


ORIGINAL RESEARCH

Physician Wellness

Canadian emergency physician psychological distress and burnout during the first 10 weeks of COVID-19: A mixed-methods study

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 is corrected to "Caroline Gérin-Lajoie" in two
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Abstract

Objectives: The aim of this study was to report burnout time trends and describe the psychological effects of working as a Canadian emergency physician during the first weeks of the coronavirus disease 2019 (COVID-19) pandemic.

Methods: This was a mixed-methods study. Emergency physicians completed a weekly online survey. The primary outcome was physician burnout as measured by the emotional exhaustion and depersonalization items, from the Maslach Burnout Inventory. We captured data on work patterns, aerosolizing procedures, testing and diagnosis of COVID-19. Each week participants entered free text explaining their experiences and well-being.

Results: There were 468 participants who worked in 143 Canadian hospitals. Burnout levels did not significantly change over time (emotional exhaustion $P = 0.632$, depersonalization $P = 0.155$). Three participants were diagnosed with COVID-19.

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Being tested for COVID-19 (odds ratio [OR] 11.5, 95% confidence interval [CI] 3.1–42.5) and the number of shifts worked (OR 1.3, 95% CI 1.1–1.5 per additional shift) were associated with high emotional exhaustion. Having been tested for COVID-19 (OR 4.3, 95% CI 1.1–17.8) was also associated with high depersonalization. Personal safety, academic and educational work, personal protective equipment, the workforce, patient volumes, work patterns, and work environment had an impact on physician well-being. A new financial reality and contrasting negative and positive experiences affected participants' psychological health.

Conclusion: Emergency physician burnout levels remained stable during the initial 10 weeks of this pandemic. The impact of COVID-19 on the work environment and personal perceptions and fears about the impact on lifestyle have affected physician well-being.

KEYWORDS

COVID-19, emergency physicians, physician burnout, physician wellness

1 | INTRODUCTION

1.1 | Background

Healthcare providers are at risk of negative psychological reactions after being exposed to stressful situations, ranging from symptoms such as fear and stress to posttraumatic stress disorder.¹ During the coronavirus disease 2019 (COVID-19) pandemic, it is expected that some healthcare workers will experience moral injury, burnout, and mood disorders. Moral injury is the distress (shame or guilt) experienced after violating one's own moral code,² for example when rationing access to levels of health care. Burnout is a work-related syndrome involving emotional exhaustion, depersonalization, and a sense of reduced personal accomplishment.³ Burnout can lead to frustration, a sense of loss of control, and diminishing morale.⁴ Burnout affects workforce retention and can lead to important mental health consequences including depression and suicide.⁵

1.2 | Importance

There are many reasons why the COVID-19 pandemic has the potential to cause burnout among the emergency physician community. The job demands-resources theory suggests that burnout results from increased physical or psychological work demands and reduced resources.⁶ During a pandemic, reduced safety standards (personal protective equipment [PPE] shortages), increased workload (rising patient numbers, increased departmental staffing, covering for sick colleagues), and poor mental health (anxiety, fatigue, and depression) could all predispose physicians to burnout.⁷ Psychological distress could result from repeated or prolonged exposure to distressing events,⁸ death of a colleague, friend or family member,⁹ being tasked

with new or difficult roles beyond their normal remit,⁸ being put into quarantine,¹⁰ and deprioritizing treatment at triage.¹¹

1.3 | Goals of this investigation

The aim of this study was to report burnout time trends and describe the psychological effects of working as an emergency physician in Canada during the first 10 weeks of the COVID-19 pandemic.

2 | METHODS

2.1 | Study design and setting

This was a mixed-methods study that follows the Good Reporting of A Mixed Methods Study guidance.¹² We followed a cohort of Canadian emergency physicians through the first 10 weeks of the COVID-19 pandemic. The mixed-methods approach allowed us to monitor burnout levels while simultaneously collecting both quantifiable risks for burnout and rich information on sources of psychological distress and participant experience.

