Secure your own mask first before assisting others: Investigating the health

of frontline care workers during the COVID-19 pandemic.

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Abstract: COVID-19 pandemic has placed unprecedented pressure on health care workers (HCWs). This pressure is caused by the scarcity and prolonged use of PPE (Hu et al., 2020), being exposed to suffering from their patients (Brooks et al., 2020), making difficult moral decisions (Xiang et al., 2020), constant changes in policies and regulations (Chen et al., 2020), and the fear of death or spreading the infection to their loved ones (Shanafelt et al., 2020). To investigate this issue, 329 HCWs in Nova Scotia were recruited. Participants completed a survey asking about their demographics and pertinent occupational health constructs. The hypotheses were tested using structural equation modelling and regression analysis. Based on the results, pandemic anxiety was associated with emotional exhaustion and cynicism. Moral distress was associated with cynicism. Peer social support was associated with lower cynicism and higher professional efficacy. Organizational support was highly correlated with all three subfactors of burnout. Burnout subfactors alone could predict up to 30% of the variance in turnover intention controlling for the participants' demographics and work characteristics. The findings did not support the mediation effect of burnout in the relationship between COVID-19 demands/resources and withdrawal behaviour. In conclusion, during large-scale public health events such as the COVID-19 pandemic, boosting peer and organizational support skills can buffer and mitigate the stressors to help people be more engaged with their work and stay longer in their organization.

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As of 20 July 2021, over 190 million were confirmed cases of COVID-19 worldwide, with over 4 million fatalities (WHO, 2021). COVID-19 pandemic has become the world's most significant health crisis of the present era (Rothan & Byrareddy, 2020). As this virus can be easily transmitted at the person-to-person level, it causes a viral infection that has been detected in more than 200 countries (Bulut & Kato, 2020). This pandemic has placed unprecedented pressure on healthcare systems and health care workers (HCWs) because of its severity and high mortality rate, which result in patients having to be hospitalized and receive specialized care (Baud et al., 2020). This leads to one of the great paradoxes of the COVID-19 pandemic: while the general population must avoid social contact and stay at home, HCWs have to do the exact opposite. They have to continue to provide care to patients and to work in direct contact with the virus continually (The Lancet, 2020). This pressure on HCWs is exacerbated with the scarcity of PPE, physical discomfort from prolonged use of PPE (Hu et al., 2020), balancing the needs of patients with their own needs (Greenberg et al., 2020), being exposed to a high level of suffering from their patients (Brooks et al., 2020), and making difficult ethical and moral decisions (Xiang et al., 2020). The impact of these stressors is compounded by uncertainty about the disease, constant changes in policies and regulations, and the fear of death or spreading the infection to their loved ones as a real possibility (Chen et al., 2020; Shanafelt et al., 2020). This whole situation generated a series of symptoms such as somatic pain, emotional exhaustion, anxiety, stress, fear, irritability, impatience, sadness, frustration, depression and psychological distress among frontline care workers in Canada (Stelnicki et al., 2020), China (Chen et al., 2020; Du et al., 2020; Kang et al., 2020; Lai et al., 2020; Wu et al., 2020), United States (Shanafelt et al.,

2020), Brazil (Drager et al., 2020), United Kingdom (Ferry et al., 2020), Australia (Dobson et al., 2020), France (El Haj et al., 2020), Spain (Ruiz-Fernández et al., 2020), Italy (Barello et al., 2020; Franza et al., 2020; Trumello et al., 2020), Portugal (Duarte et al., 2020), Greece (Tsamakis et al., 2020), Turkey (Çelmeçe & Menekay, 2020), Iran (Jalili et al., 2020), Singapore (Chor et al., 2020), Taiwan (Sung et al., 2020), Ghana (Afulani et al., 2020), and most likely in other countries that are affected by the COVID-19 pandemic.

In many cases, healthcare systems and HCWs are overwhelmed and frustrated because of the current pandemic. But it is not the first time in history that healthcare systems faced a pandemic. The literature on previous epidemics such as SARS showed the high levels of anxiety, depression, stress, and burnout among frontline workers during an outbreak (Wong et al., 2005; Wu et al., 2009). For instance, the SARS outbreak had caused significant psychological distress among HCWs from 2002 to 2004. Symptoms such as anxiety and fear went very high in the early stages of the SARS outbreak, but they went down in the later stages, while depression and post-traumatic stress symptoms continued to stay with the frontline care workers even after the end of the SARS pandemic (Wu et al., 2009). Notably, the COVID-19 pandemic has a higher transmission rate and clinical severity compared to the SARS pandemic. This difference in scope and severity of these two pandemics reflects in their impact on HCWs as well. In Italy, Barello et al. (2020) found that the level of emotional exhaustion reported by HCWs at the peak of the COVID-19 pandemic was significantly higher than those in a normal setting before the outbreak (Compared to: Bressi et al., 2008) or the one's during the SARS pandemic (Compared to: Maunder et al., 2006). Therefore, it is assumed that the effects of the COVID-19 pandemic will stay with HCWs for many years.

Pappa et al. (2020) conducted a meta-analysis study including 33,062 participants from 12 studies to explore the prevalence of depression, anxiety, and insomnia among frontline healthcare workers after the COVID-19 outbreak. The result of their study showed that the prevalence of anxiety, depression, and insomnia among healthcare workers were 23.2%, 22.8%, and 38.9% respectively. These findings suggested that at least one in five frontline healthcare workers report symptoms related to psychological distress (especially depression and anxiety) while four in ten frontline healthcare workers complain about sleeping difficulties or insomnia. Given the high mortality rate of the COVID-19 pandemic, this level of anxiety and distress may intensify the impact of the pandemic on healthcare professionals. The current level of pressure on HCWs during the current pandemic should not be underestimated. Dr. Lorna Breen who was a top emergency frontline doctor at a Manhattan hospital in New York fighting against COVID-19 committed suicide on April 26th, 2020 after contracting the coronavirus at the hospital. She was 49 years old physician without a history of mental illness (Watkins et al., 2020). In another catastrophic incident, in early January of 2021, Dr. Karine Dion, a 35-years old physician practicing in Quebec, committed suicide as a result of overwhelming job stress (Global News, 2021). Anecdotal evidence such as these cases suggests that HCWs' health and safety are at increased risk during this pandemic, and quantitative research, like this study, is necessary to better understand the impact of the COVID-19 pandemic on HCWs' well-being.

Studies that aimed to expand our understanding of the impact of the COVID-19 pandemic on HCWs, like this current study, are critical to ensure that essential workers will overcome this challenging time and will recover from it quickly. The current study is different from previously described studies in the literature as it incorporates a holistic analysis addressing the health and well-being of frontline care workers based on the data collected from Nova Scotia,

Canada during the COVID-19 pandemic. This study contributes uniquely to the body of literature by addressing four critical questions: 1) What are some individual characteristics among frontline care workers that make some of them more susceptible to burnout than others? The answer to this question can help healthcare organizations and supervisors make better decisions considering their employees' health and well-being. 2) What are the key predictors of burnout among HCWs during the COVID-19 pandemic? To prevent burnout from happening in the first place, organizations and supervisors have to tackle the antecedents and predictors of burnout (e.g. COVID-19 pandemic anxiety). By doing so, they would be able to enhance the health and safety of their employees fighting the COVID-19 pandemic. 3) What are the key outcomes of burnout among HCWs during the COVID-19 pandemic? First of all, the importance of addressing burnout among HCWs becomes clearer by identifying its consequences. It also provides managers with an alternative way of measuring burnout among their employees. Managers can measure the level of collective burnout in their workplace by measuring burnout's outcomes. If the rate of behaviours identified as burnout's consequences increases in an organization (e.g. turnover), it is more likely that burnout is common among employees in that organization. 4) What are the key job resources that can help HCWs build resilience in fighting against the COVID-19 pandemic? Moreover, another factor that differentiates this research study from the previous ones is this study's sophisticated analytical approach in investigating the interplay between different variables influencing the well-being of HCWs during a pandemic.

Burnout

This study approaches the health and safety of HCWs by focusing on their level of burnout. In 2019, World Health Organization (WHO) recognized burnout as a syndrome resulting from chronic workplace stress that has not been successfully managed (WHO, 2019). It

is important to point out that the definition introduced by WHO identifies burnout as a condition

resulting from chronic stress (daily or almost every day) and not as a result of temporary,

occasional work pressure. Based on their definition, burnout is not only about emotional

exhaustion but also about the feeling of depersonalization (cynicism) and the lack of professional

efficacy. Another important aspect of this definition of burnout is that it can be prevented if it has

been managed at the different levels (employees themselves and their organizations). In other

words, burnout is a persistent dysfunctional state that is caused by prolonged exposure to stress.

Based on the job demands-resources (JD-R) model (Demerouti et al., 2001), burnout is a

condition in which an employee has a high level of demands and insufficient resources. Demands

can be related to the physical (e.g. prolonged use of PPE), psychological (e.g. pandemic anxiety),

social (e.g. social isolation), and organizational (e.g. constant change in policies and procedures)

aspects of HCWs' job. On the other hand, resources refer to the same aspects as demands, but

resources are intended to balance out the pressure of demands or ideally outweigh them.

Demerouti et al. (2001) found that job demands had a higher association with emotional

exhaustion, whereas job resources were highly associated with work engagement (i.e. cynicism).

They speculated two psychological processes that can explain burnout through the lens of the

JD-R model. First of all, job demands can lead to burnout by exhausting employees' mental and

physical energy causing health impairment. Secondly, job resources can decrease burnout

through either intrinsic and extrinsic motivation enhancing employees' job engagement and

commitment. In general, based on the JD-R model, experiencing more demands than resources

develops job strain (i.e. less work engagement), which consequently detracts employees from

performing their optimal work and makes them burned out. As the well-being of HCWs is likely

to influence the care they deliver, HCWs' burnout has serious consequences to themselves and

their families, to patients, to their organizations, and to public health (Waqas et al., 2015). Before

the COVID-19 outbreak, a systematic review study showed that the level of burnout is usually

high among HCWs as they work in high stress jobs with low organizational support (Dugani et

al., 2018). Therefore, addressing burnout among HCWs becomes more important as their job

pressure has increased dramatically after the COVID-19 outbreak (Alharbi et al., 2020; Jackson

et al., 2020; Sung et al., 2020; Usher et al., 2020).

Burnout is characterized by three independent dimensions: 1) Emotional Exhaustion:

such as lack of energy and enthusiasm, 2) Cynicism: such as loss of idealism, feeling detached,

and getting cynical about their work and contribution, 3) Professional Efficacy: such as a sense

of personal fulfillment or perceiving their efforts to be positive and effective (Leiter & Maslach,

2009). Regarding the three dimensions of burnout, the literature has constantly shown the high

level of emotional exhaustion and cynicism among HCWs during a pandemic (e.g. Drager et al.,

2020). However, literature has supported a counterintuitive finding regarding the HCWs'

perceived professional efficacy during the COVID-19 pandemic. Ruiz-Fernández et al. (2020)

found an unexpectedly high level of compassion satisfaction (a similar construct to professional

efficacy) among nurses in Spain. Their reported level of compassion satisfaction during a global

pandemic was higher compared to a similar Spanish population before the outbreak (Compared

to: Galiana et al., 2017). Compassion satisfaction is high when an individual is working hard and

believes their effort benefits others in their own community (Schwartz et al., 2003). During the

COVID-19 pandemic, deep satisfaction among HCWs can result from the unconditional support

that they have provided to their patients. HCWs were probably able to seek satisfaction from

their own intrinsic motivation in a circumstance that lacks any sort of extrinsic motivators.

