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## Original Article

# Impacts of the COVID-19 pandemic on health, financial worries, and perceived organizational support among people living with disabilities in Canada<sup>☆</sup>



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## ARTICLE INFO

## Article history:

Received 19 March 2021

Received in revised form

21 May 2021

Accepted 18 June 2021

## Keywords:

COVID-19

Physical disabilities

Mental health disabilities

Employment

Work conditions

## ABSTRACT

**Background:** Individuals with physical or mental health disabilities may be particularly vulnerable to the impact of COVID-19 on their health and employment.

**Objectives:** We examined COVID-19-related concerns for health, finances, and organizational support among workers with no disability, a physical, mental health, or both physical and mental health disability, and factors associated with COVID-19 perceptions.

**Methods:** An online, cross-sectional survey was administered to a sample of Canadians in the first wave of the COVID-19 pandemic. Questions asked about COVID-19 perceptions, demographics (gender, age, education), work context (e.g., sector, contract work) and employment conditions (e.g., job stress, control, accommodation needs). Descriptive, multivariable, and nested regression analyses examined factors associated with COVID-19 perceptions.

**Results:** A total of 3066 participants completed the survey. Workers with both a physical and mental health disability reported significantly greater health and financial concerns and less organizational support than those with no disability. Workers with a physical disability reported more health concerns and those with a mental health disability reported more financial concerns and less organizational support. Respondents with disabilities also reported significant differences in employment conditions (e.g., more contract work, stress, unmet accommodation needs) than those with no disability. Employment conditions were consistently significant predictors of COVID-19 perceptions and attenuated the significance of disability type in analyses.

**Conclusions:** Concerns about the impact of COVID-19 on one's health, finances, and organizational support reflected existing disability inequities in employment conditions and highlight the importance of creating more inclusive employment opportunities for people living with physical and mental health disabilities.

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<sup>☆</sup> This research was funded by a grant from the Social Sciences and Humanities Research Council of Canada (SSHRC) #435-2016-0550. It was also funded by a Healthy and Productive Work (HPW) partnership grant from the Social Sciences and Humanities Research Council of Canada (SSHRC) and the Canadian Institutes of Health Research (CIHR) #890-2016-3002. The Institute for Work & Health operates with the support of the Province of Ontario. The views expressed herein are those of the authors and do not necessarily reflect those of the province of Ontario.

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## Introduction

The SARS-CoV-2 (COVID-19) pandemic, which began at the end of 2019, has dramatically changed the lives of the general population. The World Health Organization (WHO) reports over 163 million cases and 3.3 million deaths as of May 2021.<sup>1</sup> Studies highlight COVID-19's psychological impact on the population with reports of increased depression, anxiety, social isolation, and

financial worries.<sup>1–4</sup>

Individuals with disabilities may be particularly vulnerable to the impact of COVID-19. Prior to the pandemic, studies found that people living with disabilities were less likely to be employed, more likely to live in poverty, have more depression, and were more vulnerable to job loss when technology and skills needs change.<sup>5–10</sup> Yet, improvements in health treatments also mean that many individuals living with a disability are now better able to sustain employment, and they often expect to be able to work longer than in past generations.<sup>11,12</sup>

As a result, the potential influence of COVID-19 on the working experiences of people living with disabilities remains unclear. A rapid review examining the impact of COVID-19 on people with physical disabilities yielded only 11 studies.<sup>2</sup> The review focused on healthcare access and did not examine employment. A separate U.K. study examined the impact of COVID-19 on work and found that people living with disabilities were no less likely to have lost their job than people with no disabilities, but they were working fewer hours and experienced more financial stress.<sup>13</sup> Another study examined COVID's impact on young adults with arthritis. In the year before the pandemic, 86% of respondents were employed. This dropped to 71% in the year following the beginning of the pandemic.<sup>14</sup> Still needed are studies that include measures of work characteristics and that compare those living with physical, mental health or no disability. Workplace factors and employment conditions are critical to include because employment vulnerability often arises not as an inherent characteristic of a worker's disability, but as an increased susceptibility to harm or discrimination arising from a lack of access to workplace policies and supports.<sup>10,11,15–18</sup>

This research examined employment and health perceptions and characteristics of a sample of Canadians working with no disability, a physical disability, mental health disability or with both a physical and mental health disability. We examined workers' concerns about the impact of COVID-19 on their health and finances, and their perceptions of support from their organization during COVID-19. We expected those working with both a physical and mental health disability to report more concerns and less organizational support during COVID-19 than those with no disability. It is unclear whether individuals with a physical disability versus mental health disability will differ in their concerns. Those with physical disabilities may have greater health risks and long-term health impacts if they acquire COVID-19.<sup>2</sup> However, individuals with mental health conditions may suffer more from the effects of social isolation and anxiety linked to policies enacted by governments to minimize the spread of the virus, which could result in heightened concerns and needs for supports.<sup>4</sup>

**Hypothesis 1a.** Workers with both a physical and mental health disability will report significantly greater COVID-19-related concerns about their health and finances and less organizational support than other groups.

**Hypothesis 1b.** Workers with a physical disability will report similar levels of concern about their health and finances and similar levels of organizational support to workers with a mental health disability.

