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Wellness

Impact of the COVID-19 Pandemic on the Wellness of Canadian Plastic Surgery Residents

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Background: On top of preexisting burnout, depression, and anxiety among trainees, the COVID-19 pandemic has introduced novel stressors. The objectives of this study were to determine the effects of the COVID-19 pandemic on Canadian plastic surgery residents' practice, wellness, and overall training.

Methods: Surveys for program directors and residents were created and disseminated to all English-speaking Canadian plastic surgery residency training programs. Survey results were pooled and presented as a percentage of responses for each question.

Results: Response rates were 50% (n = 5/10) and 25% (n = 19/77) for program directors and residents, respectively. All program directors believed that the pandemic has a negative effect on resident wellness, 80% (n = 4/5) of which believed that their residents were coping effectively. They rated program support for resident wellness as neutral or supportive. Most programs (80%; n = 4/5) introduced strategies to support resident well-being. Most trainees (84%; n = 16/19) reported the pandemic as having a negative effect on their well-being, with approximately 50% endorsing worse emotional, social, psychological, and physical wellness, as well as feelings of burnout. Some reported difficulties coping (21%; n = 4/19). Residents felt that their wellness was supported externally by their own resilience (89%; n = 17/19), family members (74%; n = 14/19), friends (74%; n = 14/19), their partner (68%; n = 13/19), or co-residents (53%; n = 10/19). Internal support by their program was rated as neutral or negative (63%; n = 12/19).

Conclusions: Our findings of negative effects of the COVID-19 pandemic on the wellness of Canadian plastic surgery trainees are concerning. Programs must implement appropriate identification and support strategies to improve resident well-being. *(Plast Reconstr Surg Glob Open 2022;10:e4259; doi: 10.1097/GOX.0000000000004259; Published online 24 March 2022.)*

INTRODUCTION

Graduating plastic surgery trainees must possess technical and nontechnical skills to competently manage patients.[1] A self-reported work profile of Canadian plastic surgery residents in 2018 demonstrated an average of 73 hours of work per week and eight call shifts per month.[2] This volume of clinical exposure, which has been the foundation of surgical training, has been drastically affected by the COVID-19 pandemic.[3–8] The World Health Organization officially declared the COVID-19 pandemic on March 11, 2020. As a result, there were severe disruptions to plastic surgery training.[9–12]

In addition to the effects of COVID-19 on physical health, the pandemic has affected social, psychological, and economic well-being.[13] Before the pandemic, common stressors of residency included work–life balance, caseloads, and an unpredictable schedule.[14] There is robust evidence to support that resident physicians experience burnout, depression, and anxiety during their training.[15–17] The most recent Canadian Medical Association National Physician Health Survey in 2018 found that despite high rates of resilience, emotional well-being, social well-being, and psychological well-being reported in trainees, 38% endorsed high burnout symptoms and 48% screened positive for depression.[18] This is

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alarming considering that the prevalence of mental illness in the general Canadian population is 20%.[19] During the COVID-19 pandemic, disruptions to work and social life may both exacerbate these stressors and expose resident physicians to unprecedented stressors.[14] Added stresses include being overworked, having vacations canceled, redeployment to the front lines, personal safety, general uncertainty, risk of transmission to family members, social isolation, and overall cumulative effects on training and its effect on future ability to graduate on time.[14,20–22] With novel pandemic stressors, careful attention must be paid to resident well-being.[23,24]

The primary objective of this study was to determine the effects of the COVID-19 pandemic on the practice, wellness, and overall training of Canadian plastic surgery residents. By expediently assessing the current status of resident well-being, we can determine if further, validated studies are required. Results of this study can also empower leaders in postgraduate medical education to not only assess and support the well-being of their residents during this unprecedented time, but also when recovering from the pandemic in the future.

Takeaways

Question: What are the effects of the COVID-19 pandemic on Canadian plastic surgery residents' practice, wellness, and overall training?

Findings: Surveys of Canadian plastic surgery program directors and residents were conducted. While clinical schedules remain similar, there is concern for the training of PGY5s. Program directors believed their residents were coping effectively, however both program directors and residents reported the pandemic as having a negative effect on trainee wellness. Residents endorsed external wellness support and rated internal support by their program as neutral or negative.

Meaning: The results of our study have highlighted the need for appropriate identification and support strategies to improve resident well-being.