Saying that, regarding extrinsic motivations, the recognition that HCWs have received from the

social movement of support for the effort of frontline health professionals should not be overlooked. Previously, it was shown that HCWs' perceived gratification is a protective factor for their mental health and resilience (Bonetti et al., 2019; Zwack & Schweitzer, 2013). In conclusion, HCWs' intrinsic motivation to provide care and support, besides their perceived social recognition, may have been the key reasons behind the high level of professional efficacy among HCWs during a global pandemic.

There are few studies investigating the influence of demographic variables on burnout among HCWs during a pandemic. Çelmeçe and Menekay (2020) studied the level of stress and anxiety among 240 healthcare professionals in Turkey. Based on their result, care workers who were female, married, and had children reported a higher score in stress and anxiety. This finding was also supported by another study in the American population. Shanafelt et al. (2020) conducted a focus group study exploring the key sources of anxiety among HCWs in the United States. Participants who had children were concerned about having access to childcare during increased work hours and school closures. In addition, employees who were deployed to a new area were concerned because they had not received any training to function in a new work area. Moreover, Lai et al. (2020) conducted a cross-sectional survey exploring the mental health of 1,257 HCWs in 34 hospitals in multiple regions of China. Their results showed nurses and female healthcare professionals experienced a high level of psychological burden and had an alarming score in depression, anxiety, and insomnia. Along with these results, Ferry et al. (2020) explored burnout among 539 HCWs in the UK. The result of their multivariate logistic regression analysis showed that independent predictors of burnout are being a nurse, female, and young practitioner. Furthermore, a meta-analysis study investigating the relationship between demographic variables and psychological distress among HCWs showed that female sex, less

clinical experience, having dependents, and being a nurse are more likely to experience

psychological distress during the COVID-19 pandemic (Kisely et al., 2020). This meta-analysis

also pointed out that having an older age is associated with a higher level of psychological

distress as the COVID-19 virus has a higher mortality rate among elderlies. Based on these

studies' findings, I hypothesized that:

H1: During the COVID-19 pandemic, HCWs' age has a curvilinear relationship with

their experienced level of emotional exhaustion (H1a), cynicism (H1b), and professional efficacy

(H1c). HCWs at older ages are expected to report a higher level of emotional exhaustion and

cynicism, and a lower level of professional efficacy.

H2: During the COVID-19 pandemic, HCWs' work experience in their profession has a

curvilinear relationship with their experienced level of emotional exhaustion (H2a), cynicism

(H2b), and professional efficacy (H2c). HCWs who are newly graduated are expected to report a

higher level of emotional exhaustion and cynicism, and a lower level of professional efficacy.

H3: During the COVID-19 pandemic, HCWs who have dependents have experienced

higher emotional exhaustion (H3a), higher cynicism (H3b), and lower professional efficacy

(H3c) comparing to care workers who do not have any dependents.

H4: During the COVID-19 pandemic, HCWs who have been redeployed have

experienced higher emotional exhaustion (H4a), higher cynicism (H4b), and lower professional

efficacy (H4c) comparing to care workers who have not been redeployed.

COVID-19 Job Demands

Job demands are certain physical, psychological, social, or organizational aspects of a job

that lead to burnout. Identifying the role of job demands in employees' health and well-being

during a pandemic can inform organizations' decisions and potentially decrease the risk of

burnout among HCWs. Job demands are known to be burdens on working individuals taxing their energy and making them emotionally exhausted and psychologically alienated from their work which may consequently lead to burnout. Job demands can be very broad including the different sets of physical, psychological, and social demands such as work pressure, work overload, role ambiguity, role conflict, interpersonal conflicts, etc. (Demerouti et al., 2001). However, this study's focus is on moral distress and pandemic anxiety as they are more pertinent to the context of the COVID-19 pandemic and have not been studied thoroughly.

In terms of the literature review, a study in the Italian population by Trumello et al. (2020) showed HCWs who were working in areas with higher rates of contagion reported higher levels of stress and burnout. Also, the perceived risk of getting the virus and spread it within their families and friends can cause burnout among HCWs (Çelmeçe & Menekay, 2020). The result of a cross-sectional survey among 2,707 HCWs from 60 countries showed that HCWs' burnout level was significantly associated with how much they were worried about the needs and health of their family, feeling pushed beyond training, exposure to COVID-19 patients, and making challenging ethical and moral decisions (Morgantini et al., 2020). Moreover, Ruiz-Fernández et al. (2020) showed that HCWs in Spain experienced a high level of compassion fatigue and emotional exhaustion resulted from many challenging ethical and moral decisions that HCWs have to make during the COVID-19 pandemic. HCWs have faced unique challenges for which they were most likely unprepared. Based on their speculation, caring for seriously ill patients with inadequate resources or having to prioritize some cases over others due to a lack of ventilators caused compassion fatigue by increasing their moral distress. Based on these findings, I hypothesized that:

H5: COVID-19 pandemic anxiety is positively associated with emotional exhaustion (H5a) and cynicism (H5b), and it is negatively associated with professional efficacy (H5c).

H6: Moral distress is positively associated with emotional exhaustion (H6a) and cynicism (H6b), and it is negatively associated with professional efficacy (H6c).

COVID-19 Job Resources

Job resources are the physical, psychological, social, or organizational aspects of a job that prevent the occurrence or decrease the risk of getting burnout among HCWs. According to the JD-R model, insufficient resources can cause disengagement and motivation collapse which may consequently lead to burnout. When job demands are inevitably high, the role of job resources in keeping employees engaged and motivated becomes more vital. Job resources include job autonomy, job control, peer social support, etc. (Demerouti et al., 2001). Given the special context of the COVID-19 pandemic, perceived PPE accessibility, perceived peer social support and perceived organizational support are selected to be included in this study.

Based on the literature, lack of access to appropriate and adequate PPE was another significant antecedent of burnout among HCWs (Denning et al., 2020; Ferry et al., 2020; Franza et al., 2020; Marzetti et al., 2020; Morgantini et al., 2020). El Haj et al. (2020) studied burnout in acute care geriatric facilities in France during the COVID-19 pandemic found that the shortages in equipment and supplies in medical facilities were directly perceived as a major safety risk by HCWs for their own personal safety and that of their families. A focus group study done by Shanafelt et al. (2020) showed that having access to appropriate PPE was the first concern among HCWs in the United States.

Furthermore, social support is fundamental in promoting resilience and preventing burnout; nevertheless, COVID-19 has made it difficult for HCWs to receive the support they

need from their family members (Sasangohar et al., 2020). HCWs who were in close contact

with COVID-19 patients were advised to protect their families by socially isolating themselves

after their work hours. HCWs were hesitant to meet their family and spend time with them due to

the risk of bringing the virus to their family members. Consequently, many HCWs decided to

isolate themselves within their homes. As a result, they experienced reduced social support from

their family members during the COVID-19 pandemic (Galbraith et al., 2020).

To address this challenge, some researchers suggested HCWs have "battle buddies" as a

way to cope with stress and prevent themselves from getting burnout (Albott et al., 2020;

Bradley & Chahar, 2020). They suggested healthcare organizations pair employees with one of

their colleagues to support and check in on one another and provide support to each other. This

suggestion is supported by the literature as Ferry et al. (2020) showed working in a supportive

organization reduced the odds of getting burnout at a significant level. Even before the outbreak,

peer supervision and supportive teamwork were found to be significant job resources and

protective factors against burnout, depression, and anxiety among HCWs (Jarden et al., 2019).

Based on these findings, I hypothesized that:

H7: *Perceived PPE accessibility is negatively associated with emotional exhaustion*

(H7a) and cynicism (H7b), and it is positively associated with professional efficacy (H7c).

H8: *Perceived peer social support is negatively associated with emotional exhaustion*

(H8a) and cynicism (H8b), and it is positively associated with professional efficacy (H8c).

H9: *Perceived organizational support is negatively associated with emotional exhaustion*

(H9a) and cynicism (H9b), and it is positively associated with professional efficacy (H9c).

Burnout Outcomes

To my knowledge, there are still no studies in the literature exploring the relationship between withdrawal behaviours and burnout among HCWs during the COVID-19 pandemic. Therefore, I reviewed the literature on the consequences of burnout outside of pandemic circumstances. Wang et al. (2020a) conducted a study on 1,148 primary care workers in China. Their results showed a significant direct relationship between burnout and turnover intention. This finding was supported by another study by Chen et al. (2019) on 1,370 HCWs in China. Furthermore, Leiter & Maslach (2009) conducted a study on 677 nurses in Atlantic Canada. Besides finding out that turnover intention is one of the key consequences of burnout, they found out that among all three dimensions of burnout, cynicism had the highest coefficient size associating with turnover intention among nurses. This finding was supported by Wang et al. (2020b) study on 616 social workers in China. Similarly, in their research, cynicism was the key predictor of turnover intention among all three burnout dimensions within the social worker community. In general, the literature is consistent in indicating that employees are more willing to leave whether on a temporary (absenteeism) or a permanent (turnover) basis, when they have experienced high emotional exhaustion and cynicism, and low professional efficacy in their job (Kim & Stoner, 2008; Rahim & Cosby, 2016; Na & Park, 2019). Therefore, I hypothesized:

H10: Turnover intention is positively associated with emotional exhaustion (H10a) and cynicism (H10b), and it is negatively associated with professional efficacy (H10c).

H11: Absenteeism is positively associated with emotional exhaustion (H11a) and cynicism (H11b), and it is negatively associated with professional efficacy (H11c).

Proposed Hypothetical Model

A hypothetical model is proposed to test the hypotheses and explore the complex interplay between the variables. This model is proposed to explain the interplay between COVID-19 job demands, job resources, burnout, and withdrawal behaviours. The following four latent variables are hypothesized in this model: (1) Demands: Psychological demands including COVID-19 pandemic anxiety and moral distress are loaded on this latent factor. They were considered as demands as they tax personal resources over time. (2) Resources: It includes perceived PPE accessibility, perceived peer social support, and perceived organizational support. (3) Burnout: It is explained by its three sub-dimensions including emotional exhaustion, cynicism, and professional efficacy. (4) Withdrawal behaviours: It includes turnover intention and absenteeism.

The proposed model is based on the JD-R theory (Demerouti et al., 2001) investigating the influence of job demands and resources on burnout and withdrawal behaviours among HCWs during a pandemic. JD-R framework has been widely used in the literature to explore employees' well-being in the workplace (Bakker & Demerouti, 2007).

