



## SPECIAL ARTICLE COVID-19

# Impact of the COVID-19 Pandemic on Physicians Working in the Head and Neck Field

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## Abstract

**Background** With the COVID-19 pandemic, the clinical practice of physicians who work in the head and neck field in Brazil dropped dramatically. The sustained impact of the pandemic is not known.

**Methods** An anonymous online survey was distributed to Brazilian otolaryngologists, head and neck surgeons, medical and radiation oncologists, asking about their clinical practice in the third to fourth months of the pandemic.

**Results** The survey was completed by 446 specialists. About 40% reported reduction of more than 75% in outpatient care. A reduction of 90% to 100% in airway endoscopies was reported by 50% of the responders, and the same rate of reduction regarding surgeries (pediatric or nasosinusal) was reported by 80% of them. Family income decreased by 50%, and the psychological burden on physicians was considerable. The availability of personal protective equipment and safety precautions were limited, especially in the public sector.

**Conclusion** COVID-19 is still impacting the head and neck field, and safety concerns may hinder the prompt resumption of elective care.

## Keywords

- ▶ coronavirus
- ▶ professional practice
- ▶ occupational groups
- ▶ health personnel
- ▶ work

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## Introduction

Early reports on COVID-19 in China and in Iran, Italy, France, the UK and Greece soon recognized the occupational risk for professionals who deal with diseases of the upper aerodigestive tract.<sup>1</sup> The high viral loads of SARS-CoV-2 reported in the nasal cavity, nasopharynx and oropharynx in both asymptomatic and symptomatic patients suggest potential explanations for these high infection rates.<sup>2,3</sup>

Many institutions and medical societies in the fields of otolaryngology and head and neck cancer have suggested postponing non-urgent patient care,<sup>1,4-8</sup> leading to a reduction in the volume of outpatient appointments, exams and surgeries.<sup>9,10</sup> As a result, the diagnosis and treatment of cancer and other non-COVID-19 progressive diseases may be delayed, thus impacting morbidity, mortality and treatment costs.<sup>11-13</sup>

As the incidence curve of COVID-19 lowers,<sup>14</sup> resumption of elective care needs to be considered, taking into account challenges regarding the safety of patients and healthcare personnel (HCP), and the availability of proper personal protective equipment (PPE), specially within the context of care of underserved populations. The present study aimed to evaluate the current impact of the pandemic related to otolaryngology and head and neck cancer in Brazil, to compare results with those at the beginning of the outbreak, for trend analyses, and to identify difficulties in the resumption of elective care.

## Material and Methods

Using the SurveyMonkey (SVMK Inc., San Mateo, CA, US) audience platform, a web-based survey was created to collect the demographic, professional and clinical-practice data of the responders. The target population consisted of otolaryngologists, head and neck surgeons, medical oncologists, and radiation oncologists. The questionnaire consisted of 35 questions with different formats: multiple choice, dropdown lists, and text boxes, with the possibility of adding comments as open text in some questions. Specifically, data regarding the impact of the COVID-19 pandemic were collected on: 1) the number and type of outpatient appointments, surgeries and exams with the risk of generating aerosols; 2) the availability of adequate PPE in different settings and practices; 3) the preparedness of the responder's health institution in developing strategies to manage COVID-19 suspected and confirmed patients; 4) the economic and psychological burden on physicians; and 5) the measures planned for the resumption of elective care. Pilot testing of the survey was performed with members of the research team, and the questions were modified to improve readability and adequacy.

A link to access the survey was distributed electronically, through email and social media, to members and participants of the Brazilian medical organizations (Brazilian Head and Neck Cancer Group, Otolaryngology Foundation, Brazilian Society of Clinical Oncology, Brazilian Head and Neck

Surgery Society, Brazilian Society for Radiation Oncology, and the Departments of Otorhinolaryngology, Head and Neck Surgery, Oncology and Radiotherapy of the Medical School of Universidade de São Paulo) involved. The survey collected responses from May 25th to June 30th, 2020, 3 to four months after the first diagnosed case in Brazil. Each physician could participate only once in the survey.

Participation in the survey was voluntary, and all data that could identify the responder was kept anonymous in all phases of the study. The study protocol was approved by the Institutional Review Board of Hospital das Clínicas, Universidade de São Paulo (Nr 4.009.745).

The statistical analyses were performed using the Statistical Package for The Social Sciences (SPSS, IBM Corp., Armonk, NY, US). Absolute and relative frequencies were reported for the qualitative data, and means, medians, standard deviations (SDs), interquartile ranges (percentile 25 [P25%]; percentile 75 [P75%]) or 95% confidence intervals (95%CI) were used for the quantitative data. The categorical data were compared with Chi-squared ( $\chi^2$ ) tests, and the ordinal data, with the Kruskal-Wallis, Mann-Whitney or Spearman tests (with the  $r_s$  representing the correlation coefficient). Some analyses compared the present data with those of a previous survey,<sup>9</sup> with the same main questions, which collected answers five weeks earlier, while the number of cases were still rising in Brazil. The study was considered exploratory, and no sample size calculation or correction for multiple comparisons were performed.

