

# Changes in Alcohol Habits Among Workers During the Confinement of COVID-19: Results of a Canadian Cross-Sectional Survey

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## ABSTRACT

**BACKGROUND:** The restrictions implemented around the world to contain the spread of the coronavirus disease 2019 (COVID-19) impact workers. Emotional distress and maladaptive behaviors such as alcohol misuse are expected, particularly in vulnerable groups such as front-line health workers. In the present study, we examined if alcohol consumption behaviors in Quebec workers changed during confinement of the COVID-19 pandemic, and whether healthcare workers reported specific patterns of changes.

**METHODS:** Data were obtained from an anonymous online survey conducted among adult workers aged  $\geq 18$  years in the province of Quebec, Canada, between May 25, 2020 and June 26, 2020. Participants provided self-reported data regarding sociodemographic including field of work, as well as mental health disorders, alcohol use, alcohol craving, and type of alcohol consumed. Changes in alcohol behaviors were assessed using Wilcoxon signed rank test for categorial variables and paired-*t* tests for continuous variables.

**RESULTS:** The survey was completed by 847 participants (77.8% women), with 42.5% healthcare workers. Participants reported increased daily alcohol use ( $Z = -10.60$ ;  $P < .001$ ,  $r = -.372$ ) and alcohol craving ( $P < .001$ ,  $d = 0.485$ ) during the confinement. Only the type of alcohol consumed during the confinement differed between health care workers and other workers ( $OR = 0.45$ ,  $P = .003$ ). Health care workers used less high alcohol products during the confinement.

**CONCLUSION:** Our results show a significant increase in daily alcohol consumption and in alcohol craving during the confinement in the Quebec working population.

**KEYWORDS:** Alcohol drinking, occupational groups, health personnel, mental health, COVID-19 pandemic

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## Introduction

Governments around the world implemented preventive restrictions including social distancing measures and lockdowns in order to contain the spread of the coronavirus disease 2019 (COVID-19). Combined with economic challenges, these measures are likely to induce distress<sup>1,2</sup> and trigger maladaptive behaviors such as substance misuse.<sup>3,4</sup> Populations at greater risk of increasing their substance use and related problems include those with substance use and mental health disorders, young and elderly adults, and workers holding precarious contracts or self-employed.<sup>5</sup> The World Health Organization also formally recognized an increased risk for psychological distress among social and healthcare personnel, especially those working in emergency departments, public health, primary care, and intensive or critical care.<sup>6</sup>

Past disasters, man-made or natural one's, have been linked to adverse psychosocial outcomes and increase in substance

abuse.<sup>7-9</sup> For instance, during the Severe Acute Respiratory Syndrome (SARS) pandemic in 2003, Hong Kong residents drank more alcohol compared to before the pandemic.<sup>10</sup> Quarantined or working in high-risk hospitals employees showed a 1.5 times increased risk of reporting symptoms of an alcohol use disorder 3 years after the SARS compared to unexposed hospital employees.<sup>11</sup> Hospital employees also showed signs of trauma and psychiatric morbidity.<sup>12</sup> Interestingly however, the increased rates of alcohol use disorder reported post-disasters in some studies,<sup>10,13</sup> have not been consistently reported in others.<sup>14</sup>

Few studies have assessed the possible increase in alcohol consumption during the months following the COVID-19 pandemic in a worker's population. In Quebec, the government enforced the closure of non-essential businesses as well as public and private gathering as of March 23rd, 2020 resulting in a strict population confinement. In the present study, we



examined whether alcohol consumption behaviors in the Quebec working population changed during confinement of the COVID-19 pandemic compared to before March 23rd, 2020. Data were obtained from an anonymous online survey conducted among adult workers in the province of Quebec, Canada. We hypothesized that alcohol consumption and alcohol craving would increase among workers during the first wave of the pandemic.

