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Research Article

The mental health impact of the COVID-19 pandemic on Canadian critical care nurses

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ABSTRACT

Objective: Focusing on Canadian critical care nurses (CCNs), the study objectives were to examine the impact of the COVID-19 pandemic on: mental health, quality of work life, and intent to stay in their current positions.
Research design: Mixed-methods study using an online cross-sectional survey and integration of closed- and open-ended survey data.
Setting: Canadian CCNs working in an intensive care unit, high acuity unit, or intensive care step-down unit during the COVID-19 pandemic between May 2021 to June 2021.
Main outcome measures: The survey consisted of four instruments: (1) the impact of event scale – revised, (2) the depression, anxiety, and stress scale, (3) the professional quality of life scale, and (4) intent to turnover tool, as well as one optional open-ended question.
Results: From across Canada, 425 CCNs responded. The large majority reported symptoms of post traumatic stress disorder (74%), depression (70%), anxiety (57%), and stress (61%). All (100%) reported moderate to high burnout, 87% were suffering from signs of secondary traumatic stress, and 22% intended to quit their current employment. Qualitative analysis of written comments submitted by 147 (34.5%) of the respondents depicted an immense mental health toll on CCNs that stemmed from 1) failed leadership and 2) the traumatic nature of the work environment, that led to 3) a sense of disillusionment, defeat, and an intent to leave.
Conclusion: The mental health toll of the pandemic has been significant for Canadian CCNs and highlights the urgent need for individual supports and systems level changes.

Implications for clinical practice

- There are Canadian critical care nurses who are experiencing profound mental health challenges related to the pandemic.
- There is an urgent need for initiatives that address these mental health challenges.
- Failure to promote healing or protect mental wellbeing of critical care nurses may lead to high rates of turnover.

Introduction

As the COVID-19 pandemic has evolved, so has public health responses and modes of treatment when patients become critically ill, with critical care nurses (CCNs) constantly at the bedside (Mahase, 2020; Wang et al., 2020). Evidence from previous outbreaks and disasters illuminated the psychosocial impact on healthcare workers, with risk of infection to their own family, access to proven personal protective equipment, as well as team / institution preparedness found to influence stress (Brooks et al. 2018; Greenberg et al., 2020; Khalid et al., 2016; Lai

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et al., 2020; Lima et al., 2020; McMahon et al., 2016; Matsuishi et al., 2012; Ives et al., 2009). Research started to emerge detailing the impact of the pandemic on the well-being of the healthcare staff who have been on the frontlines providing care for patients with SARS CoV-2. Evidence of the burden borne by healthcare providers, particularly nurses, at the outset of the pandemic documented a significant impact to mental health (AlAteeq et al., 2020; Alharbi et al., 2020; Azoulay et al., 2020; Gomez et al., 2020; Greenberg et al., 2021; Havaei et al., 2021a; Havaei et al., 2021b, Shaukat et al., 2020; Vizheh et al., 2020; Wahlster et al., 2021).

During the initial months of COVID-19, our team documented high levels of stress, depression and symptoms of post traumatic stress disorder (PTSD) among CCNs at a single site in British Columbia, Canada (Crowe et al., 2021). We found 55% of participants reported symptoms of stress, 58% symptoms of depression, and 50% symptoms of PTSD at the time of data collection (Crowe et al., 2021). Given these findings and the ongoing pandemic wherein nurses have continued to care for critically ill patients in tremendously demanding circumstances, we anticipated ongoing mental health challenges that were also influencing nurses' ability and desire to continue in their work. Thus, we designed a new study that focussed on CCNs across the country, as opposed to a single institution, and included additional instruments to assess CCNs quality of work life and their intent to stay in their position. The aim of this study was to examine the mental health and quality of work life of Canadian CCNs providing patient care during the COVID-19 pandemic. The specific research questions were: what is the impact of the pandemic on CCNs' (1) mental health, (2) quality of work life, and (3) intent to stay in their current position one year into the pandemic?

