



Canadian emergency medicine physician burnout: a survey of Canadian emergency physicians during the second wave of the COVID-19 pandemic

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Abstract

Objectives A previous survey of Canadian emergency medicine (EM) physicians during the first wave of the COVID-19 pandemic documented less than 20% experienced high levels of burnout. This study examined the experience of a similar group of physicians during the second pandemic wave. We reported the associations between burnout and physician age, gender, having children at home and training route.

Methods This study utilized a national survey of Canadian emergency physicians. We collected data on demographics and measured burnout using the Maslach Burnout Inventory (MBI). Multiple logistic regression models identified associations between the emotional exhaustion and depersonalization domains of the MBI and EM physician demographics (age, gender, children living at home, and training route).

Results Between November 25, 2020, and February 4, 2021, 416 emergency physicians completed the survey, representing all Provinces or Territories in Canada (except Nunavut). The mean participant age was 44, 53% were male, 64% had children living at home and 41% were FRCPC and 41% CCFP-EM trained. Sixty percent reported high burnout (either high emotional exhaustion and/or high depersonalization). Increasing age was associated with lower emotional exhaustion and depersonalization; female or nonbinary gender was associated with an increase in emotional exhaustion; and having children living at home was associated with lower depersonalization.

Conclusions Most Canadian emergency physicians participating in our study during the COVID-19 pandemic reported high burnout levels. Younger physicians and female physicians were more likely than their coworkers to report high burnout levels. Hospitals should address emergency physician burnout during the pandemic because it is a threat to quality of patient care and retention of the workforce for the future.

Keywords Physician burnout · Wellness · COVID-19 pandemic

Résumé

Objectifs Une enquête précédente sur les médecins d'urgence canadiens pendant la première vague de la pandémie de COVID-19 a montré que moins de 20 % d'entre eux souffraient de niveaux élevés d'épuisement professionnel. Cette étude a examiné l'expérience d'un groupe similaire de médecins au cours de la deuxième vague et a rapporté les associations entre l'épuisement professionnel et l'âge du médecin, son sexe, le fait d'avoir des enfants à la maison et le parcours de formation.

Méthodes Cette étude s'est appuyée sur une enquête nationale auprès des médecins d'urgence canadiens. Nous avons recueilli des données démographiques et mesuré le burnout à l'aide du *Maslach Burnout Inventory* (MBI). De multiples modèles de régression logistique ont identifié des associations entre les domaines de l'épuisement émotionnel et de la dépersonnalisation

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du MBI et les données démographiques des médecins de la médecine d'urgence (âge, sexe, enfants vivant à la maison et parcours de formation).

Résultats Entre le 25 novembre 2020 et le 4 février 2021, 416 médecins urgentistes ont répondu au sondage, représentant toutes les provinces ou territoires du Canada (sauf le Nunavut). L'âge moyen des participants était de 44 ans, 53% étaient des hommes, 64% avaient des enfants vivant à la maison et 41% étaient formés FRCPC et 41% CMFC-MU. Soixante pour cent ont signalé un épuisement professionnel élevé (soit un épuisement émotionnel élevé et/ou une dépersonnalisation élevée). L'augmentation de l'âge était associée à une diminution de l'épuisement émotionnel et de la dépersonnalisation ; le sexe féminin ou non binaire était associé à une augmentation de l'épuisement émotionnel ; et le fait d'avoir des enfants vivant à la maison était associé à une diminution de la dépersonnalisation.

Conclusions La plupart des médecins urgentistes canadiens ayant participé à notre étude pendant la pandémie de COVID-19 ont signalé des niveaux élevés d'épuisement professionnel. Les médecins plus jeunes et les femmes médecins étaient plus susceptibles que leurs collègues de déclarer des niveaux élevés d'épuisement professionnel. Les hôpitaux doivent s'attaquer au problème de l'épuisement professionnel des médecins urgentistes pendant la pandémie, car il constitue une menace pour la qualité des soins aux patients et la rétention de la main-d'œuvre pour l'avenir.