## Methods

### *Participants*

Recruitment began on May 25, 2020 and ended on June 26, 2020. Participants were recruited from online advertising on social media (Facebook, Twitter, and LinkedIn). To be eligible, participants had to be 18 years or older, be employed and reside in Quebec. All participants who accessed the survey and provided information about their type of work were kept for the analysis. A total of 1165 adults accessed the survey, and 847 participants were included in this study. The study was approved by the ethical committee of the Hautes Études Commerciales (HEC) de Montréal (#2021-3988). Respondents were informed of the study purposes and provided electronic consent before completing the survey.

### *Survey*

The results reported in this article are part of a larger survey assessing the effect of the COVID-19 confinement on outcomes such as changes in online social interactions, mental health, nutrition, quality of life, and social and familial promiscuity, defined as an uncomfortable cohabitation with other people in a confined space. Participants were asked about their age, sex, marital status, employment status, type of work, presence of mental health condition and/or physical problems, stress levels (Likert scale from 0 to 10), alcohol use frequency (only before confinement), and alcohol consumption behaviors before and during the confinement (see outcomes section below). To avoid all bias and misunderstanding regarding questions and items measuring attitude and behaviors of respondents, the questionnaire was pre-tested in France on a sample of 40 respondents. As this research integrated a multi-cultural approach, the questionnaire dedicated for Quebec was adapted to the North American context.

### *Outcomes*

Our main outcomes were daily alcohol consumption (number of drinks per day), type of alcohol products used, and craving during the confinement of COVID-19. Participants answered questions retrospectively regarding the number of daily alcohol consumption (categorical variable), alcohol craving using the visual analog scale (Likert scale from 0—lack of desire to 10—irrepressible desire to drink), and type of alcohol used (eg, wine, beer, spirits, and cocktails) before and during the confinement.

We grouped wine and beer as “low alcohol products” and spirits and cocktails as “high alcohol products.” Participants using both products were categorized in the “high alcohol products” group. No imputation for missing data was made.

### *Data analysis*

We used SPSS Version 26 (IBM) for all data analysis. Demographic characteristics were reported using descriptive statistics. Statistical significance was set at  $P < .05$ . Changes between before and during the confinement were assessed using Wilcoxon signed rank test for categorical variables (daily alcohol use and type of alcohol products) and paired- $t$  tests for continuous variables (alcohol craving). Effect sizes were calculated for these variables ( $r$  for Wilcoxon signed rank test and  $d$  for paired  $t$ -tests).

To compare daily alcohol consumption between health workers and other workers during confinement, we used a multinomial logistic regression, including type of work, baseline daily alcohol consumption, and other characteristics for which the two groups differed at baseline (sex, presence of a physical health problems, and employment status). We used the same approach for the type of alcohol used (logistic regression) and alcohol craving (multiple linear regression). Given that stress and/or presence of mental illness can increase alcohol use,<sup>15,16</sup> we also performed a post-hoc analysis testing the association between change in alcohol consumption and stress and/or presence of mental illness.

## Results

### *Characteristics of the participants*

The participants included in this study ( $N = 847$ ) were mostly females (77.8%), in a relationship (74.7%) and full-time employees (80.6%), with 42.5% working in the healthcare system. On average, participants had a stress level of 5.56 (Standard Deviation [SD] = 2.10) at the time of survey completion. Mental health disorder was present in 6.1% and chronic health condition in 25.6%. Health workers and other workers were similar on all demographic characteristics except sex ( $P < .001$ ), presence of physical health problems ( $P = .028$ ), and employment status ( $P = .001$ ). See Table 1 for more details.

