RESEARCH PAPER

Describing the Mental Health State of Nurses in British Columbia: A Province-Wide Survey Study

Description de l'état de santé mentale des infirmières en Colombie-Britannique : une enquête à l'échelle provinciale

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Abstract

A cross-sectional province-wide survey study of 3,978 British Columbia (BC) nurses was conducted to explore the mental health state of the nursing workforce in BC. About one third of nurses reported depression and anxiety; about half reported symptoms of post-traumatic stress disorder and at least one third reported high levels of one or more dimensions of

burnout. Mental health problems were about 1.5 to 3 times more prevalent among BC nurses compared to their peers nationally. Improving nurses' mental health requires multi-factorial and multi-level efforts. Evidence-based and workplace-specific policies and interventions that better support nurses at risk are recommended.

Résumé

Une étude transversale à l'échelle de la province auprès de 3 978 infirmières a été menée pour explorer l'état de santé mentale de la main-d'œuvre infirmière en Colombie-Britannique. Environ un tiers des infirmières ont fait état de dépression et d'anxiété; environ la moitié d'entre elles ont signalé des symptômes de trouble de stress post-traumatique et au moins un tiers ont signalé des niveaux élevés d'un ou plusieurs aspects de l'épuisement professionnel. Les problèmes de santé mentale étaient d'environ 1,5 à 3 fois plus fréquents chez les infirmières de la Colombie-Britannique que chez leurs pairs à l'échelle nationale. L'amélioration de la santé mentale des infirmières exige des efforts multifactoriels et à plusieurs niveaux. On recommande la mise en place de politiques et d'interventions fondées sur les données probantes et propres aux milieux de travail pour mieux soutenir les infirmières à risque.

Introduction

Mental health problems are one of the leading causes of disability internationally, with about 11% of the world population – equivalent to 792 million people – estimated to have one or more mental health disorders (Ritchie and Roser 2018; WHO 2021). While employment is believed to positively impact mental health, a negative work environment with frequent exposure to risk factors plays a major role in compromising employees' mental health and well-being (Government of Canada 2016; WHO 2021). According to the World Health Organization (2021), employee depression and anxiety alone cost the global economy over one trillion USD in lost productivity each year. In Canada, every week, at least 500,000 employees are unable to work due to poor mental health (MHCC 2017), costing Canadian employers more than $6 billion due to increased absenteeism, increased turnover and lost productivity in 2011 (MHCC 2017).

Nurses and other frontline healthcare providers are exposed to many work-related risk factors, such as heavy workloads and workplace violence, and subsequently are at a greater risk of mental health challenges (Aiken et al. 2013; Berrios et al. 2015; Brandford and Reed 2016; Poghosyan et al. 2010; Spector et al. 2014). Research shows that a disproportionately high percentage of the nursing workforce worldwide suffers from conditions such as depression, anxiety, post-traumatic stress disorder (PTSD) and burnout, and these conditions affect their ability to function well in the workplace and provide safe, quality patient care (CFNU 2017; Shahri et al. 2017; Shields and Wilkins 2006; Tung et al. 2018). Furthermore, poor mental health has been linked to increased nurse absenteeism (Davey et al. 2009) and turnover (Hayes et al. 2012; O'Brien-Pallas et al. 2010). Given an alarming shortage of professional nurses worldwide (WHO 2020) and in Canada (Murphy et al. 2012), studying

the mental health of the nursing workforce is an urgent undertaking. The purpose of this study is to identify the prevalence of mental health problems among the nursing workforce in British Columbia (BC), Canada.

Literature Review

The World Health Organization (2018) defines mental health as "a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community." In research, mental health is often conceptualized as the absence or presence of mental health disorders such as depression, anxiety and PTSD. While anxiety (4%) and depression (3%) are two of the most prevalent mental health disorders worldwide (Ritchie and Roser 2018), some of the less common mental health disorders, such as PTSD (1%), are associated with a greater risk of severe consequences, such as suicide (Gradus 2018; Karam et al. 2014).

