

Effects of SARS-CoV-2 on the Practice of Otolaryngology

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Objectives: Otolaryngologists in Texas have been greatly affected by the coronavirus disease 2019 (COVID-19) pandemic. Executive orders and professional recommendations have changed the way otolaryngologists practice. The objective of the study was to determine the effect of COVID-19 on otolaryngologists in the state of Texas.

Methods: We surveyed the Texas Association of Otolaryngology to evaluate burnout, research output, and ability to respond to the pandemic. We also looked at the effect of Texas governmental executive orders GA-09 and GA-15 on work hours and patient load.

Results: Our survey showed no significant difference in personnel contracting COVID-19 with perception of adequate personal protective equipment ($P = 0.203$), population density ($P = 0.445$), or type of practice ($P = 0.763$). The phenomenon of “pandemic burnout” was prevalent, with prolonged uncertainty the primary contributing factor for burnout caused by the pandemic.

Conclusions: The response to COVID-19 and the course of the pandemic are continuing to evolve and may play a significant role in how otolaryngologists practice and on their well-being during the pandemic.

Key Words: burnout, COVID-19, otolaryngology, pandemic, Texas

Specialties involved with the upper aerodigestive tract such as otolaryngology, oral maxillofacial surgery, pulmonology, and anesthesiology have an increased risk of exposure to severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) and contracting coronavirus disease 2019 (COVID-19).^{1,2} Reportedly, the first physician fatality of COVID-19 was an otolaryngologist in Wuhan, China on January 25, 2020.³ Otolaryngologists address a broad range of medical and surgical aerodigestive problems; hence, government regulations and professional organizations’

recommendations in response to the pandemic have greatly affected how otolaryngologists practice.

On March 22, 2020, Texas governor Greg Abbott implemented executive order GA-09, which temporarily halted elective surgeries and procedures in an effort to ensure adequate resources to respond to the pandemic.⁴ Any surgical procedures requiring hospital capacity or personal protective equipment (PPE) that were not immediately necessary or lifesaving were postponed.⁴ In addition, there were several recommendations and guidelines that affected the way otolaryngologists practice in Texas, such as those from the US Centers for Disease Control and Prevention (CDC) for general medical practice and the American Academy of Otolaryngology–Head and Neck Surgery (AAO-HNS) specific to otolaryngology.^{5,6} For example, the AAO-HNS categorized emergent conditions as having an immediate impact on survival and urgent conditions as having the potential to lead to permanent damage if the procedure is not performed in a timely manner.⁶ The AAO-HNS also recommended that routine priority procedures, those for conditions that cause some limitation in function but would not likely result in permanent harm or hospitalization, be delayed 30 to 90 days and be reassessed once the pandemic appeared to be waning.⁶

When treating COVID-19-positive patients, practitioners were advised by AAO-HNS to wear an N95 or higher-rated mask, face shield, gown, and gloves.⁶ Other recommendations included dedicated scrubs, hair and shoe covers, occlusive goggles if face shields are unsuited for operation, and powered air-purifying respirators if there is concern for aerosolization.⁶

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B.M. has received compensation from Medical Resonance, PENTA, and Perry Law Firm.

The remaining authors did not report any financial relationships or conflicts of interest.

Accepted January 21, 2021.
0038-4348/0-2000/114-327

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DOI: 10.14423/SMJ.0000000000001263

Key Points

- Otolaryngologists are greatly affected by the coronavirus disease 2019 pandemic because of their involvement in the evaluation and treatment of the upper respiratory tract and the broad range of practice that is affected by governmental regulations and professional organizations’ recommendations.
- The effects of the pandemic on otolaryngologists in Texas include decreased patient load and work hours after the implementation of governmental executive orders and the creation of new contributing factors to physician burnout.
- Coronavirus disease 2019 has had and continues to have an effect on the practice and well-being of otolaryngologists throughout the state of Texas.

