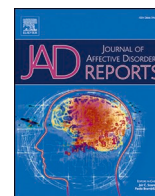




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## Brief Report

# School staff and teachers during the second year of COVID-19: Higher anxiety symptoms, higher psychological distress, and poorer mental health compared to the general population

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## ABSTRACT

**Background:** The aim of this study was to: 1) assess mental health symptoms in Canadian school staff during the second year of the pandemic (Spring 2021) and compare these same outcomes to national representative samples, and 2: examine whether the number of hours of direct contact with students was a significant predictor of anxiety symptoms.

**Methods:** Online data on anxiety symptoms, psychological distress, overall mental health, and demographic information was collected from 2,305 school staff in the greater Vancouver area between February 3 and June 18, 2021, as part of a seroprevalence study.

**Results:** School staff reported significantly higher anxiety symptoms than a national representative survey in Spring 2021 and higher exposure contact time with students was significantly associated with anxiety symptoms, in addition to sex and age, but not level of education and ethnicity. School staff also reported poorer mental health and higher levels of psychological distress compared to pre-pandemic population measures.

**Limitations:** Cross-sectional design, self-report measures.

**Conclusions:** These results show that priorities to reduce mental health challenges are critical during a public health crisis, not only at the beginning, but also one year later. Ongoing proactive prevention and intervention strategies for school staff are warranted.

## 1. Introduction

The COVID-19 pandemic has significantly impacted mental health. A systematic review of studies conducted mostly in Europe and North America (72%) showed that mental health indices in the general population deteriorated at the beginning of the pandemic (March- April 2020) and suggested mental health outcomes reached near pre-pandemic levels by mid-2020 (Robinson et al., 2021). In Canada, overall mental health outcomes have fluctuated during the pandemic. Specifically, large national representative surveys showed that 15% of Canadian adults reported moderate to severe levels of anxiety symptoms

in Spring 2021, an increase from 13% in Fall of 2020 (Statistics Canada, 2021; Statistics Canada, 2021b) and from 2.5% in 2012 (Louise et al., 2017). Compared to the general population, adolescents (Hutchison et al., 2021), visible minorities (Moyser, 2020b), First Nations women (Arriagada, 2020), gender-diverse participants (those that did not report their current gender as exclusively female or male) (Moyser, 2020a), and individuals with long-term health conditions or disabilities (Findlay et al., 2020; Hutchison et al., 2021; Yang et al., 2020) were more likely to report poorer mental health during the first year of the pandemic. The long term psychological impact of COVID-19 on essential workers such as school staff remains unknown, but is critical to assess as they

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represent a vulnerable group at risk of mental health challenges (Kidger et al., 2016; Stansfeld et al., 2011).

School staff are essential workers that play a vital role in educating children and allowing parents to engage more fully in the workforce and support the economy (Pressley et al., 2021). Schools have been at the center of debates around the risk from COVID-19, particularly during the 2020-2021 academic year when, in many parts of the world, schools re-opened. A systematic review of eight studies published from December 2019 to June 2021 found that the overall prevalence of moderate to high anxiety symptoms during the first year of the pandemic was 17% in teachers, with lower prevalence for studies conducted in Asia (14%) than other continents (22%) (Ozamis-Etxebarria et al., 2021). Studies that have examined change in anxiety levels of teachers over time have predominantly focused on teachers who switched to virtual learning and these studies reported mixed results (Evanoff et al., 2020; Li et al., 2020; Zhao et al., 2020). For example, one study conducted among 329 U.S. elementary teachers, of which only 4% returned to all in-person teaching, reported no change in anxiety symptoms after the first month of teaching in the 2020-2021 academic school year (Pressley et al., 2021). In contrast, a qualitative longitudinal study among 24 school teachers in England interviewed at three time points in 2020 (April, July, and November) found that mental health declined over time, especially among primary (elementary) teachers (Kim et al., 2021).

To our knowledge, the current study is among the first to evaluate anxiety symptoms, psychological distress, and overall mental health in a large sample of school staff where in-person teaching continued throughout the 2020-2021 academic school year in a Western society (Canada). While some parts of Canada (e.g., Ontario, Alberta) closed their schools at various points during the 2020-2021 academic school year, the current study was conducted in British Columbia (BC), where schools remained opened and in-person learning was provided to all elementary students and secondary school students, with the latter group engaging in a portion of their learning virtually (~25%). As the current study used the same validated instruments used in large Canadian population surveys, the mental health findings from this study were directly compared to the general population during the same time period (Statistics Canada, 2021; Statistics Canada, 2021b) and with pre-pandemic values (Louise et al., 2017; Patten et al., 2014). In addition, we examined whether the number of hours of direct contact with students was a significant predictor of anxiety symptoms and psychological distress in school staff.