Each mental health disorder has its own unique characteristics. Depression is a mood disorder characterized by persistent feelings of sadness, hopelessness, and loss of interest for two weeks or more (Kroenke et al. 2001). Anxiety refers to persistent, excessive and unnecessary worry about a variety of events or activities (Spitzer et al. 2006). PTSD develops because of exposure to a traumatic event and is characterized by a triad of common symptomology consisting of hyper-arousal (e.g., impaired concentration, hypervigilance), avoidance of reminders of the event and re-experiencing the event through nightmares or flashbacks (Kerasiotis and Motta 2004).

In contrast with these mental health disorders, burnout is an occupational syndrome resulting from chronic workplace stress and is characterized by high levels of emotional exhaustion (EE), depersonalization (DP) and reduced personal accomplishment (PA) (Maslach et al. 2017). EE refers to feelings of emotional overextension and exhaustion; DP refers to feelings of detachment and indifference; and reduced PA refers to feelings of inadequacy in work performance (Maslach et al. 2017). A variety of approaches is used to detect and quantify burnout. Nurse researchers often quantify burnout through subscale cutoff scores, which are based on recommendations from an older version of the *Maslach Burnout Inventory Manual* (Adriaenssens et al. 2015; Maslach et al. 1996). A less common approach is Leiter and Maslach's burnout profile approach, which has been described as the most appropriate method of detecting burnout in the most recent version of the *Maslach Burnout Inventory Manual* (Maslach et al. 2017). This approach identifies five burnout profiles on a continuum ranging from burnout on the negative extreme to engagement on the positive extreme, with three intermediate profiles between the two extremes: disengaged, overextended and ineffective (Leiter and Maslach 2016). Overall, while the worldwide prevalence of burnout is unknown, a recent Gallup study of nearly 7,500 full-time employees estimated the rate of burnout to be about 28% in the US (Wigert 2020). However, due to a lack of consensus on a clear-cut metric for measuring burnout, any estimate of prevalence has limited utility. Whatever the prevalence of burnout may be, reducing it is a worthwhile idea.

When compared to the general working population, the nursing workforce is at a greater risk of developing mental health problems due to work-related risk factors (Aiken et al. 2013; Berrios et al. 2015; Havaei and MacPhee 2020a, 2020b; Havaei et al. 2020; MacPhee et al. 2017; Poghosyan et al. 2010; Spector et al. 2014; WHO 2021). International reviews estimated that 34% of nursing students aged 17 to 28 years suffered from depression (Tung et al. 2018). A study by Shahri et al. (2017) estimated that 22% of Iranian nurses suffered from depression. The prevalence of depression and anxiety among Australian nurses has been reported at 32% and 41%, respectively (Maharaj et al. 2018). The prevalence of PTSD is estimated at 14% among the general nursing population, ranging from 24% to 29% among intensive care unit nurses (Mealer et al. 2007) and from 9% to 10% among mental health nurses (Jacobowitz 2013). For burnout, a seminal study conducted in six countries found that this phenomenon was least prevalent among German nurses and most prevalent among Japanese nurses (Poghosyan et al. 2010). More recently, a European study of nurse burnout conducted in 12 countries found that 27% of European nurses experienced high EE, 10% experienced high DP and 17% experienced low PA (Dall'Ora et al. 2015). A systematic review of burnout studies among emergency nurses between 1989 and 2014 estimated the prevalence of nurse burnout as 26% (Adriaenssens et al. 2015). These studies used subscale cutoff scores to measure burnout.

Mental health problems are particularly prevalent among Canadian nurses. In Canada, a 2005 national survey found that one in every five Canadian nurses had difficulties managing their work due to mental health problems, and one in every 10 Canadian nurses suffered from depression – about twice the national average for working women (CFNU 2017; Shields and Wilkins 2006). Canadian nurses also have higher rates of PTSD symptoms, ranging from 30% to 40% (CFNU 2017) – three to four times higher than the national average (Ameringen et al. 2008). In a study conducted in six countries, Canadian nurses had one of the highest rates of burnout (Poghosyan et al. 2010).

Given the strong correlation between mental health disorders and nurse absenteeism (Davey et al. 2009) and increased turnover (Hayes et al. 2012; O'Brien-Pallas et al. 2010), and in light of the forecasted nation-wide shortage of nurses (Murphy et al. 2012), it is important to evaluate the state of nurses' mental health in BC.

