


BMJ Open Impact of the COVID-19 pandemic upon self-reported physician burnout in Ontario, Canada: evidence from a repeated cross-sectional survey

Jainita Gajjar,¹ Naomi Pullen,¹ Yin Li,¹ Sharada Weir ,^{1,2} James G Wright^{1,3}

To cite: Gajjar J, Pullen N, Li Y, *et al*. Impact of the COVID-19 pandemic upon self-reported physician burnout in Ontario, Canada: evidence from a repeated cross-sectional survey. *BMJ Open* 2022;**12**:e060138. doi:10.1136/bmjopen-2021-060138

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2021-060138>).

Received 14 December 2021
Accepted 23 August 2022



© Author(s) (or their employer(s)) 2022. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

¹Economics, Policy & Research, Ontario Medical Association, Toronto, Ontario, Canada

²Canadian Centre for Health Economics, University of Toronto, Toronto, Ontario, Canada

³Botnar Research Centre, Oxford, UK

Correspondence to

Dr Sharada Weir;
sharada.weir@oma.org

ABSTRACT

Objectives To estimate the impact of the SARS-CoV-2 (COVID-19) pandemic on levels of burnout among physicians in Ontario, Canada, and to understand physician perceptions of the contributors and solutions to burnout.

Design Repeated cross-sectional survey.

Setting Active and retired physicians, residents and medical students in Canada's largest province were invited to participate in an online survey via an email newsletter.

Participants In the first survey wave (March 2020), 1400 members responded (representing 76.3% of those who could be confirmed to have received the survey and 3.1% of total membership). In the second wave (March 2021), 2638 responded (75.9% of confirmed survey recipients and 5.8% of membership).

Key outcome measure Level of burnout was assessed using a validated, single-item, self-defined burnout measure where options ranged from 1 (no symptoms of burnout) to 5 (completely burned out).

Results The overall rate of high levels of burnout (self-reported levels 4–5) increased from 28.0% in 2020 (99% CI: 24.3% to 31.7%) to 34.7% in 2021 (99% CI: 31.8% to 37.7%), a 1-year increase of 6.8 percentage points ($p < 0.01$). After a full year of practising during the COVID-19 pandemic, respondents ranked 'patient expectations/patient accountability', 'reporting and administrative obligations' and 'practice environment' as the three factors that contributed most to burnout. Respondents ranked 'streamline and reduce required documentation/administrative work', 'provide fair compensation' and 'improve work-life balance' as the three most important solutions.

Conclusions During the first 12 months of the COVID-19 pandemic in Ontario, prevalence of high levels of burnout had significantly increased. The contributors and solutions ranked highest by physicians were system-level or organisational in nature.

INTRODUCTION

Burnout is defined by the WHO as 'chronic workplace stress that has not been successfully managed',¹ and is characterised by three dimensions—emotional exhaustion, depersonalisation and a reduced sense of personal accomplishment.^{2–3} In physicians, burnout has been associated with depression, suicidal

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ The physician burnout survey was launched at the outset of the COVID-19 pandemic in Ontario, Canada, in March 2020, and repeated 1 year later, offering a unique opportunity to estimate the impact of the pandemic on levels of burnout.
- ⇒ The study population comprised the entire membership of the Ontario Medical Association, including active and retired physicians, as well as medical students and residents.
- ⇒ In an effort to minimise response burden among physicians in the midst of the pandemic, a simple, unidimensional scale was used to measure burnout level; it was therefore not possible to analyse the dimensions of burnout.
- ⇒ The survey was advertised using email newsletters and social media, rather than being targeted to a selected sample of members, and this made it impossible to calculate an accurate response rate or to follow up with individuals to encourage participation.

ideation, substance use, motor vehicle crashes, reduced productivity, increased turnover and early retirement.^{2–3} It has also been associated with poor patient outcomes, including lower quality of care and increased medical errors.² Even before the COVID-19 pandemic, healthcare worker burnout was identified as a public health crisis in the USA.⁴ However a pre-pandemic review highlighted significant variability in burnout rates in the USA measured through various tools, making it difficult to accurately assess the scale of the issue.⁵

The SARS-CoV-2 (COVID-19) pandemic created major disruptions in physician services. Between mid-March and late-May 2020, healthcare providers and organisations in Ontario, Canada were directed to stop or substantially reduce the provision of elective and non-emergent services as the health system was reconfigured to manage the influx of patients with

COVID-19 admitted to hospitals and intensive care units. Simultaneously, temporary virtual care billing codes were introduced to facilitate telephone and video visits. Over half of family medicine physicians and approximately two-thirds of physicians in other specialties in Ontario are compensated mainly via fee-for-service (FFS) billings or in primary care models of which FFS billings are a significant component. FFS physicians who could not practise at normal capacity in the virtual environment were subject to financial strain.

Physicians on the front line of the COVID-19 response, and others who were called upon to provide essential care, experienced stress related to the risk of contracting, and potentially spreading, COVID-19. This was exacerbated during the first wave by shortages of respirators and other vital personal protective equipment. While healthcare workers were lauded as heroes early in the pandemic, they too often became the targets of frustration and anger as the public wearied of pandemic restrictions.

These are just a few examples of ways in which the pandemic may have exacerbated stressors experienced by physicians, above and beyond increased demands placed upon the healthcare system by COVID-19. Healthcare workers have experienced unprecedented stressors during the pandemic, leading many to hypothesise that the problem of burnout has worsened since its onset. However, data to assess the issue during this period have been generally lacking.