Evidence from Italy and China has shown that adequate access and the use of PPE reduced COVID-19 infections in healthcare workers.⁷ The increasing incidence of cases across the nation led to shortages of PPE, so much so that some hospitals had staff reuse N95 masks for 15 days before discarding them.⁸ Still, many healthcare workers continued to care for their COVID-19-positive patients despite the personal risks associated with care because of inadequate PPE.⁸

During this time, the phenomena of “pandemic burnout” emerged, usually in reference to frontline workers in regions with high volumes of COVID-19 patients.⁹ Burnout itself is not a new concept and is well studied in physicians. Factors that typically contribute to burnout include too much paperwork, government/payer regulation, poor work–life balance, electronic health records, lack of autonomy and career control, insufficient pay, being overwhelmed by patient needs, and nonadherent patients.¹⁰ With increasing regulation and unending uncertainty, there was increased burnout in physicians who were not necessarily frontline workers, such as otolaryngologists.

The aim of our survey was to evaluate the effect of the COVID-19 pandemic on otolaryngologists and their practice, by collecting data that reflect otolaryngologists’ ability to respond to the pandemic and new contributing factors that may lead to burnout.

Methods

This project was an observational study that consisted of a survey through Google Survey that was distributed to members of the Texas Association of Otolaryngology (TAO), sent via the TAO executive director, after official institutional review board

(IRB) exemption was received from the University of Texas Medical Branch IRB. The survey was sent to the members of the TAO via e-mail listserv, which consists of approximately 200 otolaryngologists in Texas, and was open for responses from August 10 to August 20, 2020. Participants were asked to submit the survey only once. Members were sent an e-mail reminder to complete the survey every 3 days for the duration of the study. The survey consisted of questions designed to evaluate burnout, patient load, work hours, research output, and ability to respond to the pandemic. The survey was a Google Survey in English and did not request or include identifying information. The survey consisted of 15 multiple choice and/or short-answer questions and took approximately 15 minutes to complete. Participants were asked to choose from a preset list of answer choices, with some questions having a short-answer option. The survey questions and answer options are shown in Part B of the Supplemental Digital Content Appendix, <http://links.lww.com/SMJ/A225>.

Inclusion criteria for this survey included active TAO membership, which requires certification by the American Board of Otolaryngology and current practice of otolaryngology in the state of Texas for 1 year or in the military service. Resident members were excluded from the study. In addition, incomplete surveys were excluded from the study.

Descriptive statistics and χ^2 analyses were used to analyze the survey results. To compare the effect of population size, a known association with the spread of COVID-19, on various survey factor assessments, we defined low-density counties as counties with populations of <100,000, medium density with populations of 100,000 to 1,000,000, and high density with populations of >1 million people.