Clinician capsule

What is known about the topic?

Many emergency physicians report psychological distress and burnout, with increased stressors during the COVID-19 pandemic.

What did this study ask?

How prevalent was burnout during the second wave of COVID, and what physician features were associated with it?

What did this study find?

60% reported burnout, which was higher among younger and female physicians. Living with children was protective.

Why does this study matter to clinicians?

Burnout leads to loss of workforce. The workforce of the future is at the highest risk of burnout.

experiencing burnout [2]. One possible explanation for this was that our first survey used an abbreviated form of the Maslach Burnout Inventory (MBI) which measured emotional exhaustion and depersonalization with one question each [5]. It is possible that the abbreviated MBI (which has not been extensively validated) may be less sensitive to high burnout levels than the full MBI.

The aim of this current survey was to report the associations between emergency physician characteristics (age, gender, living at home with their children and training route) and emergency physician burnout, as measured by the full MBI questionnaire, during the second COVID-19 pandemic wave.

Methods

In April and May 2020, we conducted a national survey of Canadian emergency physicians who were invited through email, social media and professional societies (Network of Canadian Emergency Researchers, Society of Rural Physicians of Canada, the Canadian Association of Emergency Physicians (CAEP), Association des médecins d'urgence du Québec and Association des spécialistes en médecine d'urgence du Québec) [4]. Individuals who participated in our previous study were invited on November 25th, 2020 to participate in a single confidential follow-up survey. Up to four additional survey reminders were sent to those who had not responded over the following two months. Additionally, we advertised for new participants through social media on Twitter (@EmergWell) and through the CAEP email blasts.

The survey consisted of the MBI Human Services Survey for Medical Personnel [6]. The MBI is a popular tool for measuring burnout and psychological distress, and has been shown to be valid and reliable in several populations [6]. The MBI for medical personnel consists of 22 statements to be rated by the participant using a frequency scale of

Introduction

The onset of the coronavirus disease 2019 (COVID-19) pandemic elevated concern for the safety and wellbeing of frontline clinicians. Burnout is a serious work-related syndrome involving emotional exhaustion and depersonalization which leads to workforce depletion, depression and suicide [1]. Canadian physician burnout has previously been associated with younger physician age [2, 3], training route [2] and gender [3].

In our Canada-wide survey during the first 10 weeks of the pandemic, emergency physicians expressed worry about the impact that COVID-19 would have on their work environment, lifestyle and well-being [4]. However, we found high levels of burnout in less than 20% of participants, which contrasted to a prepandemic Canadian emergency physician survey reporting over 80% of respondents

‘never’ to ‘every day’. The MBI does not produce a single ‘burnout’ score, rather it measures the frequency of burnout syndromes: emotional exhaustion, depersonalization and personal accomplishment. The survey was disseminated in both English and French.

The primary outcomes were high emotional exhaustion and depersonalization levels among participants (defined by emotional exhaustion score ≥ 27 or depersonalization score ≥ 10) because these domains are considered to measure the core symptoms of burnout [7]. Multivariable logistic regression models were developed to examine the relationship between the outcome variables and four independent variables identified a priori, based on previously published associations: age, gender (categories male, female/nonbinary gender, reference male), whether the physician had children living at home (reference no children living at home) and training route (categories FRCPC/ABEM, all additional training routes, reference all additional training routes). Analyses were performed using Stata version 13.1.

Results

Between November 25, 2020, and February 4, 2021, survey data were collected from 427 participants. The response rate among those who had participated in the previous survey [2] was 58% (271/468) and there were 156 participants new participants. Eleven surveys were incomplete with respect to the MBI (8 did not include any data, 3 were missing scores for several questions), resulting in 416 surveys with complete data to be included in the regression models. Respondent demographics can be viewed in Supplemental Appendix 1. We received a response from at least one participant in every province and territory in Canada, except Nunavut. The mean age was 44 years, there was an approximately even split of male and female genders (53 vs 47%) with one participant indicating nonbinary gender. Sixty-four percent had children living at home and 41% were FRCPC trained and 41% CCFP-EM trained.