The purpose of this study was to estimate the prevalence of burnout among Ontario physicians, evaluate the impact of the COVID-19 pandemic on rates of physician burnout, and canvas Ontario physicians about the factors that they believe contribute to burnout and the interventions that they believe would be effective to address it.

METHODS

Study design and population

A repeated cross-sectional survey was used to evaluate baseline levels of physician burnout at the onset of the COVID-19 pandemic in Ontario and the impact of the pandemic after 1 year. The entire membership of the Ontario Medical Association (OMA), including all active and retired physicians, residents and medical student members, were eligible to participate by completing an online survey.

Questionnaire design and data collection

At the behest of the OMA Burnout Task Force, a survey instrument was constructed to assess overall feelings of burnout and solicit opinions about possible causes and solutions (online supplemental appendix 1). Physicians were asked to rate their own level of burnout on a 5-level scale, ranging from 1 (no symptoms of burnout) to 5 (completely burned out) based on a single-item, non-proprietary, validated self-defined burnout measure that was developed by

Schmoldt and colleagues and has been used in physician populations since 1994 (online supplemental appendix 2).^{6 7} A self-defined measure was chosen to allow respondents the latitude to report on burnout as they experienced it, and a widely accepted definition of burnout was provided in the survey instrument preamble for reference (online supplemental appendix 1).^{3 8}

Physicians were then asked to rank a list of the top 10 contributors to burnout from 1 (most contribute to physician burnout) to 10 (least contribute to physician burnout) and rank a list of the top 10 solutions to burnout from 1 (would most like to see implemented) to 10 (would least like to see implemented). The set of contributors and solutions was selected based on those most commonly mentioned in the literature.^{2 9-11} An open-text question allowed physicians to identify other contributors or solutions to physician burnout that, in their opinion, the supplied lists did not capture. Sociodemographic data were also collected on gender, age, years of practice, career stage, primary practice setting, location and degree of rurality.

The survey was conducted in two waves. An online survey link was included in the President's Update email communication, which was made available to the entire population of physicians, retired physicians and trainee members, who had not previously opted out of email communications, on 9 March 2020. Responses were accepted through 22 March 2020 (14 days). With only minor modification (ie, rewording without a change in meaning to the 'solutions' ranked options), the same survey instrument was redeployed on 12 March 2021, via an OMA News email communication, and remained open until 4 April 2021 (24 days). Between the two survey waves, the OMA redesigned its email communication mechanisms to merge the President's Update with the OMA's other newsletters to create a single newsletter called OMA News, delivered to the same recipients as the former President's Update. Reminders to complete the survey were included in the weekly OMA News email communications for the duration. The invitation to participate was also shared on social media platforms. Respondents were anonymous.

Definition of burnout

Some degree of burnout was indicated for respondents who rated themselves as either '(3) I am definitely burning out and have one or more symptoms of burnout, such as physical and emotional exhaustion', '(4) The symptoms of burnout that I'm experiencing won't go away. I think about frustration at work a lot', or '(5) I feel completely burned out and often wonder if I can go on. I am at the point where I may need some changes or may need to seek some sort of help'. Those reporting levels 4-5 were determined to be experiencing a high degree of burnout.

Statistical analysis

Survey participants were considered 'respondents' if they answered the first question (Q1) of the survey (ie,

the burnout level scale measure), regardless of whether or not the survey was completed. Hence, there were different numbers of respondents reported for different parts of the survey.

Since survey participation was entirely voluntary, personal characteristics such as age and gender may be associated both with the propensity to respond and with risk of experiencing burnout. Assuming equal probability to respond, the number of respondents in each of the groups should follow a hypergeometric distribution or, for large populations, a binomial distribution, whose cumulative distribution functions, containing probabilities between 0 and 1, can be used to test for the representativeness of demographic groups. Where the probability for a group falls below 0.005, there is evidence of under-representation, and where the probability exceeds 0.995, there is evidence of over-representation.

Results on the sample proportion of respondents who indicated that they were experiencing a high degree of burnout were weighted to reflect the demographic composition of the entire membership. We then calculated weighted odds of reporting high levels of burnout among subgroups of physicians using bivariable logistic regression. Results for subgroups with fewer than five respondents were not reported. Finally, for respondents who provided information on demographics, career stage, practice setting and rurality of location, multivariable logistic regression was used to examine the characteristics associated with a high degree of burnout in each wave of the survey.

Overall rankings of the top 10 contributors to burnout and solutions to burnout were obtained by summing individual rankings. The option with the lowest aggregate score was considered the most important contributor/solution and the option with the highest aggregate score was the least important.

Analyses were conducted using SAS software V.9.4 (SAS Institute).

Patient and public involvement

The study was designed with input and oversight by the OMA's Burnout Task Force, an advisory group of physicians with expertise in physician burnout. The survey was validated with a larger Burnout Advisory Group, comprised of Ontario physicians interested in burnout. Recruitment was facilitated by peer physicians in various ways. In the first wave of the study, the survey was shared through the OMA President's Update, a newsletter from the membership's elected physician representative. In the second wave of the study, the survey additionally was shared through peer physicians' communication channels, for example, the Twitter accounts of the OMA President and the Chair of the Burnout Task Force. Preliminary results were made available to participants via a white paper, shared through OMA member and public communication channels.

