

Sociodemographic factors associated with Covid 19 in Canada

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ABSTRACT

BACKGROUND

Coronavirus disease or Covid-19 has caused more than 30 million documented infections and 1 million deaths worldwide as of Oct 2020. It was shown that several sociodemographic factors play a significant role in shaping the Covid-19 outcome and associated death rates across the globe. Thus the present study aims to study the sociodemographic parameters associated with the Covid-19 cases in Canada.

MATERIAL AND METHODS

In this retrospective study, the data was collected from the Official data repository present in Canada. The patients' data were evaluated and sociodemographic parameters were checked and recorded. After the data was recorded they are categorized based on the different states and statistical analysis was done.

RESULT

The present study reported that in Canada total cases as reported in the repository are 1,253,519 cases. This result indicates that maximum of the patients suffering from Covid-19 belonged to the younger age category. Compared to the males, females were more to suffer from Covid-19. Most of the patients who required hospitalization were in the 80+ year age group (28.5%). Only 1.7% of patients in the age group below 19 years are required to be hospitalized. The regional data variation showed that in Alberta female patients were more in all the age groups compared with the male patients. Saskatchewan also reported a higher number of death cases in older people. In Manitoba, in the younger age category (0-29 years) less number of female patients suffered Covid-19. Interestingly, this number reversed as the age group increased. In Ontario, 72.1% of people reported being admitted to ICU and required a ventilator. In British Columbia, the gender distribution showed no such difference among all the Covid-19 positive cases. In Quebec among the covid-19 positive cases, 47.2% were male and 52.8% were females.

CONCLUSION

Age is a significant predictor of Covid-19 mortality and patients from both genders aged more than 75 years and more need to provide more care and increased medical supervision to decrease the Covid-19 casualty.

KEYWORDS

Coronavirus, mortality, Canada, Age, Gender, Covid-19

INTRODUCTION

Coronavirus disease or Covid-19 has caused more than 30 million documented infections and 1 million deaths worldwide as of Oct 2020. The symptoms of Covid-19 infection have a different range of severity, starting from symptomatic individual to life-threatening condition and in worse cases, it can also cause death. Globally many people were reported to be "recovered" from this infection ⁽¹⁾.

Covid-19 is a respiratory disease that is a newly recognized disease caused by a virus that primarily affects the respiratory tract. The spectrum of this disease and its

clinical characteristics are not that well defined and the possibility of the clinical sequelae in patients who had recovered from this disease is not well documented ⁽²⁾.

In a maximum of the cases Covid-19 patients experience mild to moderate symptoms including respiratory problems and get cured without requiring any medication. Presently, there is no such cure is available for Covid-19 and hence the rate of deaths and casualties are increasing globally.

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Though it is well established that deaths due to Covid-19 depend on the immune system of a particular individual, the lack of adequate medicine is making the situation worse ⁽³⁾.

Past researchers have shown that several sociodemographic factors play a significant role in shaping the Covid-19 outcome and associated death rates across the globe. It was pointed out that people with low economic status and migrant people are more vulnerable to get infected with this disease ⁽³⁾.

Several risk factors including medical and social ones are shown to be associated with covid-19. It was reported that medical risk factors such as lung diseases, diabetes increases the chances of death in Covid-19 patients. In addition to that social factors such as low socioeconomic status, usage of public transport, and living in a crowded society all are posed as risk factors ⁽⁴⁾.

Despite several studies that were done on this topic, no consensus can be reached. The most common knowledge regarding is limited to anecdotal reports. Hence, in this study, we aim to study the sociodemographic parameters associated with the Covid-19 cases in Canada.

MATERIAL AND METHODS

In this retrospective study, the data was collected from the Official data repository present in Canada. The data of the patients who were admitted to the hospital were included in the study if the following inclusion criteria were fulfilled.

Inclusion Criteria

- Patients who were reported to be Covid-19 positive after they found positive in RT-PCR testing.
- Patients of both the genders

Exclusion Criteria

- Unwilling patients
- Patients with an only serological diagnosis that showed the presence of Covid-19

The patients' data were evaluated and sociodemographic parameters were checked and recorded. After the data was recorded they are categorized based on the different states and statistical analysis was done.