From the theoretical perspective, based on the unfolding model of voluntary employee turnover (Lee & Mitchell, 1994), a shock that prompts an individual to re-evaluate their current condition is a precipitating event for withdrawal attitudes and behaviours such as turnover intention. Based on the unfolding model, if an individual finds a match between their set of values and beliefs with the newly updated circumstances, they will stay in their role, and if they do not find that fit or compatibility, they will decide to leave an organization. They solely consider their present circumstances while deciding whether they want to stay or leave. From another perspective, based on embeddedness theory (Mitchell et al., 2001), there are three main

factors that an employee will consider in re-evaluating their current job including (1) Links: the number of formal or informal connections that HCW has with other employees or their organization, (2) Fit: the extent to which their job is fit or compatible with the other aspects of their life, and (3) Sacrifice: the perceived cost and benefits that are associated with leaving their job. Given these two theoretical perspectives, the HCWs who have experienced a high level of emotional exhaustion and cynicism, as well as a lower level of professional efficacy will have more tendency to leave their job. In terms of the literature review, burnout was found to be a significant mediator in the relationship between supervisory support and turnover intention (Fukui et al., 2019), emotional labour and turnover intention (Back et al., 2020), work-family support and turnover intention (Yang & Chen, 2020), and financial satisfaction and turnover intention (Yan et al., 2021). Therefore, it is assumed that burnout is partially mediating the relationship between demands/resources and withdrawal behaviours. So, both indirect and direct paths are drawn between the latent variables in Figure 1. Also, I hypothesized that:

H12: Burnout partially mediates the relationship between demands/resources and withdrawal behaviours among HCWs during the COVID-19 pandemic.

Figure 1

Proposed Hypothetical Model
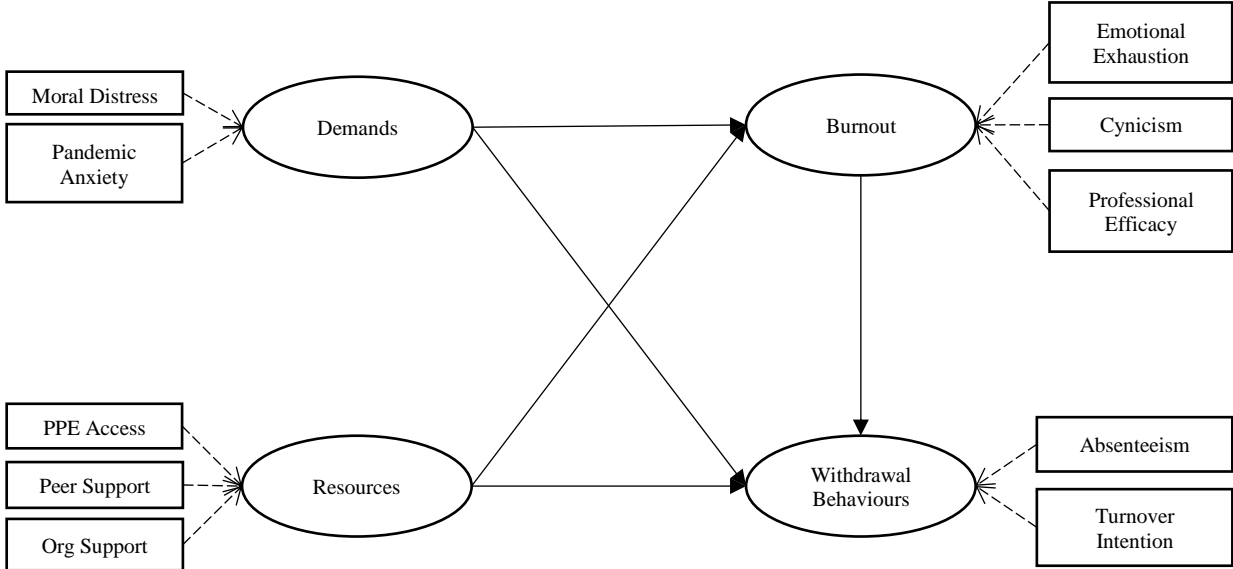
Method

Participants

This proposed study will utilize the BurnoutPulse dataset that includes a sample of 329 healthcare workers practicing during the COVID-19 pandemic in Nova Scotia. Front-line healthcare and homecare workers who were 18 years of age or older and who live and/or work in Canada were eligible to participate in the BurnoutPulse study. Health care workers participated voluntarily and ethical approval for this study was obtained from the Research Ethics Board committee at Saint Mary's University (REB #20-081). BurnoutPulse study was conducted independently by researchers from Saint Mary's University in Halifax, NS.

In the BurnoutPulse dataset, participants were predominately Female ($n = 230$; 91.6%) and Caucasian ($n = 222$; 88.4%) with an average age of 44.07 years ($SD = 10.86$; with a range of 21 to 65 years of age). Most of the participants were coupled ($n = 192$; 77.4%) and over the half of the participants have dependents ($n = 132$; 53%). Participants worked in hospitals ($n = 97$; 30.8%), long term care facilities ($n = 122$; 38.7%), and home care agencies ($n = 50$; 16%). About half of them were nurses ($n = 162$; 51.8%), while the others were support workers ($n = 51$; 16.3%) or administrative staff ($n = 31$; 9.4%). They mostly worked in the public sector ($n = 263$; 84.3%) with an average job tenure of 14.22 years ($SD = 11.42$) and an average organizational tenure of 11.08 years ($SD = 9.54$). Most of the participants' jobs were full time ($n = 252$; 80.8%) while others worked part time. About a third of the sample had a supervisory role ($n = 109$; 34.9%). Some participants ($n = 33$; 10.6%) had a second job while working as a frontline healthcare worker as their primary job. About half of the participants were exposed to COVID-19 virus in their workplace ($n = 151$; 53.9%). A third of them worked night shifts ($n = 93$;

30.2%) and a fifth of the participants were redeployed to a different department or asked to a

different job (*n* = 67; 21.8%) to help fight against COVID-19 pandemic.

Measures

All participants were asked to complete the following measures.

Demographics. Demographic variables including age, gender, marital status, number of

dependents, location, profession, work experience, and their redeployment status were collected.

COVID-19 Pandemic Anxiety. Participants' pandemic anxiety was measured using a 6-

item scale developed by Dai et al. (2020). Responses were recorded using a 5-point Likert scale,

with values ranging from 1 (Not worried at all) to 5 (strongly worried). Examples of items

include "Are you worried about getting infected with COVID-19 yourself?" and "Are you

worried about your family members getting infected with COVID-19 from you?". The reliability

of this scale in the BurnoutPulse dataset was .78.

PPE Perceived Accessibility. Healthcare workers were asked about their perceived

access to personal protective equipment (PPE) and their confidence in using them appropriately

using a 9-item scale (Kelloway et al. 2020). Responses were recorded using a 5-point Likert

scale, with values ranging from 1 (strongly disagree) to 5 (strongly agree). Examples of items

include "I have access to a sufficient supply of PPE required for my job.", "There is a safe place

where I can don PPE without risk of contamination", and "I received adequate training on PPE

utilization." The reliability of this scale in the BurnoutPulse dataset was .90.

Moral Distress. Before measuring participants' moral distress, this concept was

introduced to participants using the following definition: "Moral distress in a form of distress

that occurs when you believe you know the ethically correct thing to do, but something or

someone restricts your ability to pursue the right course of action". Then, they were asked to rate

how much they have been experiencing moral distress in the past 7 days. This single-item scale was validated by Wocial & Weaver (2013) to be used among healthcare workers. Their responses were recorded ranging from 0 (None), 2 (Mild), 4 (Uncomfortable), 6 (Distressing), 8 (Intense), to 10 (Worst possible).

Perceived Peer Social Support. Perceived peer social support was measured using a single-item scale. They were asked about how supportive they perceived their coworkers in the past 7 days. Responses were recorded using a 5-point scale, ranging from 1 (not at all) to 5 (Extremely).

Perceived Organizational Support. Participants' perceived organizational support was measured using an 8-item scale (Eisenberger et al., 1986). Responses were recorded using a 7-point Likert scale, with values ranging from 0 (strongly disagree) to 6 (strongly agree). Items were "The organization really cares about my well-being.", "The organization cares about my general satisfaction at work.", and "The organization takes pride in my accomplishments at work." The reliability of this scale in the BurnoutPulse dataset was .94.

Burnout. Job burnout was measured using the Maslach Burnout Inventory General Survey (MBI-GS) (Maslach et al., 1996). MBI-GS is a 16-item scale that has three subscales: Emotional Exhaustion (items 1, 2, 3, 4, 6), Cynicism (items 8, 9, 13, 14, 15), and Professional Efficacy (items 5, 7, 10, 11, 12, 16). This scale is originally designed using a 7-point Likert scale with values ranging from 0 (never), 1 (a few times a year), …, 5 (a few times a week), 6 (every day). As the COVID-19 pandemic changes the working environment rapidly, researchers decided to make two changes to make the original scale more suitable to be used in pandemic circumstances. First, the participants were instructed to answer the items based on their experience in the past 7 days (rather than a one-year time that was instructed in the original

scale). Secondly, researchers changed the measure to a 4-point Likert scale (0: Never; 4: Once in past 7 days, 5: A few times in past 7 days. 6: Everyday) given the new instruction. Examples of items include "I feel used up at the end of the workday" (Emotional Exhaustion), "I doubt the significance of my work" (Cynicism) and "I have accomplished many worthwhile things in this job." (Professional Efficacy). The reliabilities in BurnoutPulse dataset for this scale were .67 (for Professional Efficacy), .85 (for Cynicism), and .89 (for Emotional Exhaustion). The medium reliability of professional efficacy was probably caused by the gap between the scores in the updated scale. Therefore, all three subscales of burnout were considered to have medium to high reliability.

Absenteeism. Absenteeism was measured using a one-item scale. They were asked to indicate how many hours they have been absent from a regularly scheduled workday in the past 7 days.

Turnover Intention. Health workers' intent to leave their current job was measured using a short three-item scale (Kelloway et al., 1999). Responses were recorded using a 5-point Likert scale, with values ranging from 1 (strongly disagree) to 5 (strongly agree). The first two turnover items were "I plan on leaving my job within the next year", "I have been actively looking for other jobs", and the last reverse-coded item was "I want to remain in my job". The reliability of this scale in the BurnoutPulse dataset was .86 indicating very good reliability.

Procedure

BurnoutPulse data is collected via an online survey which was distributed among frontline healthcare workers with the support of its community partners in Nova Scotia (CUPE, NSNU, NSGEU, Aware-NS, and NS Health Association). Data were collected from June 1st, 2020 to September 30th, 2020. To participate in this study, participants first had to provide their

consent and answer screening questions. Upon successful completion of the survey, a personal

score in job burnout was shown to each participant. The researchers did not foresee that

participants would incur any risk, harm, or inconvenience by participating in the research.