RESULTS

Of 37 335 members who were sent email newsletters that included an invitation to provide information on physician burnout in March 2020 (survey wave 1), 1836 clicked on the survey link and 1400 provided a response to Q1 (representing 76.3% of those who could be confirmed to have received the survey, 3.8% of those who were sent the email newsletter and 3.1% of the total association membership). In March 2021 (survey wave 2), 40 052 members were sent email communications with the invitation to 'complete a survey on the impact of COVID-19 on burnout', 3475 clicked the survey link and 2638 responses were received (75.9% of those who were confirmed to have received the survey, 6.6% of those who were sent the email newsletter and 5.8% of members).

Female physicians were over-represented, making up more than half of survey respondents in both waves (59% in 2020 and 56% in 2021) vs approximately 43% of OMA members (table 1). Physicians aged 35–64 years were over-represented, while the younger and older cohorts were under-represented. This was particularly the case for the second wave when physicians under 35 and 65+ years each made up over one-fifth of the membership but accounted for only 13% of respondents.

Prevalence of burnout

The unweighted prevalence of burnout, measured as the percentage of respondents who reported either persistent symptoms of burnout (level 4) or feeling completely burned out (level 5), increased from 29.0% in 2020 to 34.6% in 2021 ($p<0.001$; figure 1). Respondents experiencing some degree of burnout (levels 3–5 combined) increased from 66.0% in 2020 to 72.9% in 2021 ($p<0.001$). After weighting survey responses to reflect OMA membership demographics, the overall rate of high levels of burnout (levels 4–5) among physicians in Ontario increased from 28.0% in 2020 (99% CI: 24.3% to 31.7%) to 34.7% in 2021 (99% CI: 31.8% to 37.7%), a 1-year increase of 6.8 percentage points ($p<0.01$). This corresponds to an OR for reporting high levels of burnout in 2021 vs 2020 of 1.37 (95% CI: 1.15 to 1.63; $p<0.001$). The odds of having some degree of burnout (levels 3–5) in 2021 vs 2020 were 1.43 (95% CI: 1.19 to 1.71; $p<0.001$).

There were significant differences in the weighted odds of experiencing burnout among certain subgroups of physicians in each wave of the survey in adjusted analyses that accounted for all variables simultaneously (table 2). Although female physicians reported lower odds of burnout in 2020 (OR: 0.90; 95% CI: 0.86 to 0.95), women were significantly more likely to report burnout in 2021 (OR: 1.093; 95% CI: 1.05 to 1.14).

Significant differences were also found based on age cohort. Compared with physicians aged 35–44 years, those who were under 35 years old, 55–64 years old and 65+ years all had lower odds of burnout in 2020, whereas those aged 45–54 years had higher odds (OR: 1.21; 95% CI: 1.13 to 1.30). However, in 2021, physicians aged 45–54 years were less likely to report burnout (OR: 0.84;

Table 1 Representation of survey respondents* versus population, by physician demographic characteristics, 2020 and 2021

	Survey respondents				Population			Cumulative distribution function†		
	Number of respondents	Respondent percentage	Burnout rate	Population	Population percentage	Hypergeometric	Binomial	Representation		
Gender 2020	Female	58.7	30.5%	19458	42.3	1	1	Over		
	Male	41.3	29.6%	26550	57.7	0	0	Under		
	Total	1121		46008						
Gender 2021	Female	56.4	39.0%	19688	42.6	1	1	Over		
	Male	43.6	33.6%	26484	57.4	0	0	Under		
	Total	1979		46172						
Age cohort 2020	Under 35 years old	19.0	22.6%	10819	23.5	0.00011	0.00013	Under		
	35–44 years old	25.2	31.2%	9704	21.1	0.99967	0.99961	Over		
	45–54 years old	22.8	35.5%	8487	18.4	0.99994	0.99992	Over		
	55–64 years old	23.2	34.9%	7491	16.3	1	1	Over		
	65 years or older	9.8	17.5%	9507	20.7	0	0	Under		
	Total	1161		46008						
Age cohort 2021	Under 35 years old	12.8	36.5%	10219	22.1	0	0	Under		
	35–44 years old	24.2	43.2%	10043	21.8	0.99736	0.9968	Over		
	45–54 years old	25.6	41.2%	8525	18.5	1	1	Over		
	55–64 years old	24.8	34.3%	7503	16.3	1	1	Over		
	65 years or older	12.6	21.1%	9882	21.4	0	0	Under		
	Total	2033		46172						

*Only survey respondents with known gender or age cohort were included in the calculation of weighted results.

†Cumulative Distribution Function tests for hypergeometric and binomial distributions produce probabilities between 0 and 1. If the value is between 0.005 and 0.995, then the respondent group is representative of the overall population; if not, the group is over-represented or under-represented (statistically significant at the $\alpha=0.005$ level).