METHODS

This is a cross-sectional, survey-based, national Canadian study conducted during the COVID-19 pandemic from November 23, 2020 to December 7, 2020. This study was approved by the Unity Health Toronto Research Ethics Office (REB#20-133c).

The authors devised two separate surveys, one specifically for Canadian plastic surgery program directors (**See survey 1, Supplemental Digital Content 1,** which shows the Program Director Survey. **http://links.lww.com/PRSGO/B994**) and one for Canadian residents (**See survey 2, Supplemental Digital Content 2**, which shows the Resident Survey. **http://links.lww.com/PRSGO/B995**). The survey for program directors contained up to 27 questions. The survey for residents contained up to 38 questions. The types of questions included in the surveys were yes/no, multiple choice, Likert/numerical scales, and open-ended questions.

The surveys were sent to program administrators of all English-speaking Canadian plastic surgery residency training programs (University of British Columbia, University of Calgary, University of Alberta, University of Manitoba, Western University, McMaster University, University of Toronto, University of Ottawa, McGill University, and Dalhousie University) for distribution to their residents and program directors. The anonymous survey was administered through SurveyMonkey. Initial invitations were emailed on November 23, 2020. Follow-up reminders were sent on November 30, 2020 and December 7, 2020, at the midway point and on the final day of the survey, respectively. The surveys remained open for a total period of 14 days.

Participation was voluntary, and consent to participation in the research study was implied if the survey was completed. Participants were permitted to not answer specific questions if they did not wish to do so without explanation and to opt out at any time. Participants were asked to provide information on their institution and postgraduate year (PGY#) of training (residents) or years of experience (program director), for analysis purposes. This was to ensure adequate representation across training programs. Survey results were pooled and presented as a percentage of responses for each question.

RESULTS

Plastic Surgery Program Directors

Of the 10 English-speaking plastic surgery program directors, five completed the survey. Time as program director ranged from 9 months to 4 years.

In terms of redeployment, on a scale of 1–10, program directors felt an average pressure of 5.6 out of 10 (range 1–9) to redeploy their residents. Despite this pressure, no programs had any residents redeployed at this point in time. All program directors were concerned about missed plastic surgery training in the case of redeployment (Table 1). Other concerns included supervision of plastic surgery residents on redeployed services, insufficient relevant skills on redeployed services, and resident exposure to COVID-19 on redeployed services (Table 1). On a scale of 1–10, program directors expressed an average concern of 5.6 (range 2–8) for shortage of residents on plastic surgery services due to redeployment. Of the five respondents, two (40%) were concerned about this.

All program directors believed that potential redeployment has a negative effect on resident wellness. On a scale of 1–10, program directors reported an average 8.6 out of 10 (range 7–10) for how much resident wellness is affected by the COVID-19 pandemic, and all believed it to be a negative effect (100%; n = 5/5). All program directors believed that preparing for the Royal College examination during the pandemic was affecting resident wellness (other factors are listed in Table 2). One program director expressed concern about the loss of division social activities and journal club affecting resident wellness.

Table 1. Concerns Regarding Potential Redeployment

	Program Directors % (n)*	Residents % (n)*
Missed plastic surgery training	100% (5/5)	84% (16/19)
Adequate supervision of plastic surgery residents on redeployed services	60% (3/5)	26% (5/19)
Insufficient relevant skills on redeployed services	60% (3/5)	63% (12/19)
Resident exposure to COVID-19 on redeployed services	40% (2/5)	53% (10/19)
Hours of work on redeployed services	0% (0/5)	16% (3/19)

*% (n) represents the percentage of respondents and proportion of respondents who selected the respective concern.

Table 2. Potential Factors Adversely Impacting Resident Wellness

Factor	Program Directors % (n)*	Residents % (n)*
Implications with the final Royal College examination	100% (5/5)	13% (2/16)
Access to scholarly activities (ie, grand rounds, teaching)	80% (4/5)	19% (3/16)
Impact on elective opportunities	80% (4/5)	0% (0/16)
Impact on fellowship/job applications	80% (4/5)	13% (2/16)
Overall uncertainty	80% (4/5)	25% (4/16)
Social isolation	60% (3/5)	6% (1/16)
Changing/conflicting policies	60% (3/5)	6% (1/16)
Changes to clinical experience	40% (2/5)	13% (2/16)
Impact on research opportunities	40% (2/5)	31% (5/16)
Excessive workloads	20% (1/5)	25% (4/16)
Overload of information regarding COVID-19	20% (1/5)	6% (1/16)
Potential extension of duration of training	0% (0/5)	6% (1/16)

*% (n) represents the percentage of respondents and proportion of respondents who selected the respective factor affecting resident wellness.