Method

This was a province-wide study of BC nurses using a cross-sectional descriptive design. An overwhelming majority of BC nurses are unionized (over 90%), and all unionized nurses (N = 48,000) were invited to participate in a survey study, advertised on multiple platforms, between October and December 2019. An e-mail invitation containing the survey link was distributed by the provincial union among nurse members. Several strategies including weekly e-mail reminders, a raffle draw and a two-month data collection interval were used to increase response rate. Overall, 5,512 surveys were returned, reflecting an estimated response rate of 12%. A precise response rate was difficult to determine due to the nature of the

union's database and the uncertainty around whether or not the e-mail invitations reached members. For this study, only actively working nurses with complete mental health data were included, yielding a sample size of 3,978. Ethics approval was obtained from the University of British Columbia's Behavioural Research Ethics Board (H18-02724).

Measures

Depression was measured with the Patient Health Questionnaire (PHQ-9), which comprises nine items rated on a four-point scale ranging from 0 (not at all) to 3 (nearly every day) (Kroenke et al. 2010). The PHQ-9 asks respondents to report the frequency of experiencing symptoms meeting the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (*DSM-IV*) diagnostic criteria for depression, such as loss of energy and suicidal thoughts over the past two weeks (American Psychiatric Association 2000). Previous research has established the sensitivity and specificity of the PHQ-9 and identified the following cutoff sum scores: 0–4: none; 5–9: mild; 10–14: moderate; 15–19: moderately severe; and 20–27: severe depression (Kroenke et al. 2010). An exploratory factor analysis (EFA) using varimax rotation among the study sample showed a unidimensional factor structure explaining 51.1% of the variance (loadings: 0.50–0.82). Internal consistency was excellent ($\alpha = 0.93$).

Anxiety was measured with the General Anxiety Disorder Scale (GAD-7), which consists of seven items rated on a four-point scale ranging from 0 (not at all) to 3 (nearly every day) (Spitzer et al. 2006). The GAD-7 asks respondents to report the frequency of experiencing symptoms meeting the *DSM-IV* diagnostic criteria for anxiety, such as feeling afraid as if something awful might happen or being so restless that it is hard to sit still, over the past two weeks. Previous research has established the sensitivity and specificity of the GAD-7 and identified the following cutoff sum scores:0–4: none; 5–9: mild; 10–14: moderate; and 15–21: severe anxiety (Kroenke et al. 2010; Spitzer et al. 2006). An EFA using varimax rotation among the study sample showed a unidimensional factor structure explaining 64.6 % of the variance (loadings: 0.70–0.91). Internal consistency was excellent ($\alpha = 0.90$).

PTSD was measured with the Post-Traumatic Stress Syndrome-14 Questions Inventory (PTSS-14), which comprises 14 items rated on a seven-point scale ranging from 1 (never) to 7 (always) (Twigg et al. 2008). The PTSS-14 asks respondents to report the frequency of experiencing symptoms from the *DSM-IV* diagnostic criteria of PTSD, such as jumpiness, flashbacks or nightmares (Twigg et al. 2008). Previous research has established the sensitivity and specificity of the PTSS-14 and identified the following cutoff scores: sum scores of 14 to 45 representing no to mild PTSD and 46 to 98 representing PTSD (Twigg et al. 2008). An EFA using varimax rotation (forced) confirmed a unidimensional factor structure accounting for 49% of the variance (loadings: 0.56–0.77). Internal consistency was excellent ($\alpha = 0.93$).

Burnout was measured by the 22-item Maslach Burnout Inventory–Human Services Survey (MBI-HSS), which comprises three subscales: EE (nine items, e.g., "I feel like I'm at the end of my rope"), DP (five items, e.g., "I don't really care what happens to my recipients") and PA (eight items, e.g., "I deal very effectively with the problems of my recipients"). Items

were rated on a seven-point Likert scale ranging from 0 (never) to 6 (every day). An EFA using varimax rotation showed a three-factor structure explaining 48.9% of the variance (loadings = 0.38–0.85). The measure demonstrated excellent subscale and total scale internal consistencies (subscale α= 0.77–0.92; scale α = 0.83).