Data Analysis

Before doing any statistical analysis, the data were cleaned. The missing values were

treated listwise and univariate outliers were identified and removed from the dataset. There was

no concern regarding multivariate outliers as none of the participants had a Cook's distance

greater than 1. The proposed hypothetical model was analyzed using structural equation

modelling (SEM) and path analysis with AMOS v22. In addition, the descriptive and regression

analyses were done with SPSS v22. SEM analysis was conducted to test the mediating role of

burnout in the relationship between demands/resources and withdrawal behaviours. Although a

SEM can test the interplay between the latent variables (which each represents the common

variance between its observed variables), it does not explain the unique role of each observed

variable in the proposed model. Therefore, multiple regression analyses were conducted to cover

the unique role of each observed variable in this study. The first two multiple regression analyses

tested the extent in which emotional exhaustion, cynicism, and professional efficacy predict an

individual's withdrawal behaviours controlling for their demographic variables. In addition, three

multiple regression analyses were used to test the extent in which moral distress, pandemic

anxiety, PPE accessibility, organizational support, and peer support predict an individual's

burnout controlling for their demographic variables.

Results

Descriptive statistics and correlations for all study variables are presented in Table 1. Participants with missing data were excluded listwise from analyses. Multivariate assumptions of normality, linearity, and univariate/multivariate outliers were checked prior to analyzing the data.

The results of the Shapiro-Wilk normality tests were ranged from .34 to .98, $p < 0.05$, for all the key continuous variables in this study suggesting that the distribution was not normal. The visual inspection of the Q-Q plots showed that age, pandemic anxiety, moral distress, PPE accessibility, peer support, organizational support, emotional exhaustion, cynicism, professional efficacy, and turnover intention were all normally distributed except for absenteeism. However, as the sample of this study is large ($n = 329$), a normal distribution of data was assumed since the normality tests are over-sensitive with large samples (Field, 2013).

Visual inspections of the P-P plot and scatterplot diagrams did not reveal any concern regarding the assumption of linearity with the exception of the relationship between job tenure and emotional exhaustion. This violation of linearity assumption was addressed in its respective section. Finally, scale reliabilities for all measures were ranged from acceptable to excellent (Cronbach's α = .67-.94; refer to Table 1).

Table 1

Descriptive Statistics and Correlations for Study Variables (N = 235)

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. Gender [a]	(-)											
2. Age	-.09	(-)										
3. Marital Status [b]	-.02	.12	(-)									
4. Dependents [c]	-.07	.02	.17*	(-)								
5. Job Status [d]	.13*	.17**	.06	-.03	(-)							
6. Job Sector [e]	.09	-.10	.04	.06	.03	(-)						
7. Job Tenure	-.05	.65**	.14*	-.01	.16	.00	(-)					
8. Org. Tenure	-.03	.52**	.16*	.15*	.05	.01	.57**	(-)				
9. Management Position [f]	-.16*	.28**	.05	.08	-.09	-.26**	.17**	.107	(-)			
10. Second Job [g]	-.19**	.06	-.08	-.01	.02	-.04	.00	-.07	.02	(-)		
11. Night Shifts [h]	.00	-.28**	-.04	-.05	-.06	-.07	-.18**	-.21**	-.18**	-.01	(-)	
12. Redeployed [i]	.02	-.04	-.07	-.05	-.06	.01	-.07	-.02	-.14*	.08	-.01	(-)
13. COVID Exposure [j]	-.06	-.29**	-.01	.03	-.14*	.18**	-.18**	-.14*	-.06	.04	.11	.23**
14. Pandemic Anxiety	.05	-.11	-.08	-.08	-.03	-.09	-.07	-.09	-.15*	.07	.20**	-.01
15. PPE Accessibility	-.13*	.08	.01	.02	-.08	.10	.03	.06	.21**	.04	-.17**	-.03
16. Moral Distress	.07	-.11	.04	.03	-.07	.00	-.14*	-.10	.01	-.01	.12	.02
17. Org Support	-.08	.12	.01	.00	.08	-.14*	.13*	.10	.21**	.04	-.12	-.12
18. Peer Support	-.01	.00	-.03	.00	.00	-.02	.06	.10	-.02	-.07	.11	-.03
19. Turnover Intention	.03	.02	-.10	-.05	-.02	.03	.02	.05	-.01	.01	.00	.10
20. Absenteeism	-.05	-.15*	.08	-.01	-.10	-.01	-.10	-.08	-.10	.05	.13*	.15*
21. Emotional Exhaustion	.07	-.01	.06	-.02	-.09	-.04	.01	-.02	-.01	.03	.05	.05
22. Cynicism	.01	-.07	-.01	.06	-.12	.04	-.04	-.03	.01	.02	.10	.03
23. Professional Efficacy	-.01	.09	.03	-.02	.09	-.03	.16*	.12	.02	-.09	-.08	-.07
M	0.92	43.71	0.77	0.46	0.17	0.85	14.27	11.51	0.37	0.08	0.31	0.23
SD	0.27	10.90	0.42	0.50	0.37	0.36	11.08	9.54	0.48	0.28	0.46	0.42

Note. [a] 0 = male, 1 = female. [b] 0 = single, 1 = couple. [c] 0 = did not have dependents, 1 = had dependents. [d] 0 = full-time, 1 = part-time or casual. [e] 0 = private sector, 1 = public sector. [f] 0 = non-managerial employees, 1 = managers. [g] 0 = did not have a second job, 1 = had a second job. [h] 0 = did not work night shifts, 1 = worked night shifts. [i] 0 = was not redeployed, 1 = redeployed. [j] 0 = had no exposure to COVID-19 at work, 1 = was exposed to COVID-19 at work. Coefficient alpha is presented in parentheses on the diagonal. * $p < .05$, ** $p < .01$.

Descriptive Statistics and Correlations for Study Variables (N = 235) (CONTINUED)

Variables	13	14	15	16	17	18	19	20	21	22	23
1. Gender [a]											
2. Age											
3. Marital Status [b]											
4. Dependents [c]											
5. Job Status [d]											
6. Job Sector [e]											
7. Job Tenure											
8. Org. Tenure											
9. Management Position [f]											
10. Second Job [g]											
11. Night Shifts [h]											
12. Redeployed [i]											
13. COVID Exposure [j]	(-)										
14. Pandemic Anxiety	.09	(.78)									
15. PPE Accessibility	.02	-.39**	(.90)								
16. Moral Distress	.04	.25**	-.24**	(-)							
17. Org Support	-.18**	-.32**	.29**	-.33**	(.94)						
18. Peer Support	-.04	-.10	.06	-.20**	.16*	(-)					
19. Turnover Intention	.12	.11	-.20**	.25**	-.41**	-.22**	(.86)				
20. Absenteeism	.16*	.10	-.03	.13*	-.08	-.05	.05	(-)			
21. Emotional Exhaustion	.09	.34**	-.25**	.25**	-.35**	-.18**	.39**	.12	(.89)		
22. Cynicism	.18**	.29**	-.12	.33**	-.50**	-.27**	.50**	.12	.54**	(.85)	
23. Professional Efficacy	-.17**	-.15*	.18*	-.15*	.37**	.23**	-.38**	-.07	-.21**	-.50**	(.67)
M	0.48	2.95	3.75	2.65	3.71	3.76	2.42	1.25	4.56	3.48	5.25
SD	0.50	0.87	0.84	2.57	1.55	1.18	1.13	4.13	1.36	1.80	0.66

Note. [a] 0 = male, 1 = female. [b] 0 = single, 1 = couple. [c] 0 = did not have dependents, 1 = had dependents. [d] 0 = full-time, 1 = part-time or casual. [e] 0 = private sector, 1 = public sector. [f] 0 = non-managerial employees, 1 = managers. [g] 0 = did not have a second job, 1 = had a second job. [h] 0 = did not work night shifts, 1 = worked night shifts. [i] 0 = was not redeployed, 1 = redeployed. [j] 0 = had no exposure to COVID-19 at work, 1 = was exposed to COVID-19 at work. Alpha Cronbach is presented in parentheses on the diagonal. * $p < .05$, ** $p < .01$.

Curvilinear Relationship Between Demographics and Burnout

Hypotheses 1 and 2 were tested using hierarchical regression analysis. To test for curvilinear effects, the squared term for age and job tenure were computed (De Dreu, 2006; Janssen, 2001). For both regression models, demographic and work characteristic variables were added into the first block as control variables. Then, age and job tenure were entered into the second block to test the linear effect, and the squared terms of age and job tenure were added in the third block. Burnout's subfactors were the dependent variables for both regression models.

Curvilinear Relationship Between Age and Burnout

The summary of the results of regression analysis between age and burnout's subfactors are indicated in Table 2. In the model predicting emotional exhaustion, the control variables in the first block did not explain a significant portion of the variance, $F(12, 225) = 0.83$, $R^2 = .04$, $p > 0.05$; and adding the linear term for age in the second block, $F(13, 224) = 0.77$, $R^2 = .04$, $p > 0.05$, and the squared term of age in the third block, $F(14, 223) = 0.78$, $R^2 = .05$, $p > 0.05$, did not increase the R-squared significantly as well. Based on the regression model predicting cynicism, the first block was able to predict up to 5% of the variance in the dependent variable, $F(12, 225) = 1.07$, $R^2 = .05$, $p > 0.05$. The second block, $F(13, 224) = 0.98$, $R^2 = .05$, $p > 0.05$, and the third block, $F(14, 223) = 0.94$, $R^2 = .05$, $p > 0.05$, did not increase the model's power to predict the cynicism. In the final regression analysis, the first block was able to predict up to 7% of the variance in professional efficacy, $F(12, 225) = 1.44$, $R^2 = .07$, $p > 0.05$. Likewise to other two regression models, the second block, $F(13, 224) = 1.45$, $R^2 = .07$, $p > 0.05$, and the third block , $F(14, 223) = 1.46$, $R^2 = .08$, $p > 0.05$, did not increase the model's power to predict professional efficacy. Based on the results, the results did not support the curvilinear relationship between age and burnout. Therefore, Hypotheses 1a, 1b, and 1c are not supported by the findings.

Table 2

Regression Analyses Between an HCWs' Age and their Level of Burnout (N = 235)

	Variable	Emotional Exhaustion			Cynicism			Professional Efficacy		
		b	SE B	β	b	SE B	β	b	SE B	β
Block 1	Intercept	3.89	.48		2.71	.63		5.61	.23	
(control variables)	Gender [a]	.57	.34	.11	.27	.45	.04	-.32	.16	-.13*
	Marital Status [b]	.27	.22	.08	-.05	.28	-.01	-.01	.10	-.01
	Dependents [c]	-.04	.18	-.01	.21	.24	.06	-.03	.09	-.02
	Job Status [d]	-.38	.25	-.11	-.45	.32	-.09	.12	.12	.07
	Job Sector [e]	-.26	.26	-.07	.09	.35	.02	-.02	.13	-.01
	Job Tenure	.01	.01	.08	.00	.01	.02	.01	.01	.08
	Org. Tenure	-.01	.01	-.04	.00	.01	-.01	.00	.01	.04
	Management Position [f]	-.05	.20	-.02	.10	.26	.03	-.02	.10	-.02
	Second Job [g]	.25	.33	.05	.14	.43	.02	-.24	.16	-.10
	Night Shifts [h]	.09	.20	.03	.33	.26	.09	-.05	.10	-.04
	Redeployed [i]	.07	.22	.02	-.01	.29	.00	-.03	.10	-.02
	COVID Exposure [j]	.25	.19	.09	.58	.25	.16*	-.12	.09	-.14
R^2				.04			.05			.07
Block 2	Intercept	3.76	.66		2.68	.87		5.88	.32	
(linear effect)	Age	.00	.01		.00	.02	.01	-.01	.01	-.12
R^2				.04			.05			.07
Block 3	Intercept	2.52	1.49		1.47	1.96		5.12	.71	
(quadratic effect)	Age	.00	.00	-.52	.00	.00	-.38	.00	.00	-.66
R^2				.05			.05			.08
ΔR^2				.01			.00			.01

Note. [a] 0 = male, 1 = female. [b] 0 = single, 1 = couple. [c] 0 = did not have dependents, 1 = had dependents. [d] 0 = full-time, 1 = part-time or casual. [e] 0 = private sector, 1 = public sector. [f] 0 = non-managerial employees, 1 = managers. [g] 0 = did not have a second job, 1 = had a second job. [h] 0 = did not work night shifts, 1 = worked night shifts. [i] 0 = was not redeployed, 1 = redeployed. [j] 0 = had no exposure to COVID-19 at work, 1 = was exposed to COVID-19 at work. * $p < .05$, ** $p < .01$, *** $p < .001$.