2.2 | Selection of participants

The population of interest was physicians working in Canadian emergency departments (EDs). We invited emergency physicians and trainees to participate in this study using 3 approaches (email, social media, and through professional societies). The survey was sent by email to 20 emergency physician groups in 7 provinces (via members of the Network of Canadian Emergency Researchers) on April 4, 2020, with 1 reminder sent a week later. The study was launched on Twitter (@EmergWell) and Facebook on April 13 and was

disseminated through every Canadian association that registers emergency physicians: the Society of Rural Physicians of Canada (450 physicians), the Canadian Association of Emergency Physicians (1857 physicians), Association des médecins d'urgence du Québec (1358 physicians), and Association des spécialistes en médecine d'urgence du Québec (180 physicians).

2.3 | Quantitative measurements

The study used a weekly online survey that was designed to be completed quickly, on a phone, tablet, or computer. Physicians were asked to complete the survey once a week for 10 weeks. The survey was designed to be as simple as possible to minimize loss to follow-up as time progressed. Also, we were mindful that the burden of our survey could add to stress and burnout during this challenging time for participants; we wanted to minimize this impact. The participant could choose to receive survey reminders and links on their cellphone or else by email. Each week, an invitation was sent to a new survey, with 1 reminder 2 days later. The survey was initially piloted by the physician members of our investigator group, then refined further with feedback from 5 emergency physicians, to optimize clarity, brevity, layout, and simplicity.

The survey collected data relating to the period of March 9 to May 17, 2020. Details regarding the content of the survey are included in Appendix 1. The study was launched on April 4, 2020 (at the time of research ethics board approval), at which point physicians entered data on shifts worked in the previous 3 weeks (ie, between the weeks of March 9–15, 16–22, and 23–29). Burnout questions were first introduced on week 4 to ensure that participants entered their burnout responses prospectively.

2.4 | Outcomes

Burnout, the most commonly used measure of physician mental health,¹³ was our primary outcome. We measured physician burnout using the single item measures of emotional exhaustion and depersonalization from the Maslach Burnout Inventory, "I feel burned out from my work" and "I have become more callous toward people since I took this job," with a 7-point Likert scale response (never/a few times a year or less/once a month or less/a few times a month/once a week/a few times a week/every day). These items have been shown to correlate to the emotional exhaustion and depersonalization domains from the Maslach Burnout Inventory¹⁴ and exhibit consistent association with key outcomes such as perceived major medical errors, unprofessional attitudes, and serious thoughts of dropping out in cohorts of medical students and physicians.¹⁵ High levels of emotional exhaustion and depersonalization were defined as responses indicating occurrence at least weekly.¹⁵ To minimize prior response recall, the Maslach Burnout Inventory items were included every 2 weeks (weeks 4, 6, 8, and 10). Our survey's secondary outcomes were shifts missed at short notice (with reasons for missing the shift) and participant COVID-19 infection.

The Bottom Line

There are several threats to emergency physician psychological well-being during this current pandemic, ranging from safety in the work environment to personal perceptions and fears about the impact on home life. The paper uses a mixed-methods approach to explore psychological stressors and their association with physician burnout during the early stages of the coronavirus disease 2019 (COVID-19) pandemic.

2.5 | Explanatory variables

We hypothesized that working a higher number of shifts, additional shifts at short notice, and in unfamiliar settings could have detrimental effects on physician mental health, leading to burnout. We recorded the number of scheduled shifts participants worked every week, the number of shifts participants worked at short notice, and shifts worked in unfamiliar hospitals or areas other than the ED. We also tracked the number of aerosolizing procedures performed weekly because these procedures are thought to pose a high risk for hospital-acquired COVID infection. We collected data on family circumstances including children, partners who worked in health care and other caregiver roles, as well as self-identified immunosuppression.

The survey was anonymous; however, we collected age, gender-hospital, province, and city of work, and prior experience of severe acute respiratory syndrome coronavirus or Middle East respiratory syndrome coronavirus.