Methods

Study design

This was a mixed-methods study using an online cross-sectional survey and the integration of closed- and open-ended survey data. We surveyed CCNs from across Canada between May 2021 and June 2021; a time considered to be the third wave of the pandemic in Canada. This study was approval by the Fraser Health Research Ethics Board (Ethics #2021-046). The survey platform was approved by the Research Ethics Board and, prior to the start of the survey an explanation that completion of the questionnaires constituted implied consent was included. No identifying data was collected from participants.

Setting and sample

The Canadian publicly funded healthcare system covers all critical care costs. CCNs working in intensive care unit, high acuity unit, or intensive care step-down units during the COVID-19 pandemic were invited to participate. We recruited participants using convenience sampling. An email invitation to participate was distributed three times by the Canadian Association of Critical Care Nurses (CACCN), a national association composed of approximately 1000 CCNs. The invitation to participate contained a link to the online survey. Social media recruitment through Facebook and Twitter was also used – again, shared initially by the CACCN and then shared broadly by users.

Data collection and analysis

We collected data using four questionnaires: the Impact of Event Scale – Revised (IES - R), the Depression, Anxiety, Stress Scale (DASS – 21), the Professional Quality of Life scale (ProQoL), and the Intent to Turnover scale (Creamer et al., 2002; Lovibond and Lovibond, 1995; Stamm, 2012). These scales have demonstrated strong reliability and validity when used in previous nursing studies, including with CCN participants (McMahon et al., 2016; Maunder et al., 2004; Jiang et al., 2021). Previously used to assess the impact of a public health crisis, the IES – R measures the psychological impact of an event, providing a brief snapshot in time of staff response to crisis, and capturing symptoms of post-traumatic stress disorder (PTSD) (Wang et al., 2020; McAlonan et al., 2007; Weiss, 2007). This 22-item scale asks respondents to reflect on how difficult a statement was in the past seven days with response options ranging from not at all (0 points) to extremely (4 points) (Creamer et al., 2002). All 22 items are summed; a score of under 24 indicates no clinical concern, 24 to 32 indicates the presence of some PTSD symptoms, 33 to 36 indicates a cut off for probably diagnosis of PTSD, and a score of more than 37 indicates significant symptoms (Creamer et al., 2002).

Previously used in pandemic research, the DASS-21 measures symptoms of depression, anxiety and stress (Wang et al., 2020; McAlonan et al., 2007). The 21-item DASS-21 asks respondents to reflect on how a specific statement applied to them over the past week with response options ranging from did not apply to me (0 points) to applied most of the time (3 points) (Lovibond and Lovibond, 1995). The three sub-scale scores are summed and interpreted for depression [normal (0 to 9), mild (10 to 13), moderate (14 to 20), severe (21 to 27), and extremely severe (over 28)], anxiety [normal (0 to7), mild (8 to 9), moderate (10 to 14), severe (15 to 19), and extremely severe (over 20)] and stress [normal (0 to 14), mild (15 to 18), moderate (19 to 25), severe (26 to 33), and extremely severe (over 34) (Lovibond and Lovibond, 1995).

The PROQoL measures was chosen as it includes the constructs of compassion satisfaction, burnout, and secondary traumatic stress (Stamm, 2012). It is commonly used to measure the negative and positive effects of helping others who experience suffering and trauma (Stamm, 2012). The 30-item PROQoL asks respondents to reflect on their experiences over the past 30 days with response options ranging from never (1 point) to very often (5 points) (Stamm, 2012). The three subscales are each summed and interpreted as compassion satisfaction [low (22 or less), average (22 to 41 points), and high compassion satisfaction (42 or more points)], burnout [low (22 or less points), average (23 to 41 points), and high burnout (42 or more points)], and secondary traumatic stress [low (22 or less points), average (23 to 41 points), and high secondary trauma (42 or more points)] (Stamm, 2012).