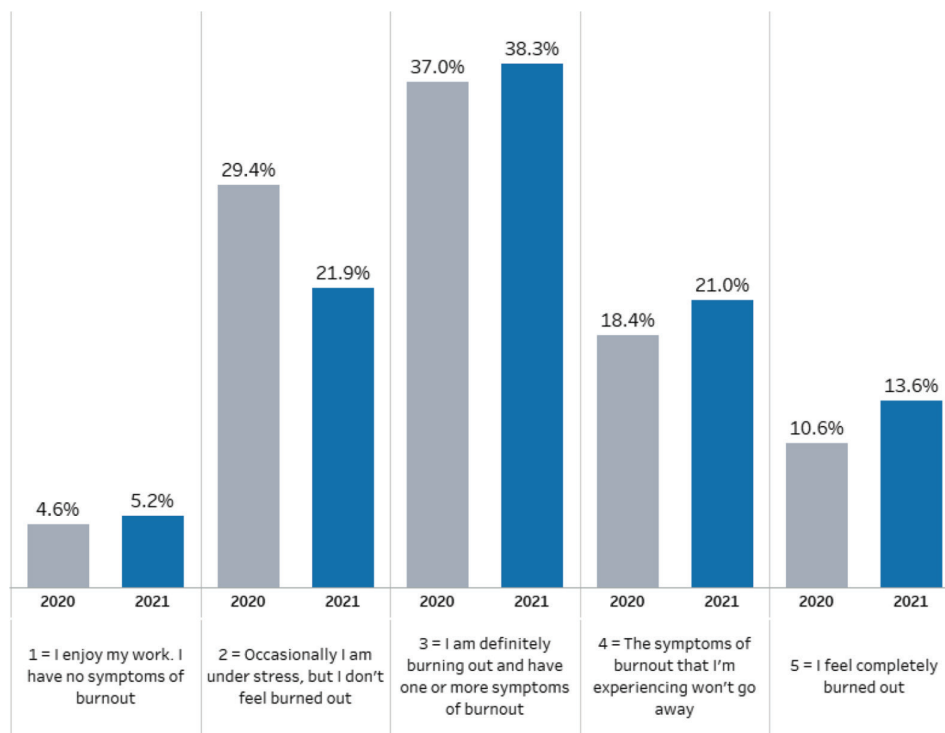


Figure 1 Overall levels of burnout reported by survey respondents (2020: n=1400; 2021: n=2638).

95% CI: 0.79 to 0.90), while those under age 35 years were more likely (OR: 1.24; 95% CI: 1.14 to 1.35).

In 2020, physicians in the middle, established phase of their career had lower odds of burnout than any other category. That changed during the pandemic, when only late career physicians were at higher risk of reporting burnout than mid-career physicians (OR: 1.45; 95% CI: 1.34 to 1.57). Physicians working in community-based group practice had some of the lowest risks of burnout in 2020, but experienced higher odds compared with most other settings by 2021. Finally, there were shifts in effect by location, with physicians practising in the Greater Toronto Area having lower odds of experiencing burnout than those in most other regions in 2020 but higher or not significantly different odds by 2021. Controlling for region, a similar shift was found for rurality (table 2). Unadjusted odds of burnout for physician subgroups are presented in online supplemental appendix 3.

Contributors and solutions to burnout

Respondents ranked 'patient expectations/patient accountability', 'reporting and administrative obligations' and 'practice environments' as the three factors that contributed most to burnout in 2021 (figure 2). Rankings were generally stable across both waves of the survey, with only 'practice environment' rising to third place, and displacing 'health system sustainability', from 2020 to 2021.

Respondents ranked 'streamline and reduce required documentation/administrative work', 'provide fair compensation' and 'improve work-life balance' as the three solutions most requested in both 2020 and 2021

(figure 3). Again, the overall distribution of rankings was generally stable across waves.

There were no differences in the top two most highly ranked contributors or solutions to burnout for male versus female physicians. However, the third highest ranked contributor for women was 'health system sustainability' versus 'practice environment' for men. There were also a few differences based on age/career stage with younger members prioritising organisational changes to improve work-life balance and older physicians suggesting better integration of digital health tools (online supplemental appendix 4).

A qualitative analysis of the responses to the open-text questions that offered respondents the opportunity to add additional contributors and solutions yielded themes largely consistent with the provided options. An exception was a theme related to the pandemic that emerged as a burnout contributor in the 2021 survey. Responses related to this theme included lacking personal protective equipment, impacts of isolation, and public and social media criticisms.

DISCUSSION

One year following the onset of the pandemic, prevalence of burnout among respondents had significantly increased. Nearly 35% of Ontario physicians were experiencing high levels of burnout by March 2021.

The prevalence of high levels of burnout pre-pandemic (28%) was consistent with prior research from the Canadian Medical Association, which reported high levels of burnout among 30% of Canadian physicians in a 2017

Table 2 Adjusted weighted odds of high degree of burnout, by physician characteristics, 2020 and 2021

Variable	Category	Reference group	2020				2021			
			OR	95% CI		Sig	OR	95% CI		Sig
				LB	UB			LB	UB	
Gender	Female	Male	0.904	0.864	0.946	*	1.093	1.047	1.141	*
Age cohort	Under 35 years old	35–44 years old	0.514	0.473	0.560	*	1.242	1.142	1.350	*
	45–54 years old		1.212	1.131	1.300	*	0.840	0.788	0.896	*
	55–64 years old		0.679	0.620	0.745	*	0.490	0.450	0.533	*
	65 years or older		0.336	0.302	0.373	*	0.256	0.231	0.284	*
Career stage	Medical student	Established physician	n/a	n/a	n/a		0.303	0.263	0.349	*
	Resident/fellow		1.837	1.650	2.045	*	0.978	0.852	1.122	
	Starting career physician		1.147	1.050	1.252	*	0.529	0.486	0.575	*
	Late career physician		1.589	1.464	1.725	*	1.452	1.341	1.572	*
	Retired physician		n/a	n/a	n/a		n/a	n/a	n/a	
Practice setting	Academic hospital	Community-based group practice	1.148	1.072	1.230	*	1.010	0.946	1.078	
	Community hospital		0.956	0.888	1.028		0.755	0.710	0.804	*
	Community-based interprofessional practice		1.541	1.422	1.671	*	0.752	0.696	0.813	*
	Community-based solo practice		1.785	1.669	1.909	*	0.931	0.876	0.989	*
Practice location	Central Ontario	Greater Toronto Area	1.088	1.004	1.178	*	1.068	0.993	1.148	
	Eastern Ontario		1.122	1.059	1.189	*	0.854	0.807	0.904	*
	Northern Ontario		1.281	1.160	1.416	*	1.024	0.940	1.116	
	Western Ontario		0.721	0.676	0.769	*	0.716	0.673	0.762	*
Geographical setting	Remote area	Urban	n/a	n/a	n/a		n/a	n/a	n/a	
	Rural		0.969	0.874	1.076		1.032	0.943	1.129	
	Semirural		1.421	1.312	1.539	*	1.058	0.980	1.141	
	Suburban		1.223	1.153	1.298	*	1.028	0.974	1.086	