2.6 | Qualitative data collection

We asked participants to explain how they were feeling or else explain their survey answers in a free-text box each week. There was no limit on text length. These qualitative comments were used adjunctively to augment our quantitative findings and to explore sources of psychological stress.

2.7 | Analysis

The primary analysis was the time trend in emotional exhaustion and depersonalization burnout scores over the 10-week study duration. Secondary analyses included associations with burnout and emerging themes from the participant free-text communications.

Continuous data were reported as means with SDs or medians with interquartile range, where appropriate. Continuous and dichotomous measures were compared using analysis of variance and χ^2 tests, respectively. Hierarchical models were developed to examine time trends and associations with burnout. For burnout, both emotional exhaustion and depersonalization were considered dependent

variables. As every burnout score was included in these models, we accounted for clustering of effects of burnout scores within participants. The primary analysis (analysis of time trend) used hierarchical regression models to assess for an association between the pandemic week and burnout scores. Hierarchical logistic regression analyses evaluated associations with high emotional exhaustion and high depersonalization levels. Independent variables were chosen a priori, based on existing literature and plausibility. Independent variables for the models included age (years), gender (male vs non-binary/female), tested for COVID-19 in prior 7 days (yes/no), number of scheduled shifts in prior 7 days, number of extra shifts picked up at short notice in prior 7 days, number of aerosol procedures performed in prior 7 days, and whether some shifts were worked in a department other than the participant's usual one in prior 7 days (yes/no).

The goal of the qualitative analysis was to summarize emerging themes of important aspects for participant well-being and distress. Limited by the types of free-text data we acquired in our survey, we opted to complete a thematic analysis using interpretive description.^{16,17} To capture the time course of emerging themes, we conducted a serial analysis of weekly data. Initially, 2 analysts (CW, TC) created a coding schema together using the first 4 weeks of data. These codes were then used to independently code each of the subsequent weeks. Analysts exchanged their remaining coding to ensure that they agreed upon final findings. To ensure further rigor, 3 members of our investigatory team (KR, CG, MM) conducted a further audit of the data trail. All study investigators reviewed the quantitative associations and qualitative data together to interpret the study findings.

Study data were collected and managed using REDCap electronic data capture tools hosted at McMaster University.^{18,19} REDCap (Research Electronic Data Capture) is a secure, web-based software platform designed to support data capture for research studies (REDCap Consortium, Nashville, TN). All analyses were performed using Stata/SE 13.1 (StataCorp, College Station, TX).

2.8 | Ethics

The study was approved by Hamilton Integrated Research Board on April 3, 2020.

3 | RESULTS

In total, 583 physicians consented to participate in the survey of whom, 468 participants entered data on their demographics. Overall, 461 participants completed at least 1 survey, and 231 completed all 10 weekly surveys (mean number of weekly surveys completed 7.7). Three participants unsubscribed from the survey, and 2 physicians reported they had stopped working in the ED during the pandemic.

Of the 1147 physicians working in 20 hospital groups, 345 (30%) consented to participate. A further 238 physicians gave consent to participate after the study was advertised on social media and distribution via medical society email lists. It is not possible to estimate response rates for social media and society distribution, and there was overlap

TABLE 1 Participant demographics (n = 468)

Age	Median 41 (interquartile range 35–50)
Gender	
Female	227 (49%)
Male	240 (51%)
Non-binary	1 (0%)
Position	
Emergency resident	40 (9%)
Staff physician	428 (91%)
Province/Territory	
British Columbia	48 (10%)
Alberta	19 (4%)
Saskatchewan	15 (3%)
Manitoba	20 (4%)
Ontario	251 (54%)
Québec	66 (14%)
New Brunswick	12 (3%)
Prince Edward Island	5 (1%)
Nova Scotia	13 (3%)
Newfoundland and Labrador	13 (3%)
Yukon	0
North West Territories	3 (1%)
Nunavut	1 (0%)
Other/not specified	2 (0%)
Immunosuppressed	15 (3%)
Lives with	
Partner	400 (85%)
Children	300 (64%)
Parents	14 (3%)
Extended family	12 (3%)
Roommate	11 (2%)
Partner works in health care	142 (30%)
Caregiver for friend or family member	72 (15%)
Severe acute respiratory syndrome coronavirus or Middle East respiratory syndrome coronavirus experience	147 (31%)
Typical shift pattern	
Even spread	301 (64%)
More days	57 (12%)
More evenings	76 (16%)
More nights	34 (7%)

between these methods of approach. In 2016, the Canadian Association of Emergency Physicians and Royal College of Physicians and Surgeon of Canada estimated there were 6500 physicians practicing as emergency physicians in Canada.²⁰