Eighty percent of program directors (n = 4/5) believed that their residents were coping effectively. They rated the support they were providing for resident wellness to be neutral (20%; n = 1/5) or supportive (80%; n = 4/5). Most programs (80%; n = 4/5) introduced additional strategies to support resident well-being during the COVID-19 pandemic. New initiatives included appointment of a wellness director, socially distant journal clubs, provision of healthy snacks, end of year virtual celebration with catered food, and frequent check-ins by the program director.

In the context of overall training, all program directors were concerned about the effects of the pandemic on plastic surgery training (Table 3), with the most concern for the PGY5s (8.4/10, range 7–9; refer to Fig. 1). Aspects of plastic surgery training that they are most concerned about are overall clinical experience (80%; n = 4/5) and

Table 3. Level of Concern about the Effects of the Pandemic on Plastic Surgery Training

	Program Directors % (n)	Residents % (n)
Not at all concerned	0% (0/5)	10% (2/19)
Slightly concerned	0% (0/5)	53% (10/19)
Moderately concerned	80% (4/5)	21% (4/19)
Very concerned	20% (1/5)	16% (3/19)

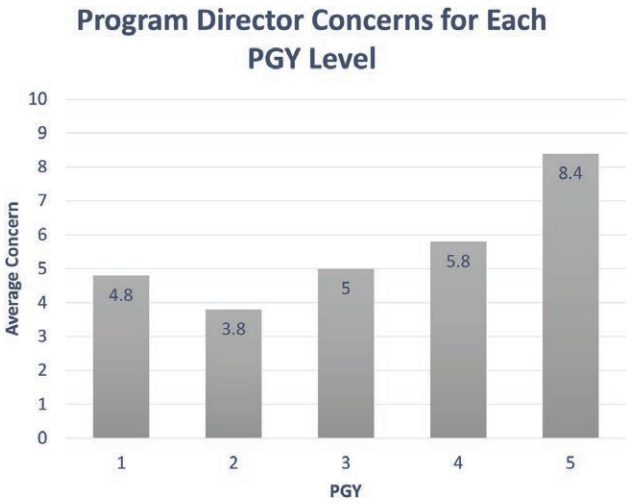

Fig. 1. Average Program Director concerns for each PGY Level.

OR experience (60%; n = 3/5). A minority were concerned about scholarly activities (40%; n = 2/5), elective opportunities (40%; n = 2/5), duration of training (40%; n = 2/5), research opportunities (20%; n = 1/5), and fellowship applications (20%; n = 1/5). One program director raised concern about the canceled oral component of the Royal College examination.

Plastic Surgery Residents

A response rate of 25% (n = 19/77) was calculated for Canadian plastic surgery residents. Of the 10 English-speaking plastic surgery programs, there were respondents from four programs (Fig. 2). All postgraduate years were represented (Fig. 3).

Compared with before the COVID-19 pandemic, residents reported a decrease in elective operative case experience from an average of 4.7–3.6 cases per week. However, other aspects (including days in clinic, minor procedure cases, scholarly activities, call frequency, emergency cases, and total work hours per week) remained similar (Table 4).

At the time of the survey, none of the respondents had been redeployed to another service. Fifty percent of respondents felt either unprepared or very unprepared for potential redeployment. Most concerns regarding potential redeployment included insufficient relevant skills on the redeployed service and missed plastic surgery training (Table 1). Only a small percentage of trainees reported a negative effect of potential redeployment on their wellness (26%; n = 5/19), whereas the majority reported no effect (53%; n = 10/19) or unsure of an effect (21%; n = 4/19).

With respect to wellness, on a scale of 1–10, residents reported an average 6.4 (range 3–9) for how much their wellness was affected by the COVID-19 pandemic. The majority of respondents reported COVID-19 as having a negative effect (84%; n = 16/19), 44% (n = 7/16) of which endorsed feeling burnt-out. Factors that contributed to this included impact on research opportunities, excessive workloads, and general uncertainty about the future (Table 2).