The 7-item intent to turnover scale asks respondents about their level of agreement [strongly disagree (1 point), to strongly agree (5 points)] with statements about different aspects of leaving a position (Mobley et al., 1978). Participant responses on each of the four study questionnaires were analyzed using descriptive statistics.

Following the questionnaires, we included an optional open-ended question asking participants if there was anything else they wanted to share. The research team (Crowe, Howard and Vanderspank) analyzed these written responses using an inductive thematic approach that involved open coding of the participant's comments, the creation of a coding frame that was then applied to all the comments, the grouping and regrouping of the codes into larger categories, and eventually the construction of themes to describe the experiences and perspectives shared by the participants. This process involved the comparing and contrasting of the participants' different comments and ideas and ongoing research team deliberations by all investigators wherein we arrived at consensus regarding analysis and our interpretations (Norwell et al., 2017). Aligning with Morse (1997), we did not consider inter-rater reliability of coders appropriate, but rather, aimed for insightful interpretation of the unstructured free-text data with contributions from each of the team members.

Results

Participant demographics

In total, 425 CCNs participated (Table 1). All Canadian provinces were represented in the sample. Nurses ranged from 20 to 65 years of age, with years employed in healthcare ranging from 1 to 46 years and a mean of 8.3 years in their current position.

Table 1
Participant Characteristics.

Participant Characteristics		N = 425Number (%)
Gender	Woman	384 (92.5%)32
	Man	(7.5%)5
	Non-Binary	(1.2%)
Designation	Registered Nurse	414 (97.4%)8
	Nurse Practitioner	(1.9%)3
	Other	(0.7%)
Role	Bedside Nurse	378 (88.9%)21
	Nurse Educator	(4.9%)2
	Nurse Director	(0.5%)3
	Nurse Manager	(0.7%)7
	Nurse Practitioner	(1.6%)14
	Other	(3.3%)
Employed in critical care prior to pandemic	Yes	393 (92.5%)32
	No	(7.5%)
Province of Employment	Alberta	59 (13.9%)163
	British Columbia	(38.4%)46
	ManitobaMaritimes	(10.8%)19
	(NS, NB, PEI, NFLD)	(4.5%)115
	Ontario	(27%)13
	Quebec	(3.1%)10
	Saskatchewan	(2.4%)
Hospital	Urban	397 (93.4%)19
	Rural	(4.5%)9
	Other	(2.1%)
Type of Unit	ICU – Medical	42 (9.9%)315
	ICU – Mixed	(74.1%)23
	ICU – Surgical	(5.4%)35
	Stepdown / HAU	(8.2%)10
	Other	(2.4%)
Patient Population	Adult: 410 (96.5%)Mixed: 7 (1.6%)Pediatric: 8 (1.9%)	

Questionnaire (IES – R, DASS − 22, PROQoL, and intent to Turnover) results

The IES – R responses demonstrated high levels of PTSD symptoms at the time of completion (Fig. 1). Overall, 74.4% of nurses were above the cut off for clinical concern for PTSD symptoms at the time of survey. While this represents high symptom burden at the time of survey, it is not diagnostic of PTSD, but provides a snapshot in time as to the experiences of CCNs. On the DASS – 21, the majority reported depression (69.6%), anxiety (56.9%), and stress (60.7%) symptoms at the time of survey (Fig. 2). Responses on the PROQoL indicated that 100% of nurses surveyed were suffering from moderate to high burnout, and 87.1% had signs of secondary traumatic stress at the time of the survey (Fig. 3). Despite the high levels of burnout, the majority of participants (96.5%) also reported moderate levels of compassion satisfaction. Responses on the intent to turnover questionnaire indicated that 44% of nurses surveyed were thinking of quitting, 38.1% would like to work for different organization, 49.4% would like to look for a new job in the future, 23.3% already actively searching for a new job and 22.4% indicated they intend to quit (Table 2). Statistical analysis was performed using SPSS, however no significant differences in the subgroup analysis examining the difference between provinces, age groups, and years of experience for each of the IES-R, DASS – 21, PROQoL, and Intent to Turnover was found. The variables were compared using pearson's coefficient for correlations and chi-squares. Due to the sample size further analysis was not possible.