Of interest is examining type of disability in conjunction with work context and employment conditions. In developing multivariable models, an initial effect of a disability variable may diminish or disappear when work-related variables are added. Rather than conclude that disability is not relevant, it may be that the addition of employment-related variables highlights a decomposition of a disability variable into components that illuminate its link to employment. This approach to the association of a variable with outcomes has been adopted as part of sex and gender-based

analyses (SGBA) to deconstruct sex and gender and illustrate its biological, psychological, or social components.<sup>19,20</sup> For example, contract work may be more common among workers with a disability. If in multivariable models, disability is not associated with perceived workplace support, but those engaged in contract work perceive their organization as less supportive, it may be relevant to consider disability when addressing whether contract work contributes to vulnerability among workers with disabilities. To address this, we compared disability groups in terms of work characteristics. We then examined the associations of disability group, work context and employment conditions with COVID-19 perceptions in multivariable models to assess changes in the associations of disability when other factors were included.

**Hypothesis 2a.** Workers living with a disability will report significantly different work context and job conditions than workers with no disability.<sup>21–23</sup> This includes less income, less job control, being less willing to share work-related support needs, and greater job stress and perceived job lock.

**Hypothesis 2b.** The association of disability group with COVID-19-related concerns will be attenuated and no longer significant once work context and job conditions are included in multivariable models. This finding will signal that COVID-19 perceptions are associated with pre-existing disadvantages in employment experiences that are potentially amplified by the pandemic.

## Methods

### Study design and sample

In June 2020, many Canadians were in partial or full lockdown as part of efforts to limit the spread of the first wave of COVID-19. Some restrictions were in the process of being relaxed. Data were collected using an online, cross-sectional survey. To be eligible, participants had to be  $\geq 18$  years of age, employed  $\geq 12$  h/week, and fluent in English or French. We aimed for similar numbers of participants in three age groups: 18–34, 35–49, and  $\geq 50$  years, and to recruit at least one third of participants working with a physical or mental health condition that caused a disability at work at least some of the time.

### Recruitment and procedure

Participants were recruited from an existing national panel of over 90,000 Canadians assembled using random digit dialing and designed to mirror the Canadian population as defined by Statistics Canada. Potential participants were contacted by the survey research firm and completed a short screening questionnaire to verify eligibility. Informed consent was obtained from respondents. Questionnaires took 25–30 min to complete. The questionnaire was pilot tested with 41 individuals and was administered in June 2020. Email invitations were sent to 14,570 individuals. Two reminder emails were sent. Fifty-one invitations were invalid (i.e., the email bounced). The total completed questionnaires were 3842 (26.5%). Of these, 3068 participants were eligible to participate. Two participants had missing data on key variables and were excluded. Ethics approval for the research was received from the University of Toronto Research Ethics Board [REB#39085].

## Measures

### Outcome variables: COVID-19 pandemic perceptions

**COVID-19 impact and perceived support.** Two questions asked participants how concerned they were about the impact of COVID-

19 on their health and finances. A third question asked, "Would you say your organization has been supportive of your personal needs during the COVID-19 pandemic?" Responses to all three items were 1 = not at all; 2 = a little; 3 = somewhat; 4 = quite a bit; 5 = a great deal.

*Main independent variable: disability type*

**Disability group.** Three questions asked participants, "Do you have any [physical; mental or cognitive; other health problems or long-term conditions expected to last six months or more] that can make working difficult at least some of the time?" Examples were provided for physical limitations (e.g., seeing, hearing, walking) and mental or cognitive limitations (e.g., learning, concentrating, psychological conditions like anxiety, depression, substance abuse). Responses to other health problems were coded into physical, mental/cognitive, or both physical and mental health limitations. Questions were adapted from the short disability screening questionnaire (DSQ) designed by Statistics Canada.<sup>24</sup> Items were modified to ask about difficulties with employment. Responses ranged from 1 = no; 2 = sometimes; 3 = often; 4 = always. Four groups were created: no disability; physical disability; mental health disability; both a physical and mental health disability.

## Covariates

### Socio-demographics

**Age, gender, education.** Information on age, gender (man, woman, I do not identify with the gender binary), and education was collected. Age was collapsed into three groups: 18–34; 35–49; ≥50 years. Education was collapsed into three categories: high school or less; some college/university; college/university graduate.

### *Work context*

**Job sector.** Participants indicated from a list of 24 job sectors the industry where they were employed. Responses were collapsed into four broad groups: i) financial, business, technology, government; ii) education, health, sciences, arts, professional; iii) sales, service, hospitality; and iv) construction, utilities, manufacturing, agriculture.

**Income.** Respondents were provided with income categories and asked to indicate their total household income before taxes in the past 12 months. Categories were collapsed into less than CAD\$39,999; \$40,000–\$79,999; \$80,000–\$119,000; \$120,000 or more.

**Contract work.** Participants were asked if they had a permanent position or time-limited contract with their employer.

**Job tenure.** Respondents provided the number of years/months they had worked for their current employer or were self-employed.

### *Employment conditions*

**Job control.** Participants were asked, "how much overall control do you have over your work activities and work-related matters?" Responses were 1 = not at all; 2 = a little; 3 = somewhat; 4 = quite a bit; 5 = a great deal.

**Perceived work stress.** Respondents were asked about work stress in the past three months. Responses were 1 = not at all stressful; 2 = not very stressful; 3 = a bit stressful; 4 = quite a bit stressful; 5 = extremely stressful.

**Perceived job lock.** Respondents were asked, "Do you feel 'locked in' your current job (i.e., trapped in your job and unable to look for other work)?" Responses were No/Yes.