Curvilinear Relationship Between Job Tenure and Burnout

The results of regression analysis between job tenure and burnout's subfactors are summarized in Table 3. In the regression model predicting cynicism, the first block was able to predict up to 5% of the variance in the dependent variable, $F(12, 225) = 1.07$, $R^2 = .05$, $p > 0.05$. The second block, $F(13, 224) = 0.98$, $R^2 = .05$, $p > 0.05$, and the third block, $F(14, 223) = 1.10$, $R^2 = .06$, $p > 0.05$, did not increase the model's power to predict the variance in the dependent variable either. In the regression model predicting professional efficacy, the first block was able to explain up to 7% of the variance in the dependent variable, $F(12, 225) = 1.39$, $R^2 = .07$, $p > 0.05$. The second block, $F(13, 224) = 1.45$, $R^2 = .08$, $p > 0.05$, and the third block, $F(14, 223) = 1.41$, $R^2 = .08$, $p > 0.05$, did not explain the significant portion of the variance in professional efficacy. Therefore, the data did not support the curvilinear relationship of job tenure with cynicism or professional efficacy.

In the hierarchical regression testing the form of relationship between job tenure and emotional exhaustion, the control variables in the first block was only able to predict up to 4% of the variance in emotional exhaustion, $F(12, 225) = .79$, $R^2 = .04$, $p > 0.05$. The second block including the linear term for job tenure did not increase the model's R-squared as well, $F(13, 224) = .77$, $R^2 = .04$, $p > 0.05$. In the third block, $F(14, 223) = 1.11$, $R^2 = .06$, $p > 0.05$, adding the squared term of job tenure increased the model's powered significantly, $\Delta R^2 = .02$, $p < 0.05$. Additionally, the squared term of job tenure had a negative and significant coefficient ($\beta = -.55$, $p < 0.05$) suggesting that there is a curvilinear relationship between job tenure and emotional exhaustion. Figure 2 illustrates the curvilinear relationship between job tenure and emotional exhaustion.

Table 3

Regression Analyses Between an HCWs' Job Tenure and their Level of Burnout (N = 235)

|	Variable	Emotional Exhaustion			Cynicism			Professional Efficacy		
		b	*SE B*	β	*b*	*SE B*	β	*b*	*SE B*	β
Block 1	Intercept	3.64	.64		2.65	.84		5.77	.31	
(control variables)	Gender [a]	.57	.34	.12	.27	.45	.04	-.34	.16	-.14*
	Age	.01	.01	.06	.00	.01	.01	.00	.01	-.05
	Marital Status [b]	.28	.22	.09	-.05	.29	-.01	.00	.10	.00
	Dependents [c]	-.05	.18	-.02	.20	.24	.06	-.05	.09	-.03
	Job Status [d]	-.38	.25	-.10	-.45	.32	-.09	.15	.12	.08
	Job Sector [e]	-.24	.26	-.06	.10	.35	.02	-.02	.13	-.01
	Org. Tenure	.00	.01	-.03	.00	.02	.00	.01	.01	.105
	Management Position [f]	-.05	.20	-.02	.10	.27	.03	.00	.10	.00
	Second Job [g]	.24	.33	.05	.14	.43	.02	-.23	.16	-.10
	Night Shifts [h]	.11	.20	.04	.34	.26	.09	-.06	.10	-.05
	Redeployed [i]	.06	.22	.02	-.02	.29	-.01	-.03	.11	-.02
	COVID Exposure [j]	.26	.20	.10	.59	.25	.16*	-.20	.09	-.15*
R^2				.04			.05			.07
Block 2	Intercept	3.76	.66		2.68	.87		5.88	.32	
(linear effect)	Job Tenure	.01	.01	.07	.00	.02	.01	.01	.01	.14
R^2				.04			.05			.08
Block 3	Intercept	3.52	.66		2.46	.88		5.83	.32	
(quadratic effect)	Job Tenure	.00	.00	-.55*	.00	.00	-.38	.00	.00	-.23
R^2				.06			.06			.08
ΔR^2				.02*			.01			.00

Note. [a] 0 = male, 1 = female. [b] 0 = single, 1 = couple. [c] 0 = did not have dependents, 1 = had dependents. [d] 0 = full-time, 1 = part-time or casual. [e] 0 = private sector, 1 = public sector. [f] 0 = non-managerial employees, 1 = managers. [g] 0 = did not have a second job, 1 = had a second job. [h] 0 = did not work night shifts, 1 = worked night shifts. [i] 0 = was not redeployed, 1 = redeployed. [j] 0 = had no exposure to COVID-19 at work, 1 = was exposed to COVID-19 at work. * $p < .05$, ** $p < .01$, *** $p < .001$.

Originally, I hypothesized a U-form relationship between job tenure and emotional

exhaustion indicating that HCWs with low and high job tenure experienced more emotional

exhaustion. In contrast to what I initially hypothesized, Figure 2 shows that the form of

relationship is the inverted-U form suggesting HCWs with low and high job tenure experienced

lower emotional exhaustion comparing to those with moderate job tenure. Therefore, H2a was

partially supported meaning there is a curvilinear relationship between job tenure and emotional

exhaustion, but the direction was not as expected in the hypothesis. Other hypotheses suggesting

a curvilinear relationship between job tenure and cynicism (H2b) and professional efficacy (H2c)

are not supported by the results of this analysis.

Figure 2

Curvilinear Relationship Between Emotional Exhaustion and Job Tenure
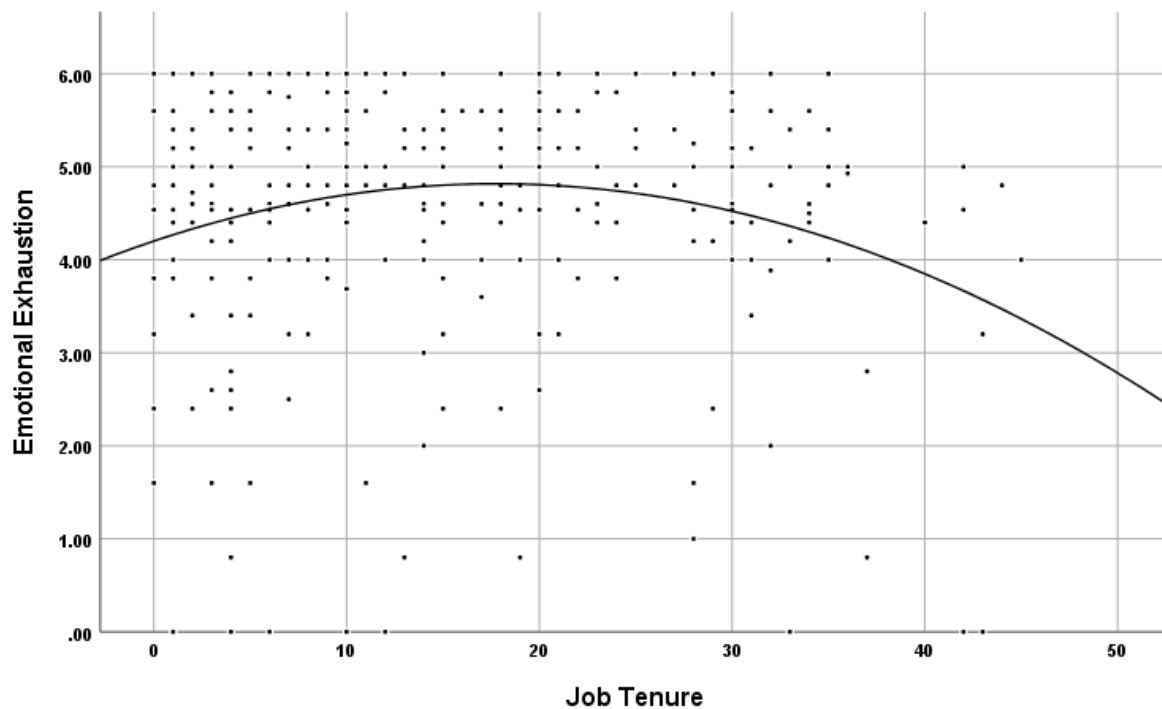
Inspection of the inter-correlation matrix in Table 1 suggests that some of the control variables are highly correlated and might act as suppressors in these regression models. To be more specific, the intercorrelation between job tenure and age, organizational tenure and age, and job tenure and organizational tenure were .65, .52, and .57 respectively. As a result, they might cause the violation of the multicollinearity assumption. To address this issue, I re-tested the models excluding the highly inter-correlated control variables (excluded job tenure and org tenure for models focused on age and excluded age and org tenure for models focused on job tenure). The findings were the same regardless of the presence or absence of the highly inter-correlated control variables. Therefore, although suppressor effects may be present, they did not affect the main conclusions of these analyses.

Burnout Antecedents

A two-step hierarchical multiple regression model was used to test the association between COVID-19 job demands and resources and burnout subfactors. Table 4 shows the impact of COVID-19 job demands and resources on a HCW's burnout controlling for an individual's demographic and work characteristics. Job tenure was not included as a controlling variable for the model predicting emotional exhaustion as it fails the assumption of linearity.

According to Table 4, an individual's demographic and work characteristics accounted for 4% of the variance in emotional exhaustion, $F(12, 223) = 0.77$, $R^2 = .04$, $p > 0.05$; 6% of the variance in cynicism, $F(13, 221) = 1.00$, $R^2 = .06$, $p > 0.05$; and 8% of the variance in professional efficacy, $F(13, 221) = 1.52$, $R^2 = .08$, $p > 0.05$. The analyses showed that, over and above the effects of demographic and work characteristics, the COVID-19 job demands and resources accounted for 19% of the variance in emotional exhaustion, $F(17, 218) = 3.87$, $R^2 = .23$, $p < .001$; 29% of the variance in cynicism, $F(18, 216) = 6.60$, $R^2 = .35$, $p < 0.001$; and

14% of the variance in professional efficacy, $F(18, 216) = 3.43$, $R^2 = .22$, $p < 0.001$. All together, these models were able to predict 23% of the variance in emotional exhaustion, 35% of the variance in cynicism, and 22% of the variance in professional efficacy.

