



## SPECIAL ARTICLE COVID-19

# The Impact of the COVID-19 Pandemic on Head and Neck Surgery Training: A Brazilian National Survey

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## Abstract

**Introduction** The COVID-19 pandemic has had a high impact on surgical training around the world due to required measures regarding the suspension of elective procedures and the dismissal of nonessential personnel.

**Objectives** To understand the impact the pandemic had on head and neck surgery training in Brazil.

**Methods** We conducted a 29-question online survey with head and neck surgery residents in Brazil, assessing the impact the pandemic had on their training.

**Results** Forty-six residents responded to the survey, and 91.3% of them reported that their residency was affected by the pandemic, but most residents were not assigned to work directly with patients infected with the new coronavirus (71.4%). All residents reported decrease in clinic visits and in surgical procedures, mostly an important reduction of ~75%. A total of 56.5% of the residents described that the pandemic has had a negative impact on their mental, health and only 4 (8.7%) do not have any symptoms of burnout. The majority (78.3%) of the residents reported that educational activities were successfully adapted to online platforms, and 37% were personally infected with the virus.

**Conclusion** Most surgical residencies were greatly affected by the pandemic, and residents had an important decrease in surgical training. Educational activities were successfully adapted to online modalities, but the residency programs should search for ways of trying to compensate for the loss of practical activities.

## Keywords

- ▶ Internship And Residency
- ▶ surgery
- ▶ COVID-19
- ▶ head and neck

## Introduction

The COVID-19 pandemic had a high impact on clinical activities around the world. This impact was not uniform, but, for several months, most elective surgeries and appointments were cancelled, all non-necessary personnel

were dismissed from the hospitals, operating rooms were converted in intensive care units, and all nonurgent procedures were postponed. New recommendations regarding surgical procedures were published by most health agencies.<sup>1</sup> Head and neck surgery was specially affected,

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since most procedures were considered of high risk for transmission due to aerosol production and manipulation of mucous membranes with potentially high viral load.<sup>2,3</sup>

These measures were necessary, yet not without consequences. One of the main effects was the impact on the training of surgical residents, which is highly dependent on practical activities.

Previous reports showed an important influence on the training of surgical residents in different specialties and geographic regions.<sup>4-6</sup> Guo et al. reported, based on a national survey, a reduction of clinical activities in 93% of otolaryngology training programs in the United States, with 68% of trainees concerned about the ability to receive adequate surgical training.<sup>7</sup>

Measures have been proposed to overcome the difficulties in practical training.<sup>8</sup> However, it is not clear if there will be enough time to adequately compensate the decrease in practical activities and surgical training.

To better understand the impact of the COVID-19 pandemic on head and neck surgery residents and on their training programs in Brazil, we conducted an online survey regarding practical activities, educational experiences, and psychological well-being.

## Methods

A 29-question anonymous online survey was created on the online platform SurveyMonkey. The questions accessed demographic information (geographic location, gender, age), stage of head and neck surgery residency (first year, second year or fellowship), impact of the COVID-19 pandemic on practical activities (clinical and surgical activities) and on educational activities, if the resident was recruited to work directly with patients infected with the new coronavirus, availability of personal protective equipment (PPE), if the resident was infected with the disease, and psychological impacts of the pandemic. All Brazilian program directors were invited to share the survey with their residents. The study project was approved by the institutional review board (number 36337320.8.0000.0068).

Descriptive statistics were performed on the online platform SurveyMonkey.

## Results

The survey was answered by 46 residents, which represent at least 51% of response since there are currently 90 head and neck surgery residency positions in Brazil, but not all are occupied.

Thirty-three (73%) respondents were from the state of São Paulo, followed by three from Rio de Janeiro (6.7%), three from Bahia (6.7%), two from Pernambuco (4.4%), one from Rio Grande do Norte (2.2%), one from Ceará (2.2%), one from Paraná (2.2%), and one from Santa Catarina (2.2%). All respondents were from large urban centers with a population > 500,000 inhabitants. The majority (26 residents, 56.5%) were male, with a mean age of 30.3 years old (ranging from 27 to 36 years old). The majority (35 residents, 76%)

attended programs in hospitals that offer services only for the Brazilian unified public health system (SUS, in the Portuguese acronym).

The majority (42 residents) of the respondents reported that their residency programs were affected by the COVID-19 pandemic (91.3%), yet most residents were not assigned to work directly with patients infected with the new coronavirus (33 residents, 71.4%). One resident volunteered for this work, and 12 (26%) were assigned, not voluntarily.

Among the 12 residents that worked directly with COVID-19 patients, five were totally removed from their usual activities and exclusively assigned to this work (11% of respondents), one worked 75% of the time with COVID-19, two worked 50% of the time, and four only 25%. For six residents, this work lasted one to two months, and for seven, it lasted > three months. Only one resident described not having adequate PPE available, and eight (17.4%) reported not having adequate training to work with COVID-19 patients.

When describing their activity in head and neck surgery, all residents reported a decrease in clinical activities. Regarding in-person outpatient clinic visits, eight residents (17%) reported a total interruption, 17 (37%) reported an important reduction of ~ 75%, 12 (26%) reported a reduction of ~ 50%, and nine (20%) reported a reduction ≤ 25%.

Regarding participation in surgical procedures, two residents (4.3%) described total interruption of surgical activities, and 20 (43.5%) reported an important decrease of ~ 75% of surgical activities. Ten (21.7%) residents described a moderate reduction of ~ 50% of surgeries, and 14 (30.5%) reported a smaller reduction of ~ 25% of procedures.

