




RESEARCH NOTE

Impact of the COVID-19 pandemic on otolaryngology resident rhinology education

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INTRODUCTION

The rapid evolution of the health care environment prompted by the initial surge in COVID-19 cases in early 2020 resulted in significant operational and logistical changes in hospitals and clinics throughout the United States and worldwide. In response to the surge, academic medical centers implemented a major drawdown in nonurgent face-to-face patient care and clinical teaching, particularly in procedural specialties. The magnitude of this nationwide clinical drawdown and subsequent effect on resident education is unknown.

Otolaryngologists and other clinicians who routinely perform invasive upper aerodigestive procedures were found to be especially susceptible to COVID-19 infection during the early stages of the pandemic.¹ Consequently, medical advisement boards recommended the cessation of elective procedures.^{2,3} Widespread postponement of elective rhinologic procedures may thus have resulted in a sizable lapse in clinical and procedural education opportunities for otolaryngology residents.

The present study was designed to shed light on COVID-19-related lapses in otolaryngology resident educational experiences during the early pandemic response, specifically regarding the subspecialty of rhinology and skull

base surgery (RSBS). A better understanding of the effects of the pandemic on resident education and the ways in which trainees compensated for loss of traditional educational opportunities is critical to optimizing and, if necessary, remediating, education moving forward.

MATERIALS AND METHODS

A 34-question online questionnaire was sent in May 2020 to a total of 810 resident and fellow members of the American Rhinologic Society (ARS) on behalf of the Education and Resident/Fellow Committees of the ARS. The survey was open for 4 weeks and covered various topics involving COVID-19 effects on otolaryngology and RSBS-related resident education, focusing on changes in clinical volume and didactic opportunities, residents' comfort with pandemic-related precautions, personal safety, and perception of adequacy of training and personal competency.

Respondents were asked to identify alternative educational resources they used to compensate for lapses in traditional clinical learning opportunities and to assess involvement in various aspects of otolaryngology training at their respective institutions. Using a 0 to 10 sliding scale, with 0 representing "no involvement at all,"

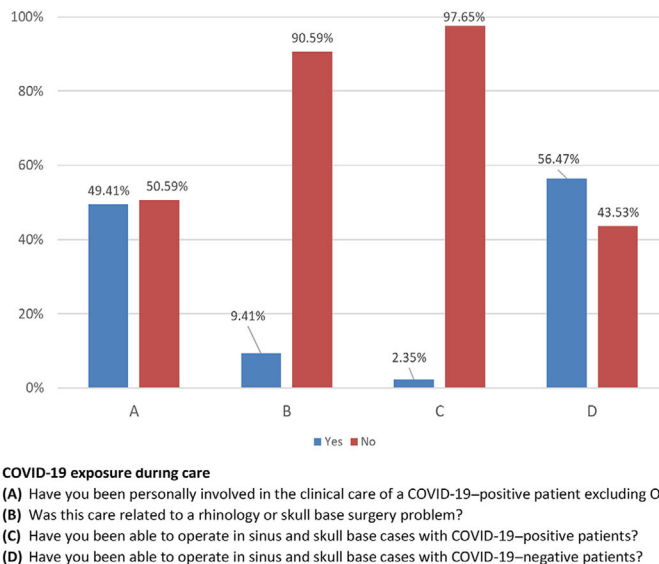


FIGURE 1 Resident involvement in the surgical management of COVID-19–positive and –negative patients. Percentage of respondents answering “yes,” “no,” or “prefer not to answer/unknown” (85 answered, 0 skipped)

5 as “involvement moderately decreased,” and 10 as “no change in involvement,” participants were asked to rank RSBS-specific educational resources used in lieu of normal clinical training during the study period. Each modality was assigned a utilization score (0–5), with a higher score representing increased utilization of a particular resource as compared with others.