**Willing to share needs with supervisor/manager.** Respondents were asked, "If you were to experience difficulties in your ability to work because of personal needs, how willing would you be to share your personal situation with your supervisor/manager?" Responses were 1 = not at all; 2 = a little; 3 = somewhat; 4 = quite a bit; 5 = a great deal.

**Unmet support/accommodation needs.** Participants were asked about their need for six benefits or accommodations to help manage disability at work.<sup>22</sup> They were prescription drug coverage; extended health benefits; flexible work schedules; modified job duties; work from home arrangements; and an accessible workplace, workstation adaptations, and/or assistive devices or technology. A score from 0 to 6 was created by summing the number of accommodations respondents reported needing but that were not available.

### *Statistical analyses*

Means, SDs, and frequency percentages describe the COVID-19 outcomes, disability groups, demographic, work context and employment conditions variables. To examine differences in COVID-19 perceptions and work characteristics variables by disability group (no disability, physical, mental health, both physical and mental health), analysis of variance (ANOVA) or chi-square tests were used. Tukey's tests accounted for multiple comparisons.<sup>25</sup> Analyses were performed in steps. Separate linear bivariable analyses examined the unadjusted relationship of each predictor variable to perceptions of the impact of COVID-19 on health, finances, and perceptions of workplace support. We examined variables in blocks (disability group; demographics; work context; employment conditions).

We conducted a series of nested regression models to examine the direct effect of disability group on each COVID-19 outcome, as well as the change in the direct effect under the scenario that demographic, work context or employment conditions were the same between disability groups.<sup>26</sup> The initial model adjusted for demographics. Subsequent models adjusted for work context and employment conditions. Changes in direct effects are a function of the relationship between disability group and the variables added to the model, as well as the relationship between these variables and the COVID-19 outcomes. In using this modeling, we were interested in changes in the direct effect of disability group on our outcomes.<sup>27</sup> Model assumptions were checked using residual analyses.<sup>27</sup> Data were analyzed using the Statistical Analyses System (SAS) software version 9.3.<sup>28</sup>

## Results

Among the 3066 respondents, 1960 (63.9%) reported no chronic conditions causing limitations (i.e., no disability) at work, 455 (14.8%) reported working with a physical disability; 360 (11.7%) were working with a mental health disability; and 291 (9.5%) reported working with both a physical and mental health disability. [Table 1](#) provides sample characteristics by the four disability groups across COVID-19, demographic, work context, and employment condition variables. In support of Hypothesis 1a, participants working with both a physical and mental health disability differed from those with no disability, as well as participants with a physical disability or a mental health disability on its own. Specifically, they reported significantly more concerns about their health and finances, and less perceived support than participants with no disability ( $p < 0.05$ ). Respondents with a physical disability also reported more health concerns than those with no disability ( $p < .05$ ). Participants with both a physical and mental health disability reported significantly more concerns about their finances

**Table 1**  
Sample characteristics by disability group (n = 3066).

Characteristic	No disability	Physical	Mental	Both	p value
	(n = 1960)	(n = 455)	(n = 360)	(n = 291)	
	n (%) / Mean (SD)	n (%) / Mean (SD)	n (%) / Mean (SD)	n (%) / Mean (SD)	
<b>COVID-19 Outcomes:</b>					
Concerns about COVID-19 impact on health (range 1–5) <sup>a,e</sup>	2.7 (1.2)	2.9 (1.3)	2.8 (1.2)	3.0 (1.3)	.001
Concerns about COVID-19 impact on finances (range 1.5) <sup>a,d</sup>	2.7 (1.4)	2.8 (1.4)	2.9 (1.4)	3.1 (1.4)	.001
Perceived organizational support during COVID-19 (range 1–5) <sup>a,d,f</sup>	3.7 (1.2)	3.7 (1.2)	3.6 (1.3)	3.3 (1.3)	.001
<b>Socio-Demographics:</b>					
Age (years)					.001
18–34	693 (35.4)	89 (19.6)	166 (46.1)	106 (36.4)	
35–49	655 (33.4)	141 (31.0)	142 (39.4)	112 (38.5)	
50 or older	612 (31.2)	225 (49.4)	52 (14.5)	73 (25.1)	
Gender (women)	889 (45.6)	210 (51.2)	192 (53.9)	158 (57.2)	.001
<b>Education</b>					
High school or less	143 (7.3)	54 (11.9)	24 (6.7)	35 (12.0)	.001
Some college/university	299 (15.3)	87 (19.2)	67 (18.6)	65 (22.4)	
College/university graduate	1514 (77.4)	312 (68.9)	269 (74.7)	191 (65.6)	
Characteristic	No disability	Physical	Mental	Both	p value
	(n = 1960)	(n = 455)	(n = 360)	(n = 291)	
	n (%) / Mean (SD)	n (%) / Mean (SD)	n (%) / Mean (SD)	n (%) / Mean (SD)	
<b>Work Context:</b>					
Job Sector					.23
Financial; business; technology; government	724 (37.1)	144 (31.8)	136 (38.2)	98 (34.0)	
Education; health; sciences; arts; professions	629 (32.3)	150 (33.2)	129 (36.2)	99 (34.4)	
Sales; services; hospitality	220 (11.3)	56 (12.4)	37 (10.4)	34 (11.8)	
Construction; utilities; manufacturing; agriculture	375 (19.3)	102 (22.6)	54 (15.2)	57 (19.8)	
Contract work	195 (10.7)	52 (12.6)	42 (11.9)	43 (16.3)	.06
Job tenure (years) <sup>b,d,e,f</sup>	9.2 (8.9)	11.3 (1.2)	6.5 (6.9)	8.7 (9.4)	.001
<b>Household Income</b>					
Less than \$39,999	118 (6.5)	42 (10.3)	35 (10.3)	42 (16.0)	.001
\$40,000 - \$79,999	402 (22.1)	112 (27.6)	90 (26.6)	92 (35.0)	
\$80,000 - \$119,999	533 (29.3)	117 (28.8)	100 (29.5)	64 (24.3)	
\$120,000 or more	768 (42.2)	135 (33.3)	114 (33.6)	65 (24.7)	
<b>Job Conditions:</b>					
Job control (range 1–5) <sup>a,b</sup>	3.2 (1.1)	3.2 (1.0)	3.0 (1.1)	3.0 (1.2)	.001
Job stress (range 1–5) <sup>a,b,c,d</sup>	3.1 (1.0)	3.2 (1.0)	3.5 (1.0)	3.6 (1.0)	.001
Characteristic	No disability	Physical	Mental	Both	p value
	(n = 1960)	(n = 455)	(n = 360)	(n = 291)	
	n (%) / Mean (SD)	n (%) / Mean (SD)	n (%) / Mean (SD)	n (%) / Mean (SD)	
Perceived job lock (Yes) <sup>a,b,d,e,f</sup>	521 (27.2)	146 (33.9)	125 (36.1)	131 (48.5)	.001
Willing to share needs with supervisor/manager (range 1–5) <sup>a,b,c,d</sup>	3.2 (1.3)	3.2 (1.4)	2.9 (1.3)	2.7 (1.4)	.001
Unmet needs for support/accommodations (range 1–6) <sup>a,b,d,e,f</sup>	0.8 (1.3)	1.1 (1.4)	1.1 (1.4)	1.7 (1.6)	.001

