

Modelling the Potential Impact of Weight Gain During the COVID-19 Pandemic on the Future Burden of Cancer

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Objectives: To understand potential long-term consequences of the impacts of the COVID-19 pandemic and resulting public health measures on daily life, specifically shifts in health behaviours which contribute to weight gain.

Methods: Data on unintentional weight gain among adults during the first year of the COVID-19 pandemic was applied to national survey data to simulate pre and post weight gain body mass index (BMI). Population impact measures were estimated using OncoSim, a web-based microsimulation tool, which simulates the trajectory of cancer, calibrated using Canadian cancer incidence and mortality data along with measurable risk for specified cancers from lifestyle risk factors. Projections were estimated until 2042, assuming a 12-year latency period.

Results: Following a mean weight gain of 11.4 lbs, the proportion of underweight, overweight, obese and morbidly obese BMI were: 37%, 36%, 18% and 9%, respectively. The projected excess cancer cases would reach 8,651 and 16,915 by 2037 and 2042. The additional cancer burden will disproportionately impact women. The largest projected increases were observed for uterine, kidney and liver cancers among women, with mean potential impact fractions (PIF) of 4.26%, 2.58% and 2.08%, respectively. Among men, the largest mean PIFs were observed for esophageal (3.03%), kidney (2.28%) and liver (1.81%) cancers. The projected excess cancer deaths would reach 6,254 by 2042, with the largest burden projected for colorectal, esophageal and pancreatic cancer (N = 1,087, N = 945, and N = 813).

Conclusions: These projections highlight the possible long-term consequences of changes in health behavior during the COVID-19 pandemic on the burden of cancer in Canada. This underscores the critical need for timely investment into effective cancer prevention strategies, to minimize the likelihood that unhealthy lifestyle changes during the COVID-19 pandemic are sustained.

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