RESULTS

Responses were received from 85 of 810 resident and fellow members of the ARS. Seventy-three participants (86%) completed all items within the questionnaire. Resident involvement in the care of both COVID-19–negative and –positive patients during the initial surge, including in the operating room, is depicted in Figure 1. Roughly half of the respondents were personally involved in the clinical care of a COVID-19–positive patient during early pandemic conditions (49.41%). Otolaryngology resident involvement in surgery on COVID-19–positive patients was rare, with only 6 (7.06%) residents overall and 2 (2.35%) on RSBS cases. However, 48 residents (56.47%) were able to operate in sinus and skull base cases with COVID-19–negative patients.

Involvement in the care of otolaryngology patients during initial pandemic conditions was subjectively rated on a scale from 0 (no involvement at all) to 10 (no change/normal involvement) as 5.86 (SD = 2.22), in-office evaluation of patients with rhinologic or skull base complaints as 4.43 (SD = 3.33), diagnostic nasal

endoscopy/flexible laryngoscopy as 5.07 (SD = 2.80), nasal endoscopy with biopsy, polypectomy, or debridement as 4.37 (SD = 3.13), endoscopic sinus surgery as 5.06 (SD = 3.49), and endoscopic or open skull base surgery as 4.89 (SD = 3.50). Residents ranked their overall involvement in RSBS as 4.84 (SD = 2.79).

COVID-19 also resulted in significant changes to departmental conferences and didactic offerings. Strictly in-person weekly conferences were cancelled, and 44 (52.05%) residents stated that their historically offered formal sinus and skull base dissection courses were cancelled or postponed.

As a result of the decreased exposure to rhinology and skull base surgical cases and increased concern over educational deficits (Figure 2A), residents supplemented their knowledge with a variety of alternative resources. There was a large preference for ARS website surgical videos and website lectures over traditional book and journal resources illustrating the increased utility of electronic resources during the pandemic (Figure 2B).

DISCUSSION

The COVID-19 pandemic significantly impacted the US graduate medical education system. Postgraduate residency is a critical period in which physicians-in-training have finite opportunities to obtain vital knowledge, skills, and procedural competencies before progressing to unsupervised practice. The dramatic reduction in nonurgent clinical care and elective procedures included in the initial