Qualitative results

Comments were submitted by 147 (34.5%) CCNs. These ranged from 1 to 2 sentences to long detailed paragraphs. The comments depicted an immense mental health toll on CCNs that stemmed from 1) failed leadership and 2) the traumatic nature of the work environment, that led to 3) a sense of disillusionment, defeat, and an intent to leave.

Failed leadership impacting mental health

The CCNs described feeling taken for granted by leadership. They reported being unacknowledged, unsupported, and disrespected by all levels of leadership including the federal and provincial governments, their health authorities, and hospitals. One nurse shared, "more than the pandemic, it is the mismanagement by the "leaders" that left us nurses feel[ing] burn[t] out and devalued" (participant 317, Ontario). Being redeployed to unfamiliar areas and forced to work different schedules with no choice, with the added expectation to work extensive overtime, left some unable to look after their children or ailing family members. One participant commented:

> "*Mandatory redeployment causes further pandemic burdens by indiscriminately moving female nurses throughout their health authority. Women are already disproportionately impacted by the pandemic and then have to worry about mandatory redeployment further increasing stress/burdens as caregivers-both personally and professionally*" (participant 127, British Columbia).

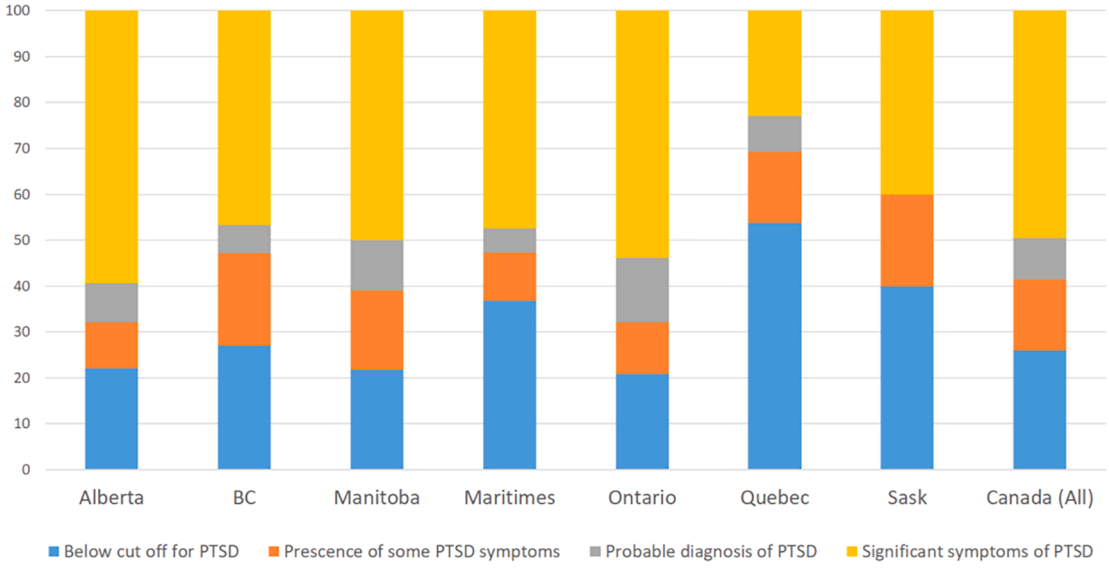

Fig. 1. Impact of Event Scale Provincial Comparison.