Two approaches were used to examine burnout: (1) subscale cutoff scores to categorize respondents into low, moderate and high levels; and (2) latent profile analysis (LPA) to identify respondents by profiles. Previously established cutoff scores were used for each subscale: EE: scores 0–16 representing low, 17–26 representing moderate and 27–54 representing high levels; DP: scores 0–6 representing low, 7–12 representing moderate and 13–30 representing high levels; PA: scores 0–31 representing low, 32–38 representing moderate and 39–48 representing high levels levels (Maslach et al. 1996; Schaufeli and Van Dierendonck 1995). Similar to previous research and for the purpose of benchmarking, high scores on EE and DP or high scores on EE and low scores on PA were used as reflective of burnout (Mind Garden 2019). In addition, we used person-centred analysis to replicate the five burnout profiles found by Leiter and Maslach (2016). High burnout was characterized by high EE, high DP and low PA; high DP reflected a disengaged profile; high EE was reflective of an overextended profile; low PA reflected an ineffective profile; and engagement was characterized by low EE, low DP and high PA (Leiter and Maslach 2016).

Analysis

Descriptive statistics such as frequencies, proportions, means and standard deviations were used to analyze the data using the Statistical Package for Social Sciences for Windows 25.0 (SPSS Inc., Chicago, IL, US). A Sankey flow diagram was created to display the proportion of nurses with a combination of various levels of burnout, as identified by the cutoff scores, using SankeyMATIC (http://sankeymatic.com/). The diagram enabled benchmarking our results against studies that have used other ways of scoring burnout. In addition, a series of LPAs using Mplus8 (Muthen and Muthen 2012) evaluated models with various numbers of profiles. Using an interactive process, LPA results provide several indicators of model fit, which together can inform decisions on selecting the number of profiles to pursue. The indicators include the Akaike information criterion (AIC), the Bayesian information criterion (BIC) and the Lo-Mendell-Rubin adjusted likelihood ratio (LMR). For AIC and BIC, smaller values indicate a better fit (Williams and Kibowski 2016); for Lo-Mendell and the bootstrapped likelihood ratio test, a significant value indicates a better fit than that provided by a model with one less profile (e.g., five versus four profiles) (Nylund et al. 2007). Entropy indicates the probability of accurate assignment of cases to a profile. In addition to evaluating these indicators of model fit, it is important to also examine the extent to which the resulting profiles are consistent with theoretical underpinnings of the phenomenon of interest.

Results

The sample demographics are shown in Table 1, available online at longwoods.com/

content/26500. An overwhelming majority of the participants was female (91%) and registered nurses (78%) and held a direct patient care role (90%). Most participants were between 25 to 44 years of age (60%, M = 40.3, SD= 11.6) with 10 or fewer years of nursing experience (52%) and an undergraduate degree (49%). Moreover, most participants worked full time (63%) in an urban (62%) acute care setting (74%).

Table 2 shows descriptive statistics on the four mental health variables. About 31% of the participants met the criteria for moderate-to-severe depression (M = 7.6, SD = 5.9). Almost 29% met the criteria for moderate-to-severe anxiety (M = 7.1, SD = 5.5). Almost 49% of the sample met the cutoff point indicating substantial symptoms of PTSD (M = 45.0, SD = 18.2). According to burnout cutoff scores, about 56% of the respondents had high EE (M = 28.4, SD = 12.9), 31% had high DP (M = 9.2, SD = 6.9) and 32% had low PA (M = 34.3, SD = 7.9). As shown in the Sankey flow diagram, 35% (N = 1,400) had at least "high scores on EE and DP" or "high scores on EE and low scores on PA" (Figure 1).

FIGURE 1. A Sankey flow diagram for a combination of various levels of burnout subscales