The median age was 41, and 49% of participants were female (Table 1). Approximately 9% were emergency medicine residents, the

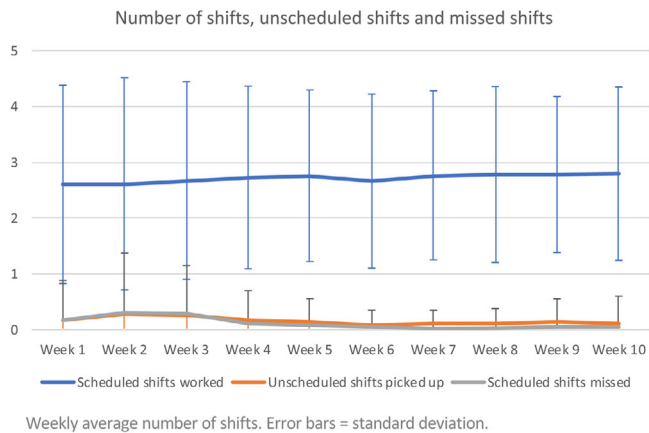


FIGURE 1 Time trends in scheduled, unscheduled, and missed work shifts

remainder being staff physicians. Every Canadian province and territory was represented with the exception of the Yukon. Participants worked at 143 different hospitals.

We did not find a time trend in burnout levels ($P = 0.632$ for emotional exhaustion and $P = 0.155$ for depersonalization). In week 4, 67/380 respondents (18%) scored high emotional exhaustion, 65/372 (17%) in week 6, 49/341 (14%) in week 8, and 47/297 (16%) in week 10. In week 4, 56/380 (15%) scored high depersonalization, 49/372 (13%) in week 6, 35/341 (10%) in week 8, and 39/296 (13%) in week 10. Of the 266 participants who completed both week 4 (first burnout survey) and week 10 (last burnout survey), 13 participants changed from low to high levels of emotional exhaustion, 21 moved from high to low emotional exhaustion, and 232 remained in the same category. For depersonalization, 12 moved from low to high, 15 high to low, and 239 remained static.

Three participants (0.6%) were diagnosed with COVID-19. Of the 191 missed scheduled shifts, 124 (65% of missed shifts) were missed because the participant was in quarantine, 12 (6%) because of COVID illness, 6 (3%) because of childcare or family issues, and 49 (26%) for other reasons. Figure 1 shows time trends in number of shifts worked and missed.

Being tested for COVID-19 in the previous week (odds ratio [OR] 11.5, 95% confidence interval [CI] 3.1–42.5) and the number of shifts worked (OR 1.3, 95% CI 1.1–1.5 per additional shift, per week) were associated with high emotional exhaustion. Having been tested for COVID-19 (OR 4.3, 95% CI 1.1–17.8) was also associated with high depersonalization. Table 2 shows the results of the multivariable hierarchical logistic regression models.