n/a: results not reported for cells containing fewer than 30 respondents.
 *=significant at $\alpha=0.05$ level.
 LB, lower bound; UB, upper bound.

members survey.¹² We are not aware of any studies reporting on burnout during the pandemic for the general population of physicians in Canada. However, a weekly repeated panel survey found no significant increase in burnout among Canadian emergency medicine physicians during the first 10 weeks of the pandemic.¹³ This finding is not necessarily contradictory to our results since burnout is developed through chronic stress over time, and our study period was significantly longer (1 year vs 10 weeks). A prospective repeated cross-sectional study of physicians working in COVID-19 hub hospitals conducted in May 2020 and May 2021 in central Italy found an increase in self-reported burnout levels.¹⁴ A similar upward trend in burnout was reported among US critical care physicians in a Medscape survey conducted in the early Autumn of 2020 and 2021.^{15 16} However, that survey found no significant change in the overall percentage of physicians experiencing burnout (42%). It is difficult to compare findings from the Medscape studies with ours, since the time period and survey instrument were different, but it

is concerning that rates of overall physician burnout in Ontario appear to be moving closer to those experienced in the USA.

It is too early to draw conclusions about whether the increase in burnout reported in the first year of the coronavirus pandemic in Ontario will persist, or even worsen, in the coming years as the acute phase of the pandemic subsides, care backlogs begin to be addressed and the healthcare system adapts in various ways. An umbrella review of systematic reviews and meta-analyses on healthcare worker burnout in coronavirus epidemics found that during the SARS and Middle East respiratory syndrome epidemics, prevalence of burnout among healthcare workers was actually similar to that during non-epidemic periods for certain studied healthcare workers in settings with high risk factors for burnout.¹⁷ As the authors point out, additional research on burnout during the SARS-CoV-2 pandemic will be necessary to determine whether the magnitude, scope and duration of this pandemic have triggered an evolution of the disorder beyond that found

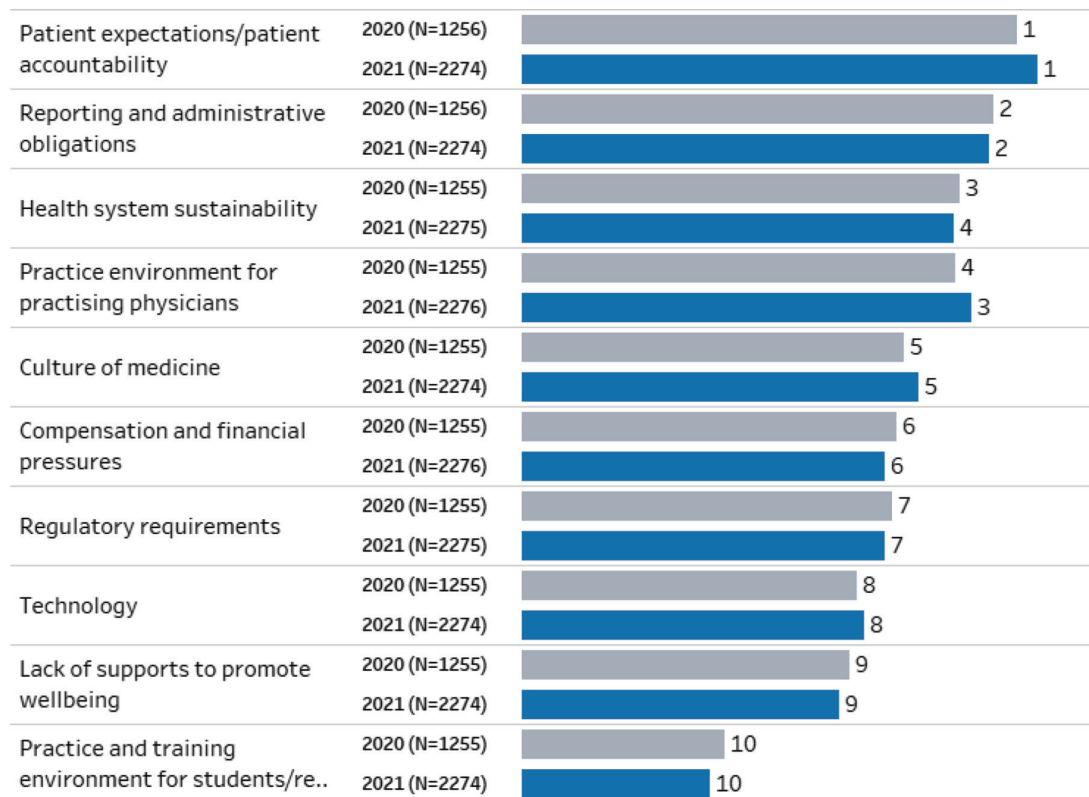


Figure 2 Top 10 ranked contributors to burnout as reported by participants in 2020 and 2021.