Note: Sample sizes can vary due to missing values.

Note: Chi-square analyses and analyses of variance (ANOVAs) examined similarities and differences across disability groups. Tukey tests further examined mean differences among disability groups (p < .05).

<sup>a</sup> No disability group significantly different from the group with both a physical and mental health disability.

<sup>b</sup> No disability group significantly different from the mental health disability group.

<sup>c</sup> Physical disability group significantly different from the mental health disability group.

<sup>d</sup> Physical disability group significantly different from the group with both a physical and mental health disability.

<sup>e</sup> No disability group significantly different from the physical disability group.

<sup>f</sup> Mental disability group significantly different from the group with both a physical and mental health disability.

and less support than those with a physical disability, as well as less support than those with a mental health disability ( $p$ 's < 0.05). Support was also found for hypothesis 1 b, with no significant differences in COVID-19 perceptions between those working with a physical disability and those working with a mental health disability.

Older adults were significantly more likely to report a physical disability and younger and middle-aged adults a mental health or both physical and mental health disability (see Table 1) ( $p$  < .001). Women were significantly less likely to report no disability ( $p$  < .001). Participants with a mental health disability reported the lowest number of years with their current employer ( $p$  < .001). Support was largely found for Hypothesis 2a, especially among respondents working with both a physical and mental health disability. Specifically, respondents with no disability reported a higher income, more job control and less job stress compared to those with a mental health or both a physical and mental health disability ( $p$ 's < 0.05). Respondents with any type of disability were more likely to perceive themselves as locked in their jobs ( $p$ 's < 0.05). Respondents with mental health or both physical and mental health disability were significantly less willing to share their health needs with a supervisor ( $p$ 's < 0.05). Those with both a physical and mental health disability reported more unmet accommodation needs than other disability groups ( $p$  < .05).

Table 2 further examines factors associated with perceptions of COVID-19 impact and presents bivariable analyses of disability group, demographics, work context and employment conditions. There were significant bivariable findings for demographic factors, work context and most variables assessing employment conditions associated with COVID-19 perceptions.

Multivariable analyses for the three COVID-19 perceptions revealed support for Hypothesis 2 b, which predicted an attenuation of the effect of disability group with most relationships no longer reaching statistical significance (see Table 3). However, working with a physical disability remained significantly associated with concerns about the impact of COVID-19 on one's health ( $p$  < .05). Younger and middle-aged workers were significantly less concerned about their health from COVID-19 ( $p$  < .001). Respondents working in construction, utilities, manufacturing, or agriculture were less concerned about the impact of COVID-19 on their health compared to respondents working in the financial, business, technology, and government sectors ( $p$  < .01). Respondents reporting more job control were more concerned about their health ( $p$  < .05) as were respondents with more job stress and who had more unmet support/accommodation needs ( $p$ 's < 0.001).

Concerns about COVID-19's impact on one's finances were largely related to work context and employment conditions, although younger workers reported being less concerned than older workers ( $p$  < .01) and respondents with some college/university were more concerned than college/university graduates ( $p$  < .05) (see Table 3). Respondents working in the combined category of education, health, sciences, arts, and professions reported fewer concerns ( $p$  < .01), whereas respondents working in sales, services, hospitality or construction, utilities, manufacturing, and agriculture reported more financial concerns than those in the combined financial, business, technology, or government sectors ( $p$ 's < 0.001). Workers on contract and with less job tenure also reported more financial concerns ( $p$  < .01 and .001, respectively) as did participants with incomes less than CAD\$80,000 per year ( $p$ 's < 0.001). Greater job stress, perceived job lock, being less willing to share needs with one's supervisor/manager and reporting more unmet support/accommodation needs also were associated with greater financial concerns ( $p$ 's < 0.001).