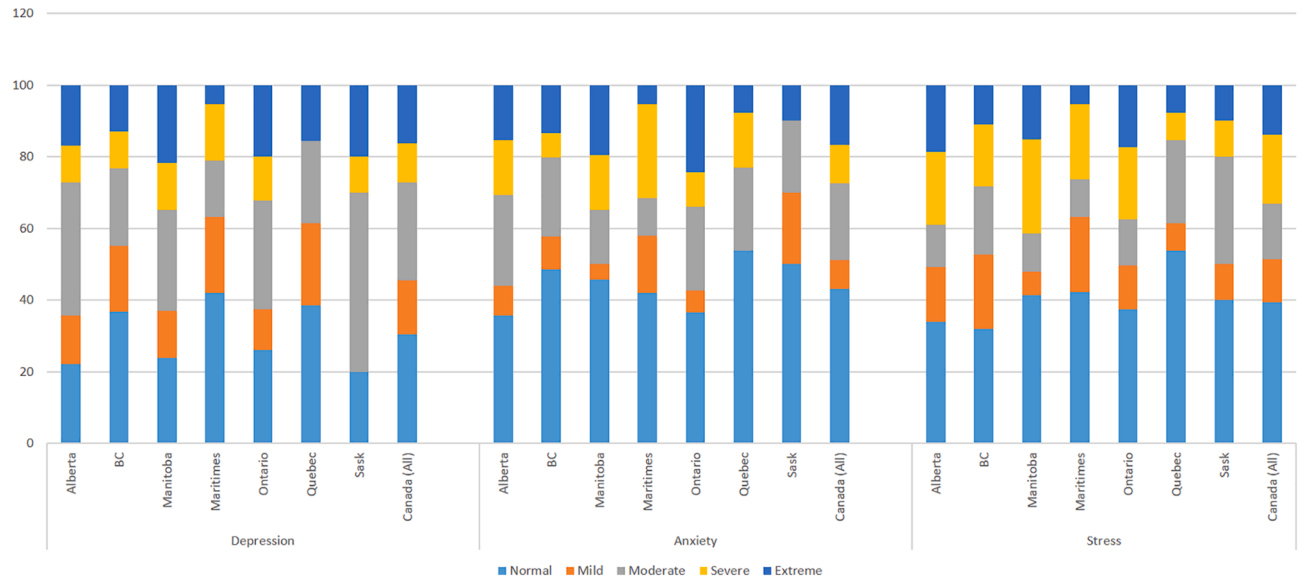

Fig. 2. DASS – 21 Provincial Comparison.

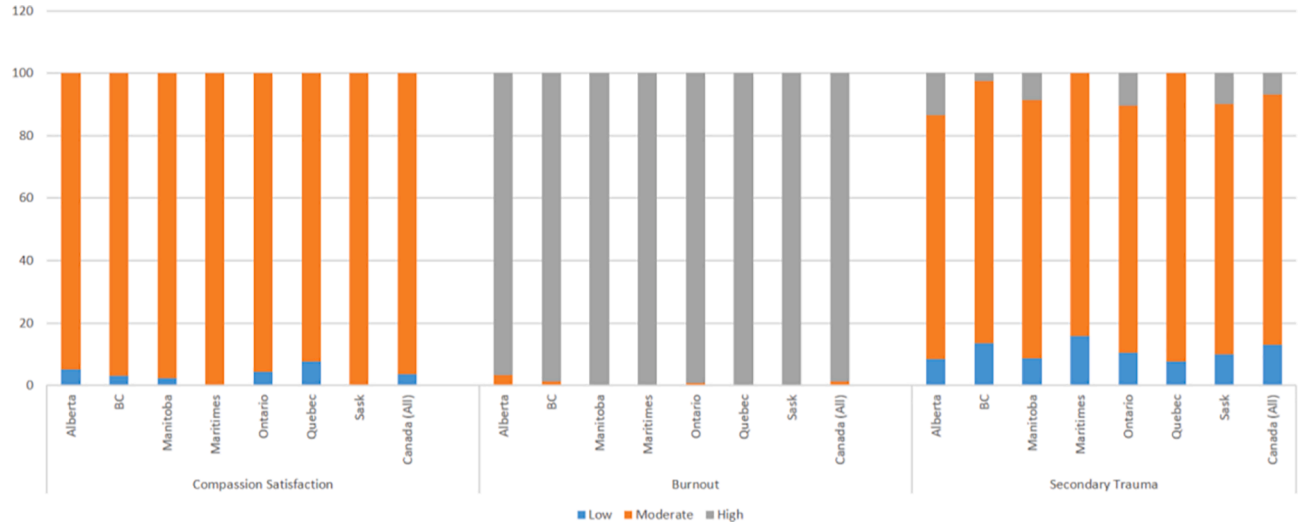

Fig. 3. PROQoL Provincial Comparison.