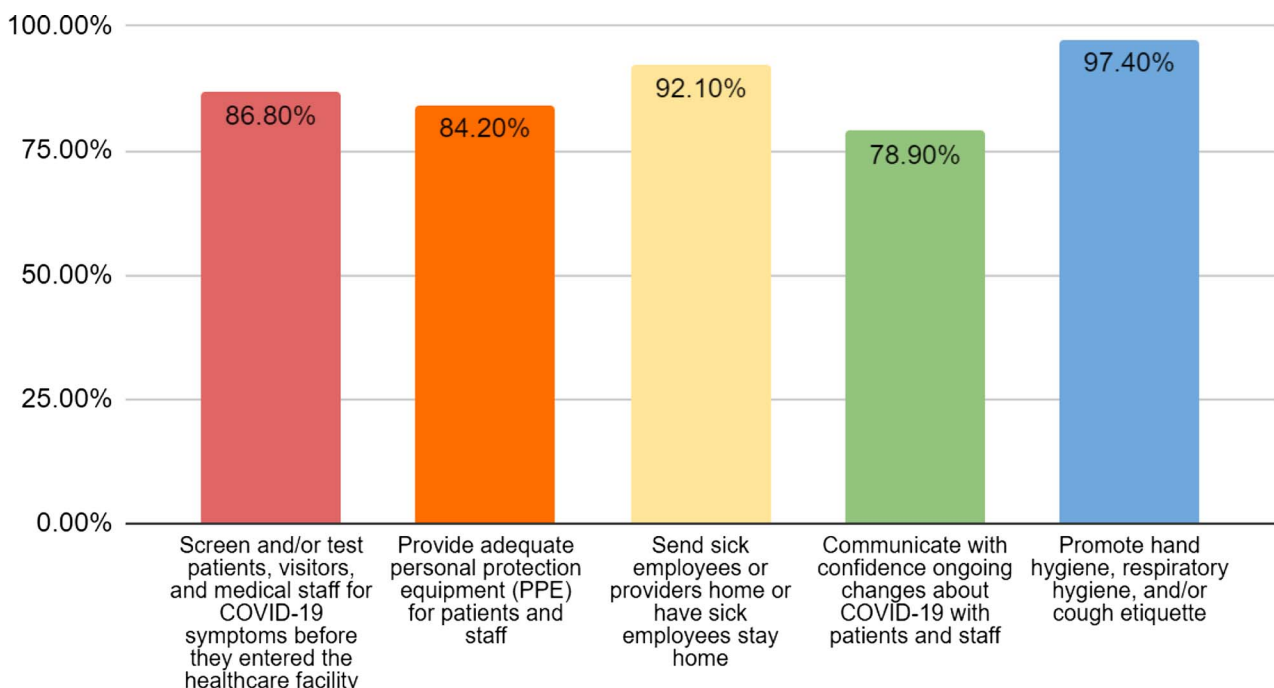


Fig. 1. Ability to respond to the pandemic. COVID-19, coronavirus 2019.

Results

We received a total of 38 responses from the estimated 200 members of the TAO, giving an approximate response rate of 19%. A majority of the respondents were from metropolitan areas, with Dallas County (13.2%) and Travis County (13.2%) being the most commonly reported counties. A total of 68.4% of participants practiced in a self-employed private practice setting; 68.4% of participants primarily practiced general otolaryngology and/or head and neck. A near-majority of respondents (47.4%) looked to the AAO-HNS to prepare and/or respond to the pandemic.

In regard to PPE, 73.7% of respondents believed that they had an adequate amount of PPE during the months of April and May to respond to the pandemic, with 52.6% of respondents working with personnel who contracted COVID-19. There was no significant difference in personnel contracting COVID-19 with perception of adequate PPE ($P = 0.203$), population density ($P = 0.445$), or type of practice ($P = 0.763$).

To assess ability to respond to the pandemic, we selected five common methods in current practice according to CDC guidelines.⁵ Of the survey respondents, 97.4% of participants were able to promote hand hygiene, respiratory hygiene, and/or cough etiquette, and 78.9% of participants were able to communicate with confidence ongoing changes about COVID-19 with patients and staff (Fig. 1).

Of the survey respondents, 86.8% of participants used combined audio and video communication (eg, Zoom, doxy.me, FaceTime), making it the most common method of communication with patients, and 55.3% of practitioners used some form of audio-only communication (eg, telephone, Google Voice). Of the survey respondents, 42.1% of practitioners opted to use both

audio only and combined audio and video telecommunication. There was a significant difference between type of practice, whether private, military, or academic, and mode of telehealth ($P = 0.016$). Military practice was found to use audio-only communication and employed private practice was found to use both audio-only and combined audio and video communication. Academic and self-employed private practices were equally likely to use either only combined audio and video communication or both audio-only and combined audio and video communication.

Of the survey respondents, 50% of participants disclosed that COVID-19 and the resulting changes contributed to physician burnout in their practice, with uncertainty about the course of the pandemic being the most common (77.8%) contributing factor. Another common contributing factor was inability to meet the needs of patients (29.6%). Some respondents selected preexisting factors of burnout such as too much paperwork and government/payer regulation (25.9%) as contributing factors (Fig. 2). Participants were given the option to type in any contributing factor that was not already on the list of potential contributing factors. Other answers written by respondents relate to patient pushback at newly enforced safety measures, challenges created by PPE such as difficulty breathing while wearing an N95 mask, and financial difficulties.

