

Use of healthcare services by people
with confirmed SARS-CoV-2 infection
and those with no documented
evidence of infection
English summary

Une production de l'Institut national
d'excellence en santé
et en services sociaux (INESSS)

SUMMARY

Use of healthcare services by people with confirmed SARS-CoV-2 infection and those with no documented evidence of infection

Introduction

Infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) can be asymptomatic or give rise to the coronavirus 2019 disease (COVID-19). In addition, it can lead to the exacerbation or worsening of pre-existing conditions that may or may not have been previously known, the onset of complications or sequelae of the acute episode, and the development of a post-COVID-19 condition.

Little is known about the long-term repercussions of SARS-CoV-2 infection on sufferers, and no data are available to assess their impact on Quebec's health and social services system beyond the acute phase of infection. The Institut national d'excellence en santé et en services sociaux has therefore conducted a study to compare the use of healthcare services by people with confirmed SARS-CoV-2 infection and those without documented proof of infection during the first two years of the pandemic.

Methodology

A retrospective matched cohort study has been conducted. The matching made it possible to assess the causal effect of exposure in an observational study, controlling selection bias. People with confirmed SARS-CoV-2 infection between March 1, 2020, and November 30, 2021, i.e., before the Omicron variant wave, were matched with people who had no documented evidence of infection based on a propensity score. The follow-up period began on the 31st day after confirmation of infection and continued until March 31, 2022, or until the date of death or termination of health insurance coverage, whichever came first. The main variables of interest were acute-care hospitalization, emergency department consultation and ambulatory medical consultation with a family doctor or specialist. For all these variables, no distinction was made regarding the cause of service use (i.e., related to COVID-19 or not). The secondary variables of interest were hospitalization for predetermined causes and outpatient consultation with specific specialty physicians. Rates of healthcare service use and event rates were calculated for each of the main variables of interest. In addition, a Cox proportional-hazards model was used to estimate hazard ratios (HRs) and their 95% confidence intervals (95% CIs) for specific periods after confirmation of infection: 31 to 90 days, 91 to 182 days, 183 to 365 days, and 366 to 729 days. The variables used for subgroup analysis were age (< 18 years, 18 to 64 years and \geq 65 years), gender and initial severity of SARS-CoV-2 infection. Severity was defined as the occurrence (severe) or non-occurrence (mild) of hospitalization within 30 days of confirmation of infection.

Results

Front Line Services

Rates of consultation with a family doctor were higher among people with confirmed SARS-CoV-2 infection (1,749 consultations / 1,000 person-years) than among those with no documented evidence of infection (1,538 consultations / 1,000 person-years; $p < 0.0001$). However, the difference in rates is greater in people whose initial infection was severe than in those whose infection was mild. In addition, SARS-CoV-2 infection is associated with an increased risk of consulting a family doctor compared with the absence of documented evidence of infection, in all the follow-up time intervals studied. The hazard ratio was greater when the interval since infection was short (31 to 90 days after confirmation of infection; HR_{31-90} : 1.21; CI95 %: 1.19 – 1.22) than when it was long (366 to 729 days after confirmation of infection; $HR_{366-729}$: 1.07; CI95 %: 1.06 – 1.08). In addition, this ratio was higher if the initial infection was severe and in older people. However, it did not vary according to gender.

Results for emergency room visits followed the same trends as those observed for visits to family doctors.

Second or Third Line Services

Hospitalization rates were slightly higher in people with confirmed SARS-CoV-2 infection (80 hospitalizations/1,000 person-years) than in those with no documented evidence of infection (69 hospitalizations/1,000 person-years; $p < 0.0001$). However, the difference in rates was entirely due to those whose initial infection was severe. The same was true for the rates of outpatient specialist consultations.

Confirmed SARS-CoV-2 infection is associated with an increased risk of hospitalization compared with no documented evidence of infection, throughout the follow-up period. The hazard ratio was greater when the interval since infection was short (HR_{31-90} : 1.37; CI95 %: 1.31 – 1.43) than when it was long ($HR_{366-729}$: 1.09; CI95 %: 1.05 – 1.13). In addition, it was higher if the initial infection was severe, and among those aged under 18, those aged 65 and over, and men. Differently, the increased risk of consulting an outpatient specialist was mainly observed between days 31 and 90 after confirmation of infection. In addition, HRs were lower in the elderly and did not vary according to gender.

Compared with people with no documented evidence of infection, initial severe SARS-CoV-2 infection was associated with an increased risk of consulting a nephrologist or pulmonologist, and of being hospitalized for diabetes, heart failure or respiratory disorders.

Conclusion

This retrospective matched cohort study highlighted three main findings regarding the use of healthcare services by people with confirmed SARS-CoV-2 infection prior to the Omicron variant wave, compared with people with no documented evidence of infection. Firstly, SARS-CoV-2 infection is associated with increased use of healthcare services between day 31 and day 729 after confirmation, mainly front-line services. Secondly, the pressure on the healthcare system is greatest in the first three months following confirmation of infection but is still tangible up to two years later. Finally, severe initial infection and age 65 and over are associated with increased use of healthcare services compared with mild initial infection or age under 65. These findings contribute to the evolving body of knowledge about the impact of the COVID-19 pandemic on the healthcare system. However, generalization of the results to the post-vaccination period, and to infections with the Omicron variant and its subtypes, is fraught with uncertainty.

*Institut national
d'excellence en santé
et en services sociaux*

Québec 

Siège social

2535, boulevard Laurier, 5^e étage
Québec (Québec) G1V 4M3
418 643-1339

Bureau de Montréal

2021, avenue Union, 12^e étage, bureau 1200
Montréal (Québec) H3A 2S9
514 873-2563

inesss.qc.ca