In total, 41% of respondents had high emotional exhaustion and 53%, high depersonalization scores. Sixty percent of respondents had either high emotional exhaustion or high depersonalization scores. Results from the multivariable logistic regression models are displayed in Table 1. Of note, increasing age was associated with lower emotional exhaustion and depersonalization. Female or nonbinary gender was associated with high emotional exhaustion when compared to male gender. Having children living at home was associated with lower depersonalization. No association between training route and either emotional exhaustion or depersonalization was observed.

Table 1 Multivariable logistic regression analysis for emotional exhaustion and depersonalization domains

Emotional exhaustion	Odds ratio	95% CI
Age (years)	0.978	0.957–0.999
Female or nonbinary gender vs male gender	2.32	1.53–3.50
Children living at home vs no children at home	0.688	0.446–1.06
FRCPC/ABEM vs all other training routes	0.912	0.601–1.38
Constant	1.60	
Depersonalization		
Age (years)	0.951	0.931–0.971
Female or nonbinary gender vs male gender	0.825	0.543–1.25
Children living at home vs no children at home	0.472	0.304–0.731
FRCPC/ABEM vs all other training routes	0.808	0.533–1.23
Constant	20.9	

Discussion

Interpretation of findings

It has been two years since the first reported cases of COVID-19. The impact of the pandemic is beyond physical health. In the pandemic second wave Canadian emergency physician survey, we found that 60% of participants registered high burnout levels with either high emotional exhaustion or high depersonalization. Being an older physician was associated with less burnout. Physicians who live in the same home as their children had less burnout as measured by lower depersonalization. In contrast, being female or nonbinary gender was associated with more burnout as measured by high emotional exhaustion.

Comparison to previous studies

Our initial survey was conducted weekly during the first 10 weeks of the COVID-19 pandemic. We reported stable and low burnout levels in that survey. To reduce participant workload and loss to follow up, we used an abbreviated version of the MBI which consisted of only two questions. Participants were categorized as having high burnout levels if they indicate burnout symptoms occurred at least once a week [5]. The full MBI consists of nine emotional exhaustion and five depersonalization questions. The full MBI does not recommend cutoffs for high/low burnout, so in the current analysis we used the same definition of high burnout as applied to other physician surveys [2, 7, 8]. Of

note, this definition of high burnout is more liberal than that for the abbreviated MBI, which may explain why a greater proportion (60%) of respondents in the present survey fulfilled at least one criteria for burnout. Prepandemic, Lim et al. reported that more than 80% of Canadian emergency physician respondents fulfilled at least one criteria for high burnout using our current definition [2]. The difference might be attributable to differing spectrum bias between the studies (respondents being different from nonrespondents), preferential loss of burned out physicians from the workforce during the pandemic or other unknown factors.

Our findings concord with other investigators. The prepandemic emergency physician survey by Lim et al. [2], the 2018 CMA survey [3] and a recent Australian survey of over 10,000 physicians [9] identified older age as a protective factor in burnout. The CMA survey reported higher burnout rates among female physicians [3] and a US pandemic healthcare provider survey found that having children living at home was a protective factor for burnout [10]. We were unable to replicate prior findings [2] of differing burnout by training route.

Strengths and limitations

There were only 427 respondents in our survey. In 2016, CAEP estimated there were 6500 practicing Canadian emergency physicians. Nonresponders may have been more or less burned out and may have differed from participants in other attributes. However, participants worked in almost all regions of Canada, there was representation of all training routes, a large range of years of experience and a representative spread of shift patterns. There was only one participant reporting nonbinary gender, so we cannot draw conclusions regarding burnout among nonbinary physicians. The MBI is extensively studied, however, assuming burnout among participants scoring highly on either emotional exhaustion or depersonalization domains and dichotomizing the survey results into ‘high’ and ‘nonhigh’ burnout is an over-simplification.