We analyzed a total of 516 qualitative comments over the 10-week period from 213 different participants. A complete listing of the themes and their frequencies are found in Appendix 2. Broadly speaking there were 2 main categories of themes. The first category included themes about the impact of COVID-19 on the work environment. We identified that personal safety, academic and educational work, PPE, the workforce, patient volumes, work patterns, and the work environment all had an impact on physician well-being. Figure 2 lists these themes in full, with example quotes. The second category included

TABLE 2 Associations between emergency physician characteristics, their work experience, and burnout levels ($N = 436$)

Emotional exhaustion	Odds ratio	95% confidence interval
Male gender	0.54	0.22–1.35
Age (years)	1.03	0.98–1.09
Tested for COVID-19	11.48	3.10–42.46
Number of shifts per week	1.26	1.05–1.52
Number of extra shifts per week, worked at short notice	1.54	0.84–2.80
Number of aerosol procedures	0.90	0.68–1.19
Working in usual department only	0.75	0.13–4.31
Depersonalization	Odds ratio	95% confidence interval
Male gender	0.62	0.23–1.68
Age (years)	0.98	0.93–1.04
Tested for COVID-19	4.32	1.05–17.81
Number of shifts per week	1.13	0.93–1.39
Number of extra shifts per week, worked at short notice	1.54	0.81–2.93
Number of aerosol procedures	1.09	0.83–1.44
Working in usual department only	1.00	0.12–8.20

themes concerning personal perceptions and fears about the ramifications of COVID-19 on lifestyle. This category included a new financial reality and contrasting negative and positive experiences that affected participants' psychological health. Figure 3 outlines these themes in detail. Appendices 3 and 4 outline the thematic time trends relating to environmental impact and personal perceptions and fears relating to lifestyle.

4 | LIMITATIONS

Our study had several limitations. Not all participants responded to the survey every week, meaning those who felt burned out may not have responded to the survey reminders. If this was the case, we would have underreported burnout rates. We did not directly measure burnout pre-pandemic and are unable to report our findings in the context of "usual" burnout levels among this cohort. Our qualitative analysis was based on free text from the survey responses rather than interviews. We are still conducting in-depth interviews with the same cohort and will report these results later, in relation to the findings from this survey.

5 | DISCUSSION

In this Canadian emergency physician cohort, we did not detect a trend toward increasing physician burnout over time during the initial 10 weeks of the COVID-19 pandemic. Our qualitative data suggest

Personal safety was a notable theme throughout the pandemic.

“My financial risks and my personal risk of death has suddenly escalated because I am a frontline [physician] who can save lives. Do I want to be called a hero? NO. ...I want to be paid for all the [simulations] and meeting[s] designed to save Canadian lives.” (Week 6 quote)

“One viewpoint we need to combat, 'doctor's signed on knowing they could get an infectious disease and die in their line of work'. This is medieval and we need to uphold the value of [physician] lives over the next few months. Having an MD does not disqualify a human being from meriting ordinary workplace safety and worker's rights. Doctors do merit workplace safety and worker's rights.” (Week 5 quote)

“More than 90% of our patients are suspected [COVID-19] or confirmed [COVID-19]; therefore, constantly confronted with pathology in disadvantaged clientele. The sustained use of protective equipment is extremely physically and mentally strenuous.” (Week 10 quote)

Academic and educational work was adversely affected. Some trainee participants also noted that they felt they were on the outside:

“As a junior resident, I understand that decisions were made initially to preserve PPE and limit exposure. However, as the weeks dragged on and the surge never came and PPE became more available, I feel the rule of leaving us out of resuscitations should have lifted. Informally, with some staff, it did. But overall, we remained on the outside and I feel especially underprepared now for moving forward into PGY3 where I'll be a senior in rotations such as ICU.” (Week 10 quote)

Exams were cancelled and residency training disrupted. There was increased use of simulation and some participants worried about missing simulation practice if they were absent from work.

Personal protective equipment (PPE) themes varied over time. Early comments noted the lack of or the inappropriate use of PPE. In the middle weeks, participants' comments were heterogeneous with some reporting the replenishment of their PPE supplies while others were noting conservation protocols.

“The PPE guidelines are still changing - I work at more than one site and they are inconsistent, one place has us clean our face shields between patients and I worry we will end up contaminating ourselves, the other uses [integrated] mask... worn during entire shift which for sure get contaminated...I feel that we are just lucky that we have not ended up getting sick ourselves.” (Week 7 quote)

By week 7, we see the emergence of themes around ‘PPE fatigue’ – a phenomenon described by our participants regarding the challenges of PPE usage throughout their shifts, impacting their ability to provide empathetic and high-quality clinical care to their patients.