## Results

The survey was answered by 446 physicians; 145 head and neck surgeons, 224 otolaryngologists, 56 radiation oncologists, and 21 medical oncologists. The medical specialties were grouped in surgical and non-surgical specialties. The demographics and professional characteristics of the responders are shown in **Table 1**.

Physicians self-rated their risk of developing severe forms of COVID-19: no risk = 275 (61.7%); low risk = 118 (26.5%); and high risk = 53 (11.9%). The main reasons for the heightened perceived risk referred by 167 responders were: age (43%), hypertension (33%), obesity (16.2%), and pulmonary disease (13.8%).

The survey showed a marked reduction in outpatient care. About 40% of the specialists mentioned a reduction greater than 75% compared with prepandemic levels, with no significant difference between the private and public sectors (Mann-Whitney test;  $p = 0.68$ ). Comparing the results to those of our previous survey, we noticed a trend toward a slight increase in the volume of outpatient care in the private sector, and a slight decrease in the public sector (**Fig. 1**).

The self-perceived risk on the part of the physicians of developing serious forms of COVID-19 correlated with the reduction in outpatient care, but only in the private sector ( $r_s = 0.208$ ;  $p < 0.001$ ). In this sector, a reduction of 75% or more in the volume of outpatients was mentioned by 54.9%, 46.9% and 31.6% of the responders in the high, low and risk-free groups respectively.

**Table 1** Demographics of physicians who answered the survey

Specialty group	Surgical (otolaryngology and head and neck surgery)		Non-surgical (clinical oncology and radiation oncology)		Total		p-value
	369	82.7%	77	17.3%	446	100.0%	
<i>Years of practice</i>							
Resident	27	7.3%	7	9.1%	34	7.6%	<0.001*
< 5 years	43	11.7%	21	27.3%	64	14.3%	
5–10 years	62	16.8%	14	18.2%	76	17.0%	
10–20 years	116	31.4%	24	31.2%	140	31.4%	
20–30 years	83	22.5%	8	10.4%	91	20.4%	
> 30 years	38	10.3%	3	3.9%	41	9.2%	
<i>Geographic area of practice</i>							
North	7	1.9%	2	2.6%	9	2.0%	0.607
Northeast	61	16.5%	13	16.9%	74	16.6%	
Midwest	34	9.2%	6	7.8%	40	9.0%	
Southeast	221	59.9%	51	66.2%	272	61.0%	
South	46	12.5%	5	6.5%	51	11.4%	
<i>Urbanization level</i>							
Metropolitan	287	77.8%	55	71.4%	342	76.7%	0.231
Countryside	82	22.2%	22	28.6%	104	23.3%	
<i>Type of service</i>							
Private	107	29.0%	33	42.9%	140	31.4%	0.004†
Public	25	6.8%	10	13.0%	35	7.8%	
Both	237	64.2%	34	44.2%	271	60.8%	

Notes: \*Mann-Whitney test

†Chi-squared test.

Face-to-face appointments comprised more than 70% of the practice for 2/3 (67.5%) of the responders. Telemedicine was infrequently used: 75.0% of the physicians used it in less than 10% of their patient interactions. For 2/3 (67.7%) of the physicians, contact with patients by phone, email or social media corresponded to less than 20% of the appointments. These proportions did not change significantly since the previous survey.