### *Comparison of alcohol-related outcomes before and during the confinement*

Supplemental Figure S1A illustrates daily alcohol consumption before and during the confinement. We found a significant difference in daily alcohol consumption between before and during the confinement ( $Z = -10.60$ ;  $P < .001$ ,  $r = -.372$ ). Following the confinement, 70.7% of participants did not change their daily alcohol consumption whereas 4.1% decreased it and 25.3% increased it (median = 1 [ $< 1$  glass/day]). Supplemental Figure S1B illustrates alcohol craving before and during the confinement. The mean (SD) craving score increased

**Table 1.** Demographic and baseline characteristics of participants.

CHARACTERISTICS	TOTAL (N=847)	HEALTH WORKERS (N=360)	OTHER WORKERS (N=487)	P VALUE
Sex, n (%)				
Female	656 (77.8)	304 (84.4)	352 (72.9)	<.001*
Male	187 (22.2)	56 (15.6)	131 (27.1)	
Missing data	4	0	4	
Age, n (%)				
18-24 years old	24 (2.8)	7 (1.9)	17 (3.5)	.151
25-34 years old	160 (18.9)	68 (18.9)	92 (18.9)	
35-44 years old	265 (31.3)	117 (32.6)	148 (30.4)	
45-54 years old	204 (24.1)	92 (25.6)	112 (23.0)	
55-64 years old	155 (18.3)	66 (18.4)	89 (18.3)	
65-74 years old	33 (3.9)	9 (2.5)	24 (4.9)	
75-84 years old	5 (0.6)	0 (0.0)	5 (1.0)	
Missing data	1	1	0	
Mental health disorder, n (%)	52 (6.1)	16 (4.4)	36 (7.4)	.077
Physical health problem, n (%)	217 (25.6)	106 (29.4)	111 (22.8)	.028*
Employment status, n (%)				
Full time	683 (80.6)	299 (83.1)	384 (79.0)	.001*
Part time	79 (9.3)	39 (10.8)	40 (8.2)	
Unemployed	28 (3.3)	5 (1.4)	23 (4.1)	
Student	23 (2.7)	3 (0.8)	20 (4.1)	
Other	33 (3.9)	14 (3.9)	19 (3.9)	
Missing data	1	0	1	
Marital status, n (%)				
Married or common-law couple	633 (74.7)	280 (78.0)	353 (72.5)	.694
Single	213 (25.1)	79 (22.0)	134 (27.5)	
Missing data	1	1	0	
Stress level, mean (SD)	5.56 (2.10)	5.52 (2.06)	5.59 (2.13)	.647
Alcohol use frequency, n (%)				
No alcohol use	88 (10.4)	34 (9.4)	54 (11.1)	.377
Less than 1 time per month	108 (12.8)	46 (12.8)	62 (12.8)	
2-4 times per month	230 (27.2)	105 (29.2)	125 (25.7)	
2-3 times per week	309 (36.5)	136 (37.8)	173 (35.6)	
More than 4 times per week	111 (13.1)	39 (10.8)	72 (14.8)	
Missing data	1	0	1	

Abbreviations: n, number of participants; SD, standard deviation.

\* Denotes significant difference between groups.

from 4.11 (2.32) to 4.86 (2.70) points during the confinement ( $P < .001$ ,  $d = 0.485$ ). Supplemental Figure S1C illustrates the type of alcohol used before and during the confinement. We

did not find any significant difference regarding the type of alcohol used between before and during the confinement ( $Z = -1.71$ ;  $P = .087$ ,  $r = -.063$ ). During the confinement, 4.3%

of the participants added high alcohol products or switched to high alcohol products consumption whereas 6.4% switched to only low alcohol products (median = 0 [low alcohol products]).

No correlation was found between changes in alcohol habits (daily alcohol consumption, type of products and craving) and stress or presence of mental illness (Supplemental Table S1).

#### *Comparisons of alcohol habits between health workers and other workers during the confinement*

There was no statistical difference between healthcare workers and other workers with regards to daily alcohol use during the confinement. Moreover, there was no statistical difference between healthcare workers and other workers in alcohol cravings during the confinement. Working in the healthcare system was inversely related to the use of high alcohol products (OR=0.45,  $P=.003$ ) during the confinement (Supplemental Tables S2-S4).

## Discussion

This cross-sectional study explored via an anonymous online survey whether alcohol consumption in the Quebec working population changed following the confinement of the COVID-19 pandemic. Our results confirm our hypothesis that daily alcohol consumption and alcohol craving increased during the confinement with a small to medium effect sizes.