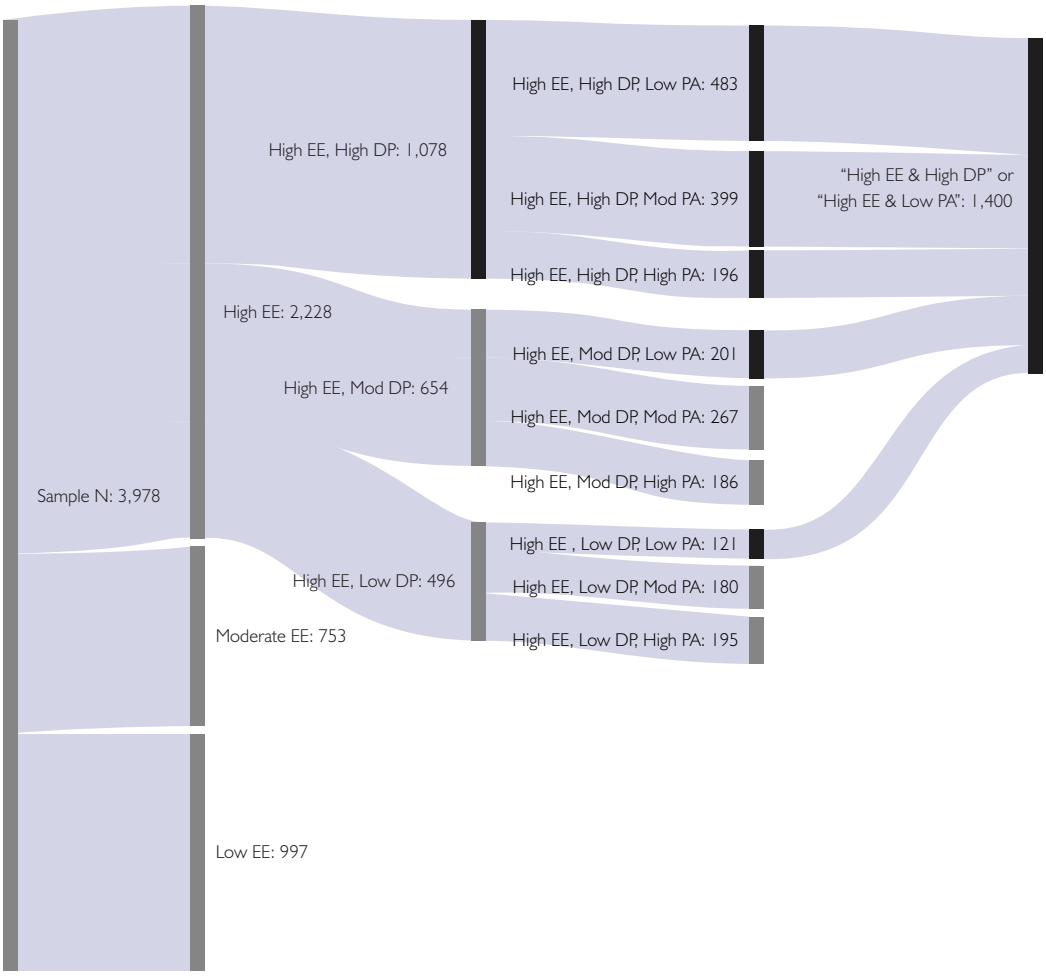

TABLE 2. Descriptive statistics for mental health indicators (N = 3,978)

Mental health indicators	*N*	Percentage	*M*	*SD*	Range
Depression (PHQ-9)			7.6	5.9	0-27
No depression	1,497	37.6			
Mild depression	1,228	30.9			
Moderate depression	674	16.9			
Moderately severe depression	387	9.7			
Severe depression	192	4.8			
Anxiety (GAD-7)			7.1	5.5	0-21
No anxiety	1,470	37.0			
Mild anxiety	1,368	34.4			
Moderate anxiety	650	16.3			
Severe anxiety	490	12.3			
PTSD (PTSS-14)			45.0	18.2	14-98
Under cutoff	2,050	51.5			
Meets or exceeds cutoff	1,928	48.5			
Emotional exhaustion (MBI-HHS)			28.4	12.9	0-54
Low EE	997	25.1			
Moderate EE	753	18.9			
High EE	2,228	56.0			
Depersonalization (MBI-HHS)			9.2	6.9	0-30
Low DP	1,702	42.8			
Moderate DP	1,056	26.5			
High DP	1,220	30.7			
Personal accomplishment (MBI-HHS)			34.3	7.9	0-48
Low PA	1,274	32.0			
Moderate PA	1,380	34.7			
High PA	1,324	33.3			

Table 3 summarizes the results of the LPAs for four to seven profiles. AIC and BIC values decreased with additional profiles. Bootstrapped likelihood ratio test maintained the same level of significance across all four analyses. LMR was significant from five to seven profiles. Entropy was acceptable at four or five profiles and decreased at six and seven profiles. The model with five profiles was selected because it aligned with the results of Leiter and Maslach (2016), and it had a significant LMR and the highest level of entropy, and the smallest profile was at 3%.