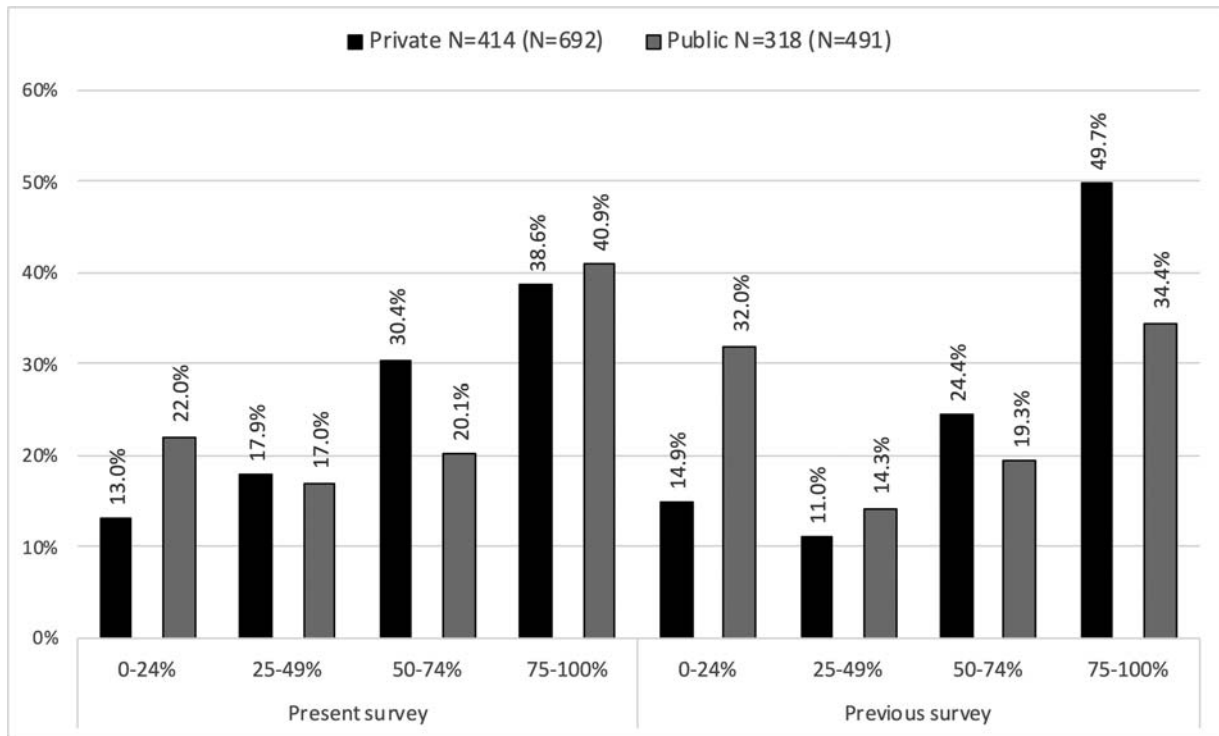
► **Figs. 2 and 3** depict the percentage reduction in upper-airway exams and surgical procedures in comparison to prepandemic levels. A pronounced reduction in exams and surgeries was observed, although a trend for improvement could be observed since last survey.

Comparing the results from the previous and the present surveys, difficulties in scheduling elective surgeries decreased from 78.7% to 46.4% in the private sector ( $\chi^2$  test;  $p < 0.001$ ), and from 75.5% to 73.3% in public services ( $\chi^2$  test;  $p = 0.573$ ). The limitations for the resumption of elective surgeries as referred by the interviewees include restrictions imposed by surgical centers, especially in the public sector, the lack of intensive care units (ICUs) for elective surgeries in

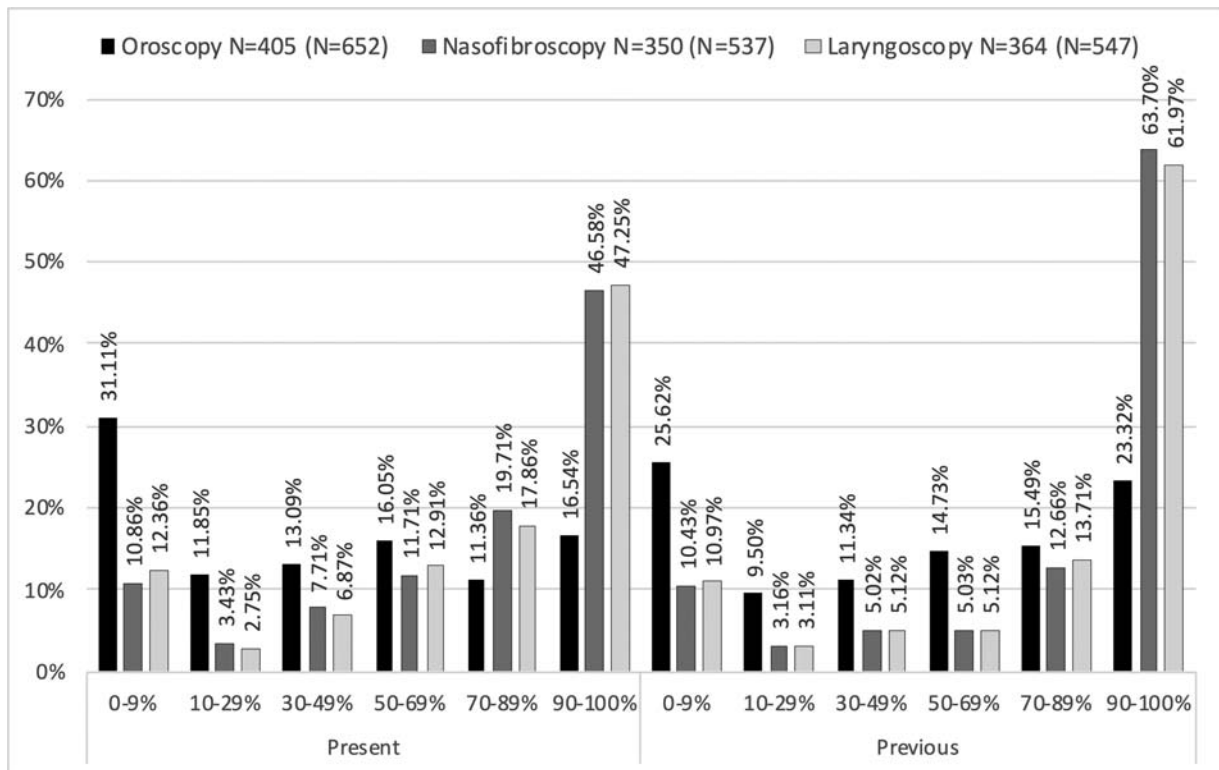
non-COVID patients, and the patients' fear to get infected during hospitalization for surgery.

