Can J Anesth/J Can Anesth (2023) 70:172–175
https://doi.org/10.1007/s12630-022-02366-2

CORRESPONDENCE

Impact of the COVID-19 pandemic on anesthesiology residents in Canada: a nationwide survey

Fabricio Batistella Zasso, MD, MBA, MHSc · Laura Liu, HBSc, BS · Naveed Siddiqui, MD, MSc · Evan Wild, MBBS, FRCPC · Faraj Massouh, MD, FRCPC · Kong Eric You-Ten, MD, PhD, FRCPC

Received: 13 June 2022 / Revised: 9 October 2022 / Accepted: 11 October 2022 / Published online: 29 November 2022

To the Editor,

Medical education in Canada underwent rapid and unforeseen changes in March 2020, due to the COVID-19 pandemic.[1] A transition to online alternatives for medical education was observed. Disciplines that heavily use procedural skills, including anesthesiology, have been the most affected.[2] The literature has shown that the COVID-19 pandemic has impacted the mental health of frontline healthcare workers.[3] Anesthesiologists and anesthesia residents have been deeply involved in airway management and perioperative and intensive care unit care for COVID-19 patients. Nevertheless, the impact on anesthesia residents during the pandemic have not yet been studied in Canada. We conducted this survey to determine the educational, clinical, and psychological impacts of the COVID-19 pandemic on Canadian anesthesia residents.

Approval was obtained from the Mount Sinai Hospital Research Ethics Board (REB 21-0190-E - September 2021). An 18-question survey was developed based on a literature review and the input of the investigators (Electronic Supplementary Material eAppendix). The questionnaire was pretested to guarantee understandability and usability. The target population was third-, fourth-, and fifth-year trainees from the 17 Canadian anesthesiology residency programs; first- and second-year trainees were not included because these individuals were not in residency before the pandemic. Based on the CAPER (Canadian Post-MD Education Registry) Census of Post-MD Trainees in Canada, our estimated target population was 360 participants. The residents were contacted through their program directors (PDs). An e-mail was sent to the PDs explaining the survey and asking them to disseminate it to their residents. Two subsequent reminder e-mails within a three-week interval were sent. The survey was hosted on the online survey instrument SimpleSurvey (Montreal, QC, Canada [a division of OutSideSoft Solutions Inc.]; available at URL: https://simplesurvey.com [accessed November 2022]) from October to December 2021. Respondents signed an online consent form. Responses were anonymized and confidential. Statistical analysis was descriptive (Microsoft Excel, Microsoft Corporation, Redmond, WA, USA).

One hundred and four residents participated, and 79 completed the questionnaire (22%, 79/360) from 13 different residency programs. Of the residents, 58% (46/79) estimated a reduction in their procedure volumes, 95% (75/79) reported a decrease of in-person virtual educational activities, and 99% (78/79) reported an increase in virtual educational activities. Sixty-one percent (48/79) described a decrease in the overall number of educational activities. Despite 71% (56/79) of respondents alleging that their programs initially showed poor ability to support virtual activities, 99% (78/79) reported improvements later. Of the respondents, 76% (60/79) described a significant level of anxiety at the workplace, and 34% (27/79) related increased consumption of psychoactive substances, such as anxiolytics, alcohol, tobacco, coffee, and marijuana.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s12630-022-02366-2.

F. B. Zasso, MD, MBA, MHSc (✉) · L. Liu, HBSc, BS · N. Siddiqui, MD, MSc · E. Wild, MBBS, FRCPC · K. E. You-Ten, MD, PhD, FRCPC
Department of Anesthesia and Pain Management, Mount Sinai Hospital, University of Toronto, Toronto, ON, Canada
e-mail: fabricio.zasso@sinaihealth.ca

F. Massouh, MD, FRCPC
Department of Anesthesia and Pain Management, Sunnybrook Health Sciences Centre, University of Toronto, Toronto, ON, Canada

Table Responses to select survey items

Survey item	Response, *n*/total *N* (%)
A. COVID-19 impact on clinical activities	
Compared with your pre-COVID-19 pandemic status, how would you estimate your procedure volumes changed during the pandemic?	
More than before the pandemic	8/79 (9%)
Same as before the pandemic	26/79 (33%)
Reduction of less than 25% in procedure volumes	31/79 (39%)
Reduction between 25% and 50% in procedure volumes	14/79 (18%)
Reduction of more than 50% in procedure volumes	1/79 (1%)
Compared with your pre-COVID-19 pandemic status, how did the pandemic affect the number of hours worked per week?	
Increased	13/79 (16%)
Unchanged	59/79 (75%)
Decreased	7/79 (9%)
Compared with your pre-COVID-19 pandemic status, how did the pandemic affect the number of night shifts you worked per month?	
Increased	14/79 (18%)
Unchanged	61/79 (77%)
Decreased	4/79 (5%)
Have you been redeployed (to work in other departments other than yours) during the COVID-19 pandemic?	
Yes	40/79 (51%)
No	39/79 (49%)
B. COVID-19 impact on educational activities	
How have the number of "in-person" (nonvirtual) educational activities changed during the COVID-19 pandemic?	
Increased	4/79 (5%)
Unchanged	0/79 (0%)
Decreased	75/79 (95%)
How have the number of remote (virtual) educational activities changed during the COVID-19 pandemic?	
Increased	78/79 (99%)
Unchanged	0/79 (0%)
Decreased	1/79 (1%)
Overall, how have the number of educational activities (virtual and nonvirtual) changed during the COVID-19 pandemic?	
Increased	6/79 (7%)
Unchanged	25/79 (32%)
Decreased	48/79 (61%)
Have the types of educational activities used in your program changed during the COVID-19 pandemic?	
Yes, we are doing more journal clubs/seminars	0/79 (0%)
Yes, we are doing more lectures/presentations	20/79 (25%)
No, it was unchanged	59/79 (75%)
During the COVID-19 pandemic, how would you assess your program's ability to support virtual educational activities?	
Poorly prepared throughout (i.e., no to minimal support for virtual educational activities)	1/79 (1%)
Poor at first, but significantly improved later	56/79 (71%)
Adequately prepared before the COVID-19 pandemic (routinely performed virtual educational activities), but increased further during the pandemic	22/79 (28%)
Virtual educational activities were fully implemented before COVID-19	0/79 (0%)