## 2. Methods

### 2.1. Participants

The current study reports complete data collected from 2,305 school staff during the first phase of an ongoing longitudinal seroprevalence study. School staff were recruited through an advertisement on the district's website or an email from their school principal and were asked to provide their school district email to verify eligibility. Inclusion criteria were: working full or part-time for the Vancouver, Richmond, or Delta school district, living in the Greater Vancouver area of BC, Canada, and being able to read and write in English. School staff completed an online questionnaire between February 3 and June 18, 2021. Eligible staff were provided with study information, gave electronic consent, and received a nominal incentive (\$20 gift card) after completing a secure REDCap questionnaire. Approval was obtained from the University of British Columbia Children's and Women's Research Ethics Board (H20-03593).

### 2.2. Measures

Socio-demographic information including sex, age, level of education, ethnicity, job title (e.g., teacher, student support worker), and

general health information (e.g., medical conditions) was collected. Anxiety symptoms were assessed using the Generalized Anxiety Disorder assessment (GAD-7; 7 items assessing anxiety symptoms in the previous 2 weeks) and scores of 10 or higher indicate moderate-to-high levels of anxiety symptoms (Spitzer et al., 2006). Cronbach's alpha for the GAD-7 in the current study was .92, consistent with previous research (.89) (Löwe et al., 2008). Psychological distress was measured using the Kessler psychological distress scale (K6; 6 items assessing distress symptoms in the previous 30 days) and scores of 13 or higher indicate that the person is at risk for serious psychological distress (Kessler et al., 2002; Kessler et al., 2003; Kessler et al., 2010). Cronbach's alpha for the K6 in the current study was .86, consistent with previous research (.89) (Kessler et al., 2002). Mental health was assessed by asking: "In general, how would you rate your mental health?", with response options ranging from poor to excellent on a five-point scale. Direct contact with students was assessed using the following: "how many hours per week do you spend instructing students in the classroom (in-person instruction)?"

### 2.3. Data analysis

Descriptive statistics were computed for demographics and main study variables. Categorical data were reported as frequency (%) and means and standard deviations were used to present continuous data. Internal consistency of the measures was determined by computing Cronbach's alpha. To examine whether the rate of moderate or severe anxiety symptoms was significantly different from representative national samples of Canadian adults during Spring 2021 and Fall 2020, we computed a z-score and *p* value. As number of contact hours with students, sex, age, education, and ethnicity were hypothesized to be related to anxiety symptoms and psychological distress, we conducted two multiple linear regressions with GAD-7 and K6 total scores entered as dependent variables and sex, age, education, ethnicity and the number of direct contact hours with students entered as independent variables. Ethnicity was categorized as 1 = White/ European, 2 = East Asian, 3 = South/West Asian, and 4 = Mixed ethnicity/other. All analyses were conducted with *p* < 0.05 considered statistically significant. All analyses were conducted using STATA version 16 (StataCorp).

## 3. Results

### 3.1. Sample characteristics

Of an estimated 13,497 eligible staff members within the three participating school districts, 3,315 were assessed for eligibility through the online screening tool and 2,538 consented and provided their email address to continue participation in the study. Of these, a small number were excluded because they could not provide an eligible school district email address (*n* = 5) or decided to withdraw their data from the study (*n* = 2). For the present analysis, we excluded administrative staff who worked in the district office as they did not have any in-person contact with students (*n* = 95). Complete data was collected from 2,305 school staff (17.1% participation rate); their characteristics are provided in Table 1.

### 3.2. Anxiety

Overall, 18.7% of school staff reported moderate or severe anxiety symptoms (Table 1), which was significantly higher than the rate expressed by Canadians in a Statistics Canada representative survey during a similar time period, February to May 2021 (15%, *N* = 8,028, *z* = 4.29, *p* < .001) (Statistics Canada, 2021). The rate of anxiety symptoms of school staff was also significantly higher than a representative survey by Statistics Canada in Fall 2020 that showed a 13% prevalence of moderate or severe anxiety symptoms among Canadians (*N* = 15000, *z* = 7.40, *p* < .001) (Statistics Canada, 2021b). A multiple linear

**Table 1**  
Anxiety symptoms, psychological distress, mental health, and descriptive statistics in BC school staff (Spring 2021).

