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The Healthcare Costs of BMI-Defined Obesity among Adults Who Have Undergone a Medical Procedure in Alberta, Canada

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Abstract : Obesity is associated with significant personal impacts on health and has a substantial economic burden on payers due to increased healthcare use. A contemporary estimate of the healthcare costs associated with obesity at the population level are lacking. This evidence may provide further rationale for weight management strategies. Methods: Adults who underwent a medical procedure between 2012 and 2019 in Alberta, Canada were categorized into the investigational cohort (had body mass index [BMI]-defined class 2 or 3 obesity based on a procedure-associated code) and the control cohort (did not have the BMI procedure-associated code); those who had bariatric surgery were excluded. Characteristics were presented and healthcare costs ($CDN) determined over a 1-year observation period (2019/2020). Logistic regression and a generalized linear model with log link and gamma distribution were used to assess total healthcare costs (comprised of hospitalizations, emergency department visits, ambulatory care visits, physician visits, and outpatient prescription drugs); potential confounders included age, sex, region of residence, and whether the medical procedure was performed within 6-months before the observation period in the partial adjustment, and also the type of procedure performed, socioeconomic status, Charlson Comorbidity Index (CCI), and seven obesity-related health conditions in the full adjustment. Cost ratios and estimated cost differences with 95% confidence intervals (CI) were reported; incremental cost differences within the adjusted models represent referent cases. Results: The investigational cohort (n=220,190) was older (mean age: 53 standard deviation [SD]±17 vs 50 SD±17 years), had more females (71% vs 57%), lived in rural areas to a greater extent (20% vs 14%), experienced a higher overall burden of disease (CCI: 0.6 SD±1.3 vs 0.3 SD±0.9), and were less socioeconomically well-off (material/social deprivation was lower [14%/14%] in the most well-off quintile vs 20%/19%) compared with controls (n=1,955,548). Unadjusted total healthcare costs were estimated to be 1.77-times (95% CI: 1.76, 1.78) higher in the investigational versus control cohort; each healthcare resource contributed to the higher cost ratio. After adjusting for potential confounders, the total healthcare cost ratio decreased, but remained higher in the investigational versus control cohort (partial adjustment: 1.57 [95% CI: 1.57, 1.58]; full adjustment: 1.21 [95% CI: 1.20, 1.21]); each healthcare resource contributed to the higher cost ratio. Among urban-dwelling 50-year old females who previously had non-operative procedures, no procedures performed within 6-months before the observation period, a social deprivation index score of 3, a CCI score of 0.32, and no history of select obesity-related health conditions, the predicted cost difference between those living with and without obesity was $386 (95% CI: $376, $397). Conclusions: If these findings hold for the Canadian population, one would expect an estimated additional $3.0 billion per year in healthcare costs nationally related to BMI-defined obesity (based on an adult obesity rate of 26% and an estimated annual incremental cost of $386 [21%]); incremental costs are higher when obesity-related health conditions are not adjusted for. Results of this study provide additional rationale for investment in interventions that are effective in preventing and treating obesity and its complications.

Keywords : administrative data, body mass index-defined obesity, healthcare cost, real world evidence
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