Were Snowbirds Disproportionally Impacted by COVID-19? An Ontario Analysis

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Abstract

Early in the first wave of the COVID-19 pandemic, many older adult Canadians who routinely spend the winter months in warmer regions (colloquially known as "snowbirds") returned to Canada. While numerous infections were attributed to travel-related exposure at that time, little is known about the impact of COVID-19 on returning snowbirds. This population-based analysis from Ontario suggests that snowbirds were not disproportionately impacted by the pandemic. However, as older adults, they remain at high risk of complications once infected. These findings underscore the need for continued caution in this older adult population.

Introduction

In March 2020, the Canadian government urged Canadians abroad to return home because of increased worldwide travel restrictions and an imminent border closure (Government of Canada 2020a). Consequently, many retirees who spend winter months in warmer regions (colloquially known as "snowbirds") returned to Canada. During this period, epidemiological reports attributed numerous COVID-19 cases to travel-related exposure, predominantly among those aged 60–79 years (Statistics Canada 2020). We examined whether returning snowbirds were disproportionately impacted by COVID-19 by comparing rates of COVID-19 testing, infection and hospitalization among snowbirds and non-travelling older adult Canadians.

Method

We conducted a population-based evaluation using health administrative databases from Ontario. Data were linked using unique encoded identifiers and analyzed at ICES. Use of data in this study was authorized under section 45 of Ontario's *Personal Health Information Protection Act* (2004), which does not require review by a research ethics board.

In Ontario, older adults are eligible for government-funded health services and prescription medications through the Ontario Health Insurance Plan (OHIP) and the Ontario Drug Benefit (ODB) program, respectively. We defined snowbirds as Ontarians aged 65 years and older who received a "travel supply" of medications recorded in the ODB database between September 2019 and January 2020 (Burden et al. 2015). A travel supply of up to 200 days' worth of medications can be provided when proof of travel outside the province for more than 100 days is presented (Ontario Ministry of Health and Ministry of Long-Term Care 2008). To ensure that data regarding the snowbirds being outside the province when COVID-19 escalated worldwide were accurate, we excluded individuals who subsequently used government-funded health services in Ontario before February 2020. Furthermore, as some snowbirds may not have been able to, or opted not to, return to Ontario, we excluded snowbirds with no record of health service use during the observation period of March 1 to June 30, 2020 – the period of the COVID-19 pandemic's first wave in Ontario. For comparative purposes, we matched snowbirds to four community-dwelling Ontarians who did not receive a travel supply of medications in the same period by age and sex.

We collected baseline sociodemographic and health characteristics for snowbirds and non-travelling older adults and compared the two groups using standardized differences (>10% suggests clinically significant differences). Our outcomes of interest included rates of COVID-19 testing, infection and hospitalization. We used the Ontario Laboratories Information System to determine if a test was performed during the observation period, and we confirmed COVID-19 infection as a positive test result or hospitalization for COVID-19 (*International Classification of Diseases, 10th Revision* diagnosis code U07.1; recorded in the Canadian Institute for Health Information Discharge Abstract Database). We measured 30-day hospitalization as a hospital admission for COVID-19 within 30 days of a positive test. We used multivariable conditional logistic regression (where applicable) to estimate unadjusted and adjusted odds ratios (aORs) and a 95% confidence interval (CI) for the three outcomes. Analyses were performed using SAS version 9.4 (SAS Institute, Cary, NC, USA).

Findings

After exclusions, we identified 42,928 snowbirds from Ontario. Table 1 compares baseline characteristics of snowbirds to those of matched non-travelling older adults. Snowbirds were more often new arrivals to Ontario and more likely to live in rural regions and higher-income neighbourhoods. They were also generally healthier and used less emergency care.

TABLE 1.
Sociodemographic characteristics, comorbidities and healthcare use of snowbirds and matched comparators, Ontario, 2020

Characteristic	Snowbirds *N* = 42,928	Matched comparators *N* = 171,712	Standardized difference[a] (%)
Sociodemographic			
Age in years, mean (*SD*)	73 (69–78)	73 (69–78)	0
Female, *n* (%)	21,200 (49.4)	84,800 (49.4)	0
Recent arrival to Ontario[b], *n* (%)	2,363 (5.5)	6,039 (3.5)	10
Rural residence, *n* (%)	7,920 (18.4)	21,997 (12.8)	16
Socio-economic status (lowest quintile), *n* (%)	5,781 (13.5)	32,865 (19.1)	15
Socio-economic status (highest quintile), *n* (%)	10,955 (25.5)	35,569 (20.7)	11
Comorbidities			
Deyo–Charlson comorbidity score, mean (*SD*)	0.39 ± 0.95	0.55 ± 1.20	14
Diabetes mellitus, *n* (%)	13,554 (31.6)	53,458 (31.1)	1
Asthma, *n* (%)	5,439 (12.7)	23,278 (13.6)	3
Chronic obstructive pulmonary disease, *n* (%)	6,924 (16.1)	34,879 (20.3)	11
Hypertension, *n* (%)	31,273 (72.8)	118,155 (68.8)	9
Congestive heart failure, *n* (%)	1,507 (3.5)	8,106 (4.7)	6
Prior healthcare use[c]			
Number of prior emergency department visits (one year), median (IQR)	0.31 ± 0.78	0.53 ± 1.38	20
Number of prior general practitioner visits[d] (two years), median (IQR)	8.49 ± 6.31	9.55 ± 8.29	14
Number of prior specialist care visits (one year), median (IQR)	3.29 ± 3.86	3.74 ± 4.81	10