Table continued

Survey item	Response, *n*/total *N* (%)
C. COVID-19 psychological impact on the residents	
Please try to describe your level of anxiety in the workplace during the COVID-19 pandemic	
Very high	5/79 (6%)
High	19/79 (24%)
Moderate	36/79 (46%)
Low	14/79 (18%)
Unchanged	5/79 (6%)
Did you need to seek professional assistance for your anxiety?	
Yes	8/79 (10%)
No	71/79 (90%)
Did you increase the consumption of any substance such as anxiolytics, alcohol, tobacco, coffee, marijuana, or other psychoactive substances during the COVID-19 pandemic?	
Yes	27/79 (34%)
No	52/79 (66%)
How has your program prepared residents to deal with the psychological stress of the COVID-19 pandemic?	
Residents are engaged in in-person or virtual meetings to monitor their psychological wellbeing and ensure access to resources if needed	12/79 (15%)
There are no specific meetings for residents, but the residents have been actively involved in in-person or virtual meetings regarding COVID-19	20/79 (25%)
Residents are not actively involved in COVID-19 preparation, but their specific concerns are addressed as they arise	34/79 (43%)
There is no preparedness or support from the program for the residents whatsoever	13/79 (17%)
D. COVID-19 overall impact on residents' training and career	
Overall, how do you believe the COVID-19 pandemic affected your residency training?	
Positively	5/79 (6%)
Unchanged	21/79 (27%)
Negatively	53/79 (67%)
How do you rate the quality of supervision and teaching that you receive during the COVID-19 pandemic?	
Better than before	1/79 (1%)
Same as before	50/79 (64%)
Worse than before. Nevertheless, I acknowledge that the program is doing the best it could	23/79 (29%)
Worse than before, and I believe there was a lack of intention from the program to address the issue	5/79 (6%)
How do you believe the changes due to the COVID-19 pandemic impacted your future career?	
Positively	9/79 (11%)
Unchanged	55/79 (70%)
Negatively	15/79 (19%)

Nevertheless, only 10% (8/79) sought professional assistance. Regarding how programs monitored wellbeing, 15% (12/79) of the residents alleged they were actively monitored, 68% (54/79) indirectly, and 17% (13/79) not at all. Sixty-seven percent (53/79) of the residents believed the COVID-19 pandemic negatively affected their training. Nevertheless, 64% (50/79) felt the quality of supervision and teaching was similar to before, and 70% (55/79) felt their future career would not be affected by the pandemic (Table). Our results showed that the COVID-19 pandemic had a negative educational, clinical, and psychological impact on Canadian anesthesia residents.

This study has limitations. It is a survey, which inherently contains the risk of respondent bias. In addition, the response rate was low at 22%. This low response rate was possibly caused by the lack of incentive to respond and emotional fatigue due to pandemic stress,

which may have led to "survey fatigue." An expansion of virtual learning was observed, which might be considered a positive "collateral effect" of the pandemic. Even though the superiority of conventional learning cannot be denied in some situations (i.e., clinical training, hands-on practice), we suggest a hybrid learning system should be used moving forward. Our data suggest that Canadian anesthesia programs only partially addressed the issue of the pandemic's psychological impact on residents. Options to improve the response on this matter would include frequent proactive communication with residents regarding accessible resources to support mental health and creating safe spaces where concerns can be shared and validated.[4,5]

Disclosures None.

Funding statement None.

Editorial responsibility This submission was handled by Dr. Stephan K. W. Schwarz, Editor-in-Chief, *Canadian Journal of Anesthesia/Journal canadien d'anesthésie*.

References

1. *Ross DA, National Neuroscience Curriculum Initiative "Quarantine Curriculum" Committee*. Creating a "quarantine curriculum" to enhance teaching and learning during the COVID-19 pandemic. Acad Med 2020; 95: 1125–6. https://doi.org/10.1097/acm.0000000000003424
2. *Anwar A, Seger C, Tollefson A, Diachun CA, Tanaka P, Umar S*. Medical education in the COVID-19 era: impact on anesthesiology trainees. J Clin Anesth 2020; 66: 109949. https://doi.org/10.1016/j.jclinane.2020.109949
3. *Aughterson H, McKinlay AR, Fancourt D, Burton A*. Psychosocial impact on frontline health and social care professionals in the UK during the COVID-19 pandemic: a qualitative interview study. BMJ Open 2021; 11: e047353. https://doi.org/10.1136/bmjopen-2020-047353
4. *Gallagher TH, Schleyer AM*. "We signed up for this!" - student and trainee responses to the Covid-19 pandemic. N Engl J Med 2020; 382: e96. https://doi.org/10.1056/nejmp2005234
5. *Alhaj AK, Al-Saadi T, Mohammad F, Alabri S*. Neurosurgery residents' perspective on COVID-19: knowledge, readiness, and impact of this pandemic. World Neurosurg 2020; 139: e848–58. https://doi.org/10.1016/j.wneu.2020.05.087