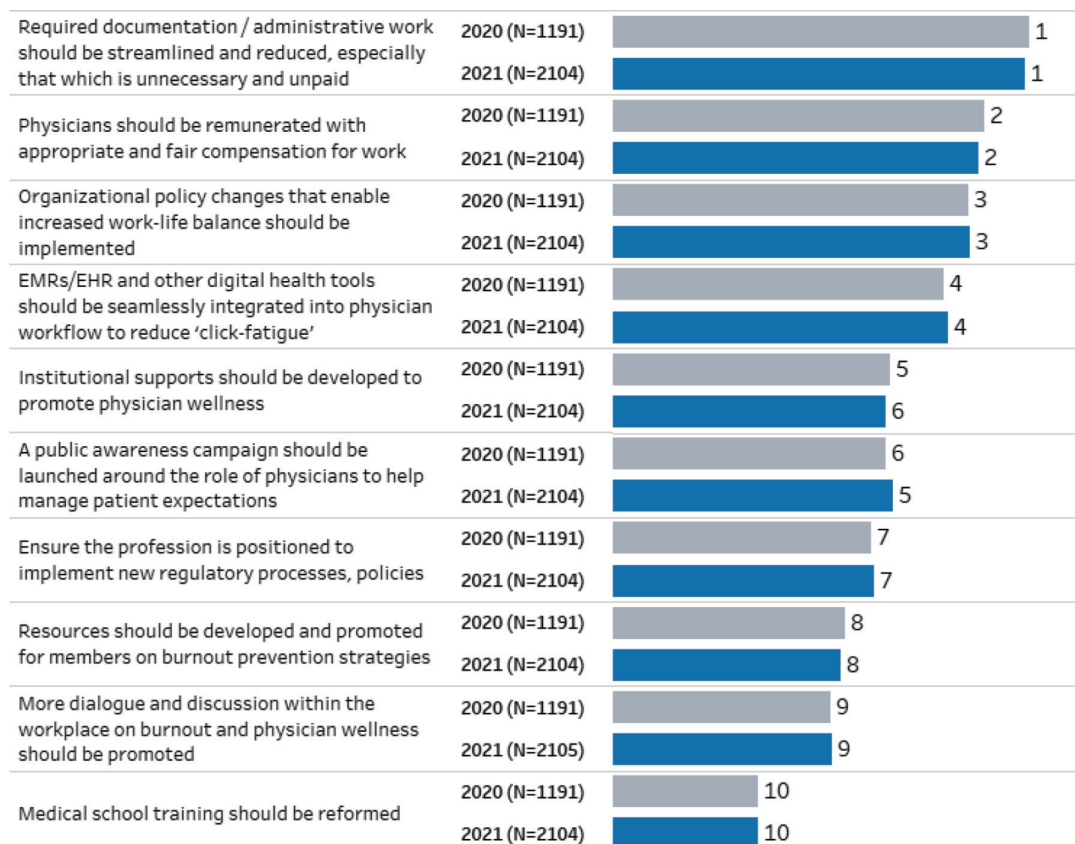


Figure 3 Top 10 ranked solutions to burnout as reported by participants in 2020 and 2021. EMRs/EHR, Electronic Medical Records/Electronic Health Record.

in non-pandemic times among high-risk subcategories of physicians and other healthcare workers. In any event, it is clear from the findings presented here that the widespread impact of the pandemic has created a reckoning that health system leaders cannot afford to ignore. Our data on the perceived causes of burnout and solutions pointed out by physicians are timely.

Both 2020 and 2021 Medscape surveys found that more than half of respondents reported 'too many bureaucratic tasks' as contributing most to burnout, by far the most cited issue.^{15 16} Contributors and solutions to burnout in the present study are not directly comparable with the Medscape survey, owing to different choice lists and rating methodology. However, alleviating administrative burden was the top ranked solution by Ontario physicians despite the Ontario Health Insurance Plan providing a far more streamlined billing system compared with that in the USA.

Burnout has been identified as a system-level, workplace issue.¹⁵ A systematic review found organisational-level interventions were more effective than individual-level approaches.¹⁰ Consistent with this, the solutions ranked highest by physicians in Ontario were system-level or organisational in nature; individual-level contributors and solutions related to promoting well-being were ranked lower. This is an important consideration for those interested in implementing interventions to address physician burnout. However, system-level solutions tend to involve significant complexity, being targeted at various stakeholders in the healthcare system including multiple levels of government, medical regulators and healthcare organisations. As a result, it is difficult to design and implement such solutions and to evaluate their implementation. While there is much literature outlining what system-level solutions could look like, there is relatively limited evidence evaluating such interventions.