Demographics/Work Characteristics and Burnout

There were two hypotheses regarding the relationship between demographics/work characteristics and burnout among HCWs during the COVID-19 pandemic. Having dependents and being redeployed both did not have a significant association with burnout among HCWs. To be more specific, having dependents was negatively associated with emotional exhaustion ($\beta = -.02$, $p > 0.05$) and professional efficacy ($\beta = -.05$, $p > 0.05$), while it was positively associated with cynicism ($\beta = .06$, $p > 0.05$). Since these relationships were nonsignificant, the hypotheses assuming the significant association between having dependents and burnout (H3a, H3b, and H3c) were not supported by this study's findings. Moreover, being redeployed was positively associated with emotional exhaustion ($\beta = .02$, $p > 0.05$), while it was negatively associated with cynicism ($\beta = -.02$, $p > 0.05$) and professional efficacy ($\beta = -.03$, $p > 0.05$). As these relationships were not significant, the hypotheses expecting a significant association between redeployment and burnout (H4a, H4b, and H4c) were not supported.

COVID-19 Job Demands and Burnout

The relationship between pandemic anxiety, moral distress, and burnout was explored to test the two hypotheses that are relevant to the relationship between COVID-19 demands and burnout. First, pandemic anxiety was positively associated with emotional exhaustion ($\beta = .21$, $p < 0.01$), cynicism ($\beta = .13$, $p < 0.05$), and professional efficacy ($\beta = .02$, $p > 0.05$). Therefore, H5a and H5b that indicate a significant relationship between pandemic anxiety and emotional exhaustion and cynicism were supported while the hypothesis (H5c) that assumes a significant

relationship between pandemic anxiety and professional efficacy was not supported by the findings. Furthermore, as another COVID-19 job demand in the model, moral distress was positively associated with emotional exhaustion ($\beta = .07$, $p > 0.05$), cynicism ($\beta = .13$, $p < 0.05$), and professional efficacy ($\beta = .04$, $p > 0.05$). Based on these findings, only H6b which assumes a significant relationship between moral distress and cynicism was supported by the data. The other two hypotheses, H6a and H6c, that expect a relationship between moral distress and emotional exhaustion and professional efficacy were not supported by the findings of this study.

COVID-19 Job Resources and Burnout

There were three hypotheses regarding the relationship between COVID-19 resources and burnout among HCWs during the pandemic. As the first COVID-19 resource, perceived PPE accessibility did not have a significant relationship with burnout (with emotional exhaustion: $\beta = -.10$, $p > 0.05$; with cynicism: $\beta = .07$, $p > 0.05$; and with professional efficacy: $\beta = .11$, $p > 0.05$). Since all these associations were not significant, the hypotheses assuming the significant relationship between perceived PPE accessibility and burnout (H7a, H7b, and H7c) were not supported by the findings. Moreover, as a second job resource during the pandemic, perceived peer social support had a significant relationship with cynicism and professional efficacy (with emotional exhaustion: $\beta = -.09$, $p > 0.05$). Perceived peer social support was negatively associated with cynicism ($\beta = -.18$, $p < 0.01$), while it was positively associated with professional efficacy ($\beta = .17$, $p < 0.01$). Based on these findings, the hypotheses that assume a significant relationship between perceived peer social support and cynicism and professional efficacy (H8b and H8c) were supported by the data. The hypothesis that expects a significant relationship between perceived peer social support and emotional exhaustion (H8a) was not supported by the findings. As a final job resource during the pandemic, perceived organizational support had a

significant relationship with burnout among HCWs during the pandemic. Perceived organizational support was negatively associated with emotional exhaustion (β = -.22, $p < 0.01$) and cynicism (β = -.41, $p < 0.001$), while it was positively associated with professional efficacy (β = .31, $p < 0.001$). Therefore, hypotheses that assume a relationship between perceived organizational support and burnout's subfactors (H9a, H9b, and H9c) were all supported.

Table 4

Hierarchical Regression Analyses of the Impact of COVID-19 Job Demands and Resources on an Individual's Emotional Exhaustion, Cynicism, and Professional Efficacy Controlling for Participants' Demographic and Work Characteristics (N = 235)

	Variable	Emotional Exhaustion			Cynicism			Professional Efficacy		
		b	SE B	β	b	SE B	β	b	SE B	β
Block 1	Intercept	3.66	.65		2.64	.88		5.89	.32	
	Gender [a]	.57	.34	.11	.29	.45	.04	-.34	.16	-.14*
	Age	.01	.01	.06	.00	.02	.00	-.01	.01	-.11
	Marital Status [b]	.27	.22	.09	-.04	.29	-.01	.00	.10	.00
	Dependents [c]	-.04	.19	-.02	.22	.25	.06	-.05	.09	-.04
	Job Status [d]	-.37	.25	-.10	-.45	.33	-.09	.12	.12	.07
	Job Sector [e]	-.24	.27	-.06	.11	.35	.02	-.04	.13	-.02
	Job Tenure				.00	.01	.01	.01	.01	.14
	Org. Tenure	-.01	.01	-.03	.00	.02	.00	.00	.01	.06
	Management Position [f]	-.04	.21	-.02	.12	.27	.03	-.03	.10	-.02
	Second Job [g]	.25	.33	.05	.14	.44	.02	-.23	.16	-.10
	Night Shifts [h]	.12	.20	.04	.36	.27	.09	-.09	.10	-.06
	Redeployed [i]	.07	.22	.02	-.02	.29	.00	-.03	.10	-.02
	COVID-19 Exposure [j]	.26	.20	.10	.58	.26	.16*	-.19	.09	-.15*
R^2				.04			.06			.08
Block 2	Intercept	4.47	.94		4.47	1.16		4.52	.46	
	Moral Distress	.04	.04	.07	.09	.04	.13*	.01	.02	.04
	Pandemic Anxiety	.34	.11	.21**	.27	.13	.13*	.01	.05	.02
	PPE Access	-.17	.11	-.10	.16	.14	.07	.08	.05	.11
	Peer Support	-.11	.07	-.09	-.28	.09	-.18**	.09	.03	.17**
	Org. Support	-.20	.06	-.22**	-.47	.07	-.41***	.13	.03	.31***
R^2				.23			.35			.22
Adj. R^2				.17			.30			.16

Note. [a] 0 = male, 1 = female. [b] 0 = single, 1 = couple. [c] 0 = did not have dependents, 1 = had dependents. [d] 0 = full-time, 1 = part-time or casual. [e] 0 = private sector, 1 = public sector. [f] 0 = non-managerial employees, 1 = managers. [g] 0 = did not have a second job, 1 = had a second job. [h] 0 = did not work night shifts, 1 = worked night shifts. [i] 0 = was not redeployed, 1 = redeployed. [j] 0 = had no exposure to COVID-19 at work, 1 = was exposed to COVID-19 at work. * $p < .05$, ** $p < .01$, *** $p < .001$.

Burnout Outcomes

Another two-step hierarchical multiple regression model was used to test the association between burnout subfactors and withdrawal behaviours. Table 5 shows the impact of HCW's emotional exhaustion, cynicism, and professional efficacy on their turnover intention and absenteeism controlling for an individual's demographic and work characteristics.

Burnout and Turnover Intention

An individual's demographic and work characteristics accounted for 4% of the variance in turnover intention, $F(13, 224) = 0.75$, $R^2 = .04$, $p > 0.05$. The analyses showed that, over and above the effects of demographic and work characteristics, burnout was accounted for 30% of the variance in turnover intention, $F(16, 221) = 6.98$, $R^2 = .34$, $p < 0.001$. All together, the model was able to predict up to 34% of the variance in turnover intention. Based on the data, burnout had a significant association with turnover intention among HCWs during the pandemic. To be more detailed, turnover intention was positively associated with emotional exhaustion ($\beta = .19$, $p < 0.01$), cynicism ($\beta = .30$, $p < 0.001$), while it was negatively associated with professional efficacy ($\beta = -.20$, $p < 0.01$). Based on these findings, hypotheses indicating a significant relationship between burnout and turnover intention (H10a, H10b, and H10c) were all supported by the findings.

Burnout and Absenteeism

According to Table 5, an individual's demographic and work characteristics accounted for 8% of the variance in absenteeism, $F(13, 224) = 1.58$, $R^2 = .08$, $p > 0.05$. The analyses showed that, over and above the effects of demographic and work characteristics, burnout was accounted for only 1% of the variance in absenteeism, $F(16, 221) = 1.41$, $R^2 = .09$, $p > 0.05$. All together, the model was able to predict up to 9% of the variance in absenteeism. Based on the

data, absenteeism did not have a significant association with burnout (with emotional exhaustion: $\beta = .07$, $p > 0.05$; with cynicism: $\beta = .03$, $p > 0.05$; and with professional efficacy: $\beta = -.01$, $p > 0.05$). Since these relationships were all not significant, the hypotheses assuming the relationship between burnout and absenteeism (H11a, H11b, H11c) were not supported by the findings.

Table 5

Impact of Burnout's Subfactors on an Individual's Turnover Intention and Absenteeism

Controlling for Participants' Demographic and Work Characteristics (N = 238)

	Variable	Turnover Intention			Absenteeism		
		b	*SE B*	β	*b*	*SE B*	β
Block 1	Intercept	2.06	.55		2.06	2.01	
	Gender [a]	.16	.28	.04	-.56	1.04	-.04
	Age	.01	.01	.04	-.03	.04	-.08
	Marital Status [b]	-.29	.18	-.11	1.20	.66	.12
	Dependents [c]	-.10	.15	-.04	-.27	.56	-.03
	Job Status [d]	-.01	.21	.00	-.92	.75	-.08
	Job Sector [e]	.04	.22	.01	-.52	.81	-.04
	Job Tenure	.00	.01	.00	.01	.03	.02
	Org. Tenure	.01	.01	.07	.01	.04	.02
	Managerial [f]	-.01	.17	.00	-.74	.62	-.08
	Second Job [g]	.02	.28	.00	.68	1.00	.04
	Night Shifts [h]	-.01	.17	.00	.67	.62	.07
	Redeployed [i]	.18	.18	.07	1.04	.67	.10
	COVID-19 Exposure [j]	.28	.16	.12	.96	.59	.11
R²				.04			.08
Block 2	Intercept	3.04	.86		1.42	3.74	
	Emotional Exhaustion	.16	.06	.19**	.22	.24	.07
	Cynicism	.19	.05	.30***	.08	.21	.03
	Professional Efficacy	-.35	.11	-.20**	-.07	.49	-.01
R²				.34			.09
Adj. R²				.29			.03

Note. [a] 0 = male, 1 = female. [b] 0 = single, 1 = couple. [c] 0 = did not have dependents, 1 = had dependents. [d] 0 = full-time, 1 = part-time or casual. [e] 0 = private sector, 1 = public sector. [f] 0 = non-managerial employees, 1 = managers. [g] 0 = did not have a second job, 1 = had a second job. [h] 0 = did not work night shifts, 1 = worked night shifts. [i] 0 = was not redeployed, 1 = redeployed. [j] 0 = had no exposure to COVID-19 at work, 1 = was exposed to COVID-19 at work. * $p < .05$, ** $p < .01$, *** $p < .001$.