Multivariable analyses examining factors associated with perceived organizational support during COVID-19 found that

younger workers reported less support ( $p$  < .001), as well as workers earning less than \$40,000 per year ( $p$  < .05). Respondents in the financial, business, technology, and government sectors reported more support than other sectors ( $p$ 's < 0.001) (see Table 3). Employment conditions were significantly associated with perceived support with respondents with more job control, less job stress, less perceived job lock, fewer unmet support/accommodation needs and who were more willing to share their needs with their supervisor/manager reporting greater perceived support ( $p$ 's < 0.001).

Table 4 presents nested regression models to further examine the disability groups and COVID-19 outcomes. Model 1 presents the relationships for the disability groups with the three outcomes and indicates that having a physical disability was significantly related to COVID-19 health concerns and having both a physical and mental health disability was associated with health concerns, financial concerns, and less perceived organizational support during COVID-19 ( $p$ 's < 0.001). Model 2 adjusts the regression models by adding demographic factors. The findings remain similar to Model 1 with the addition of mental health disability being associated with health concerns during COVID-19 ( $p$  < .05). Adjusting the models further (Model 3) to add work context factors largely did not alter the significant associations of disability group with the COVID-19 outcomes. However, Model 4, which adjusts for demographics and employment conditions resulted in considerable changes to the findings. The significant relationships between the disability groups and COVID-19 outcomes are attenuated and not statistically significant apart from living with a physical disability being associated with concerns about the impact of COVID-19 on health ( $p$  < .05). These findings do not differ in Model 5, which now includes demographics, work context and employment conditions in the adjusted analyses.

## Discussion

This is one of the first studies to examine COVID-19 perceptions among workers with physical and/or mental health disabilities compared to workers with no disabilities. Findings are nuanced. As expected, when disability groups were compared, individuals working with both a physical and a mental health disability were more concerned about their health and finances and perceived less organizational support to manage COVID-19 than those with no disability. The former group also was more concerned about their finances than participants with a physical disability and reported less organizational support than those with a physical or a mental health disability alone. However, findings were attenuated when employment conditions were considered. To conclude that disability is not important is misleading, as differences in employment conditions were consistently found among the disability groups. These findings illuminate the inequalities in employment among those living with a disability<sup>4,10,13,17,29–31</sup> and enhance our understanding of areas of potential impact that changes to work, in this case from a global pandemic, have on perceptions of financial security, workplace support and health impacts of working with a disability. They suggest a pathway between disability and potential employment adversity whereby those with disability are at greater risk for potential negative outcomes. The findings point to the need to examine workplace policies and practices that may assist or undermine the ability of workers with disabilities to thrive.

Comparisons of the disability groups found that COVID-19 concerns and perceptions of a lack of support were consistently greater among participants with the greatest vulnerability – those living with both a physical and mental health condition. Concerns about the impact of COVID-19 on health also were considerable

**Table 2**  
Bivariable regression analyses of factors associated with concerns about the impact of COVID-19 on one's health and finances, and perceived organizational support during COVID-19.

Factors	Concerns about health		Concerns about finances		Organizational support	
	Beta (95% CI)		Beta (95% CI)		Beta (95% CI)	
<b>Disability group</b>						
No disability	–		–		–	
Physical	0.24 (0.11, 0.37) ***		0.12 (–0.03, 0.26)		–0.03 (–0.16, 0.10)	
Mental	0.13 (–0.01, 0.27)		0.17 (0.02, 0.33) *		–0.14 (–0.28, 0.00) *	
Both physical and mental	0.32 (0.17, 0.47) ***		0.40 (0.22, 0.57) **		–0.42 (–0.58, –0.26) ***	
<b>Socio-Demographics:</b>						
Age (years)						
18–34	–0.24 (–0.35, –0.14) ***		0.07 (–0.05, 0.19)		–0.40 (–0.51, –0.29) ***	
35–49	–0.19 (–0.30, –0.08) ***		0.02 (–0.10, 0.15)		–0.06 (–0.18, 0.05)	
50 years and older	–		–		–	
Gender						
Women	0.24 (0.16, 0.33) ***		0.05 (–0.05, 0.15)		–0.13 (–0.22, –0.04) ***	
Men	–		–		–	
Education						
High school or less	–0.16 (–0.32, 0.00)		0.16 (–0.02, 0.34)		–0.21 (–0.37, –0.04) **	
Some college/university	–0.076 (–0.19, 0.05)		0.37 (0.23, 0.50) ***		0.11 (–0.23, 0.01)	
College/university graduate	–		–		–	
Factors	Concerns about health		Concerns about finances		Organizational support	
	Beta (95% CI)		Beta (95% CI)		Beta (95% CI)	
<b>Work Context:</b>						
Job Sector						
Financial; business; technology	–		–		–	
government	–		–		–	
Education; health; sciences; arts; professions	0.04 (–0.07, 0.14)		–0.04 (–0.16, 0.07)		–0.31 (–0.42, –0.21) ***	
Sales; services; hospitality	–0.06 (–0.21, 0.09)		0.66 (0.50, 0.83) ***		–0.68 (–0.83, –0.53) ***	
Construction; utilities; manufacturing; agriculture	–0.23 (–0.36, –0.11) ***		0.37 (0.23, 0.51) ***		–0.39 (–0.51, –0.26) ***	
Contract Work						
No – Permanent job	–		–		–	
Yes – Contract job	0.01 (–0.13, 0.15)		0.31 (0.15, 0.47) ***		–0.33 (–0.47, –0.18) ***	
Job tenure (years)	0.00 (–0.00, 0.01)		–0.01 (–0.02, –0.01) ***		0.01 (0.00, 0.01) ***	
Household income						
Less than \$39,999	0.09 (–0.09, 0.26)		0.84 (0.64, 1.03) ***		–0.83 (–1.01, –0.65) ***	
\$40,000 - \$79,999	0.09 (–0.03, 0.20)		0.42 (0.29, 0.55) ***		–0.34 (–0.46, –0.22) ***	
\$80,000 - \$119,999	–0.07 (–0.18, 0.05)		0.13 (0.01, 0.26) *		–0.23 (–0.35, –0.12) ***	
\$120,000 or more	–		–		–	
Factors	Concerns about health		Concerns about finances		Organizational support	
	Beta (95% CI)		Beta (95% CI)		Beta (95% CI)	
<b>Job Conditions:</b>						
Job control (range 1–5)	0.01 (–0.03, 0.05)		–0.08 (–0.12, –0.04) ***		0.30 (0.26, 0.34) ***	
Job stress (range 1–5)	0.20 (0.15, 0.24) ***		0.22 (0.18, 0.27) ***		–0.22 (–0.26, –0.17) ***	
Perceived job lock						
No	–		–		–	
Yes	0.19 (0.10, 0.29) ***		0.53 (0.42, 0.63) ***		–0.55 (–0.64, –0.45) ***	
Willing to share needs with supervisor/manager (range 1–5)	–0.04 (–0.08, –0.01) **		–0.17 (–0.21, –0.14) ***		0.32 (0.29, 0.35) ***	
Unmet needs for support/accommodations (range 1–6)	0.13 (0.09, 0.16) ***		0.24 (0.21, 0.28) ***		–0.32 (–0.36, –0.29) ***	