There were 325 (72.8%) responders who reported owning a private office, 45.9% of whom had to dismiss or decrease the salary of employees due to reductions in income and the concomitant increase in costs with PPE and environmental cleaning material. The mean decrease in family income was of 47.4% (SD: 24.4%), with 4.1% of the colleagues reporting a drop of more than 90%. The decrease in income was lower in clinical specialties (mean: 25.6%; 95%CI: 20.6% to 30.6%) than surgical ones (mean: 51.9%; 95%CI: 49.5% to 54.2%) (Mann-Whitney test;  $p < 0.001$ ) and, as expected, for those professionals who work in the public rather than the private or both sectors (Kruskal-Wallis test,  $p < 0.001$ ). The decrease in income was also positively associated with years of practice ( $r_s = 0.25$   $p < 0.001$ ), as demonstrated in ► **Table 2**. The responders believe the pandemic will further impact their clinical practice for a median of 6 months (P25%: 6 months; P75%: 12 months).

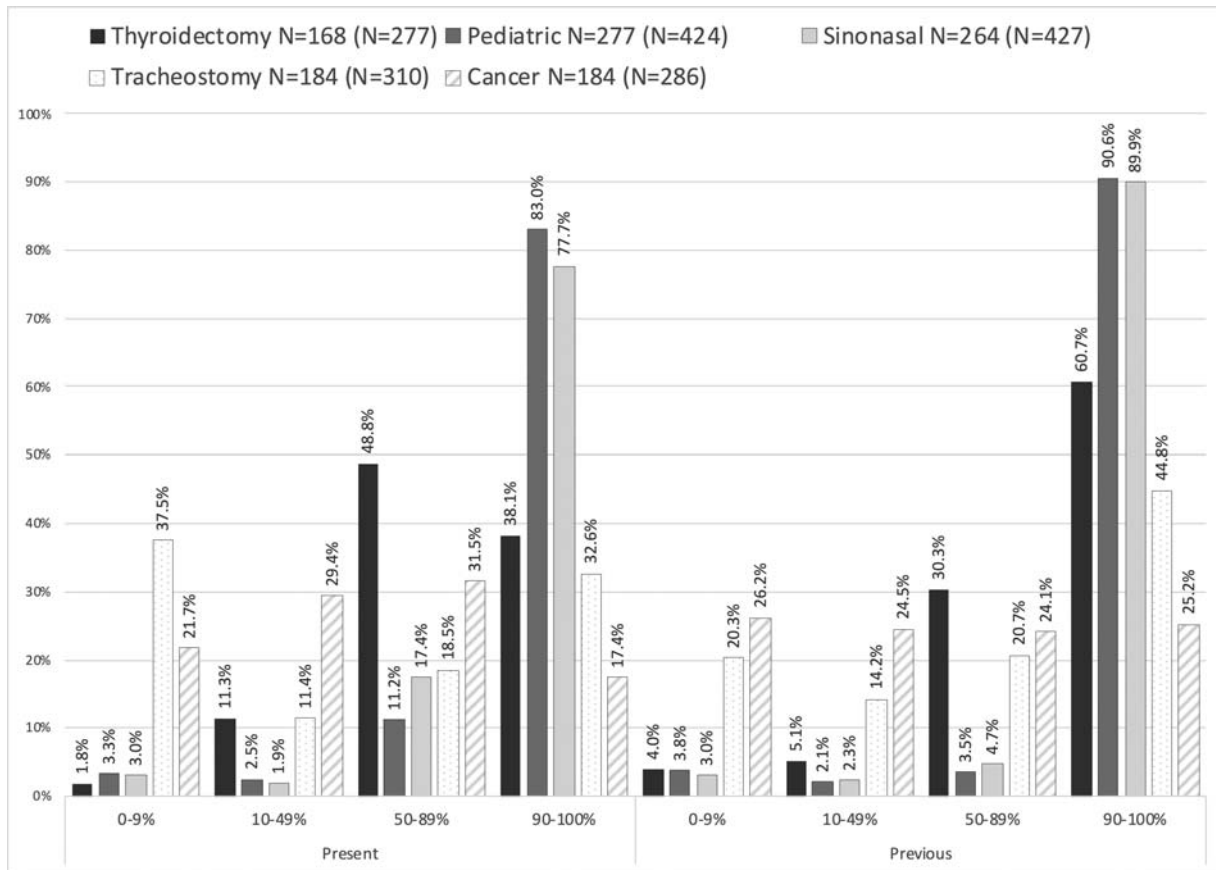
The psychological impact of the pandemic is depicted in ► **Table 3**. The percentage reduction in family income was



