

Suicide Deaths in British Columbia during the First Wave of the COVID-19 Pandemic

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Keywords

COVID-19, mental health, suicide

Introduction

The COVID-19 pandemic has created changes to the epidemiology of individuals accessing healthcare services, specifically those who are marginalized in society. High rates of anxiety, stress, and depression have been observed.¹ Some policy-makers have postulated that COVID-related lockdown measures may increase suicide rates, yet potentially increased rates of suicide may be related to many other factors during the pandemic.² The objective of this study was to measure the impact of public health measures on rates of suicide during the first wave of the COVID-19 pandemic.

Methods

In this cohort study, we assembled suicide death data for all residents of the Canadian province of British Columbia (BC) from the BC Coroners Service from January 2010 through August 2020. The population of BC was 5.1 million at the beginning of 2020.³

In BC, consistent with the Supreme Court of Canada's decision in *F.H. v. Hugh McDougall*, a finding of suicide is now made on a balance of probabilities, in that it is more likely than not, that the death was a result of intentional self-harm. This study was not subject to institutional review board approval or the requirement for informed consent because it used public data.

We used autoregressive integrated moving average (ARIMA) models to analyze suicide deaths in BC, controlling for monthly population as a covariate.⁴ We also controlled for seasonal variation. We plotted suicide deaths during each month of 2020 for which complete data exist (January to August). Incident rates and ratios for the first wave of the COVID-19 pandemic (March to August) and the previous 10-year period (2010 to 2019) were determined. Statistical significance was set at $P < 0.05$, and all tests were 2-tailed. Analysis was conducted with Stata (version 16, College Station, TX).

Results

During the first wave of the COVID-19 pandemic (March to August, 2020), 237 suicide deaths were observed in BC (incident rate 0.93 [95% CI, 0.87 to 0.99] per 100,000 person-months). From 2010 to 2019, 5758 suicide deaths were observed in BC (incident rate 1.01 [95% CI, 0.95 to 1.07] per 100,000 person-months) resulting in an incident rate ratio of 0.92 (95% CI, 0.86 to 0.98).

Using ARIMA models controlling for monthly population changes and seasonal variation, the number of suicide deaths during the first wave of the pandemic did not deviate from projected expectations (Figure 1).

Discussion

The initial phase of the COVID-19 pandemic in Canada was met with an unparalleled degree of government spending and support programs to support those citizens impacted economically. These measures may have mitigated some of the mental health consequences during the initial phase of the pandemic including the risk of suicide. Notably, the stable

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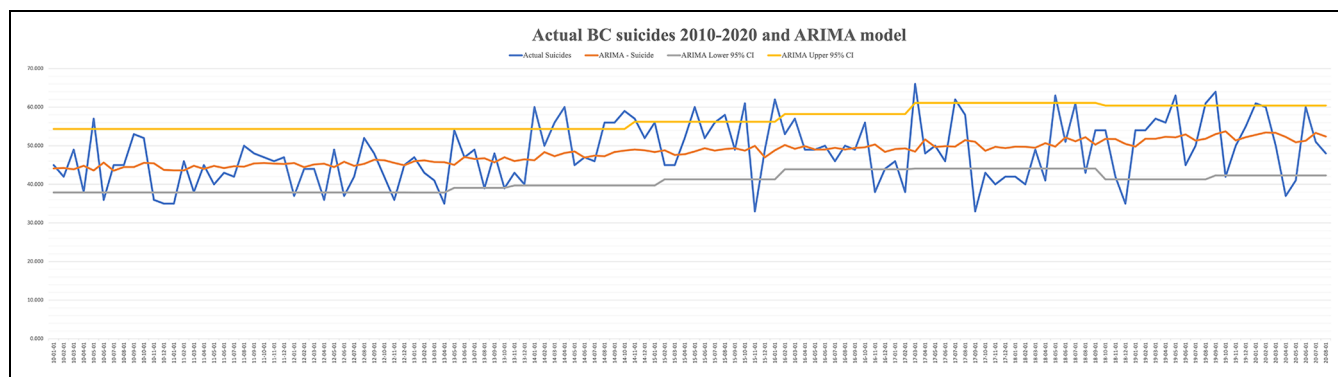


Figure 1. Autoregressive integrated moving average model of expected suicide deaths versus observed suicide deaths for British Columbia for the study period.

rates of suicide observed in BC parallel those observed with ecological disasters.⁵ Our findings are also similar to recent observations from the United States and Australia showing no increase in suicide rates in the initial phase of the pandemic.^{4,6} The effect of prolonged economic hardship, increased substance use, and social isolation on suicide rates with the continuation of the pandemic has yet to be determined.

A potential limitation of our study is that in some Canadian jurisdictions, it can take up to 2 years for coroners to make the final determination regarding suicide. It is unclear the effect this may have on our study findings, but we attempted to control for this variability by using the 10-year period prior to the pandemic as a control.

Future research is warranted to explore the impact of the COVID-19 pandemic on the mental health and rates of suicide among at-risk groups in the population including youth, indigenous persons, and economically disadvantaged persons.

Authors' Note

Data are publicly accessible at https://www2.gov.bc.ca/assets/gov/birth-adoption-death-marriage-and-divorce/deaths/coroners-service/statistical/suicide_knowledge_update.pdf.

Author Contributions

David Barbic, Frank X. Scheuermeyer, Skye P. Barbic, and William G. Honer conceived and developed this study. David Barbic obtained the data, verified the underlying data, and analyzed the data. All authors were involved in the interpretation of the results and preparation of the article.

Declaration of Conflicting Interests

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