Uniting Health Care Perspectives through Integration of Clinical (EHR) and Claims Data: An Example of Bariatric Surgery Market

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Introduction

- Patients and providers rely on improvements in clinical measures while payors and PBMs rely on subsequent health resource utilization and costs to evaluate impact of treatment decisions. Unifying both these perspectives, through examination of both claims and clinical (EHR) data, can provide holistic overview on treatments and help develop improved patient care interventions. To support this viewpoint, we present an example of bariatric surgery market.
- The US has witnessed an increase in prevalence of obesity from 4.7% in 2017 to 9.2% in 2020. Bariatric surgery is a common intervention to overcome obesity and its associated co-morbidities. In 2019, a total of 278,000 bariatric surgeries were performed in the US, at an estimated average cost of ~$17,000 to 26,000. However, not all patients undergoing bariatric surgery benefit from it. Examination of claims and clinical data can help to identify factors that drive 'success' of bariatric surgery

Objective

To gain insights into healthcare utilization, comorbidities, and clinical outcomes of patients undergoing bariatric surgery in the US

Methods

- A retrospective study using Optum® de-identified Market Clarity Dataset (linked claims and electronic health records or EHR of patients) was done among adult (>=18 years) patients with >=1 procedure or diagnosis code for bariatric surgery from 1st Jan 2016 to 31st Dec 2016. Index date was defined as first claim or EHR with bariatric surgery code
- Only patients with >=1 ICD-10 diagnosis code for overweight or obesity in claims and/ or EHR AND no procedure or diagnosis code for bariatric surgery during preceding 6 months from index date were included
- All patients were followed-up for 5 years from index date to determine their healthcare utilization and clinical outcomes after bariatric surgery. Healthcare utilization examined include average number of healthcare interactions, inpatient hospitalizations, prescriptions for anti-obesity drugs, and repeat bariatric surgery. Clinical outcomes evaluated include changes in body mass index (BMI) and relevant comorbidities [hypertensive disease, type 2 diabetes mellitus (T2DM), obstructive sleep apnea, ischemic heart disease, and dyslipidemia]
- We further investigated the demographic and clinical profile of patients who were 'successful' vs 'failed' following bariatric surgery. Success was defined as improvement in BMI and/ or comorbidity profile of patients over the 5-years follow-up

Results

- A total of 16,691 patients who underwent bariatric surgery during index period were included in the study. Of these, 46% patients were aged 18-49 years, 80% were females, 68% were Caucasians, and 40% resided in Midwest region. Nearly 63% (n=10,511) patients had 1 or more of the 5 relevant comorbidities [hypertensive disease, type 2 diabetes mellitus, obstructive sleep apnea, ischemic heart disease, and dyslipidemia]
- About 5% (n=801) & 7% (n=1,089) patients took anti-obesity drugs prior to and following bariatric surgery, respectively. About 6% (n=1,069) patients had a repeat bariatric surgery in the 5-years follow period

Average monthly visits per patient	Pre-Index	Year 1	Year 2	Year 3	Year 4	Year 5
Healthcare visits	2.8	2.5	2.6	2.6	2.7	2.9
In-patient hospitalization	0.6	0.5	0.5	0.5	0.5	0.6

- At the end of 5 years, only 6% (n=1,003) patients were able to maintain an improvement in BMI – i.e., patients who were obese at index moved to overweight or normal BMI categories post-index, and patients who were overweight at index moved to normal BMI category post-index. A total of ~55% (n=5,724) patients with comorbidities experienced improvement over the 5 years follow-up. Overall, **38% patients (n=6,274) were 'successful', i.e., had favorable outcomes (improvement in BMI and/ or comorbidity profile) in the 5 years following bariatric surgery**
- It was found that patients who are males, taking anti-obesity drugs prior to bariatric surgery, interacted more frequently with healthcare system prior to bariatric surgery, and suffered from obstructive sleep apnea or dyslipidemia were more likely to have successful outcomes following bariatric surgery as compared to other patients

Demographic and Clinical Profile of patients undergoing bariatric surgery	Successful patients (n=6,274)	Failed patients (n=10,417)	p-value
Age in years, mean (SD)	50.4 (11.6)	50.4 (11.9)	0.188
% males	22% (n=1,400)	18% (n=1,867)	**<0.001**
% females	78% (n=4,873)	82% (n=8,549)	
% Caucasians	68% (n=4,262)	69% (n=7,143)	0.575
% African Americans	15% (n=930)	15% (n=1,599)	
% taking anti-obesity drugs in pre-index period	6% (n=354)	4% (n=447)	**<0.001**
% with obstructive sleep apnea in pre-index period	52% (n=3,233)	12% (n=1,299)	**<0.001**
% with dyslipidemia in pre-index period	36% (n=2,245)	9% (n=975)	**<0.001**
% with high monthly healthcare visits in pre-index period (median = 2.16)	71% (n=4,465)	41% (n=4,260)	**<0.001**

Conclusion

- Integrating clinical (EHR) data with claims data helps in providing holistic view of treatment decisions, as seen in this bariatric surgery example
- Not all patients undergoing bariatric surgery experience optimal clinical outcomes. By predicting the potential impact of bariatric surgery in patients, patients and providers can make informed healthcare choices

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