**Fig. 1** Distribution of the reduction in outpatient volume after the COVID-19 pandemic in the present and previous surveys.<sup>9</sup> The numbers between parentheses represent the corresponding sample sizes in the previous survey.



**Fig. 2** Distribution of the reduction in upper-airway exams after the COVID-19 pandemic in the present and previous surveys.<sup>9</sup> The numbers between parentheses represent the corresponding sample sizes in the previous survey.



**Fig. 3** Distribution of the reduction in surgical procedures after the COVID-19 pandemic in the present and previous surveys.<sup>9</sup> The numbers between parentheses represent the corresponding sample sizes in the previous survey.

associated with a negative outlook for the future ( $r_s = 0.180$ ;  $p < 0.001$ ).

Most physicians (95.4%) reported knowing a professional colleague with confirmed COVID-19 infection, and 14.3% (95%CI: 10.6–18.1%) became infected themselves. Out of this last group, infections of both the physician and a family member occurred in 39.5% of the cases (95%CI: 24.3% to 54.8%). The median of colleagues (physicians or other HCPs) who were infected was 7 (P25%: 4; P75%: 11.5). Data on the clinical course of COVID-19 from the 4,169 infected HCPs

were collected. It was mild in 67.8.0% (95%CI: 65.0% to 70.7%) of the cases, 18.4% (95%CI: 16.6% to 20.3%) needed hospitalization, 8.9% (95%CI: 7.5% to 10.3%) needed intubation, and 4.4% (95%CI: 3.1% to 5.6%) died.

The survey investigated the availability of complete airborne PPE (N95 respirators, eye protection, gown and gloves) for exams that potentially generate aerosols. An availability limited to 0% to 10% of exams was mentioned by ~ 15% and 19% of responders in the private and public sector respectively, with some interviewees already referring complete

**Table 2** Reduction in family income according to years of practice

	N	Mean reduction	Minimum	Maximum	95% confidence interval		$r_s$	p-value
<i>Years of practice</i>								
Resident	28	23.9%	0	75	14.0%	33.9%	0.25	< 0.001
< 5 years	62	41.1%	0	90	35.1%	47.1%		
5–10 years	75	48.2%	0	90	42.9%	53.5%		
10–20 years	140	46.9%	0	100	43.1%	50.7%		
20–30 years	89	54.9%	0	100	50.3%	59.6%		
> 30 years	41	56.6%	0	100	48.8%	64.4%		

Note:  $r_s$ : Spearman correlation coefficient; p-value (Spearman test).

**Table 3** Psychological impact of COVID-19 on physicians

Complaints	N	%
Tranquility/optimism/hope	145	32.5%
Anxiety/restlessness/irritability	252	56.5%
Tiredness/discouragement/impotence	187	41.9%
Fear/insecurity	82	40.8%
Gratitude/faith/opportunity	101	22.7%
Sadness/distress/emotionality	87	19.5%
Thoughts of death	15	3.4%
<b>Sleep</b>		
Normal, I have been sleeping well, as always	218	48.9%
I have had insomnia frequently, restless sleep, but I wake up in a good mood	89	20.0%
I have had insomnia frequently and I wake up tired	72	16.1%
I have slept more than normal and/or I have been very sleepy during the day	51	11.4%
<b>Future prospects</b>		
Everything will be back to normal after the pandemic	101	22.7%
It will be difficult, but I am optimistic and I believe I will be able to recuperate	241	54.0%
It will be difficult and I doubt if I will be able to resume my prepandemic activity and life standard	80	17.9%
I am hopeless and sure I will face unrecoverable losses	11	2.5%

stock depletion. Mann-Whitney tests comparing the whole dataset for PPE availability showed that the lack of PPE was greater in the public sector in relation to oroscopies ( $p = 0.006$ ), nasofibroscopies ( $p = 0.042$ ), and laryngoscopies ( $p = 0.043$ ).