The CCNs indicated they were constantly working short staffed with higher nurse-patient ratios than is normal or safe, leaving them struggling to provide the high-quality care they were proud to deliver pre-pandemic.

The CCNs described those in leadership as failing to respect their contributions and the specialized skills and expertise required to work not only in critical care, but in the untenable COVID-19 ICU context. At best, the nurses were "barely able to keep up," and at worst, they felt disposable, "trashed and abused" by various levels of leadership. The negative impact of this perceived failure of leaderships on the nurse's mental health was exemplified the comment:

> "*They [leadership] have proven they think nurses are not expendable and our work isn't valued by replacing us with warm bodies and not allowing us to take jobs elsewhere… Don't preach mental health awareness if you aren't going to practice. If there's people with critical care experience and they want to leave you should ask yourselves why. The whole system is broken. And now there's hundreds of critical care nurses that are broken too.*" (participant 30, British Columbia).

Recognizing the demands and mental health effects on bedside staff, some CCNs in management positions described being wholly unable to adequately support staff. Inadequate compensation was considered by many CCNs

> "*as not valuing the entire profession*" (participant 221, Ontario).

Many reported their frustrations with government unwillingness to negotiate with them for fair, equitable pay, threats of wage cutbacks, and having to work alongside physicians who were being compensated at much higher rates for doing nursing work.

The traumatic nature of the work environment impacting mental health

Numerous CCNs described traumatic experiences that were consequences of caring for critically ill individuals during the pandemic. This included caring for a never-ending onslaught of "patient after patient getting sicker and sicker" and the momentous task of balancing facts with hope, as described by one nurse:

Table 2
Intent to Turnover.

Intent to Turnover	Total Sample N = 425 (%)
All things considered, I would like to find a comparable job in a different organization.	
Strongly Disagree	69 (16.2%)
Disagree	82 (19.3%)
Neutral	135 (31.8%)
Agree	92 (21.6%)
Strongly Agree	47 (11.1 %)
I am thinking of quitting.	
Strongly Disagree	54 (12.7%)
Disagree	88 (20.7%)
Neutral	96 (22.6%)
Agree	119 (28%)
Strongly Agree	68 (16%)
It is likely that I will actively look for a different organization to work for in the next year.	
Strongly Disagree	86 (20.2%)
Disagree	82 (19.3%)
Neutral	95 (22.4%)
Agree	104 (24.5%)
Strongly Agree	58 (13.6%)
The results of my search for a new job are encouraging.	
Strongly Disagree	46 (10.8%)
Disagree	84 (19.8%)
Neutral	230 (54.1%)
Agree	52 (12.2%)
Strongly Agree	13 (3.1%)
I will probably look for a new job in the near future.	
Strongly Disagree	56 (13.2%)
Disagree	62 (14.6%)
Neutral	97 (22.8%)
Agree	141 (33.2%)
Strongly Agree	69 (16.2%)
At the present time, I am actively searching for a job in another organization.	
Strongly Disagree	128 (30.1%)
Disagree	111 (26.1%)
Neutral	87 (20.5%)
Agree	57 (13.4%)
Strongly Agree	42 (9.9%)
I intend to quit.	
Strongly Disagree	112 (26.3%)
Disagree	90 (21.2%)
Neutral	128 (30.1%)
Agree	56 (13.2%)
Strongly Agree	39 (9.2%)

> "*It's difficult to look a sick, lonely, scared person in the eye, discussing intubation when I know … that there is a high chance this will be the last time they are awake FaceTiming their loved ones* (participant 233, Alberta).