Note: \*p < .05; \*\*p < .01; \*\*\*p < .001.

Note: CI = confidence intervals.

among those with a physical disability compared to those with no disability or a mental health disability. However, in general, concerns about COVID-19 were moderate and perceptions of organizational support were relatively good with participants reporting, on average, quite a bit of support from their organization. During the initial lockdown in Canada, protecting the health of workers,

retaining jobs, and providing emergency support to those affected by the pandemic were priorities for the Canadian government. This seems to be reflected in participants' perceptions. It is unclear to what extent perceptions and experiences have shifted over time. Rising case numbers and deaths, prolonged symptoms among some individuals recovering from COVID-19 ("long-haulers"), new virus

**Table 3**

Multivariable regression analyses of factors associated with concerns about the impact of COVID-19 on one's health and finances, and perceived organizational support during COVID-19.

Factors	Concerns about health		Concerns about finances		Organizational support	
	n = 2397		n = 2395		n = 2366	
	Beta (95% CI)		Beta (95% CI)		Beta (95% CI)	
Disability group						
No disability	–		–		–	
Physical	0.16 (0.02, 0.31) *		0.00 (–0.15, 0.16)		0.02 (–0.11, 0.15)	
Mental	0.07 (–0.09, 0.22)		–0.10 (–0.26, 0.07)		0.10 (–0.04, 0.24)	
Both physical and mental	0.14 (–0.04, 0.33)		0.00 (–0.20, 0.20)		0.03 (–0.13, 0.20)	
Socio-Demographics:						
Age (years)						
18–34	–0.28 (–0.41, –0.14) ***		–0.21 (–0.37, –0.07) **		–0.24 (–0.36, –0.11) ***	
35–49	–0.26 (–0.42, –0.14) ***		–0.08 (–0.21, 0.05)		–0.01 (–0.12, 0.10)	
50 years and older	–		–		–	
Gender						
Women	0.11 (0.01, 0.21)		–0.03 (–0.14, 0.08)		–0.02 (–0.11, 0.07)	
Men	–		–		–	
Education						
High school or less	–0.16 (–0.36, 0.03)		–0.03 (–0.24, 0.18)		–0.03 (–0.20, 0.14)	
Some college/university	–0.07 (–0.20, 0.07)		0.16 (0.01, 0.30) *		0.06 (–0.06, 0.18)	
College/university graduate	–		–		–	
Factors	Concerns about health		Concerns about finances		Organizational support	
	n = 2397		n = 2395		n = 2366	
	Beta (95% CI)		Beta (95% CI)		Beta (95% CI)	
Work context:						
Job Sector						
Financial; business; technology	–		–		–	
government						
Education; health; sciences;						
arts; professions	–0.07 (–0.19, 0.04)		–0.19 (–0.31, –0.06) **		–0.19 (–0.29, –0.08) ***	
Sales; services; hospitality	–0.08 (–0.25, 0.10)		0.35 (0.16, 0.54) ***		–0.32 (–0.48, –0.16) ***	
Construction; utilities;						
manufacturing; agriculture	–0.22 (–0.36, –0.08) **		0.26 (0.11, 0.41) ***		–0.28 (–0.40, –0.16) ***	
Contract work						
No – Permanent job	–		–		–	
Yes – Contract job	–0.00 (–0.16, 0.16)		0.29 (0.11, 0.46) **		–0.12 (–0.27, 0.02)	
Job tenure (years)	0.00 (–0.00, 0.01)		–0.02 (–0.02, –0.00) ***		–0.00 (–0.01, 0.00)	
Household income						
Less than \$39,999	0.05 (–0.16, 0.27)		0.45 (0.22, 0.68) ***		–0.22 (–0.41, –0.03) *	
\$40,000 - \$79,999	0.08 (–0.05, 0.21)		0.25 (0.11, 0.40) ***		–0.02 (–0.14, 0.10)	
\$80,000 - \$119,999	–0.07 (–0.18, 0.05)		0.04 (–0.09, 0.17)		–0.04 (–0.15, 0.06)	
\$120,000 or more	–		–		–	
Factors	Concerns about health		Concerns about finances		Organizational support	
	n = 2397		n = 2395		n = 2366	
	Beta (95% CI)		Beta (95% CI)		Beta (95% CI)	
Job Conditions:						
Job control (range 1–5)	0.05 (–0.00, 0.09) *		0.05 (–0.00, 0.10)		0.15 (0.11, 0.19) ***	
Job stress (range 1–5)	0.16 (0.12, 0.22) ***		0.21 (0.16, 0.27) ***		–0.15 (–0.19, –0.10) ***	
Perceived job lock						
No	–		–		–	
Yes	0.10 (–0.02, 0.21)		0.33 (0.21, 0.45) ***		–0.16 (–0.26, –0.06) **	
Willing to share needs with supervisor/manager (range 1–5)	–0.00 (–0.03, 0.04)		–0.08 (–0.12, –0.04) ***		0.19 (0.15, 0.23) ***	
Unmet needs for support/accommodations (range 1–6)	0.11 (0.07, 0.15) ***		0.14 (0.09, 0.18) ***		0.19 (–0.23, –0.15) ***	