In total, 39.5% of participants had an 81% to 100% reduction in their patient load from the time before the pandemic after executive order GA-09 (ordering the postponement of nonemergent surgeries and procedures) went into effect on March 22, 2020 (Fig. 3).⁴ During this time, 81.6% of participants reported a decrease in the number of hours that they were working. In contrast, 31.6% of participants had a <20% reduction in their patient

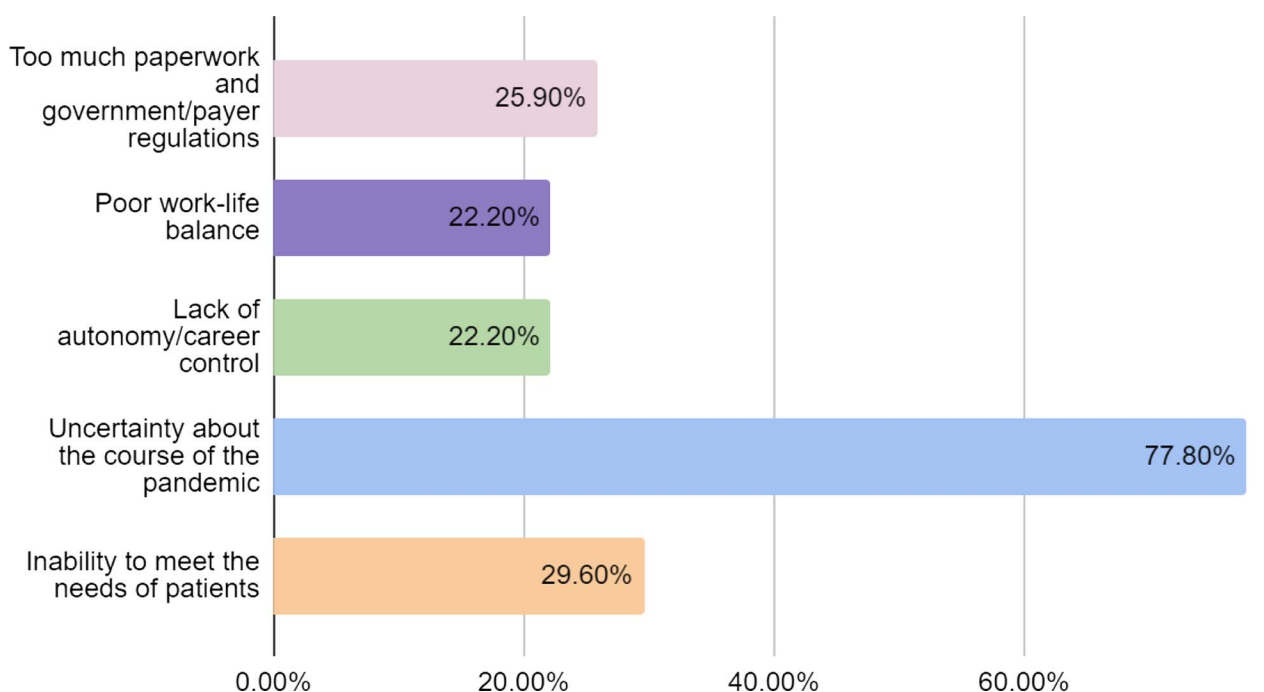


Fig. 2. Contributing factors to burnout.

