


Multiple COVID-19 Risk Factors Increase the Likelihood of Experiencing Anxiety Symptoms in Canada

The Canadian Journal of Psychiatry /
La Revue Canadienne de Psychiatrie
2021, Vol. 66(1) 56-58
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DOI: 10.1177/0706743720949356
TheCJP.ca | LaRCP.ca



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Keywords

COVID-19, anxiety, coronavirus, general population

Introduction

The COVID-19 pandemic is having significant negative impacts on mental health,¹ but its precise effects on anxiety are unknown particularly in Canada. This article examines the likelihood of experiencing anxiety for the following COVID-19-related risk factors: (1) having a job that increases the risk of contracting COVID-19; (2) someone close having a job that increases the risk of contracting COVID-19; (3) being elderly/having a health condition that increases the risk of serious illness from COVID-19 or someone close being elderly/having a health condition that increases illness risk; and (4) exposure to multiple COVID-19-related risks.

Methods

A sample of 1,005 Canadian adults aged 18 years and older was surveyed May 8 to 12, 2020. The sample was derived from a web-based panel (<http://www.delvinia.com/solutions/askingcanadians/>, accessed June 1, 2020). Quota sampling by age, gender, and region was utilized such that the survey sample was proportional to that of the English-speaking Canadian population. Electronic-informed consent was obtained prior to starting the survey. The study received ethics approval from the Centre for Addiction and Mental Health.

Anxiety was assessed using the 7-item generalized anxiety disorder scale (GAD-7), which measures anxiety symptoms over the past 2 weeks on a 4-point Likert-type scale (0 = not at all to 3 = nearly every day).² Summed scores ranged from 0 to 21, with 10 points or greater indicating moderate to severe anxiety. For COVID-19-related risk factors, respondents were asked whether: (1) they have a job that exposes them to high risk of getting COVID-19,

(2) someone close to them has a job that exposes them to high risk of getting COVID-19, (3) they, or someone close to them, are elderly and/or have a health condition that increases the risk of serious illness from COVID-19. Responses were coded as “yes” or “no.” A count measure of the number of risk items was also created ranging from 0 = no risk to 2 = 2 or 3 risks.

Statistical Analysis

A series of bivariate regression models examined the association between each COVID-19 risk variable and anxiety. A multivariate logistic regression model examined the

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Table 1. Multivariate Logistic Regression Examining Associations between Each COVID-19 Risk Factor and Anxiety.

Factors	Anxiety (GAD-7 Score of 10+)	
	Unadjusted Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)
A. Individual Risk Models^{a,b}		
Personal job risk		
No	Reference	Reference
Yes	1.51 (1.01 to 2.26)*	1.35 (0.86 to 2.13)
Close other job risk		
No	Reference	Reference
Yes	1.68 (1.19 to 2.37)**	1.54 (1.03 to 2.30)*
Health risk (personal or close other)		
No	Reference	Reference
Yes	1.09 (0.81 to 1.46)	1.07 (0.76 to 1.51)
B. Count Risk Models^{a,b}		
0 risk	Reference	Reference
1 risk	0.95 (0.70 to 1.30)	0.92 (0.65 to 1.31)
2 or more risk	1.91 (1.26 to 2.88)**	1.89 (1.17 to 3.04)**

Note. $N = 833$.

^aUnadjusted models reflect bivariate associations with anxiety. Adjusted models include adjustments for age group (18 to 39, 40 to 59, ≥ 60), gender (male/female), household size (0 to 7), ethnicity (white/nonwhite), income (<60,000, 60,000 to 99,000, $\geq 100,000$), and education (university degree/less than university degree).

^bPseudo R^2 for the following unadjusted models are as follows: personal job risk $R^2 = 0.0034$; close other job risk $R^2 = 0.0073$; health risk $R^2 = 0.0003$; count risk model $R^2 = 0.0097$. For adjusted models: individual risk model $R^2 = 0.0464$; count risk model $R^2 = 0.0481$.

** $P < 0.01$. * $P < 0.05$.

association between all COVID-19 risk variables and anxiety. Bivariate and multivariate regression models also examined the association between the number of COVID-19 risk factors and anxiety. Adjusted models controlled for demographic variables (gender, age, household size, ethnicity, income, and education). The total sample size for the regression models was 833. Analyses were conducted using Stata v16.

Results

Overall, 25.5% of respondents had a score indicating anxiety, 12.4% had a job risk, 18.4% were close to someone with a job risk, 36.8% were elderly or had a health condition (themselves or someone close to them), 39.5% had one risk, and 12.9% had multiple risks.

Those with a job risk (OR = 1.51; 95% CI, 1.01 to 2.26) and who are close to others with job risk (OR = 1.68; 95% CI, 1.19 to 2.37) were significantly more likely to experience anxiety. There were no significant differences in anxiety between those with a health condition (themselves or someone close to them) and those without such a condition (OR = 1.09; 95% CI, 0.81 to 1.46).

After controlling for demographic factors, having someone close with a job risk was significantly associated with greater odds of experiencing anxiety (OR = 1.54; 95% CI, 1.03 to 2.30; see Table 1). Individuals with multiple COVID-19 risk factors were significantly more likely to experience anxiety

compared to those with no risks (OR = 1.89; 95% CI, 1.17 to 3.04) and those with one risk (Wald $\chi^2(1) = 8.56$, $P < 0.01$).

Discussion

Those who have someone close to them working in a job at high risk for COVID-19 were especially likely to experience anxiety. In contrast, those working in such jobs themselves were no more likely to experience anxiety after controlling for sociodemographic factors. Diminished perceptions of control are associated with both short and long-term anxiety.³ Thus, it may be that individuals are especially affected by anxiety when they have less control over the situation, such as when someone close to them is working at a high risk job. In contrast, people have more control over their own risk when they themselves are working in a high-risk job and are therefore possibly at less risk for anxiety. Being elderly, having a health condition or having someone close who is elderly/has a health condition was not associated with anxiety. Importantly, those who had multiple risk exposures were more likely to experience anxiety. This is consistent with literature demonstrating that multiple stressors can have a cumulative impact on mental health.⁴

Limitations

A web panel was used and individuals without Internet access were excluded, limiting generalizability of the findings. The study is cross-sectional and responses were self-reported; therefore, the direction of associations cannot be determined and data may be subject to response bias.

Conclusions

It is important to consider the mental health impacts of COVID-19 on people who are close to those on the front lines and those exposed to multiple risks.

Authors' Note

Data are publicly available for download at: <http://www.delvinia.com/coronavirus/>.

Acknowledgments

The researchers acknowledge the in-kind support for data collection by Delvinia. The authors wish to thank Navi Boparai for assistance with project management.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Delvinia, a research technology firm provided in-kind support for data collection.

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