Note: \*p < .05; \*\*p < .01; \*\*\*p < .001.

Note: CI = confidence intervals.



**Table 4**  
Regression coefficients for disability groups across combinations of nested models predicting concerns about the impact of COVID-19 on one's health and finances, and perceived organizational support during COVID-19.

Models	Concerns about health	Concerns about finances	Organizational support
	n = 2397	n = 2395	n = 2366
	Beta (95% CI); Change in Beta	Beta (95% CI); Change in Beta	Beta (95% CI); Change in Beta
<b>Model 1: Disability group</b>			
Physical	0.26 (0.11, 0.40) ***	0.13 (-0.04, 0.29)	-0.05 (-0.20, 0.09)
Mental	0.15 (-0.01, 0.30)	0.12 (-0.05, 0.29)	-0.14 (-0.29, 0.01)
Both physical/mental	0.33 (0.15, 0.51) ***	-0.42 (0.22, 0.63) ***	-0.39 (-0.57, -0.21) ***
<b>Model 2: Disability group + socio-demographics</b>			
Physical	0.23 (0.08, 0.37) ***	0.12 (-0.04, 0.29)	-0.10 (-0.24, 0.05)
Mental	0.17 (0.02, 0.33) *	0.10 (-0.08, 0.27)	-0.09 (-0.24, 0.06)
Both physical/mental ***	0.35 (0.16, 0.53) ***	0.39 (0.18, 0.59) ***	-0.36 (-0.54, -0.18) ***
<b>Model 3: Disability group + demographics + work context</b>			
Physical	0.22 (0.07, 0.37) ** 4%	0.09 (-0.07, 0.25) 25%	-0.06 (-0.20, 0.08) 40%
Mental	0.17 (0.01, 0.32) * 0%	0.07 (-0.10, 0.24) 30%	-0.09 (-0.24, 0.06) 0%
Both physical/mental	0.33 (0.15, 0.52) *** 6%	0.31 (0.11, 0.51) ** 21%	-0.32 (-0.49, -0.14) *** 11%
<b>Model 4: Disability group + socio-demographics + job conditions</b>			
Physical	0.16 (0.02, 0.31) * 30%	0.02 (-0.14, 0.18) 83%	0.01 (-0.12, 0.14) 110%
Mental	0.08 (-0.08, 0.23) 53%	-0.07 (-0.24, 0.10) 170%	0.11 (-0.03, 0.25) 222%
Both physical/mental	0.16 (-0.03, 0.34) 54%	0.05 (-0.15, 0.25) 87%	0.04 (-0.13, 0.20) 111%
Models	Concerns about health	Concerns about finances	Organizational support
	n = 2397	n = 2395	n = 2366
	Beta (95% CI); Change in Beta	Beta (95% CI); Change in Beta	Beta (95% CI); Change in Beta
<b>Model 5: Disability group + socio-demographics + work context + job conditions</b>			
Physical	0.16 (0.02, 0.31) * 30%	100%	0.02 (-0.11, 0.15) 120%
Mental	0.07 (-0.09, 0.22) 59%	-0.10 (-0.26, 0.07) 200%	0.10 (-0.04, 0.24) 190%
Both physical/mental	0.14 (-0.04, 0.33) 60%	0.00 (-0.20, 0.20) 100%	0.03 (-0.13, 0.20) 108%

Note: \*p < .05, \*\*p < .01, \*\*\*p < .001.

Note: Reference group for disability group is no disability.

Note: CI = confidence intervals.

Note: Percentage changes in estimates are calculated as the difference in the coefficients in the new model minus the disability group + demographics model and divided by the estimate from the disability group + demographics model in absolute value.

variants and multiple waves of increased cases currently compete with optimism over the efficacy of vaccines and workplace support practices. Additional research is needed that focuses longitudinally on the experiences of those living with a disability.