The burnout profile had the most negative combination of subscale means, having the highest EE, the highest DP and low PA scores accounting for 9% of the respondents (Table 4); the engaged profile had the most positive combination with low EE, the lowest DP and the highest PA scores relative to the entire sample (35%). Three intermediate profiles were

also replicated: the disengaged profile was characterized by higher DP and EE and moderate scores on PA (24%); the overextended profile had moderate scores on EE, DP and PA (30%); and the ineffective profile had the lowest EE, low DP and the lowest PA scores (3%).

TABLE 3. The LPA fit indices for various models of burnout profile ($N = 3,978$)

Model	AIC	SSA-BIC	LMR *p*	BLRT *p*	Entropy	Smallest profile *N*
Four	35,971.55	36,027.55	0.220	0.001	0.78	138 (3%)
Five	35,691.21	35,759.66	0.018	0.001	0.78	105 (3%)
Six	35,505.97	35,586.85	0.001	0.001	0.75	121 (2%)
Seven	35,438.50	35,531.83	0.001	0.001	0.73	114 (1%)

N = 235
AIC = Akaike Information Criterion; BLRT = Bootstrapped Likelihood Ratio Test; LMR = Lo-Mendell-Rubin adjusted Likelihood Ratio; SSA-BIC = sample size adjusted Bayesian information criterion.

TABLE 4. The descriptive statistics for the five-profile model of burnout ($N = 3,978$)

	Standardized mean scores				
	Burnout	Disengaged	Overextended	Ineffective	Engaged
Exhaustion	1.25	0.67	0.17	-1.34	-0.84
Depersonalization	2.03	0.88	-0.12	-0.89	-0.96
Accomplishment	-0.58	-0.24	-0.05	-2.39	0.54
N of participants	345	971	1,184	105	1,373
Percent of sample	9%	24%	30%	3%	35%

Discussion

The findings raised concerns about BC nurses' mental health. About one third of nurses in our sample showed signs of depression and anxiety; about half met the criteria for PTSD. According to burnout cutoff scores, about 35% of nurses in this study met the criteria for clinical burnout, and based on the profile approach, about two third reported problems with one or more dimensions of burnout. These findings suggested a higher prevalence of mental health problems among this sample of BC nurses compared to their national and international peers. Specifically, depression, PTSD, and burnout were found to be about 1.5 to 3 times more prevalent among the study sample compared to the national nursing workforce (CFNU 2017; Poghosyan et al. 2010; Shields and Wilkins 2006). Our data also pointed to a worsening trend in BC nurses' mental health across a five-year span (MacPhee et al. 2015). Moreover, this study suggested that compared to the general nursing workforce both nationally and internationally, BC nurses are in a poorer state of mental health (Gradus 2018; Karam et al. 2014; Ritchie and Roser 2018). Given the study results, we are concerned about the health and well-being of BC nurses and their ability to effectively care for those in need of their services.

Workplace risk factors

Workplace risk factors are an important predictor of nurses' mental health problems. As such, in 2013, the Mental Health Commission of Canada created a national standard for "Psychological Health and Safety in the Workplace (the Standard)" that includes 13 workplace risk factors associated with compromised employee mental health and safety (MHCC 2013). In 2016, the BC Nurses Union became the first and only Canadian union to negotiate the Standard into its collective agreement with the BC government, requiring the health authorities to implement the Standard (BCNU 2020). The implementation of the Standard should begin with an assessment of nurses' workplace risk factors as identified in the Standard (MHCC 2013). Finally, in 2019, we obtained province-wide data to evaluate the conditions of nurses' workplaces (Havaei et al. 2021). To date, our preliminary findings have determined that over half of acute care nurses are concerned about 9 of the 13 workplace risk factors (Havaei et al. 2021). Most importantly, about 70% of participants perceived poor psychological protection and ineffective workload management as serious or significant concerns to their mental health and safety (blinded). The former is characterized by unreasonable amounts of work or inadequate resources and the latter refers to the prevention and management of workplace violence or other psychologically harmful incidents (Guarding Minds at Work 2020).