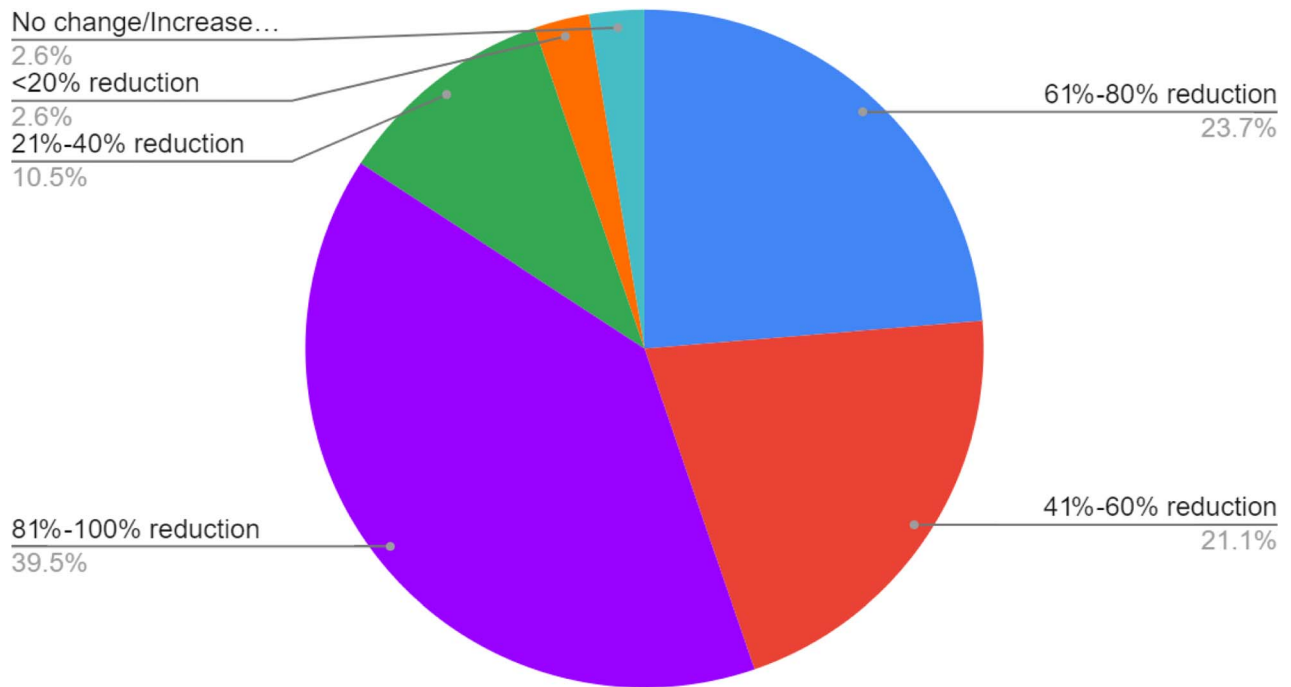


Fig. 3. Change in patient load after GA-09 was issued.

load from the time before the pandemic after executive order GA-15 (allowed for the resumption of elective surgeries and procedures), went into effect on April 22, 2020 (Fig. 4).¹¹ During this time, 39.5% of participants reported a decrease in the number of hours that they were working. There was no significant difference

between type of practice and work hours after GA-15 went into effect ($P = 0.152$). Otolaryngologists who worked in the academic setting were more likely to report increased work hours compared with respondents working in private practice, however. Lastly, in regard to research output, 94.7% of respondents reported that COVID-19 resulted in no change in research output and/or an increase in research output.