“Feeling a bit burnt out this week. Nurses and other staff are getting grouchy. I feel cut off from patients with all the PPE on. And it is so tiring having to take it on and off all the time. I'm

FIGURE 2 Themes relating to the impact of coronavirus disease 2019 (COVID-19) on the workplace environment

subsets of participants experienced significant distress relating to the pandemic, which affected both their work environment and lifestyle. The number of physicians unable to work (missing shifts at short notice) was exceedingly low, mostly a result of quarantine rather than illness, and only 3 out of 468 participants (0.6%) reported testing positive for COVID-19.

Our findings suggest that emergency physician experiences are much broader and wide ranging than a simple burnout metric – their comments on the pandemic ranged from childrearing woes to finance to workplace safety issues. Although many participants commented on the burnout they were feeling, some found that the pandemic offered a new take on their professional lives, providing them with

expecting a hot summer with PPE on in an area of our hospital without great humidity control.” (Week 7 quote)

“...PPE makes running critical care cases hot and much more tiring than usual. But deeply love the silver lining of our team closeness.” (Week 7 quote)

Workforce concerns predominated in the earlier stages.

“All [emergency physicians] over the age of 60 have been strongly encouraged by leadership at our site to not work at this time as the workplace is considered unsafe for older workers.” (Week 1 quote)

“Age and [my immunodeficiency-causing disease]. Will work if a shortage of [physicians] but no need now.” (Week 1 quote)

In contrast, some younger physicians felt upset by the loss of their colleagues from the roster.

“The ED is yet again screwing their younger staff.” (Week 6 quote)

Patient volumes, changes in work patterns and the work environment tended to interweave and impact on physicians' wellbeing. In early weeks, many of the comments showed planning and pandemic preparedness preparation, and yet there was also a notable disconnect with those on the frontlines:

“Lots of uncertainty & anxiety during that week as hospital wasn't acting fast enough to make changes & create protocols for the anticipated tsunami. Additionally, no efforts were being taken to make ED docs aware of their grand 'pandemic plan' so we didn't know whether some things had already been considered/thought of. This was a source of anxiety to many of us.” (Week 1 quote).

In weeks 4-7, our participants commented upon a marked decrease in patient volumes. In the latter weeks (Weeks 8-10), comments began to revolve around worries for patients who had seen their care delayed due to COVID-19.

“The one thing that keeps me up at night-and this isn't a wellness issue...burnout issue... I worry that people AREN'T coming to the ED when they should. I want people to know it is safe to come and see us.” (Week 6 quote)

“increased anxiety and sense of burnout and change fatigue noticed amongst staff as more departmental changes, more patient volumes resulting in bed blocking again, getting caught between public health initiative to test widely and this then resulting in bed blockages as tested patients being held in ED until neg swab.” (Week 8 quote)

FIGURE 2 Continued

newfound purpose and resilience. This phenomenon has been previously described: after experiencing adversity, some people may develop mental health difficulties²¹ whereas others develop self-esteem and resilience.²² Our study found that COVID-19 testing and working more shifts in the prior week were associated with burnout. To our knowledge, the association with COVID-19 testing has not previously been evaluated. Our qualitative data suggested COVID-19 testing could be particularly stressful for an emergency physician because of stigma; having potentially exposed patients, coworkers, or family to the virus; and loss of income during illness or quarantine. However, it is also possible that those who felt burned out were more likely to be tested. Burnout and compassion fatigue are known to be associated with working longer hours.²³

There may be several reasons why we did not identify association between burnout and the progression of time during the first weeks of the pandemic. First, psychological distress is associated with high levels of exposure to traumatic events,⁸ which may explain our lack of worsening burnout levels over time during the pandemic. It is possible that our cohort did not experience the concentrated numbers of sick patients seen in other parts of the world. Second, the mental health effects of a disaster or mass casualty are known to trail behind the initial trauma or event.^{24,25} We may simply have measured burnout too soon after the start of this pandemic to detect changing burnout levels.