Availability of N95 respirators limited to 0% to 10% of patient interactions was reported by 10.2% and 17.3% of responders in the private and public sectors respectively. As for surgical masks, the corresponding values were of 8.5% for both sectors. Mann-Whitney tests comparing the whole dataset for the availability of masks and respirators showed that both surgical masks ( $p = 0.027$ ) and N95 respirators ( $p < 0.001$ ) were less available in public services. Complete stock depletion was also mentioned by some interviewees. In total, 335 (75%) responders reported that they were reusing N95 respirators for a median of 10 days (P25%: 7; P75%: 15;

minimum: 1; maximum: 60 days). The length of re-use was shorter in the private sector (Kruskal-Wallis test,  $p = 0.006$ ).

Although the pandemic was already in its third to fourth month in Brazil, 42.5% and 41.0% of the responders in the private and public sectors respectively reported that they had not received training in the management of confirmed or suspected COVID-19 patients. Therefore, physicians are trying to keep up-to-date regarding COVID-19 on their own, through the medical literature (77.6%), websites of medical societies (72.2%) and social media (59.2%).

The presence of pretreatment screening areas for COVID-19 patients was similar in the private (62.3%) and public (65.0%) sectors. The presence of an isolated hospitalization area for patients suspected or confirmed for COVID-19 was reported by 80.4% of physicians in the public sector, and only by 65.2% of those in the private services ( $\chi^2$

**Table 4** Administrative and environmental precautions for COVID-19

Institution precautions	Private (N = 411)		Public (N = 306)		p-value
Triage to identify vulnerable group: postpone or telemedicine	282	68.61%	132	43.14%	< 0.001
Triage to identify risk of COVID-19: postpone or telemedicine	298	72.51%	142	46.41%	< 0.001
Surgical mask and alcohol hand sanitizer available for patients	333	81.02%	137	44.77%	< 0.001
Waiting room: ventilation or social distancing	384	93.43%	207	67.65%	< 0.001
Concurrent disinfection of surfaces after each appointment	310	75.43%	122	39.87%	< 0.001
Room isolation (minimum 30 minutes) after aerosol generating procedures	171	41.61%	56	18.30%	< 0.001
Room terminal cleaning in the end of each day	248	60.34%	128	41.83%	< 0.001

Note: p-value (Chi-squared test).

test;  $p < 0.001$ ). We also investigated the availability of testing for COVID-19 in the public and private sectors. For hospitalized patients, it was available in 65% and 57.5% of private and public services respectively ( $\chi^2$  test;  $p = 0.042$ ). For outpatients, the availability was larger in private services (54.3%) than in public ones (22.6%) ( $\chi^2$  test;  $p < 0.001$ ). Universal SARS-CoV-2 testing up to 72 hours before surgery in asymptomatic patients was performed in 41.2% of private services and only in 17.3% of public ones ( $\chi^2$  test;  $p < 0.001$ ). Administrative and environmental precautions for COVID-19 were more prevalent in private services (▶ **Table 4**).

Considering the decrease in non-COVID-19 patient care, we asked about the physicians' perception of the effect of the pandemic on the course of non-COVID-19 diseases in their patients. In a 10-point Likert scale, the responders agreed that their patients' clinical status was deteriorating, with a median of 5 (P25%: 3; P75%: 8), and the risk of death was increasing, with a median of 5 (P25%: 1; P75%: 8). The concern with the deteriorating clinical status of the patients was higher among physicians from public services (54.3%) than among those from private ones (44.8%) ( $\chi^2$  test;  $p = 0.012$ ), and the active tracking of patients with risk of progressive non-COVID-19 diseases for reevaluation was reported by 28.1% and 22.9% of the responders in the public and private sectors respectively ( $\chi^2$  test;  $p = 0.11$ ). On the other hand, plans for partial and full resumption of non-COVID patient care were more frequent in private (56.5% and 19.5%) than in public services (43.1% and 8.5%). The differences were statistically significant for both partial and full resumption plans ( $\chi^2$  test;  $p < 0.001$  for both comparisons). Clinical care still focused on COVID-19 patients was more common in public (33.3%) than private services (10.0%) ( $\chi^2$  test;  $p < 0.001$ ). When asked about factors limiting the resumption of elective care, the fear of the patients to become infected was commonly reported by the interviewees.

The responders believe that the volume of non-COVID-19 patient care after the pandemic will increase due to unmet demand during the crisis by a median of 40% (P25%: 30%; P75%: 60%). Nevertheless, they believe the median capacity of their services to meet the demand after the pandemic will be of 30% (P25%: 20%; P75%: 50%). The main resources needed to supply the demand were identified as: financial (49.6%), equipment (41.7%), human resources (57%) and physical area (37.5%).