Our findings echo research highlighting disadvantages in the employment conditions experienced by many individuals living with a disability. Specifically, workers with a disability reported less income, lower job control, greater stress, and were more likely to feel locked in their current job with fewer opportunities for change.<sup>23</sup> Potentially increasing vulnerability were findings that respondents living with a disability were less willing to share their needs with a supervisor and reported more unmet support and accommodation needs. This was especially true for those living with both a physical and mental health disability. Issues of workplace disclosure of a disability and accommodation needs are receiving increased attention in disability research.<sup>21,22,32-37</sup> They highlight that challenges encountered by people living with a disability go beyond the symptoms and limitations created by health conditions, and revolve around perceptions of support, concerns about reprisals if a disability is disclosed, and other psychosocial work factors.<sup>21,35,38</sup>

Age was consistently associated with COVID-related concerns and perceived organizational support. Younger respondents (aged 18-34 years) were less concerned about their health and their finances. They also reported less support at their workplace related to COVID-19 compared to older adults. It may be that, because younger workers expect a much longer work trajectory, they had fewer concerns about a lasting impact of COVID-19. However,

younger workers also were more likely to report mental health disabilities. This combined with other studies showing that younger workers are more likely to work in contract, part-time or gig economy jobs with few benefits and supports, suggests that younger workers with disabilities may be at risk of fewer career opportunities and may suffer disproportionately over the long term compared to other age groups.<sup>15,17,23,39</sup> More research is needed to examine the intersection of age and disability.

Work context factors yielded mixed findings. Compared to those working in the combined group of business, finance or government jobs, participants in other sectors reported less support. Those working in the combined category of construction, utilities, mining, manufacturing, and agriculture were less concerned about their health, but more concerned about their finances. Concern about finances also was reported by workers in sales, services, and hospitality, by those with incomes less than CAD\$80,000, and by those in contract work and with fewer years of job tenure. These concerns likely reflect a range of factors related to pay, benefits, and job security, as well as COVID-related issues related to the ability to work remotely, which is likely to be more readily available to workers in government and finance. Reasons why workers in industries like construction, utilities and manufacturing were less concerned about their health is not clear and needs additional exploration. A possible explanation is that this reflects a gender difference with more men working in this sector. Overall, women in our study reported more concerns about their health related to COVID-19 than men. Additional research examining the intersection of disability, gender, and occupation is needed.

Several factors assessing employment conditions were consistently associated with COVID-19 perceptions. Greater job stress and having unmet needs for accommodations were associated with greater concerns about COVID-19's impact on health, concerns about finances, and perceiving that one's organization as less supportive during COVID-19. Perceiving that one was locked into one's job also was related to more financial concerns and perceptions of less support. Alternatively, greater willingness to share personal needs with one's employer was associated with greater perceptions of organizational support and fewer concerns about finances. These findings point to the importance not only of policies and practices that provide support in the workplace<sup>35,40</sup> but also to the importance of the psychosocial work environment.<sup>15,18,38,40</sup>

The importance of employment conditions is also key to understanding working with a disability and COVID-19 perceptions. That variables assessing employment conditions were key factors in COVID-19 perceptions, and differentiated workers living with a disability from those with no disability, illuminates some of the challenges related to employment during COVID-19. In particular, job stress and unmet accommodation needs were important to all concerns. Employment can be an important means of minimizing social exclusion and increasing societal participation. However, individuals with disabilities may report job characteristics that put them at greater risk during times of economic uncertainty or extreme events like a pandemic.<sup>15</sup> In other words, the benefits of work are experienced largely among those with good psychosocial work conditions.<sup>5,38</sup> People living with a disability may be less likely to experience these positive conditions. Greater attention to specific workplace practices and types of accommodations that may be helpful in sustaining employment is needed in future research.

There are limitations to this study, including that the data are cross-sectional. Longitudinal data would help to better understand changing perceptions in response to quickly shifting COVID-19 circumstances, personal, social and economic realities, and could better disentangle causal relationships. Our sample was more highly educated than the Canadian population. Including respondents with less education in research is important, especially as these individuals may be more likely to work in jobs that expose them to COVID-19, which would relate to their concerns about contracting the virus. Benefits like paid sick days also may be less available to this group, influencing perceptions of organizational support. Although our response rate is comparable to other large surveys, our lower response rate needs to be considered in interpreting the findings. Bias may have been introduced with those most concerned about the impact of COVID-19 being less likely to participate. This study also only included participants who were currently employed or who had been employed for at least three months in the previous year and who worked a minimum of 12 h per week or more. As a result, the perspectives of those living with a disability who were not working, including those who lost their jobs related to COVID-19 were omitted. Greater attention to the employment needs of individuals living with a disability who are looking for employment and who have given up work is needed.

## Conclusions

This study examined perceptions of the impact of COVID-19 on health, finances, and organizational support. The results highlight that people living with both physical and mental health disabilities reported more concerns and less support than other groups during the early phase of the COVID-19 pandemic. The findings also point to the importance of employment conditions in understanding COVID-19 perceptions and the need to consider differences in these conditions among people with and without disabilities to better

understand the ways that work shapes perceptions and can contribute to inequities that may arise with a pandemic. Moreover, the importance of employment conditions is not limited to COVID-19. It deserves greater attention in future research and highlights the importance of creating more inclusive employment opportunities for people living with physical and mental health disabilities.

## Conflicts of interest

The authors have no conflicts of interest to declare related to this research.

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