Caring for dying COVID patients under restricted visitation policies, wherein CCNs helped families say their last goodbyes and watch their loved one pass away, was characterized as traumatic by several respondents, including one CCN who explained:

> "*When patients passed away in the COVID ICU, families were not allowed in … we had to set up a zoom meeting for families to watch their loved one die. This was VERY traumatic. Imagine being a mother having to watch your child die on zoom? Or a child watching your parent die on zoom? … A lot of spirits were broken for nurses working in this pandemic"* (participant 381, Manitoba).

In reflecting on death and dying, the perceived limited number of critically ill patients with SARS-CoV-2 who recovered and the futility of their care robbed the nurses of hope and left them feeling deflated and unable to care.

Despite their efforts to uphold patient- and family-centred care under less-than-ideal circumstances, the CCNs also reported profoundly destabilizing experiences as a result of negative interactions with patients and family members alike. One nurse stated:

> "*I'm tired, patients [sic] and families take out their frustration at nurses, and we are yelled at, even though we are doing everything we can to protect them*" (participant 154, Ontario).

These traumatic experiences were exacerbated by feeling profound disappointment and disconnect from some members of the public who refused to follow public health guidelines.

A sense of disillusionment, defeat, and an intent to leave

Many of the CCNs expressed their angst over losing their love for the nursing profession. The mental health toll was beyond any they had previously experienced, with disillusionment and defeat evident in comments such as this:

> "*In all my years of work, I have never so viscerally understood the depths of despair and feelings of worthlessness can be. I have not contemplated suicide, BUT I now understand how someone can feel that way. This past year has shattered me in ways I never thought possible. I hope, someday I can be myself again*" (participant 46, British Columbia).

The CCNs commonly described feeling "*hopeless and overwhelmed*" by being stuck in their current job and as a nurse, due to family obligations and their perception of no alternative career options. Others freely admitted to wishing but being unable to make a career change, as exemplified by one nurse's comments that,

> "*because I have a mortgage and kids to take care of… I regret becoming a nurse and am now trapped in a job that is soul sucking in order to continue to provide for my family*" (participant 307, British Columbia).

Several CCNs nearing retirement expressed relief that they would no longer be working as a nurse. Others indicated that the mental health toll was simply too much and, feeling utterly defeated, they intended to leave their current job or nursing for good.

> *"I have loved being a critical nurse and was grateful to have a job which I enjoyed … Now I am exhausted, mentally and physically drained. I don't know how much more I have in me to give.*" (participant 343, Manitoba).

Discussion

The demands of the COVID-19 pandemic have continued to take a toll on the mental wellbeing of healthcare providers (AlAteeq et al., 2020; Alharbi et al., 2020; Azoulay et al., 2020; Gomez et al., 2020; Greenberg et al., 2021; Havaei et al., 2021a; Havaei et al., 2021b; Shaukat et al., 2020; Vizheh et al., 2020; Wahlster et al., 2021). Our study aligns with the growing evidence of the tremendous negative mental health impact of the pandemic on CCNs. We highlighted the acute distress that is being experienced by some CCNs in terms of symptoms of PTSD, depression, anxiety, stress and burnout. Contributing to this negative symptomology, we described their perspectives and experiences of failed leadership and the traumatic nature of the work environment, which led further to a sense of disillusionment, defeat, and an intent to leave their employment and the nursing profession.