## Discussion

The present survey aimed to quantify the sustained impact of the COVID-19 pandemic on physicians who work in the field of head and neck, when the death rates were reaching the plateau, 3 to 4 months after the diagnosis of the first COVID-19 case in Brazil.<sup>14</sup> Compared with the results of a previous survey,<sup>9</sup> we detected a trend toward a slight increase in the number of outpatient visits, exams, and surgical procedures. The tendency to resume elective care, however, is not evident nor homogeneous, as, in the public sector, the volume of outpatients seemed to decrease between the two surveys. In

general, the clinical practice still shows a marked reduction compared with the prepandemic situation, and, according to the interviewees, the pandemic will continue to affect their practice for a further 6 to 12 months, with a relevant financial and psychological burden on physicians. The percentage decrease in family income was particularly higher among surgeons who work in private institutions and have more years of practice. The improvement of this scenario requires a diagnosis of the reasons behind this contraction.

Fear of contagion probably plays an important role in the reduction in the clinical practice, as specialists in the head and neck field are more likely to become infected<sup>1</sup> and transmission may occur, even from asymptomatic individuals.<sup>3,15,16</sup> The reluctance of the patients to seek medical care due to the fear of getting infected has been reported,<sup>7,17</sup> and was identified as one limiting factor for the resumption of elective care in the present survey. This fear also seems to influence the physician's side, as the reduction in outpatient visits in the private sector was associated with the responders' self-perceived risk of developing severe forms of COVID-19. Furthermore, almost all interviewees reported knowing a professional colleague with confirmed infection by SARS-CoV-2. A total of 14% of the responders were infected, and, in 40% of these cases, this was associated to the infection of a family member living in the same house. Therefore, physicians may also fear getting infected if they cohabit with vulnerable family members.<sup>18</sup> Although most cases of COVID-19 among the acquaintances of the responders were mild, almost 20% needed hospitalization, and 4% died.

Alternatives to face-to-face patient interaction could help overcome the fear of contagion. Although telemedicine has been recently regulated in Brazil,<sup>19</sup> and medical associations have provided online instructions on how to properly perform it,<sup>6</sup> 75% of responders still use it in less than 10% of patient interactions. This number did not improve since the last survey. It is probable that the difficulty in reaching a proper diagnosis without physical or endoscopic examination, the lack of familiarity by both physicians and patients, the difficulty to set up and comply with the telemedicine regulation, and the doubt whether its use will continue to be permitted after the pandemic may be influencing its adoption.

Despite a slight increase as compared with our previous survey,<sup>9</sup> there was a sustained reduction in upper-airway exams, particularly nasofibrosopies and laryngoscopies. Fear of contagion will probably interfere with the prompt resumption of these exams as well, as the nasal cavities and pharynx are regions of high SARS-CoV-2 viral loads in both symptomatic and asymptomatic patients,<sup>2,3</sup> and droplets and aerosols may be generated during these procedures.<sup>2</sup> Therefore, most experts recommend that airway endoscopies should be performed with airborne PPE, including: gowns with long sleeves, gloves, face shields, and N95 respirators,<sup>1,5,6,20,21</sup> regardless of case status, in contexts of sustained COVID-19 transmission.<sup>22-25</sup>

Although the role of aerosols in the transmission of COVID-19 is still not known,<sup>2,26-29</sup> and whether ENT endoscopies should be considered aerosol generating procedures

(AGPs) per se is debatable,<sup>2,21,30,31</sup> the theoretical risk of transmission brings a practical challenge to comply with safety recommendations. Health agencies suggest that besides the PPE for airborne precaution, AGPs should be performed in negative pressure or well-ventilated rooms and that adequate time for the clearance of aerosols should elapse until reuse without PPE for airborne infection isolation is allowed.<sup>29,32</sup> Without proper ventilation and exhaust systems, the waiting time for aerosol clearance may take up to three hours,<sup>33</sup> which would make expedite clinical care unfeasible. In our survey, isolation of the room for at least 30 minutes after an airway endoscopy was reported by 42% of responders in the private sector, and only by 18% of those in public services. Difficulty to comply with engineering and environmental safety recommendations will probably hinder the resumption of airway endoscopies and exams.

The present study revealed that the availability of PPE for exams and masks or respirators for outpatient care is still limited, especially in the public sector, with shortages of PPE already occurring. Most responders reported the reuse N95 respirators for an inadequately long interval (median of 10 days). According to the Centers for Disease Control and Prevention (CDC), reuse of the same N95 respirator should be limited according to the instructions of the manufacturer. If instructions are not provided, limiting the number of reuses to no more than five would ensure an adequate safety margin.<sup>34</sup> The resumption of elective care will increase the demand for PPE, worsening the problem of shortage, which, in turn, may slow down the recovery process.

Elective surgeries showed a marked retraction as compared with pre-pandemic levels. Difficulty in scheduling elective procedures decreased in the private sector in comparison with the last survey, but the volume of surgeries did not improve at the same rate. The interviewees reported that the fear of getting infected on the part of the patients during hospitalization for surgery was one limitation for the resumption of elective surgeries. That is a real concern for cancer patients, as they have been associated with poorer outcomes if they become infected with COVID-19.<sup>11,13,35</sup> Furthermore, the fear of contagion may be influencing surgeons to postpone elective procedures, as the risk of SARS-CoV-2 transmission during surgeries in the upper airways is particularly high.<sup>1,5,6,11</sup> Universal pre-operative SARS-CoV-2 testing could help increase the safety of surgical procedures,<sup>11,21,31</sup> but it is still scarce, especially in the public sector.

