these patients' access to surgery. Thus, there could be a significant number of patients who did gain insurance coverage for bariatric surgery as an option but were unable to complete surgery due to other barriers. Importantly, the EHB policy applies only to health plans in the individual and small-group insurance markets, but only 9% of Americans obtain insurance coverage through the non-group market. Many more Americans—49%—are covered by employer-sponsored insurance (10), which is generally exempt from EHB standards.

Our study was limited by data that did not indicate which patients were in the non-group insurance plans subject to the EHB, biasing our results toward the null. However, we were able to see the effects of the EHB in the context of states as a whole—arguably the more policy-relevant frame of reference. Finally, as we know, the barriers to bariatric surgery are not limited to inadequate insurance coverage. Patient and physician attitudes, knowledge and prior experiences with bariatric surgery all contribute to the underutilization of bariatric surgery and would not be addressed by insurance benefits alone (7, 8, 11).

Despite these limitations, from a population perspective, our analysis suggests that a policy mandating insurance coverage for a small subset of the insurance market, without addressing broader barriers to surgery, may not substantially improve access to bariatric surgery.

Acknowledgements:

The authors acknowledge the Institute for Healthcare Policy & Innovation Data and Methods Hub for analytic support on an earlier version of this manuscript.

Grant support: Dr. Chhabra receives funding from the University of Michigan Institute for Healthcare Policy and Innovation Clinician Scholars Program, Agency for Healthcare Research and Quality grant T32HS000053, and the National Institutes of Health's Division of Loan Repayment. Dr. Chao receives funding from the Veterans Affairs Center for Clinical Management Research, VA Ann Arbor Healthcare System; this work does not represent the views of the United States government nor the Veterans Affairs. Dr. Dimick receives grant funding from the NIH, AHRQ, and BlueCross BlueShield of Michigan Foundation. Dr. Telem receives funding from AHRQ K08 HS025778-01A1.

References

1. Access to Care Fact Sheet: American Society for Metabolic and Bariatric Surgery; 2011 [Available from: <https://asmbs.org/resources/access-to-care-fact-sheet>.
2. Definition & Facts for Bariatric Surgery: National Institute of Diabetes and Digestive and Kidney Diseases; [Available from: <https://www.niddk.nih.gov/health-information/health-topics/weight-control/bariatric-surgery-severe-obesity/Pages/bariatric-surgery-for-severe-obesity.aspx>.
3. Tsuda S, Barrios L, Schneider B, Jones DB. Factors affecting rejection of bariatric patients from an academic weight loss program. *Surgery for obesity and related diseases : official journal of the American Society for Bariatric Surgery*. 2009;5(2):199–202. [PubMed: 19136316]
4. Information on Essential Health Benefits (EHB) Benchmark Plans: Center for Consumer Information & Insurance Oversight, Centers for Medicare and Medicaid Services; [Available from: <https://www.cms.gov/CCIIO/Resources/Data-Resources/ehb.html>.
5. National Coverage of Bariatric Surgery: American Society for Metabolic and Bariatric Surgery; [updated 1/2018 Available from: <https://asmbs.org/app/uploads/2018/01/Bariatric-Surgery-Heat-Maps-1-19-17-no-logo.pdf>.
6. Hansen L The Truven Health MarketScan Databases for life sciences researchers. Truven Health Analytics; 2017.
7. Love KM, Mehaffey JH, Safavian D, Schirmer B, Malin SK, Hallowell PT, et al. Bariatric Surgery Insurance Requirements Independently Predict Surgery Dropout. *Surgery for obesity and related diseases : official journal of the American Society for Bariatric Surgery*. 2017;13(5):871–6. [PubMed: 28233687]
8. Westerveld D, Yang D. Through thick and thin: identifying barriers to bariatric surgery, weight loss maintenance, and tailoring obesity treatment for the future. *Surgery research and practice*. 2016;2016.
9. Alvarez R, Matusko N, Stricklen AL, Ross R, Buda CM, Varban OA. Factors associated with bariatric surgery utilization among eligible candidates: who drops out? *Surgery for obesity and related diseases : official journal of the American Society for Bariatric Surgery*. 2018;14(12):1903–10. [PubMed: 30287182]
10. Health Insurance Coverage of the Total Population: Kaiser Family Foundation; 2016 [Available from: <https://www.kff.org/other/state-indicator/totalpopulation/?currentTimeframe=0&sortModel=%7B%22colld%22:%22Location%22,%22sort%22:%22asc%22%7D>.
11. Imbus JR, Voils CI, Funk LM. Bariatric surgery barriers: a review using Andersen's Model of Health Services Use. *Surgery for Obesity and Related Diseases*. 2018;14(3):404–12. [PubMed: 29249585]

Essential Health Benefits and Utilization of Bariatric Surgery

Figure. Trends in bariatric surgery utilization surrounding state-level enactment of a bariatric surgery essential health benefit.

Data points reflect unadjusted utilization at the plan level, stratified by whether patients lived in a state that implemented a bariatric surgery EHB. P-values represent the comparison of slopes in EHB vs. control states within each time window.

Changes in bariatric surgery utilization surrounding implementation of a bariatric surgery essential health benefit.

Cohort included patients who underwent bariatric surgery (i.e., laparoscopic gastric bypass, laparoscopic sleeve gastrectomy, and laparoscopic adjustable gastric band) based on CPT procedure codes, ICD9/10 procedure codes, and a corresponding ICD9/10 diagnosis code for morbid obesity.

Table:

	Pre-EHB Announcement (1/2009 – 12/2011)	Post-EHB Announcement (1/2012 – 12/2013)	Post-EHB Implementation (1/2014 – 12/2016)	p-value (Pre- vs. Post- Announcement)	p-value (Post- Announcement vs. Post- Implementation)
	<i>Absolute utilization changes (cases/100,000 insured lives)</i>				
EHB states	11.5	14.8	16.7	<0.0001	0.26
Non-EHB states	11.5	13.7	15.4	0.002	0.41
p-value (EHB vs. non-EHB)	0.998	0.33	0.48		
	<i>Utilization trend changes (utilization/quarter)</i>				
EHB states	0.25	0.61	0.16	0.003	0.005
Non-EHB states	-0.04	0.83	0.60	<0.0001	0.412
p-value (EHB vs. non-EHB)	0.018	0.32	0.07		