The survey findings of this study confirm the negative mental health impact the pandemic is having on many CCNs. Prior to the pandemic, reported nursing PTSD rates ranged from 9% to 20%. Recent data from the COVID-19 pandemic reports nursing PTSD rates ranging from 49% to 73% (Crowe et al., 2021; Carmassi et al., 2020; Schuster and Dwyer, 2020). Our study was consistent with these findings as well as research findings focused more broadly on healthcare providers. The results also mirrored the results of first study that reported symptoms of PTSD in 74% of participants from a single Canadian site (Crowe et al., 2021). Depression and anxiety rates among healthcare providers during the

current crisis have been found to range from 23% to 71% (AlAteeq et al., 2020; Crowe et al., 2021; Havaei et al., 2021a; Havaei et al., 2021b; Shaukat et al, 2020; Vizheh et al., 2020; Wahlster et al., 2021). Our first study reported similar rates of depression, anxiety and stress symptoms (Crowe et al., 2021). Similar validation has been found in prior studies examining professional quality of life. Pre-pandemic researchers have found a moderate to high degree of burnout and stress that impacted healthcare providers and CCNs' ability to provide care (Sacco et al., 2015; Austin et al., 2017; Mohammadi et al., 2017; Monroe et al., 2020). While our study reports higher episodes of burnout and secondary trauma symptoms than some other recent studies, the results are not unexpected when considering the work of CCNs in caring for COVID-19 patients (Inocian et al., 2021; Jiang et al., 2021). It is highly likely that the cumulative mental health toll influenced the CCNs intent to turnover. Prior to the pandemic, nursing turnover rates were approximately 8% and theses are expected to climb post-pandemic (Nashwan et al., 2021; Raso et al., 2021; Sheppard et al., 2022). Raso et al. (2021) estimated post-pandemic turnover rates to reach 10%, whereas Sheppard et al. (2021) estimated 13% or higher; 22.4% of the CCNs in our study indicated their intent to turnover. Given the relatively small sample size and self-report nature of the study, there are limits to the generalizability of study findings.

Our qualitative findings provide insight into the profound impact the COVID-19 pandemic has had on CCNs individually, as member of a team, and on their lives outside of work. Other studies have reported the impact on different groups such as critical care leaders, individual experiences and healthcare providers in general (Cengiz et al., 2021; Gonzalez-Gil et al., 2021; Hayes and Cocchi, 2022; Thusini, 2020). This study differs from most to date, in that it offers a glimpse into the struggles of frontline CCNs with vivid descriptions of what it has been like for those working in critical care throughout the pandemic. While there were some positive remarks made by nurses (for example about team work), the vast majority of open-ended responses were reflective of struggles and negatives experiences.

Overall the findings of this study paint a bleak picture from the perspective of many Canadian CCNs. Not only have they experienced high levels of burnout, depression, anxiety and stress which has a profound impact on their health and wellbeing, but more than 20% want to leave their positions. This has the potential to cripple the Canadian health system. It follows then, that a solutions oriented approach to future research and interventions be prioritized by Canadian CCN leadership and likely internationally, to address not only a current nursing shortage in Canada, but to mitigate the imminent risk of a CCN shortage worldwide.

Strengths and limitations

Strengths of this study lie in the national representation of participants and, while it was anticipated to be a survey-based study, the abundance of participant comments that allowed a richer and deeper understanding of CCNs' experiences. Study limitations included the smaller size (425) compared to the approximately 21,000 CCNs Canada wide (Canadian Nurses Association, 2021). This sample size, however, is comparable to previous published surveys conducted through the CACCN (Edwards et al., 2012; Rose et al., 2012).This was rather surprising considering that we were requesting CCNs to complete a survey at a time during the pandemic when they were experiencing tremendous strain. Further, CCNs self-selected to participate thus likely contributing to a selection bias. It is possible that our participants represent individuals motivated to respond because they were experiencing mental health challenges and appreciated the opportunity to contribute their perspectives. This was also evident in the high response rate to the open-ended question, which might further represent the intensity of the participants' thoughts and emotions related to the questionnaires as well as the importance participants attached to qualifying, contextualizing, and even expanding upon their questionnaire responses. This high number of in-depth free text responses perhaps further represents participant's frustrations and the importance they attached to this research as one avenue for communicating the struggles they had endured.

Conclusion

The findings from this study, supported by literature, suggests that that mental health toll of the pandemic has been significant for CCNs.

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