Regarding the impact on educational activities, only one resident reported a total interruption. Sixteen (35%) described a discrete reduction up to 25% of the activities, and 9 (19%) reported a moderate to severe reduction (50 to 75% of activities). Eight residents (17%) described an increase in educational activities. The majority (36 residents, 78.3%) reported that these activities were successfully adapted to online platforms, and 6 (13%) maintained in-person and online activities.

Only one resident believed that the COVID-19 pandemic is having a positive impact on their training as head and neck surgeons, and 13 (28.2%) think that there is no impact. The majority (32 residents, 69.5%) believed that it is having a negative impact and, among these, only half believe that this negative impact will be compensated during their residency.

Regarding emotional wellbeing, 26 (56.5%) described that the pandemic has had a negative impact on their mental health, and only 4 (8.7%) do not have any symptoms of burnout. These symptoms are occasional for 34 residents (73.9%), frequent in 7 (15.2%), and constant in 1 (2.2%). A total of 25 residents (54%) described negative changes in their sleep patterns.

Despite the negative impacts, 16 residents believe that things will either go back to normal (34.8%) or are optimistic that it will be hard, but they will be able to overcome and compensate this difficult time (22 residents, 47.8%).

Seventeen residents (37%) were infected with the new coronavirus.

## Discussion

Head and neck surgery residents and program directors have been faced with the challenge of maintaining an adequate training scenario amidst the COVID-19 pandemic. Because of the high risk of most procedures, this has been particularly hard. Different geographical regions were distinctly affected by the pandemic, generating different impacts on training.<sup>9,10</sup> Therefore, we bring the results of this national survey in Brazil to offer additional insight on this scenario.

In Brazil, the secretary of higher education signed a note in May 2020 setting recommendations regarding the activities of medical residents during the COVID-19 pandemic. The note issued rules regarding working hours, maximum of hours outside of the specific area of training, and development of educational activities, with the intent of assuring that all residents had minimum training in their fields while assisting with the health crisis.<sup>11</sup> Unfortunately, not all residency programs followed this recommendation.

As seen on previous reports from different locations, the impact of the COVID-19 pandemic on the training activities of surgical residents was high, described by nearly all residents and specialties.<sup>7,9</sup> In this series, the majority of residents was not assigned to work directly with COVID-19 patients, but all described significant decrease in clinical activities and 47.8% reported a reduction  $\geq 75\%$  on surgical procedures.

Pertile et al. published data from a national survey with 756 surgical residents from all specialties in Italy, a country severely affected by the pandemic. The impact on surgical activities was very high and 57.7% of the respondents believed the pandemic hurt their training. Almost 15% of the residents were transferred to nonsurgical units with surgical activities totally interrupted, this being more frequent among general surgery residents than other specialties and residents on the earlier years of training. The authors also report concerns about the lack of training for the reassigned residents and the risks involved in this situation.<sup>12</sup>

Similarly, in this report, 28% of the residents were assigned to work directly with COVID-19 patients, an event that was also experienced in other residency programs in Brazil and is probably related to shortage of medical personnel.<sup>13</sup> Also, in a similar way, many residents described not having adequate training for this kind of work, which is a worrisome fact.

Some authors have, however, described potential benefits in surgical training during the pandemic, especially in general surgery, with the increase in open procedures and more opportunities for emergency surgeries being some of them,<sup>14,15</sup> but these advantages do not apply to all specialties, which, in some cases, are mainly based on elective operations, like head and neck surgery.

On the positive side, most programs adapted the educational part of their training for online platforms with success, and some even increased the educational activities. This has been similarly reported in other programs and locations, and will certainly open many new possibilities in medical education even after the pandemic.<sup>6,7</sup>

Another positive information is that these programs did not significantly experience shortage of PPE, a major concern in the beginning of the pandemic. Only one resident described this difficulty in this survey, whereas some reports show up to 51% of shortage of some PPE.<sup>6,13</sup>

The impacts on mental health are also troublesome. Fifty-six percent of the residents described a negative impact on their mental health, and only 8.7% did not describe any symptoms of burnout. This finding is also in accordance with other literature reports showing high rates of psychological impact on residents.<sup>4</sup>

Almost 70% of residents believe that the pandemic had a negative impact on their training, and only 37% believe that this will be compensated before the end of their program. Similarly, Guo et al. reported that 59% of otolaryngology trainees in the United States expressed concerns about not receiving enough training before graduation.<sup>7</sup>

Although there was some debate, the secretary of higher education decided that residency programs in Brazil would not be prolonged this year due to the pandemic. Therefore, program directors must search for creative ways of compensating the negative impact on practical training. Some options are online simulators, surgical models for training from home, discussion of surgical videos, among others. These options are feasible, with authors reporting successful experiences,<sup>16,17</sup> but will depend on the resources of the program. Programs located in hospitals greatly impacted by the pandemic should also consider searching for partnerships with other hospitals that were less affected.

Currently, the second wave of infections is affecting many countries, and strict restrictions are again being necessary in some locations.<sup>18</sup> It is still uncertain what will happen in Brazil, but program directors should maintain all efforts in compensating the deficits on the training of this generation of residents.

## Conclusions

The COVID-19 pandemic has brought many changes in head and neck surgery residency programs, with a high impact on training due to diminished practical activities. Some educational losses have been mitigated by the use of technology, and programs should continue to use these tools for these effects.

The present survey brings important information for a better understanding of this scenario in Brazil and will hopefully provide important information for program directors to pursue ways of diminishing the negative impact the pandemic has had in the training of residents.

### Conflict of Interests

The authors have no conflict of interests to declare.

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