Mediating Role of Burnout Between Demands/Resources and Withdrawal Behaviours

SEM was used to analyze the interplay between COVID-19 job demands, job resources, burnout, and withdrawal behaviours. The mediating role of burnout between demands/resources and withdrawal behaviours was analyzed using path analysis with AMOS v22.

Based on Hayes & Rockwood (2017), the first step to testing the mediation using SEM is to conduct a CFA to ensure the fit between the model and the data. The model is confirmed at this stage when (1) the model is derived according to the literature, (2) the fit indices are in an acceptable range, and (3) there is no Heywood case present in the results (i.e. a negative variance estimate or improper value estimate). In general, CFI over .90 and RMSEA under .08 indicate a good fit (Schermelleh-Engel et al., 2003). After the model is confirmed, the next step is to test the mediation. Based on Hayes & Rockwood (2017), the most appropriate approach to test the mediation is when both the direct and indirect effects are present in the model. If indirect effects are significant when direct effects are present in the model at the same time, a partial mediation can be concluded. If the indirect effects are small and nonsignificant, it can be concluded that a hypothesized mediator does not mediate the relationship between independent and dependent variables.

As the first step, CFA was conducted to assess the fit between the proposed hypothetical model and the data. Maximum likelihood estimation was used to analyze the indirect, direct, and total effects. The hypothesized model was tested on a sample of 329 HCWs. To ensure the accuracy and robustness of the results, 200 bootstrap samples were performed. The result of the CFA showed a good fit between the hypothesized model and the data, χ^2 (329, 29) = 77.27, $p <$ 0.001, CFI = 0.91, TLI = 0.84, RMSEA = 0.07. Figure 3 illustrates the path analysis of the hypothesized model. Although the model fits the data, scanning the results of the analysis

showed that there was a Heywood case (i.e. a negative variance estimate, since variance is based on the sum of the squared deviations, it cannot possibly be negative). To address this issue, I identified the withdrawal behaviour latent construct as a problematic variable due to three reasons: (1) the poor correlation between absenteeism and turnover intention, $r = 0.05$, $p > 0.05$; (2) the negative variance estimate was associated with the withdrawal behaviour latent construct; and (3) the improper squared multiple correlation was related to the withdrawal behaviour latent construct, $R^2 = 2.44$ (the value must vary between 0 and 1). Based on these reasons, I decided to omit this latent construct from the model and include its subconstructs (turnover intention and absenteeism) as observed variables in the new model. The quality of fit of the new measurement model was tested by using CFA. The result of the CFA showed a good fit between the new model and the data, χ^2 (329, 28) = 81.56, $p < 0.001$, CFI = 0.92, TLI = 0.87, RMSEA = 0.08. Figure 4 shows the results of the path analysis of the new model. The squared multiple correlation analysis of the new model showed the variance explained for each of the endogenous variables is: 41% for emotional exhaustion, 77% for cynicism, 29% for professional efficacy, 28% for turnover intention, and 3% for absenteeism.
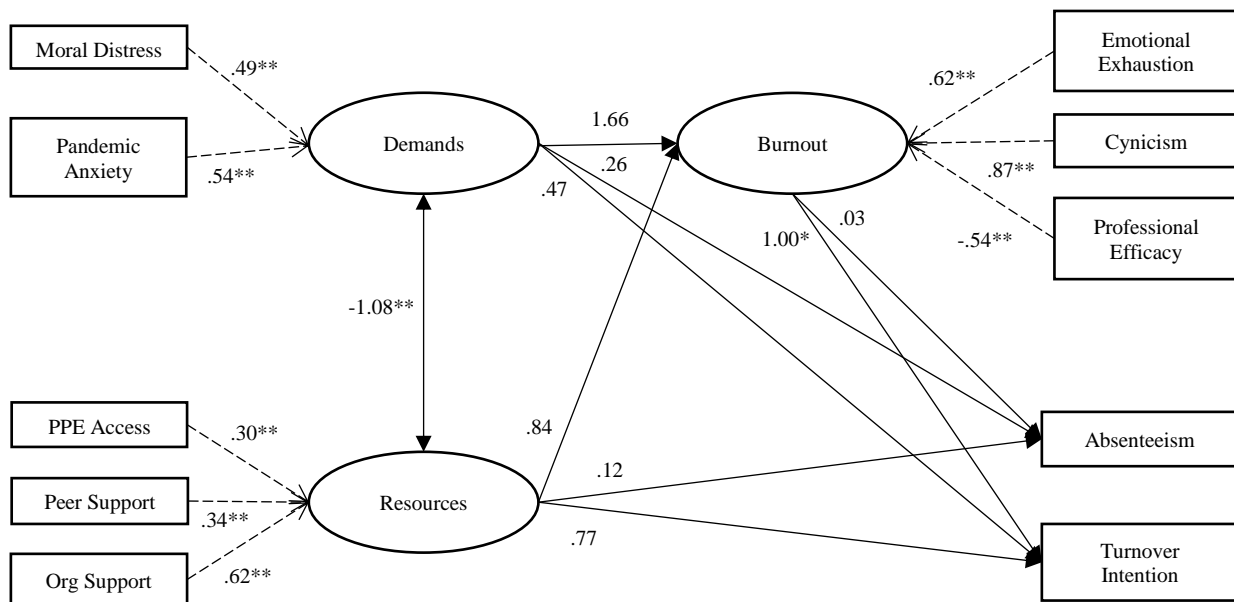
Figure 3

Path Analysis of Hypothesized Model
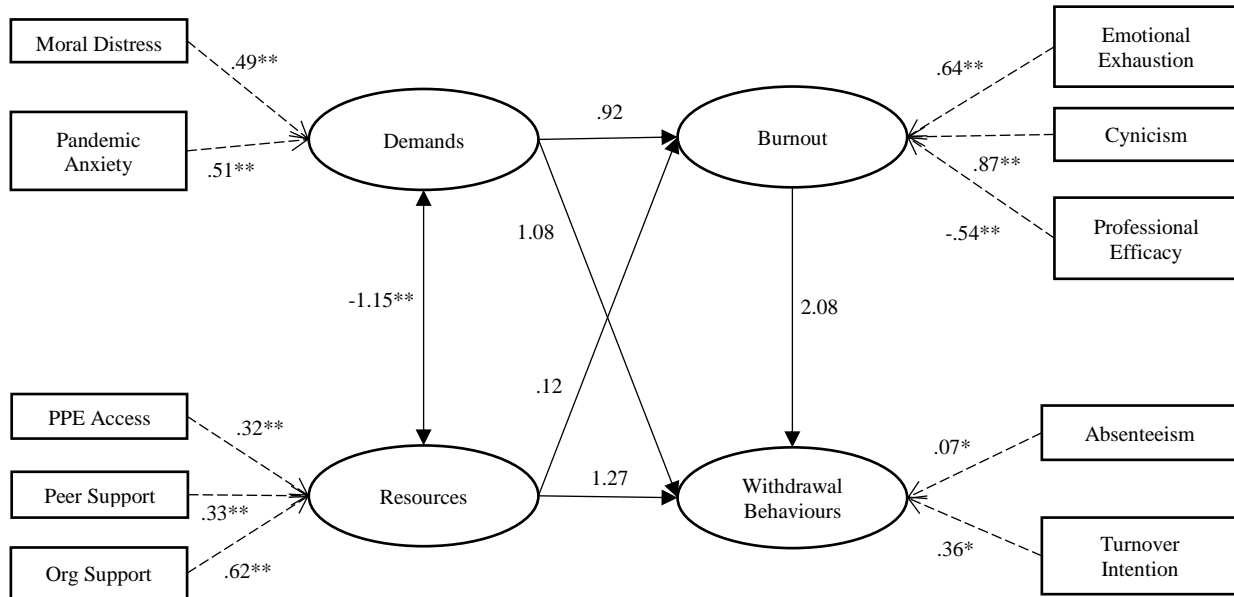
Note. * $p < .05$, **$p < .01$.

Figure 4

Path Analysis of New Model

Note. * $p < .05$, **$p < .01$.

To test the mediation hypothesis, Table 6 shows the bootstrapped estimates of the main path model. Based on Hayes & Rockwood (2017), if the indirect paths from demands/resources to turnover intention through burnout are significant while the direct path between demands/resources and turnover is present in the model, the partial mediation can be concluded. If the indirect effects are small and insignificant, it can be concluded that burnout does not mediate the relationship between demands/resources and withdrawal behaviours. According to Table 6, the mediating role of burnout between COVID-19 demands and turnover intention could be concluded if Paths 1 and 7 (indirect effect) were significant (If Path 2, direct effect, were significant, it would be partial mediation, if it were not significant, it would be full mediation). Based on the results, the only significant path is between burnout and turnover intention (Path 1). Therefore, the findings did not support Hypothesis 12 showing burnout did not mediate the relationship between COVID demands/resources and turnover intention/absenteeism.

Table 6

Bootstrapped Estimates of Main Path Model (N = 329, bootstrapped 200 times)

Outcome Variable	Predictor Variable	b	β	SE	p
Turnover Intention					
(Path 1)	Burnout	1.23	1.00	.47	.01
(Path 2)	Demands	1.12	.47	1.26	.37
(Path 3)	Resources	3.13	.77	2.92	.28
Absenteeism					
(Path 4)	Burnout	.16	.03	1.21	.89
(Path 5)	Demands	2.72	.22	1.76	.12
(Path 6)	Resources	2.18	.12	4.42	.62
Burnout					
(Path 7)	Demands	2.76	1.66	3.72	.39
(Path 8)	Resources	3.21	.84	6.52	.67

Note. Model fit indices: RMSEA = 0.07; CFI = 0.92; TLI = 0.87; X^2 (28, n = 329) = 81.57, p = .000. b = unstandardized coefficient estimates. β = standardized coefficient estimates. SE = standard error.

Discussion

The COVID-19 pandemic has placed a lot of pressure on healthcare systems and HCWs to provide a quality care to patients around the world. This pressure become more distressing for HCWs given the contextual factors surrounding the COVID-19 pandemic including the ease of transmission, limited medical equipment, and overall uncertainty about the disease (Brooks et al., 2020; Chen et al., 2020; Hu et al., 2020). Large-scale health events such as the COVID-19 pandemic require a rapid and dedicated response from healthcare employees. This study provided an insight into why "securing your own mask first before assisting others" is a necessary approach to prevent burnout and decrease turnover among frontline HCWs during a large-scale public health crisis. The purpose of this research was to investigate the health and safety of frontline care workers during the COVID-19 pandemic. This research study focuses on burnout, its antecedents and outcomes, to explore the well-being of frontline care workers.