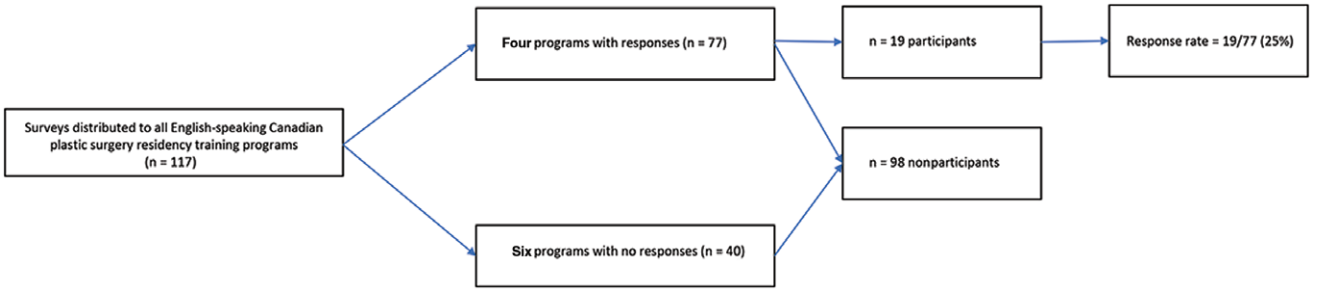

Fig. 2. Flow chart demonstrating response rate from plastic surgery residents.

Nearly half of the respondents (42%; n = 8/19) reported that their clinical performance was affected by changes in their wellness due to the pandemic. Some residents also reported effects on their academic performance (26%; n = 5/19) and research (26%; n = 5/19). Open-ended responses elaborated on the emotional and physical exhaustion that required more motivation at work, as well as overall burnout and inability to destress. Compared with before the pandemic, almost 50% of residents reported worse emotional wellness, social wellness, psychological wellness, physical wellness, and feelings of burnout (Table 5). Although most rated their ability to cope with the effects of the COVID-19 pandemic on their wellness to be neutral or effective (79%; n = 15/19), there were some who reported difficulties coping (21%; n = 4/19). Residents felt that their wellness was externally supported by their own resilience (89%; n = 17/19), family members (74%; n = 14/19), friends (74%; n = 14/19), their partner (68%; n = 13/19), or co-residents (53%; n = 10/19). There was a minority that reported support from staff (16%; n = 3/19) or mentors (16%; n = 3/19). Most rated the internal support by their program as neutral or negative (63%; n = 12/19).

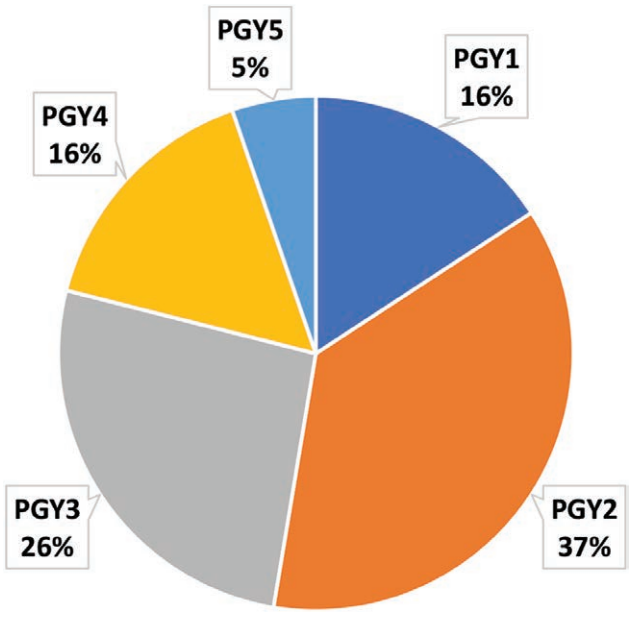

Fig. 3. Plastic surgery resident respondents (by PGY level).

Residents' suggestions of how their program can better support their wellness during the pandemic included increased communication, facilitating junior resident participation in ORs, more wellness activities, recognition of emotional challenges with protected wellness time and connection with counseling resources, small acts of kindness, or support for travel home. One respondent indicated that their wellness was affected primarily by social isolation, which they felt could not have been addressed by the program.

Most residents (89%; n = 17/19) expressed some concern over the effects of the COVID-19 pandemic on their training (Table 3). Open-ended responses for how the pandemic affected training included challenges in managing meetings, decreased access to resources, less clinical and operative exposure affecting decision-making and technical skills, and exclusion of junior residents in the OR. Open-ended responses for how programs can better support their trainees included attempts to optimize surgical exposure during shutdown/lockdown times, having one to one OR time with staff, planning more educational sessions, and prioritizing teaching over service.