The increase in alcohol consumption was possible since alcohol supply sources remained open in Quebec during the pandemic unlike elsewhere.<sup>17</sup> The increase alcohol consumption is concordant with an increase in alcohol sales following the pandemic both online and in-store.<sup>18</sup> It is not clear whether customers bought more for stockpiling or for drinking purposes, but our results seem to support the latter. Our results are consistent with populational alcohol consumption levels<sup>19</sup> and mirror behaviors observed in the Canadian,<sup>20</sup> Chinese,<sup>21</sup> Japanese,<sup>22</sup> American,<sup>23</sup> and German<sup>24</sup> populations. Opposite tendencies have also been reported in other populations<sup>25</sup> highlighting the multiple factors in play to explain such behaviors (ie, lockdown restrictions, stress level<sup>16</sup>). There are several potential explanations for an increased alcohol consumption during the confinement. First, it is possible that alcohol consumption increased because of prolonged social isolation and loneliness induced by stay-at-home orders.<sup>26</sup> Psychosocial stressors including teleworking, job instability, and fear of infection may have also led workers to misuse alcohol to alleviate negative feelings.<sup>27,28</sup> Alcohol was possibly used by many as a self-medication for anxiety, stress, and worry related to the unprecedented state of alarm created by the COVID-19 pandemic.<sup>29-32</sup> Indeed, most stay-at-home Canadians reported drinking more during the pandemic to deal with stress, boredom, loneliness, and changes in their life structure.<sup>20</sup>

Interestingly, the daily alcohol consumption and changes in alcohol craving during the pandemic in our study was similar among healthcare workers compared to non-health workers

despite the greater risk of psychological distress<sup>33</sup> and alcohol misuse<sup>11</sup> associated with front-line work. Such vulnerability factors may have been compensated by the unchanged working conditions and settings (ie, hospitals and clinics) for most healthcare workers, while other workers rapidly had to adapt to stay-at-home orders without a clear road map to transit to teleworking. The loss of structure at home, disruption in daily routine, associated distress and boredom may have contributed to changing drinking habits<sup>5,34,35</sup> in the latter group. Moreover, in our study being a healthcare worker was associated with a lower prevalence of adding high alcohol products during the confinement.

This study has several limitations that should be considered during result interpretation. Although commonly used in research, alcohol use was self-reported and might be subject to recall bias. Also, the web survey used non-probabilistic recruitment methods and the results might be subject to selection bias. Moreover, although the survey inquired about the quantity of daily alcohol use, craving and type of alcohol products used, and was pretested, clinically validated screening instruments were not employed to assess alcohol use and no question was asked about binge-drinking episodes. Finally, the relatively limited sample size may have prevented detection of small but relevant differences between healthcare and non-healthcare workers.

Nevertheless, the results of the current survey shed light on the potential effects of the pandemic on alcohol consumption among workers and the potential health crisis they might be facing. Alcohol use is a significant risk factor for mental health disorders<sup>36</sup> and is a major public health concern.<sup>4</sup> Alcohol misuse is responsible for approximately 3 million deaths annually worldwide and 77 000 hospitalizations annually in Quebec.<sup>37</sup> Future studies will be needed to explore if alcohol consumption decreases with time as observed during an economic crisis<sup>38</sup> or evolves into persistent substance misuse years beyond a pandemic (ie, SARS).<sup>11</sup> While healthcare systems are focusing on COVID-19 patients, this study highlights the need to maintain the availability and accessibility of preventive strategies and treatments for alcohol-related problems. Given the tendency for some vulnerable populations to increase their drinking during difficult times as a mean to self-medicate and cope with isolation, we believe that there is a need to closely monitor changes in alcohol use in the population.

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## Author Contributions

VMP, ER and DJA participated in the data analysis. VMP, ER, JB, DC, LM and DJA participated in data interpretation. VMP,

ER and DJA wrote the initial manuscript. All authors revised and provided feedback on the manuscript.

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## Supplemental Material

Supplemental material for this article is available online.

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