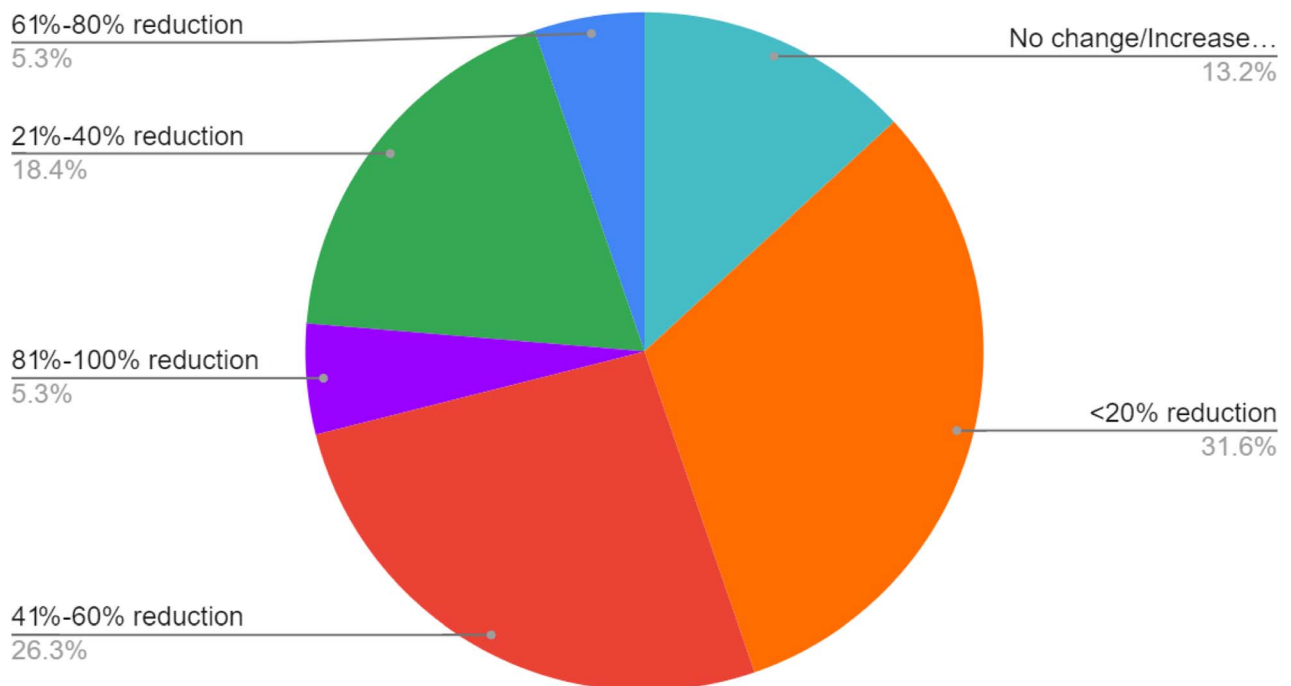


Fig. 4. Change in patient load after GA-15 was issued.

Discussion

COVID-19

During the period when the survey was distributed, the state of Texas had >7000 COVID-19 cases per day compared with early case counts of <1000 cases per day when executive orders GA-9 and GA-15 were first issued.^{4,11,12} In Texas, the peak of new reported cases were in mid-July and peak fatalities were in late July.¹² It is important to note that the survey was distributed just after these peaks as participants experienced multiple phases of the pandemic before participating in the survey. This allows for a more complete evaluation of the effects of the pandemic.

There are multiple risk factors that can contribute to the spread of COVID-19. Counties with a high population density such as Bexar, Tarrant, Dallas, and Harris counties, tended to have a higher number of COVID-19 cases¹²; however, our survey results showed no correlation between county population density and whether personnel contracted COVID-19. One possible explanation for this may be that greater regulations to reduce the spread of COVID-19 were implemented in counties with higher case counts. For example, in July 2020, Judge Nelson Wolff of Bexar County, which has a population of 2,006,193, issued Executive Order NW-13, which extended the mask mandate and prohibited large gatherings.^{13,14} This order also reimplemented the temporary postponement of elective surgeries, similar to GA-09.^{4,14}

The expected result of our survey in regard to the perception of the adequacy of PPE was that PPE was deemed adequate if practice personnel were appropriately protected from COVID-19; however, this was not the case with this survey, with 17 of 38 participants responding that they had adequate PPE but also had personnel who contracted COVID-19. One explanation may be that personnel contracted the virus through community spread rather than at the workplace. Another possibility could be incorrect use of PPE despite adequate availability of PPE, such as improper donning and doffing or lapses in the use of PPE. Protocols were enacted to conserve PPE due to the uncertainty surrounding the consumption rate of PPE. Since then, the CDC has made public a tool to calculate the expected rate of consumption of PPE.¹⁵ This “burn rate calculator” takes into account the number of patients and inventory of PPE at a given facility and is used to estimate how long the current stock of PPE will last.¹⁵ The CDC uses this to define strata to determine when PPE protocols are needed and to determine whether hospitals will be able to handle a sudden surge in cases (surge capacity).¹⁵

A majority of participants were able to communicate with confidence ongoing changes about COVID-19 with patients and staff; however, 77.8% of participants selected uncertainty about the course of the pandemic as a contributing factor to burnout. Although there was a disconnect, this may reflect that physicians feel confident about communicating with patients on current recommendations and expectations despite future uncertainties. This may speak to the improved ability to provide patients with sufficient updates efficiently, whether through telecommunication or

online notices. This may involve sharing current trends in cases, hospitalizations, and deaths with patients. When considering administrative protocols to reduce the spread of COVID-19 in the healthcare setting in response to these trends, physicians may be able to relay changes in hospital and clinic regulations such as status of hospital capacity for surgeries, visitor policies, and mask requirements.