DISCUSSION

Changes in Clinical Training Experiences

The continuation of surgical training in the midst of a pandemic has its challenges. During the first wave of the

Table 4. Residents' Perceived Changes in Training during the COVID-19 Pandemic

	Before the COVID-19 Pandemic	During the COVID-19 Pandemic
Average number of elective OR cases (range)/week	4.7 (0–12)	3.6 (0–10)
Average number of days in clinic (range)/week	2.3 (0–4)	1.6 (0–4)
Average number of minor procedure cases (range)/week	9.5 (0–30)	8.5 (0–25)
Average number of scholarly activities (eg, research meetings, grand rounds, journal club) (range)/week	2 (0–7)	1.3 (0–3)
Call frequency (range)	1 in 3.7 (0–8)	1 in 3.7 (0–7)
Average number of emergency cases (range)/week	2 (0–4)	2.2 (0–5)
Total work hours (OR, clinic, minor procedures, scholarly activities, call) (range)/week	66 (0–100)	63 (35–83)

Table 5. Aspects of Resident Wellness Compared with before the Pandemic

Aspect of Wellness	Change	Residents % (n)
Emotional wellness	Better	10% (2/19)
	No change	37% (7/19)
	Worse	53% (10/19)
Social wellness	Better	0% (0/19)
	No change	16% (3/19)
	Worse	84% (16/19)
Psychological wellness	Better	5% (1/19)
	No change	42% (8/19)
	Worse	53% (10/19)
Physical wellness	Better	5% (1/19)
	No change	32% (6/19)
	Worse	63% (12/19)
Work/life balance	Better	5% (1/19)
	No change	69% (13/19)
	Worse	26% (5/19)
Feelings of burnout	Better	10% (2/19)
	No change	42% (8/19)
	Worse	48% (9/19)
Feelings of resilience	Better	16% (3/19)
	No change	58% (11/19)
	Worse	26% (5/19)

pandemic, elective cases were canceled due to concerns that elective procedures may contribute to the spread of the disease and use limited resources such as personnel, medical supplies, and personal protective equipment within hospitals.[25,26] In our survey, residents reported a decrease in elective operative main OR experience from an average of 4.7–3.6 cases a week. Program directors also demonstrated concern regarding OR experience (60%; n = 3/5) and clinical experience in general (80 %; n = 4/5). Although the quantitative hours of clinical schedules seem relatively unchanged based on our data, qualitative data on the breadth of procedures and encounters residents were exposed to were not captured.

Resident Wellness

Maintaining residents' wellness during the pandemic is an important responsibility of programs. During the SARS epidemic, 29%–35% of healthcare workers were found to suffer significant emotional distress, with posttraumatic stress found in up to 10% of healthcare workers several years later.[22,27] While the SARS epidemic also involved top-down enforcement of community quarantine, it was controlled within an 8-month period.[28] Geographically, the SARS epidemic mostly affected Toronto.[29] In contrast, the global COVID-19 pandemic and its intermittent lockdowns have persisted for over a year now.[30] In our survey, program directors largely believed that their residents were coping effectively. However, 21% of respondents reported difficulty coping with the pandemic and 50% of respondents have experienced a decline in emotional, social, psychological, and physical wellness and increased feelings of burnout. Similar results were reported in a national survey of United States ENT residents, where a large proportion were found to be experiencing symptoms of burnout, anxiety, and distress.[23] Impaired wellness with minimal changes in clinical training draws attention to the gravity of new pandemic stressors. Although the length of the pandemic and its long-term effects on wellness is unknown, based on what we have learned from the SARS epidemic, prompt action is needed for the self-assessment and support of resident well-being now and in the long-term.

While we have demonstrated the effects of the pandemic on resident well-being, of concern is the finding that 42% of respondents reported that changes in their wellness due to the pandemic have also affected their clinical performance. Studies have found self-reported errors, nonadherence to best practices, and changes in clinical reasoning to be consequences of resident burnout.[31–34] The implications of decreased resident well-being during the pandemic on patient safety cannot be ignored. This finding highlights resident well-being as a modifiable risk factor for patient morbidity and mortality, which should be addressed appropriately.