Our study has a number of strengths. Our reported burnout levels are comparable to those reported by an Italian cohort of nurses and physicians during the COVID-19 pandemic²⁶ and those reported by

Throughout the pandemic, many reflected on their fears around the personal risk and the **financial realities** they were facing as frontline physicians on the COVID-19 battlefield:

"I will share with you my main concern: Financial. Sure, I could die. But that worries me less than being alive and not being able to support my dependents." (Week 1 quote)

"I recognize my greater health risks to working in [COVID-19] but these [risks] pale compared to my [financial] stressors. Yesterday I had to extend the mortgage on my house in order to be able to meet payments over the next year. My cash flow is way down because we have had to cut ED shifts. This does not mean I am working less, quite the opposite..... We are unpaid to work harder.... I am not working less hours, I am working more - just unpaid hours." (Week 10 quote)

Tensions exist between themes with **contrasting negative and positive feelings and experiences**. Take these following two comments from the middle period (week 6-8):

"Had community surprise me at my house with cards and well wishes and thanks. Simply amazing." (Week 8 quote)

"I would say I overall feel significant burn out with this job since starting medical school, but right now feel drained by the situation (each shift/duty/etc. is more exhausting physically and mentally than normal) but do feel less overall burnout regarding my career choice itself." (Week 6 quote)

While some felt that their pandemic experience gave them a new take on their careers and colleagues (thereby alleviating burnout), others felt that it contributed to their burnout. The following quotes below demonstrate the divergent experiences in our dataset:

"First time in my EM career I feel burned out every day due this pandemic and information getting. Frustrated." (Week 4 quote)

"Surprisingly, I'm feeling less burned out during this pandemic than during my usual work/life balance. I think it has to do with how hard all of the patients are trying to be respectful of hospital resources people are coming because they are worried that they are sick. And they really have been. I actually feel more happy at work than I have in a long time." (Week 6 quote)

"I find that right now a lot of the patients who are starting to come back to the ER... A lot of their complaints can be hard to sympathize with, especially given the circumstances of the pandemic that include less personal enjoyment/fulfillment outside of work hours." (Week 8 quote)

FIGURE 3 Personal perceptions and fears about the ramifications of coronavirus disease 2019 (COVID-19) on lifestyle

the 2018 Canadian Medical Association National Physician Survey.²⁷ Our mixed-methods approach allowed a rich exploration of the psychological stressors in addition to measuring participant burnout.

In conclusion, emergency physician burnout levels remained relatively stable during the initial 10 weeks of the COVID-19 pandemic. Longer work hours and COVID-19 testing were associated with burnout. There were several threats to emergency physician psychological well-being including the impact of COVID-19 on the work environment and personal perceptions and fears about the impact of COVID-19 on lifestyle

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CONFLICT OF INTEREST

Dr. Gérin-Lajoie reports employment with the Canadian Medical Association and notes that the opinions and conclusions expressed are the writers' own and are not those of the Canadian Medical Association.

AUTHOR CONTRIBUTIONS

Kerstin de Wit, Mathew Mercuri, Clare Wallner, Natasha Clayton, Kerri Ritchie, Caroline Gérin-Lajoie, Lisa Schwartz, Sara Gray, and Teresa Chan planned and designed the study. Kerstin de Wit obtained research ethics approval and study funding. Kerstin de Wit, Clare Wallner, Natasha Clayton, Patrick Archambault, and Teresa Chan conducted the study, including designing the survey, disseminating study invitations, reviewing weekly survey responses, and resolving problems as they arose. Kerstin de Wit, Mathew Mercuri, Clare Wallner, Natasha Clayton, Kerri Ritchie, Caroline Gérin-Lajoie, and Teresa Chan analyzed the data. All authors reviewed the study results

and contributed to the interpretation. All study authors contributed to writing this manuscript and have approved the final version.

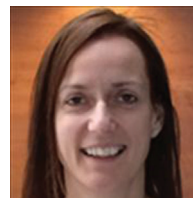
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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

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