Demographic and Work Characteristics. Based on the findings of this study, HCWs with low and high job tenure reported lower emotional exhaustion during the COVID-19 pandemic. This finding is consistent with the results of the correlation matrix that showed employees with higher job tenure reported more organizational support, professional efficacy, and less exposure to the virus and moral distress.

Based on the results of this study, female workers experienced lower professional efficacy which leads to a higher level of burnout. Although this finding is consistent with the previous findings in the literature (Çelmeçe & Menekay, 2020; Ferry et al., 2020; Kisely et al., 2020), the sample of this study was predominantly female ($n = 230$; 91.6%). Therefore, any comparison between male and female workers may not be conclusive and it needs to be tested in more equally distributed samples.

In contrast with the findings in the literature, this study did not support any significant impact of marital status, having dependents, and redeployment on HCWs' burnout level. This finding contributes uniquely to the literature as it shows that there was no significant difference in HCWs' experienced burnout based on their marital status or having dependents. The findings showed employees with different demographics experienced the same level of burnout although it could result from different type of stressors. Another interesting finding of this study is that although having exposure to the COVID-19 virus was the key predictor of burnout, getting redeployed alone was not associated with burnout among HCWs.

The findings of this study showed that HCWs who were working in close contact with the COVID-19 virus at their workplace reported a higher level of cynicism and a lower level of professional efficacy. This finding is consistent with what Trumello et al. (2020) found among Italian HCWs. Frontline workers who have worked in COVID departments have been under a lot of work pressure. HCWs who were in close contact with COVID-19 patients were advised by their organizations to protect their families by socially isolating themselves after their work hours. HCWs are hesitant to meet their family and spend time with them due to the risk of bringing the virus to their family members. As a result, they have experienced persistent peak demand with having no time to recover. Additionally, the uncertainty around safety hazards and the constant change in safety procedures and policies can cause employees to doubt their professional efficacy and the quality of care they provide to their patients. In particular, redeployed HCWs have been asked to work outside their area of expertise in an unfamiliar environment with new colleagues. As a result, the level of burnout was higher among HCWs who have worked in close contact with the virus comparing to the ones who work in other departments.

COVID-19 Demands. The findings of this study showed that pandemic anxiety was associated with a higher level of emotional exhaustion and cynicism among HCWs. This finding is consistent with the literature (Çelmeçe & Menekay, 2020; Trumello et al., 2020). HCWs with a higher level of pandemic anxiety were concerned about getting infected, spreading the virus to their family members or their colleagues, and not receiving am adequate and appropriate protective measures and equipment. Therefore, they reported a higher level of exhaustion and cynicism which indicates a higher level of burnout among them.

It seems that HCWs have faced many unique and challenging ethical and moral dilemmas during the COVID-19 pandemic that they have never experienced before. During the pandemic, nurses sometimes found themselves unable to process or resolve ethical dilemmas regarding their work. Moral distress occurs when one is aware of the right course of action but is unable to act on it due to organizational obstacles (e.g. staff shortage, lack of equipment, policies, legal constraints). Moral distress was associated with a higher level of cynicism based on the result of this study. This finding is consistent with the literature (Morgantini et al., 2020; Ruiz-Fernández et al., 2020). Moral distress was a serious concern especially in the early days of the pandemic that HCWs had to take care of seriously ill patients with inadequate resources or had to prioritize some cases over others due to a lack of ventilators. Over time, moral distress could have been partially alleviated by a surge in resources that would allow HCWs to provide quality care to their patients.

COVID-19 Resources. Perceived peer social support was significantly associated with a lower level of cynicism and a higher level of professional efficacy which leads to a lower level of burnout. Also, perceived organizational support was associated with a lower level of emotional exhaustion and cynicism and a higher level of professional efficacy. These findings are consistent

with the literature (Albott et al., 2020; Bradley & Chahar, 2020; Ferry et al., 2020; Galbraith et al., 2020; Sasangohar et al., 2020). As the COVID-19 pandemic has made it difficult for HCWs to receive the social support they need from their family members due to social isolation and distancing, the role of peer support and organizational support has become more important. Peer support becomes more critical for employees who have been redeployed to a new department or were asked to work in a new team. A supportive environment in which an organization cares about its employees and employees care about their peers can have a significant influence on reducing the risk of burnout among HCWs.

In contrast with the findings in the literature (Hu et al., 2020), having access to PPE did not show any significant impact on any of the subfactors of burnout. Hence, perceived PPE accessibility alone was not a significant predictor of burnout. However, having access to sufficient medical equipment might have an impact on employees' burnout through perceived pandemic anxiety and organizational support which both were the significant predictors of emotional exhaustion and cynicism. This finding contributes uniquely to the literature as it shows providing physical equipment alone is not an effective way of addressing burnout among HCWs during the pandemic.

Burnout Outcomes. Based on the findings of this study, there was no significant relationship between burnout and absenteeism among HCWs during the COVID-19 pandemic. On the other hand, turnover intention was significantly associated with all three subconstructs of burnout (i.e. emotional exhaustion, cynicism, and professional efficacy). This finding is aligned with the literature outside of the pandemic (Chen et al., 2019; Wang et al., 2020). Similar to what Leiter & Maslach (2009) found outside of the pandemic circumstances, cynicism had the highest influence on HCWs' turnover intention among all three dimensions of burnout. The findings

demonstrated a strong association between burnout and turnover intention. The result of this

study highlights the importance of addressing burnout in healthcare settings as an effective

strategy to reduce the turnover among the valuable workforce of healthcare workers.

In contrast with what the literature outside of the pandemic setting that has shown the

mediating role of burnout in the relationship between work stressors and turnover intention

(Back et al., 2020; Fukui et al., 2019; Leiter & Maslach, 2009), the findings of this study did not

support the mediating role of burnout in the relationship between COVID-19 demands/resources

and turnover intention. This finding contributes uniquely to the literature as it shows that burnout

did not mediate the relationship between demands/resources and turnover intention among

HCWs during a pandemic. This contradictory finding can be explained as previous research used

general job demands/resources while this study focused on COVID-19 demands/resources. Or

this might be due to HCWs' tendency not to lose their job during a pandemic. To my knowledge,

there is no other studies that explored the mediating role of burnout in the relationship between

pandemic-related demands/resources during a pandemic. Future studies can focus on the factors

that influence HCWs' decision to leave their job during a large-scale public health event.

Implications

Despite introducing a lot of policies and procedures on how to manage COVID-19

patients and deliver care to them, there is no official guidelines for HCWs on how to self-care

and manage their own well-being during the pandemic. The focus of government policymakers

and healthcare administrations has been solely on COVID-19 patients without considering the

mental health and well-being of HCWs. All the training and approval that healthcare employees

have received are designed to encourage them to put the needs of their patients above their own

needs. And previous research has shown that this tendency to put the needs of their patients

above their own personal needs is the leading antecedent of compassion fatigue and burnout among HCWs (Wu et al., 2020). As this study demonstrates the strong connection between COVID-19 demands/resources, burnout, and turnover intention, the main implication of this study for HCWs is the necessity to secure their own masks before assisting others.

This study showed the importance of peer social support and organizational support in preventing burnout among HCWs. Facilitating a supportive environment in which employees support their peers has a positive impact on their level of burnout. This recommendation is aligned with Hendin's et al. (2020) protocol for nurses who provide end-of-life care and work in close contact with patients who face immediate death and have no therapeutic option. This protocol is focused on reducing compassion fatigue and burnout among healthcare employees by asking them to support each other and perform debriefing with each other after each patient's death. This recommendation is also supported by other studies in the literature that encourages organizations to offer "battle buddies" initiative which is mainly focused on increasing peer social support among frontline HCWs (Albott et al., 2020). The role of peer support becomes more important during the COVID-19 pandemic as frontline care workers had to spend less time with their family members to reduce the risk of spreading the virus which leads to receiving less social support from their family members. This situation is more difficult for the employees who have been redeployed to a new work environment as they may experience less peer social support since they have not had the time to build a relationship with their new co-workers.

To support healthcare employees to provide quick and quality care, multiple stakeholders including government policymakers, healthcare administrations, senior staff, as well as members of the broader community should play their role in assisting HCWs to manage the care demands caused by the pandemic. Based on the findings of this study, boosting peer and organizational

support can buffer and mitigate the risk of burnout among HCWs and help organizations retain their employees during a pandemic.

Limitations and Future Research

One of the main limitations of the current study is that it is cross-sectional, meaning no causal relationship can be interpreted based on the results of this study. The generalizability of the findings of this research study is a bit limited since the healthcare organizations were all in Nova Scotia, Canada.

Additionally, the spread of COVID-19 changed very quickly in the duration of data collection which means that some of the organizations in our sample may have no COVID cases at the time of data collection, while others had to deal with many active cases. For instance, in retrospect, this data was collected during the relatively calm time compared to more active phases of the pandemic, for instance April-May 2021, when Nova Scotia had about 100 new cases every day (Nova Scotia Communications, 2020). Although it is quite impossible to predict how the pandemic will progress and unfold, an ideal study would collect data longitudinally at different time points to compare each employee with themselves. This study, as an example of a relatively early study, was successful in capturing the early reaction of healthcare professionals to the COVID-19 outbreak in Nova Scotia, but future studies are still necessary to investigate the long-term impacts of this pandemic on healthcare workers health and well-being.

This study initially tried to capture the quick-changing nature of the pandemic by collecting repeated measure data. As a result, the measures were changed to ask employees about their work behaviours and feelings in the past 7 days. In particular, the burnout scale was revised to reflect the burnout level of employees in the past 7 days. Also, the absenteeism item was asking participants to indicate how many hours they have been absent in the past 7 days.

Although multiple reminders were sent to the participants after they participated for the first time in the study, only a few numbers of participants completed the survey more than once. Therefore, I decided to use only the first wave of data for this research study. The change that was made in the scales, especially for absenteeism, might limit the scale's ability to capture employees' withdrawal behaviours by only asking them about their experience in the past 7 days.

Moreover, this study's sample was predominantly female which held us back from concluding any differences between genders based on the results of this study. Although the majority of healthcare positions are occupied by female workers, future studies will benefit from employing specific strategies to target male care workers and have a more equally distributed sample. In this study, we recruited the sample through our community partners and worker unions. Therefore, the sampling bias might influence the sample as some HCWs might not have the chance to participate in this study as they were not included in the communication reach of our community partners and unions. Healthcare employees who are not unionized or are not checking their union's website, social media, or email might not have the chance to come across this study's recruitment poster. This sampling bias might limit the generalizability of the findings to healthcare employees who work in non-union job positions. It is better for future studies to use multiple recruitment strategies to minimize the impact of sampling bias on the external validity of their research study.

Conclusion

During a global health crisis such as the COVID-19 pandemic, frontline care workers felt at risk (being exposed to the virus), betrayed (inadequate training and equipment), and alone (less social support). Saying that, this research study shows that there is still a lightbulb for people who work in healthcare during a pandemic. Facilitating peer social support and providing pure organizational support can buffer and mitigate the stressors to help people feel better, be more engaged with their work, and stay longer in their organization. These findings suggest that boosting peer and organizational support skills is something that organizations can materially do to help retain their employees during a crisis.

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