More than half of residents reported external support for their wellness. The question arises of whether programs are doing what is required to support their residents. There is a discrepancy in programs' support, where most program directors believe their programs are supportive, but only 37% (n = 7/19) of residents echo this statement, leaving a large majority (63%; n = 12/19) feeling unsupported or neutral. During these unprecedented times, it can be challenging for residents to maintain their own well-being, necessitating effective support from programs. A systematic review identified social connectedness as an important factor in resident well-being.[17] This finding is supported by literature that has established relatedness, autonomy, and competence as the three psychological needs for well-being.[35] Meaningful conversations with mentors or peers establish a feeling of being understood, allowing an individual to achieve relatedness satisfaction.[17] In recognizing that social connectedness is impaired by the pandemic, programs can adapt a targeted approach when introducing new initiatives for resident well-being. Suggestions put forth by trainees in our survey included improved communication, more wellness activities, connection with counseling resources, small acts of kindness, and support for travel home. New initiatives instituted by programs included appointing a wellness director, socially distant journal clubs and rounds, provision of healthy snacks, an end of year virtual celebration with catered food, and frequent check-ins by the program director.

It is acknowledged that program directors may not have the capacity or background necessary for providing effective support of trainees. It may be valuable to seek external consultation from personnel equipped with the appropriate background. It is also important to recognize that program directors are also under extreme stress themselves as clinicians and leaders during this time and require support in their own regard.

Overall Effects on Training

It is without a doubt that the pandemic has had a dramatic effect on surgical training. Despite this, we must preserve high-quality training to meet Royal College requirements and educational needs. In our survey, program directors were either moderately or very concerned about the effects of the pandemic on overall training, particularly for

the PGY5s. Residents reported slightly lesser concerns, but did agree that decreased clinical and operative exposure may affect their clinical acumen and technical skills.

Future Steps

It is unclear how long the COVID-19 pandemic itself or its lasting effects on mental health may persist. Adapting education to effectively respond to trainee well-being demands great leadership.[36] Given that almost 50% of residents have reported a decline in various aspects of wellness, and that most residents do not feel adequately supported by their program, concrete action is vital. The COVID-19 pandemic should be used as an opportunity to reflect on and improve training programs' assessment and support of trainee well-being. In effecting change to the broader residency community now, we can establish the necessary supports to strengthen residents' resilience and recovery post-COVID-19.

Program leaders, who play a critical role in trainee well-being, can start by fostering an awareness of wellness, self-care strategies, and the range of mental illness to which physicians are susceptible to.[36,37] To keep residents safe, we must give them tools for early detection, open dialogue, and communication. Within the confines of the pandemic, we must strive to facilitate socialization and team-building that can maintain a sense of community.[24] The first step to opening this dialogue is inviting resident feedback and maintaining open, continuous communication.[37] For example, a survey of plastic surgery program directors in the United States found that a majority of program directors hosted weekly/biweekly meetings with all residents during the pandemic.[38] This provided a space for residents to express feelings, present new ideas, and discuss changing needs with regard to their work and physical, emotional, and social challenges.[24,38] Programs are also continuing social and wellness agendas during the pandemic, with initiatives such as group virtual workouts and daily meals, which was found to foster a supportive culture.[24] Other options described in the literature include game nights, cooking classes, and meditation sessions led by residents/faculty.[38]

Limitations

There are several limitations of this work. First, our survey did not capture baseline differences in mental health, resiliency, or concurrent stressors. Second, there is likely an effect of response bias, nonresponse bias, and survey fatigue. Third, there may be differences in the impact of COVID-19-related stressors depending on training location, severity of outbreaks, and time of survey administration. Fourth, validated measures were not utilized to assess burnout, depression, or anxiety given the length of these assessments. Through conducting a rapid assessment, we were able to evaluate both the current status of trainee well-being and the need for further investigation. Finally, there was a low response rate among residents, with representation from only four of 10 schools. In addition to a short timeline of 2 weeks for survey responses, the authors encountered logistical challenges in disseminating the surveys. Despite the authors' attempts to confirm the distribution of surveys via administrative offices, some programs did not respond to confirm or deny. Statistics were not completed given the low power and preliminary nature of this study. Future work will include a detailed statistical analysis.

CONCLUSIONS

Continuing surgical training while maintaining resident well-being should be a priority of all programs. Given the well-documented effect of the COVID-19 pandemic on healthcare workers' well-being,[39–41] the dissemination of these findings is aimed to educate and stimulate proactive changes by national leaders of postgraduate medical education. Residents are deserving of appropriate adjustments by their programs, such as changes to work culture and support services during these extraordinary times. Future work includes assessing the efficacy of interventions and establishing validated tools for self-evaluation.

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