Although work is under way to gain a better understanding of specific workplace risk factors most predictive of nurses' mental health problems, our previous results are consistent with a plethora of previous research and point to serious shortcomings in nurses' work environments and associated mental health implications (Havaei et al. 2021). Workplace interventions and policies should be used as risk mitigation strategies or preventative measures (Guarding Minds at Work 2020). As such, there is an urgent need for the negotiated implementation of the Standard across all BC health authorities. To do that, the first step would be an evaluation of nursing workplace risk factors. We advocate for policies mandating routine evaluation of nurses' workplaces using a systematic, transparent and collaborative approach involving researchers, policy makers, employers, unions and, most importantly, practitioners. Until those policies are in place, nurse managers and leaders can proactively assess and modify workplace conditions that negatively impact the mental health and well-being of their nursing staff.

Similarly, we recommend routine but confidential assessment of nurses' mental health, not only for benchmarking purposes but also for designing workplace-specific policies and interventions. For example, while workplaces with a dominant overextended nurse profile should focus on more effective workload management, workplaces with a dominant ineffective profile should invest in organizational support and relationship building (Mind Garden 2019). The profile analysis found that only one third of nurses were in the engaged profile with work situations that inspired energy, involvement and efficacy. In contrast, the overextended, disengaged and burnout profiles together had 63% of nurses reporting very high levels of exhaustion, indicating unsustainable imbalances of demands over resources. These

situations call for nurse leaders and managers to find more effective ways of workload management in their work unit. The bottom line is that while improving mental health in the workplace requires a multi-factorial and multi-level approach (WHO 2021), a good step forward would be data-driven policies and practices focused on cultivating healthy nursing workplaces. This is especially important in the context of nursing care during a stressful and unprecedented pandemic.

Support our nurses

In addition to preventative measures, there needs to be support for nurses living with these mental health problems, especially in light of the COVID-19 pandemic. In BC, nurses have access to treatment programs such as the Employer and Family Assistance Program (EFAP), a confidential counselling service offered by the regional health authorities (Morneau Shepell 2013). Although EFAP is an effective mental health treatment program, access is limited to three to four visits for each mental health problem (Morneau Shepell 2013). Health policies that enable more flexible access in an environment free of stigma would be beneficial to nursing professionals. In 2019, the BC government extended the presumptive legislation to include nurses and other public safety personnel, giving them more access to services and compensation for treating mental illnesses such as PTSD (BCNU 2019). While this is commendable progress, presumption should be extended to all work-related mental health problems, including burnout. Finally, given the concerning rates found in this study, there is an urgent need for a culture shift to better protect and promote the mental health and safety of nurses in the workplace, and we believe that healthcare managers and leaders can play an integral role in motivating this shift. We believe that without healthy nurses, patient care will suffer.

Limitations

This is the first province-wide study that established a baseline of mental health among nearly 4,000 nurses across the province. However, the study findings should be interpreted in light of its limitations. First, even though a high response rate does not ensure representation and vice versa (MacDonald et al. 2009), the generalizability of the findings is limited due to low response rate and potential non-response bias. A descriptive comparison of our sample with the provincial nursing workforce demonstrated less than 10% difference with respect to age, gender, professional designation and employment status (Appendix Table A1, available online at longwoodas.com/content/26500) (CIHI 2020). Despite this finding, we recommend cautiously generalizing the findings to other samples and contexts including non-union nurses. Furthermore, the prevalence of mental health problems was likely underestimated. Although all nurses, actively working or on disability leave (data not included here), were invited to participate in the study, it is possible that those most severely impacted by mental health problems did not respond. The resulting underestimation of prevalence was likely further compounded by the stigma associated with disclosing mental health problems. Future

research should use more sophisticated sampling and data collection methods to obtain a more accurate prevalence estimation.

Conclusion

Nearly one third of BC nurses in this study suffered from depression and anxiety, half from PTSD and at least one third from burnout. A comparative evaluation of our findings with previous nursing and non-nursing research evidence showed that the BC nursing workforce is one of the highest-risk populations in terms of mental health problems in Canada; this is not surprising, given the workplace risk factors they routinely encounter. While improving the mental health of the nursing workforce requires multi-factorial and multi-level efforts, a good step forward would be evidence-based and workplace-specific policies and interventions to prevent, mitigate and better support nurses at risk.

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