Reduction in clinical care creates an unmet demand for patients with cancer and many other progressive diseases, whose diagnosis and treatment are being delayed, which may impact their morbidity and mortality.<sup>13</sup> However, active tracking of patients with risk of progressive non-COVID-19 diseases for reevaluation and treatment were restricted to less than a third of private and public services, and plans to restore elective care were limited. We believe that without the development of an effective vaccine, resumption of clinical care in our field will be hindered due to the difficulty to meet the demand, to comply with safety recommendations, and due to the shortage of PPE. Therefore, as elective

care resumes, it may be useful to stratify patients and diseases according to categories that will define the urgency of the treatment.<sup>12</sup> Prioritization will be important in this context of slow resumption of clinical care.<sup>21</sup>

Most institutions seemed concerned with their preparedness to combat the COVID-19 pandemic. Pretreatment screening areas for COVID-19 are prevalent in both private and public services. It is interesting to notice that public services are better than private ones in regard to the presence of isolated COVID-19 inpatient areas. However, administrative and environmental controls for prevention of COVID-19 transmission as suggested by the CDC<sup>29</sup> and the World Health organization (WHO)<sup>32</sup> are still sub-optimal, especially in public services. Furthermore, communication and guidance of HCPs seems to be limited, at best. Close to 40% of responders in both sectors said they did not receive any kind of training about the management of COVID-19 patients, as suggested by regulatory agencies in Brazil.<sup>25</sup> This is a deeply worrying finding, given the high occupational risk of contagion in our field, and due to the fact that the survey collected responses while the pandemic was already in its third to fourth months in Brazil.

The present study has many limitations. Surveys are particularly prone to sampling bias, especially if they rely on open, digital recruitment, which may tend to select younger responders. However, age distribution in both our surveys were close to normal. Furthermore, web-based questionnaires have shown similar results in analyses of socioeconomic variables, with a lower amount of missing values, and they are much more cost-effective than traditional paper-based ones.<sup>36</sup> Our sample revealed a predominance of physicians from the Southeastern region of Brazil and from metropolitan areas. Moreover, surgical specialists (head and neck surgeons and ENTs) were older than medical and radiation oncologists. These characteristics are in accordance with the medical demographics in our country.<sup>37</sup> The sample of this survey was smaller than that of the previous one, reflecting a saturation of physicians to answer surveys during the pandemic. This fact was particularly important among medical oncologists. However, the constitution of the sample according to years of practice, geographic area, development environment and type of service (–**Table 1**) was not significantly different from that of the previous survey<sup>9</sup> (according to the  $\chi^2$  and Mann-Whitney tests, data not shown). If the characteristics of both samples were too different, the comparison between surveys for trend analyses would be invalid.

On the other hand, this second survey deeply investigated the impact of the COVID-19 pandemic on the clinical practice of physicians in the head and neck field, enabling the identification of specific concerns and limitations that may help medical societies and institutions plan strategies to mitigate them, such as: 1) to stimulate the proper use of telemedicine; 2) to plan strategies to lessen the psychological and financial burdens on physicians; 3) to provide information about the risk of contagion and safety precautions to deal with suspicious or infected COVID-19 patients, including the adequate use of PPE and reuse of respirators; 4) to



work with health agencies to define the risk of contagion in patient interactions specific to the head and neck field, to define the minimum PPE and environmental and engineering precautions needed; 5) to help institutions adopt proper administrative, environmental and engineering safety precautions; 6) to stimulate campaigns to raise the population's awareness that the risk of not seeking medical evaluation may be greater than the risk of contracting COVID-19; 7) to define strategies for prioritization when resuming non-COVID clinical care; 8) to prepare the administrative sectors within the institutions and public bodies about the expected increase in the need of PPE as elective care resumes in our field; and 9) to increase the availability of accurate tests for COVID-19 diagnosis for the screening of asymptomatic individuals before surgical procedures or even AGPs.

## Conclusion

The present survey revealed that COVID-19 impacted Brazilian specialists that work in the head and neck field, with pronounced reduction in outpatient visits, exams and surgical procedures. Resumption is occurring at a slow pace, with financial and psychological burden on physicians. Shortage of PPE and inadequacy to comply with safety precautions may hinder the resumption of elective care. The situation is creating an unmet demand regarding patients with non-COVID-19 progressive diseases, whose diagnosis and treatment are being delayed.

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### Conflict of Interests

The authors have no conflict of interests to declare.

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