RESULT

The present study reported that in Canada total cases as reported in the repository are 1,253,519 cases. Among all these cases 18.5% of the patients were below 19 years of age. 18.9% of patients were in the 20 to 29 years of age, followed by 30-39 years (16.2%), 40-49 years (14.7%), 50-59 years (13.3%), 60-69 years (8.2%), and 70-79 years (4.4%). Only 5.4% of people were in the age group of 80+

years. This result indicates that maximum of the patients suffering from Covid-19 belonged to the younger age category. Compared to the males, females were more to suffer from Covid-19. The maximum number of females was in less than 19 years of age.

Hospitalization was required for 64,684 patients. Most of the patients who required hospitalization were in the 80+ year age group (28.5%). Only 1.7% of patients in the age group below 19 years are required to be hospitalized. With the increase in age, the hospitalization incidence also increases.

It was reported that almost 12% of the Canadian reported to have experienced symptoms. The most common symptoms included fever, cough, chills, fatigue, and breathing difficulty. The symptoms were more pronounced in young adults compared to the older individuals. 93% of the participants reported to have followed the self-isolation and wore a mask after they started experiencing symptoms. 16% of Canadians reported having been tested for COVID-19 using a deep nasal or throat swab, in which 2% were tested positive and 3% are still awaiting result. Maximum of the Canadians reported that vaccination brings positive news. As recommended by the National Advisory Committee on Immunization, vaccination was focused on priority groups including adults aged 80 years and older, health care workers, and adults living in senior care. Early in the pandemic, 58% of people were very likely to get a vaccine (July 2020)—this dropped to 48% in September 2020. By contrast, 49% of Canadians were not very likely to get a vaccine. Among them 77% were black Canadians, followed by 64% of the people who had a grade 13 education or less or some postsecondary education, and finally 56% of the people who were aged between 25 to 44 years.

The regional data variation showed that in Alberta female patients were more in all the age groups compared with the male patients. A maximum of the patients who were more than 80 years of age was reported to succumb to the disease compared to the younger ones. Saskatchewan also reported a higher number of death cases in older people. In Manitoba, in the younger age category (0-29 years) less number of female patients suffered Covid-19. Interestingly, this number reversed as the age group increased. In patients who were 80-89 years old, female patients were more who were Covid-19 positive cases.

In Ontario, 72.1% of people reported being admitted to ICU and required a ventilator. In British Columbia, the gender distribution showed no such difference among all the Covid-19 positive cases. In Quebec among the covid-19 positive cases, 47.2% were male and 52.8% were females. Interestingly, the hospitalization rate was more in males compared with females. Moreover, 63.5% of males showed

a requirement of ICU when compared with 36.5% of the females.

In contrast, Newfoundland and Labrador showed a higher number of male patients compared to the female ones. Nova Scotia data showed that the average age of people dying because of Covid-19 is 80 years and female patients are more in this category. Among the ICU admission, 48% of the patients were female compared to the 52% of male patients. The average age of ICU admission was 51 years.

Prince Edward Island reported a higher number of cases in the 20 to 39 years of age group. Yukon reported 84 confirmed cases.

Maximum of the participants were anxious about getting the infection from the workplace and this concern was higher in the individuals who had limited opportunities to work from home including healthcare and social assistance (57.8%), person associated with the educational services (54.8%), and individuals working in the retail trade, transportation, accommodation and food services.

DISCUSSION

The Covid-19 was first detected in China, in a city named Wuhan in 2019. After the first report, the disease spread rapidly all over the world and became a pandemic ⁽⁵⁾. Presently, this disease is threatening 213 countries all over the world. Studies have pointed out that many demographic and social factors play a significant role in the propagation rate of this disease ⁽⁶⁾. Hence, identification of these parameters and their influence on the direct outcome of the disease is important. This type of study can help in formulating mitigation strategies and also can have a direct impact on the health outcomes of any country.