	%	GAD <i>M</i> ( <i>SD</i> )	GAD ≥ 10, %
Sex ( <i>n</i> = 2,343)			
Male	18.1	4.88 (4.72)	16.6
Female	81.9	5.80 (4.91)	19.0
Age ( <i>n</i> = 2,339)			
18 to 24 Years	1.1	9.21 (6.06)	41.7
25 to 34 Years	17.1	7.44 (5.47)	28.5
35 to 44 Years	26.4	6.16 (4.87)	20.5
45 to 54 Years	34.1	4.91 (4.38)	14.2
55 to 64 Years	19.3	4.55 (4.52)	13.7
65 Years +	2.0	3.68 (4.07)	11.4
Ethnicity ( <i>n</i> = 2,350)			
White/European	68.4	5.59 (4.85)	18.6
East Asian	16.0	5.79 (4.84)	18.2
South/West Asian	7.2	5.70 (5.56)	19.5
Mixed ethnicity/Other	8.4	5.69 (4.70)	19.0
Education ( <i>n</i> = 2,344)			
< University degree	5.8	4.83 (4.43)	10.7
College diploma	11.4	5.66 (5.11)	20.9
University bachelor's degree	46.1	5.92 (4.95)	19.5
Graduate degree	36.7	5.38 (4.74)	17.9
Occupation ( <i>n</i> = 2,349)			
Teacher	61.5	5.98 (5.00)	20.3
Student Support	16.3	5.98 (5.20)	22.4
Admin	10.8	4.71 (4.42)	13.1
Other	11.4	4.20 (3.82)	9.9
Direct contact with students ( <i>n</i> = 1,757)			
< 20 hours	41.7	5.14 (4.77)	16.7
≥ 20 hours	58.3	6.01 (4.91)	19.9
Overall GAD score ( <i>n</i> = 2,305)		5.63 (4.89)	18.7
Mental Health ( <i>n</i> = 2,348)			
Poor or fair	15.7	11.10 (3.51)	56.1
Good	31.1	6.60 (4.26)	20.3
Very good or excellent	53.2	3.48 (3.51)	6.7
Psychological Distress ( <i>n</i> = 2,310)			
≥ 13 (severe risk)	5.8	15.23 (4.38)	14.3
< 13	94.2	5.04 (4.25)	87.1

Note. BC = British Columbia, Canada; GAD = Generalized Anxiety Disorder (GAD-7) score, scores can range from 0 = 21, with scores ≥ 10 indicating moderate and severe symptoms; *M* = mean; *SD* = standard deviation; Student Support = also includes youth & family workers; Admin = Administration (principal, office staff); Other = e.g., maintenance; Direct contact with students = average hours per week.

regression analysis showed that higher direct contact with students was significantly associated with anxiety symptoms in school staff, in addition to female status and younger age (Table 2). Level of education and ethnicity were not significantly related to anxiety.

**Table 2**  
Linear Regression analyses predicting anxiety symptoms and psychological distress.

Effect	<i>B</i>	<i>SE</i>	$\beta$	<i>p</i> values
Anxiety Symptoms ( <i>n</i> = 1,538)				
Constant	7.80	1.00		< .001
Sex	.89	0.30	.07	.003
Age	-.08	0.01	-.20	< .001
Education group	-.14	0.15	-.02	.348
Ethnicity	.03	0.13	.01	.820
Direct contact with students	.03	0.01	.07	.010
Psychological Distress ( <i>n</i> = 1,546)				
Constant	7.86	0.84		< .001
Sex	.59	0.26	.06	.020
Age	-.09	0.01	-.24	< .001
Education group	-.12	0.12	-.02	.333
Ethnicity	-.04	0.11	-.01	.729
Direct contact with students	-.02	0.01	.05	.069

Note.  $\beta$  = Standardized Beta; *B* = Unstandardized beta; *SE* = standard error; Direct contact with students = average hours per week.