In terms of the top ranked solution, 'streamline and reduce required documentation/administrative work', the majority of evidence has focused not on the actual reduction of required work but rather on the shifting of certain documentation requirements to medical scribes. Scribes were found to reduce administrative burden and were among the most effective burnout interventions of those identified in two systematic reviews.^{18 19}

Evaluations of the impact of physician compensation changes upon burnout are lacking in the literature. Research specifically evaluating the impacts of various compensation policy changes on burnout is needed. Such areas could include moving compensation structures away from piece-work models (eg, FFS), as the literature theorises that such models incentivise higher workloads,²⁰ as well as addressing the gender pay gap, which has been documented among Ontario physicians.²¹ Research exploring the relationship between the gender pay gap and burnout among physicians is lacking, but a 2016 study of 22 581 US adults found that women were significantly more likely to experience depression and anxiety when they were paid less than their equally

qualified male counterparts, including among the subset of high-income women.²²

Interventions to increase work-life balance include organisational policy changes to normalise flexible work arrangements such as part-time work or job sharing (ie, two part-time physicians sharing a full-time position),^{23 24} as well as exploring innovative strategies such as a time banking programme, where credits are given to participants for time spent on unpaid or under-recognised responsibilities—such as providing last minute clinical coverage or mentoring—and can be redeemed for home or work support services, including meal delivery or grant writing.²⁵

The solutions identified here and in the US Medscape research represent physician opinions or beliefs. Further research is needed to determine whether implementing these solutions reduces the prevalence of burnout and whether different subgroups of physicians (eg, by gender, cohort, specialty, hospital vs community setting, etc) require different types of interventions to address burnout effectively.

LIMITATIONS

Burnout was measured using a unidimensional scale, rather than the 22-item Maslach Burnout Inventory (MBI) that has been used extensively to differentiate the emotional exhaustion, depersonalisation and personal accomplishment aspects of burnout.²⁶ The measure used has been validated as a substitute to the MBI emotional exhaustion subscale.⁷ Although it would have been desirable to obtain more nuanced data on symptoms of burnout, it was judged that the trade-off in terms of survey participation was prohibitive. As it was, survey participation may have been subject to self-selection bias. The surveys were advertised using email newsletters and social media, rather than via targeted mailings. It was not possible to follow up with non-respondents via mail or telephone modes, which might have increased the number of responses. If physicians experiencing symptoms of burnout were less likely than others to read the email newsletters, we may have underestimated physician burnout. On the other hand, if those experiencing burnout were more motivated to submit a response, we may have overestimated its prevalence. Further, the merger of the OMA's newsletters, which occurred between survey waves, necessitated inconsistencies in the dissemination approach for the two surveys. However, all former recipients of the 2020 President's Update became recipients of the unified OMA News. The dissemination approach was also modified with the addition of social media for the 2021 survey, which was leveraged to attempt to reach physicians, recognising the significant volume of email communications physicians received during the pandemic. Even in the absence of selection bias, results may not be generalisable beyond Ontario physicians and trainees. Strict public health measures enforced in Ontario during the first year of the pandemic may have

reduced the strain on the healthcare system and healthcare workers, compared with the situation in other jurisdictions internationally. Hence, our findings on physician burnout during COVID-19 may be conservative.

CONCLUSION

This study demonstrates increased prevalence of burnout among Ontario physicians 1 year following the onset of the COVID-19 pandemic. This is perhaps unsurprising given that healthcare workers were subject to unprecedented stressors over this period. The implications of burnout are even more concerning given the clinical backlog of services, the worsening of health conditions through diagnostic delays and service deferrals, the putative increases in mental health and substance use disorders and the anticipated but as yet unknown impacts of long-COVID. Remediating burnout for physicians and all healthcare workers will be critical to support health system recovery efforts post-pandemic and create a sustainable healthcare system. Our findings provide a starting point for evaluating key priorities for system-level solutions to address physician burnout in Ontario.

Acknowledgements The authors would like to acknowledge the support and leadership of the Ontario Medical Association Burnout Task Force, including Drs Mamta Gautam, Stephanie Klein, Simron Singh, Carol-Anne Moulton and Chris Bourdon. We are also grateful for the invaluable contributions to project oversight, survey development, data acquisition and analyses that were made by the following employees of the Ontario Medical Association: Kathleen Clements, Thomas Fruehauf, Dara Laxer, Steve Nastos and Simone Noble.

Contributors JG, NP and JGW conceived the study. JG, NP, SW and JGW developed the analysis plan. JG and NP acquired the data. YL analysed the data. JG, NP, SW and JGW drafted the manuscript. All authors contributed to the interpretation of the data, revised the manuscript for important intellectual content and approved the final version. JGW is the guarantor.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Disclaimer Interpretation and opinions expressed are those of the authors and do not necessarily reflect the views of the Ontario Medical Association.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not required.

Ethics approval Ethical approval was not required because the study was conducted as part of OMA business operations and survey data were collected anonymously.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data were obtained without consent for sharing and therefore may not be made available. No data are available.