Clinical implications

The data on the psychological impact of the COVID-19 pandemic among health care providers is growing. Emergency physicians were previously identified as having high burnout and Canadian emergency departments should monitor wellness, including burnout symptoms. However, given the rates, monitoring burnout is insufficient. With reports of mental health issues since the pandemic, we must invest in and protect physicians. Since burnout is associated with poor mental health, medical errors and loss of workforce [1], wellness resources and access to mental health care are

needed. Burnout is more likely among younger physicians and female physicians. These groups may warrant further attention with prevention and response approaches tailored to their particular needs. Peer support programs for younger physicians might harness similar strategies that more senior physicians have already put into place.

Research implications

We have reported associations between emergency physician demographics and frequency of burnout symptoms, however, additional work is required to determine causation and to measure the effect of targeted intervention.

Conclusion

Most Canadian emergency physicians participating in our study during the COVID-19 pandemic reported high burnout levels. Younger physicians and female physicians were more likely to report high burnout levels than their coworkers. Hospitals should address emergency physician burnout during the pandemic because it is a threat to quality of patient care and retention of the workforce for the future.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s43678-021-00259-9>.

Conflict of interest None to declare.

References

1. Dyrbye LN, Thomas MR, Massie FS, Power DV, Eacker A, Harper W, Durning S, Moutier C, Szydlo DW, Novotny PJ, Sloan JA, Shanafelt TD. Burnout and suicidal ideation among US medical students. *Ann Intern Med.* 2008;149:334–41.
2. Lim R, Aarsen KV, Gray S, Rang L, Fitzpatrick J, Fischer L. Emergency medicine physician burnout and wellness in Canada before COVID-19: a national survey. *CJEM.* 2020;22:603–7.
3. Canadian Medical Association. CMA National Physician Health Survey. 2018. <https://www.cma.ca/sites/default/files/2018-11/nph-survey-e.pdf>. Accessed Nov 2021.
4. de Wit K, Mercuri M, Wallner C, Clayton N, Archambault P, Ritchie K, Gérin-Lajoie C, Gray S, Schwartz L, Chan T. Canadian emergency physician psychological distress and burnout during the first 10 weeks of COVID-19: a mixed-methods study. *J Am Coll Emerg Phys Open.* 2020;1:1030–8.
5. West CP, Dyrbye LN, Satele DV, Sloan JA, Shanafelt TD. Concurrent validity of single-item measures of emotional exhaustion and depersonalization in burnout assessment. *J Gen Intern Med.* 2012;27:1445–52.
6. Maslach CJS, Leiter MP. Maslach burnout inventory manual. Palo Alto: Consulting Psychologists Press; 1996.
7. Shanafelt TD, Gradishar WJ, Kosty M, Satele D, Chew H, Horn L, Clark B, Hanley AE, Chu Q, Phippen J, Sloan J, Raymond M. Burnout and career satisfaction among US oncologists. *J Clin Oncol.* 2014;32:678–86.

8. Lin M, Battaglioli N, Melamed M, Mott SE, Chung AS, Robinson DW. High prevalence of burnout among US Emergency Medicine Residents: results from the 2017 National Emergency Medicine Wellness Survey. *Ann Emerg Med.* 2019;74:682–90.
9. Wijeratne C, Johnco C, Draper B, Earl JK. Older physicians' reporting of psychological distress, alcohol use, burnout and workplace stressors. *Am J Geriatr Psychiatry.* 2021;29:478–87.
10. Evanoff BA, Strickland JR, Dale AM, Hayibor L, Page E, Duncan JG, Kannampallil T, Gray DL. Work-related and personal factors associated with mental well-being during the COVID-19 response: survey of health care and other workers. *J Med Internet Res.* 2020;22:e21366.

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