### 3.3. Psychological distress and mental health

We also found that 5.8% of school staff reported an elevated range of psychological distress, which is higher than previous measures of Canadian psychological distress among adults, with rates ranging between a low of 1.6% in the 2009 Canadian Community Health Survey (CCHS) to a high of 3.0% in the 2000 CCHS (Patten et al., 2014). A multiple regression analysis showed that sex and age were associated with psychological distress, but not level of education and ethnicity, with the number of direct contact hours with students approaching significance (Table 2). Finally, in terms of overall mental health, 15.7% of school staff reported poor or fair mental health.

## 4. Discussion

To our knowledge, this is the first known empirical study which measured mental health of school staff in the Spring of 2021 in a sample of schools that remained opened for in-person learning for the full academic year. The current study showed that school staff experienced significantly higher rates of moderate or severe anxiety symptoms (18.7%) compared to a representative sample of Canadian adults during the same time period (15%) (Statistics Canada, 2021) and in Fall 2020 (13%) (Statistics Canada, 2021b). This prevalence rate for our school staff (18.7%) was also higher than the results from a systematic review of moderate or severe anxiety symptoms in teachers during the first year of the pandemic (17%) (Ozamiz-Etxebarria et al., 2021). In addition, school staff also reported higher rates of psychological distress (5.8%) compared to representative samples of Canadian adults assessed pre-pandemic (1.0%- 3.0%) (Patten et al., 2014).

Results also showed that female status and a younger age were significantly associated with anxiety symptoms. This is consistent with previous research which has shown higher anxiety levels among women (McLean et al., 2011) and younger individuals (Glowacz & Schmits, 2020; Hawes et al., 2021). In addition, higher levels of direct contact with students were significantly associated with higher anxiety symptoms in school staff. These results suggest that school staff who work closely with students could be supported with policies that decrease occupational exposure (e.g., masking) as well as mental health interventions that help reduce overall anxiety levels (e.g., mindfulness) (Roeser et al., 2012).

While female status and a younger age were significantly associated with higher levels of psychological distress in school staff, contact with students was also approaching significance. Prior to COVID-19, a primary source of teacher anxiety and stress was student behaviour (Borg et al., 1991; Bottiani et al., 2019). However, during the COVID-19 pandemic working closely with students may also be related to poorer mental health outcomes. In Spring 2020, when the data for the current study was collected, vaccination was only offered to adolescents aged 16 years and older (Government of Canada, 2021). Thus, the majority of school staff were interacting with unvaccinated students, who were more likely to transmit COVID-19 than if they were vaccinated (Hsu et al., 2021), which could have been an additional source of anxiety and stress for school staff.

In terms of mental health outcomes, 15.7% of school staff also reported poorer mental health outcomes, which was substantially higher than the general population as reported in the 2012 Canadian Community Health Survey (CCHS) (7.8%) (Patten et al., 2014). While there are no published studies on the mental health of school staff during the second year of the pandemic using this specific question, our results are consistent with growing evidence of poor mental health in teachers during the first year of the pandemic (Kim et al., 2021; Ozamiz-Etxebarria et al., 2021; Pressley et al., 2021). Further, even though a systematic review concluded that the pandemic may not have caused a long-lasting mental health crisis in the general population (Robinson et al., 2021), our data show the mental health of school staff was worse than that of the general Canadian population during the second year



(Statistics Canada, 2021) and during pre-pandemic time periods (Patten et al., 2014).

We acknowledge that this study was cross-sectional and responses were self-reported, thus, the direction of associations cannot be determined and results may be impacted by response and sampling bias. While it would have been ideal to start the study during the first year of the pandemic in Spring 2020, we did not have the resources to undertake this study during that time. Also, multiple factors could potentially explain the observed high prevalence of anxiety symptoms and poorer overall mental health in this school staff sample. However, our data shows immediate priorities to reduce mental health challenges are critical during a public health crisis, not only at the beginning, but also one year later. As there is currently no research on the long-term impact of COVID-19 on mental health in school staff, this study addresses a critical gap in the literature which will help inform school districts and governments to minimize occupational burnout. Occupational burnout in school staff is a serious concern for the well being of school staff, presents a financial burden for the educational system (Carver-Thomas and Darling-Hammond, 2017), and is associated with poorer student academic achievement and lower student motivation (Madigan and Kim, 2021). Thus, failure to address mental health in school staff may lead to long-term psychological, social, and economic costs to society.

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## Declaration of Competing Interest

All authors report no conflicts of interest.

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