In this present study, the socio-demographic parameters in Canada were evaluated in detail. The deaths, as well as the confirmed cases of Covid-19, were investigated and they were examined to understand the effect of this disease with the socio-demographic parameters among the Canadian population. It was noted that Covid-19 cases across Canada are heterogeneous. The highest number of confirmed cases was found in Alberta. It can be well postulated that this uneven distribution can depend on several factors including demography, culture, climate, race, and other differences found in the country.

In the present study it was reported that individuals who are young and are in the age group of 24 years to 44 years are not willing to take vaccine. In another study conducted in Saudi Arabia Almaghaslah et al reported a higher hesitancy among the residents about the vaccination. In this study only 2.1% of the respondents have received the vaccination while only 20.4% of the respondents reported to

be registered for the same. The authors also reported that young adults in the age group of 18 years to 29 years are more reluctant for vaccination ⁽⁷⁾. This tendency is quite understandable as this age group of people are not that vulnerable for Covid-19 infection and not the high priority group. However, a contrasting opinion was reported by Alqudeimat et al in a study conducted among residents of Kuwait. This study reported that almost 53.1% of the residents who took part in the survey (aged > 21 years) were willing to take the vaccine ⁽⁸⁾. In another study conducted among older citizens of USA (aged >65 years), 81.3% of the respondents were willing to take the vaccine ⁽⁹⁾. This trend indicates that people are more prone to get the infection are more willing to take the vaccine also.

The present study indicated that aging is the most common factor associated with deaths. Overall, in Canada hospitalization was required for 64, 684 patients. Most of the patients who required hospitalization were in the 80+ year age group (28.5%). In another study, it was reported that in Europe 95% of those who died because of Covid-19 were all aged more than 60 years ⁽³⁾.

This present study reported that most common symptoms in patients was fever, cough, chills, fatigue, and breathing difficulty. This study finding is similar with the previous study results that reported fever as the most common symptom, followed by cough and fatigue ⁽¹⁰⁾. Further, studies have also reported that in patients suffering from fever the disease outcome is more severe. High fever is usually associated with the longer hospital stay and more severe illness that can results in worse disease outcome ⁽¹¹⁾.

Past studies have reported that one of the risk factors for diseases is age, which has a significant impact on the severity and mortality of Covid-19. Previous research has found that being 65 years old is one of the risk factors for COVID-19 patient mortality ⁽¹²⁾. According to the current study, the bigger the fraction of older adults (over 65 years old), and the greater the case fatality rate and mortality rate.

It was also reported that previous history of respiratory illness and other long-time illnesses all had an association with the Covid-19 deaths. In a study conducted in China, it was reported that patients with existing respiratory illness, hypertension, and diabetes have a higher risk of developing Covid-19 and these people are vulnerable to Covid-19 deaths ⁽¹³⁾.

The present study also reported differences in the Covid-19 incidence among genders. Previous studies have shown that different groups in society get affected differently based on varying degrees ⁽¹⁴⁾. Globally, while all the governments try to put in place effective control measures, the virus's spread continues, with the virus's effects falling disproportionately on vulnerable people who have less access to services and

who are exposed to the virus in travel or at work as "critical employees"⁽¹⁵⁾."

The main strength of the study is that it is the first reported study done among Covid-19 patients in Canada that have addressed the association of socio-demographic parameters with the disease severity and rate of hospitalization. However, there are also some potential limitations of this study. Firstly, we were unable to include all the places that were affected by the Covid-19 disease. Secondly, all the data regarding age, gender, and rate of hospitalization and death is not available in the data repository. Hence, analysis of data in this respect was not possible. Further, a detailed study with more demographic parameters can prove to be helpful and can shed more insight on this topic.

CONCLUSION

This study provided very useful information about the socio-demographic parameters and their association with the Covid-19 severity. It was shown that age is an important risk factor associated with Covid-19 mortality. In younger females the risk of developing severity is lower, however, in aged females, the changes in hospitalization and death rate are higher compared with their male counterparts. Our results suggest that patients from both genders aged more than 75 years and more need to provide more care and increased medical supervision.

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