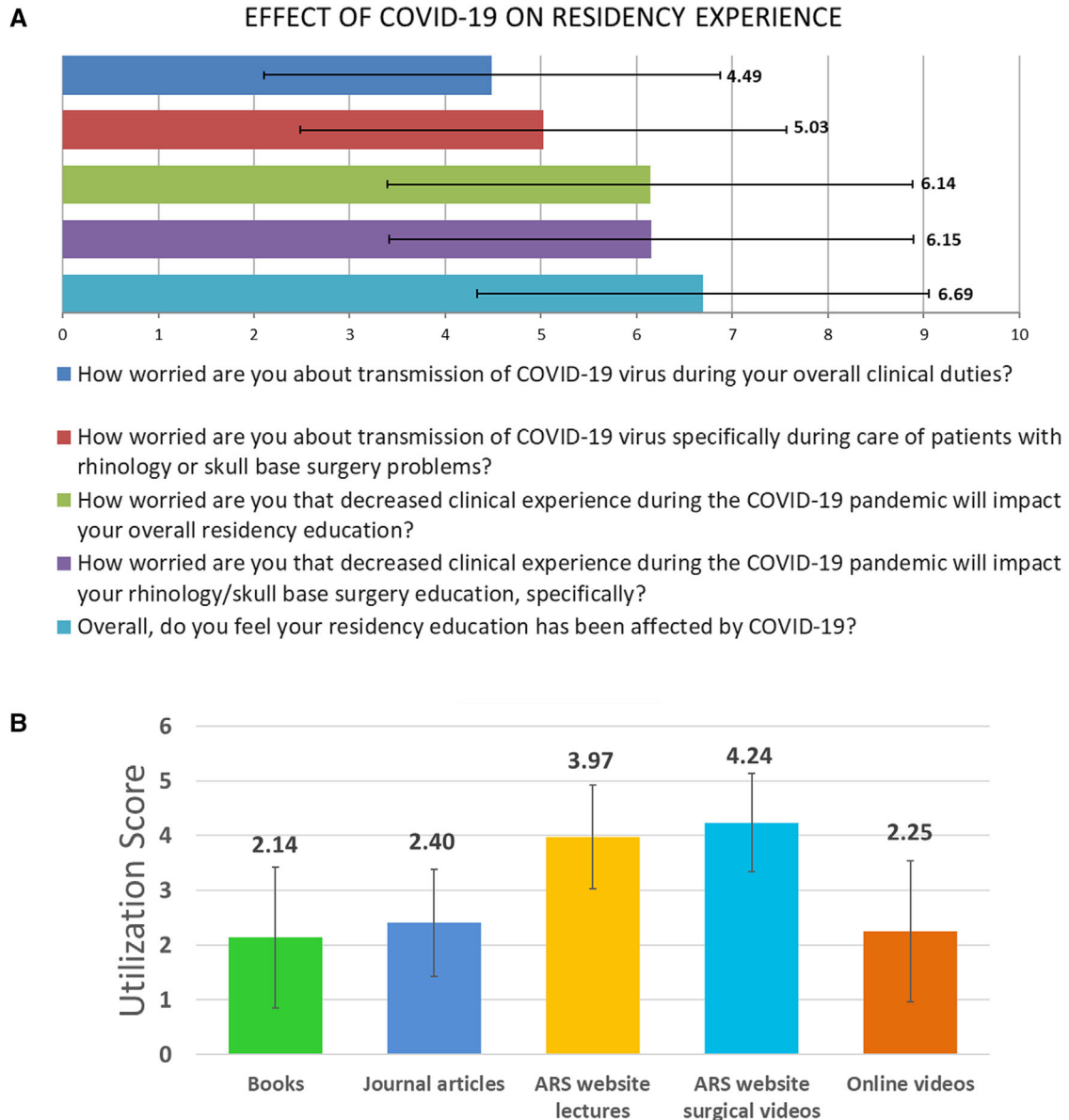


FIGURE 2 (A) Otolaryngology resident perception of the impact of the COVID-19 surge on clinical education and safety. Respondents were asked on a scale from 0 to 10: 0 = not at all affected; 10 = extremely affected. (B) Ranking of educational resource usage in lieu of normal clinical volume during COVID-19 surge conditions. A utilization score was calculated from the ranking order in which a higher score represents higher utilization of that resource compared with the others; ranked in descending order: American Rhinologic Society (ARS) website surgical videos (4.24, SD = 0.90), ARS website lectures (3.97, SD = 0.95), journal articles (2.40, SD = 0.97), online videos (2.25, SD = 1.29), and books (2.14, SD = 1.28)

pandemic response resulted in concomitant reductions in the volume and diversity of hands-on learning opportunities for residents.

This study provides a snapshot of resident experiences during the first COVID-19 surge in March to May 2020. Residency program adaptations to the challenges imposed by the pandemic invariably led to an overall decrease in clinical/procedural exposure (Figure 1).^{4,5} Tellingly, overall resident participation in RSBS was also significantly decreased, with 43.53% not able to perform

sinonasal surgery even on COVID-19–negative patients (Figure 1). Further research will be useful in determining whether overall case numbers of otolaryngology graduates are lower for those with pandemic experience and, furthermore, whether this deficit translates into decreased comfort or procedural competency. Based on the educational resource preferences identified in this report, it is reasonable to suggest learning modalities such as ARS website videos and lectures be expanded and optimized. Furthermore, additional alternative virtual resources

could be developed to compensate for the educational deficits resulting from current and potentially future health crises.

CONFLICTS OF INTEREST

There are no funding sources or financial conflicts of interest to disclose.

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