a Standardized differences were used to identify potential clinically significant differences (>10%) between groups; these are preferred over traditional hypothesis testing to assess baseline differences for population-based studies.

b New arrivals were defined as residents who became newly eligible for OHIP services in the previous 10 years.

c Healthcare use was measured in the one- or two-year period prior to October 1, 2019.

d Visits for core primary care services include minor, general and major assessments; annual exams; geriatric care; primary mental healthcare; hospital care; house calls; chronic/long-term care visits; vision care; palliative care; flu shots and other immunizations; office lab procedures; allergy and other shots; Pap smears; anticoagulant therapy; preoperative assessments; diabetes management; and smoking cessation.

IQR = interquartile range.

TABLE 2.
COVID-19 testing, infection and hospitalizations in snowbirds and matched comparators, Ontario, 2020

Outcome	Snowbirds *N* = 42,928	Matched comparators *N* = 171,712	Unadjusted OR, 95% CI	Adjusted[a] OR, 95% CI
COVID-19 testing	2,784 (6.5%)	15,246 (8.9%)	0.71, 0.6–0.74	0.76, 0.73–0.79
COVID-19 infection	74 (0.17%)	404 (0.24%)	0.73, 0.57–0.94	0.88, 0.68–1.14
30-day COVID-19 hospitalization following a confirmed infection[b]	24/74 (32.4%)	136/404 (33.7%)	0.95, 0.56–1.61	1.02, 0.59–1.75

a Adjusted for immigration status, rurality, income quintile and Deyo–Charlson score.

b Analysis restricted to individuals with a confirmed infection for COVID-19 and adjusted for immigration status, rurality and Deyo–Charlson score.

OR = odds ratio; CI = confidence interval.

By June 30, 2020, 2,784 of 42,928 (6.5%) snowbirds and 15,246 of 1,71,712 (8.9%) matched comparators had been tested for COVID-19 (aOR: 0.76, 95% CI: 0.73–0.79). COVID-19 infection was recorded for 74 (0.17%) snowbirds and 404 (0.24%) matched comparators (aOR: 0.88, 95% CI: 0.68–1.14). Within 30 days of a confirmed COVID-19 infection, 24 (32.4%) snowbirds and 136 (33.7%) matched comparators were hospitalized for COVID-19 (aOR: 1.02, 95% CI: 0.59–1.74; Table 2).

Discussion

Although older adult snowbirds were less likely to undergo a COVID-19 test, their infection and hospitalization rates were not significantly different from those of non-travelling older adults during the first wave of the pandemic. To the best of our knowledge, this is the first study to evaluate the impact of COVID-19 on snowbirds, many of whom were outside the country at the beginning of the first wave. Our findings suggest that snowbirds were not disproportionately impacted by the virus compared to non-travelling residents. However, as older adults, they were at a high risk of complications with nearly one in three snowbirds hospitalized following an infection.

Limitations of this study include restricting the analysis to data from a single province in Canada. Because of policies requiring 14-day self-isolation periods for individuals entering Canada (Government of Canada 2020b) and priority testing for symptomatic and high-risk individuals in Ontario during the observation period (Dunham 2020), reported testing rates among snowbirds may be underestimated. Furthermore, this work may be subject to residual confounding and variable misclassification because of the administrative nature of our data.

Wherever snowbirds opt to spend the upcoming winter (Johnson 2020), our findings underscore the need for continued caution in this older adult population.

Acknowledgements

This study was completed at the ICES Western site, which receives core funding from the Academic Medical Organization of Southwestern Ontario, the Schulich School of Medicine & Dentistry at Western University and the Lawson Health Research Institute. ICES is funded by an annual grant from the Ontario Ministry of Health.

Parts of this material are based on data and information compiled and provided by the Canadian Institute for Health Information and Cancer Care Ontario. The authors thank IQVIA Solutions Canada Inc. for use of its drug information database. The analyses, conclusions, opinions and statements expressed herein are solely those of the authors and do not reflect those of the funding sources or data providers; no endorsement is intended or should be inferred.

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