Supplemental material This content has been supplied by the author(s). It has not been vetted by BMJ Publishing Group Limited (BMJ) and may not have been peer-reviewed. Any opinions or recommendations discussed are solely those of the author(s) and are not endorsed by BMJ. BMJ disclaims all liability and responsibility arising from any reliance placed on the content. Where the content includes any translated material, BMJ does not warrant the accuracy and reliability of the translations (including but not limited to local regulations, clinical guidelines, terminology, drug names and drug dosages), and is not responsible for any error and/or omissions arising from translation and adaptation or otherwise.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially,

and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

ORCID iD

Sharada Weir <http://orcid.org/0000-0002-3206-6034>

REFERENCES

- World Health Organization. *Burn-out an 'occupational phenomenon': International Classification of Diseases*. WHO Departmental News. Geneva, CH, 2019. <https://www.who.int/news/item/28-05-2019-burn-out-an-occupational-phenomenon-international-classification-of-diseases>
- West CP, Dyrbye LN, Shanafelt TD. Physician burnout: contributors, consequences and solutions. *J Intern Med* 2018;283:516–29.
- Ruzycski SM, Lemaire JB. Physician burnout. *Can Med Assoc J* 2018;190:E53.
- Jha AK, Iliff AR, Chaoui AA. A Crisis in Health Care: A Call to Action on Physician Burnout. In: Waltham MA, ed. *Massachusetts Medical Society*, 2018. <http://www.massmed.org/Publications/Research,-Studies,-and-Reports/Physician-Burnout-Report-2018/>
- Rotenstein LS, Torre M, Ramos MA, et al. Prevalence of burnout among physicians: a systematic review. *JAMA* 2018;320:1131–50.
- Schmoldt RA, Freeborn DK, Klevit HD. Physician burnout: recommendations for HMO managers. *HMO Pract* 1994;8:58–63.
- Dolan ED, Mohr D, Lempa M, et al. Using a single item to measure burnout in primary care staff: a psychometric evaluation. *J Gen Intern Med* 2015;30:582–7.
- Maslach C, Leiter MP. Understanding the burnout experience: recent research and its implications for psychiatry. *World Psychiatry* 2016;15:103–11.
- Catalyst N. Physician Burnout: The Root of the Problem and the Path to Solutions. In: Waltham MA, ed. *Massachusetts Medical Society*, 2017. <https://moqc.org/wp-content/uploads/2017/06/Physician-Burnout.pdf>
- Panagioti M, Panagopoulou E, Bower P, et al. Controlled interventions to reduce burnout in physicians: a systematic review and meta-analysis. *JAMA Intern Med* 2017;177:195–205.
- West CP, Dyrbye LN, Erwin PJ, et al. Interventions to prevent and reduce physician burnout: a systematic review and meta-analysis. *Lancet* 2016;388:2272–81.
- Canadian Medical Association. CMA National Physician Survey: A National Snapshot. In: CMA-AMC. Ottawa, ON, 2018. <https://www.cma.ca/sites/default/files/2018-11/nph-survey-e.pdf>
- de Wit K, Mercuri M, Wallner C, et al. Canadian emergency physician psychological distress and burnout during the first 10 weeks of COVID-19: a mixed-methods study. *J Am Coll Emerg Physicians Open* 2020;1:1030–8.
- Magnavita N, Soave PM, Antonelli M. A one-year prospective study of work-related mental health in the Intensivists of a COVID-19 hub Hospital. *Int J Environ Res Public Health* 2021;18. doi:10.3390/ijerph18189888. [Epub ahead of print: 20 Sep 2021].
- Kane L. 'Death by 1000 Cuts': Medscape National Physician Burnout & Suicide Report 2021.. In: *WebMD*. Atlanta, GA, 2021. <https://www.medscape.com/slideshow/2021-lifestyle-burnout-6013456#15>
- Kane L. Medscape National Physician Burnout & Suicide Report 2020: The Generational Divide. In: *WebMD*. Atlanta, GA, 2020. <https://www.medscape.com/slideshow/2020-lifestyle-burnout-6012460?faf=1#5>
- Magnavita N, Chirico F, Garbarino S, et al. SARS/MERS/SARS-CoV-2 outbreaks and burnout syndrome among healthcare workers. An umbrella systematic review. *Int J Environ Res Public Health* 2021;18. doi:10.3390/ijerph18084361. [Epub ahead of print: 20 04 2021].
- DeChant PF, Acs A, Rhee KB, et al. Effect of organization-directed workplace interventions on physician burnout: a systematic review. *Mayo Clin Proc Innov Qual Outcomes* 2019;3:384–408.
- Thomas Craig KJ, Willis VC, Gruen D, et al. The burden of the digital environment: a systematic review on organization-directed workplace interventions to mitigate physician burnout. *J Am Med Inform Assoc* 2021;28:985–97.
- Goroll AH. Addressing Burnout-Focus on systems, not resilience. *JAMA Netw Open* 2020;3:e209514.
- Steffler M, Chami N, Hill S, et al. Disparities in physician compensation by gender in Ontario, Canada. *JAMA Netw Open* 2021;4:e2126107.
- Platt J, Prins S, Bates L, et al. Unequal depression for equal work? how the wage gap explains gendered disparities in mood disorders. *Soc Sci Med* 2016;149:1–8.



- 23 Linzer M, Levine R, Meltzer D, *et al.* 10 BOLD steps to prevent burnout in general internal medicine. *J Gen Intern Med* 2014;29:18–20.
- 24 McCabe J, Zaltzman A. Collegial collaboration: job sharing as an innovative approach to physician well-being and burnout prevention. *Can Fam Physician* 2021 <https://www.cfp.ca/news/2021/02/17/02-17>
- 25 Fassiotto M, Simard C, Sandborg C, *et al.* An integrated career coaching and Time-Banking system promoting flexibility, wellness, and success: a pilot program at Stanford University school of medicine. *Acad Med* 2018;93:881–7.
- 26 Schaufeli WB, Bakker AB, Hoogduin K, *et al.* On the clinical validity of the maslach burnout inventory and the burnout measure. *Psychol Health* 2001;16:565–82.