Patient Load, Telehealth, Work Hours, and Research Output

Patient load and work hours subsequently decreased after GA-09, which banned elective surgeries.⁴ Furthermore, because of the procedural component involved in the diagnosis and management of common problems, otolaryngology does not necessarily lend itself well to telehealth, the primary method of patient interaction during the early months of the pandemic. In addition, because of Texas Occupations Code 111.004 Section 562.056, a medical practitioner in Texas cannot establish patient care over a telehealth visit, thus limiting telehealth’s utility to see new patients.¹⁶ Even with temporary policy changes made by Medicare and Medicaid, which allowed providers to give care via telehealth to both new and established patients, limitations for new patients may persist.¹⁶ Furthermore, patients of lower socioeconomic status may have difficulty accessing telehealth services because of financial and digital literacy barriers.¹⁷ These reasons may explain the large decrease in patient load, with a majority of survey respondents seeing an 80% to 100% decrease in patient load during that time. Similarly, we expected an increase in patient load relative to GA-09 after GA-15 but with less than normal capacity resulting from the resumption of elective procedures.^{4,11} Another contributing factor may be decreased patient hesitancy in seeking care because of reassurance from government entities and low case numbers after the issuance of GA-15. Unexpectedly, some participants reported an increase in work hours despite a continued decrease in patient load. This was more prominent in otolaryngologists who worked in the academic setting. One possible reason may be increased time spent establishing COVID-19 safety protocols and research. This also may reflect the structural organization of academic institutions, in which otolaryngologists were deployed to other responsibilities in support of COVID-19 institutional responses, such as COVID-19 intensive care unit or airway management.

There was a significant difference between type of practice and mode of telehealth. Results may be skewed because of the small sample size—only two respondents in the military/Veterans Affairs and employed private practice categories. It is important to note that TRICARE, the healthcare insurance for uniformed service members, retired service members, and their families, recently revised its policy to cover audio-only telemedicine visits.¹⁸

We expected research output to decrease as projects were put on hold because of disruptions in research from closures and cancellations of clinical trials, travel, and conferences in response to COVID-19¹⁹; however, a majority of survey respondents reported

either no change or an increase in research output. This may be the result of the concomitant decrease in patient load leading to more time for research or that most survey respondents were general practitioners in private practice who do not normally have a high research output. Another possible reason is that otolaryngologists are highly involved in COVID-19 research.

Burnout

The results of this survey reveal new sources of burnout, particularly in relation to the COVID-19 pandemic. It also suggests that the known causes of burnout are still prevalent and may even be exacerbated because of increasing regulations to attempt to control the spread of the virus. It is important that these factors be addressed during the ongoing pandemic, as its prolonged course suggests its continued impact for a long period. Physician wellness is a priority, and there is a need to take action to promote wellness in the workplace. The CDC has even recognized the importance of identifying symptoms of stress and learning to cope and build resilience during the COVID-19 pandemic.²⁰

Although only one respondent wrote in “financially hard times, business failure” as a cause of burnout, it is likely that financial difficulties have played a role in contributing to burnout during the COVID-19 pandemic. A survey conducted by the Texas Medical Association in early May 2020 showed that 62% of practicing physicians in the state had their salaries reduced.²¹ The pandemic has caused financial difficulties from significantly decreased patient loads. Because many private practices operate on small reserves, this has led to difficulty keeping businesses open. Financial difficulties may be linked to other causes of burnout, including uncertainty about the course of the pandemic, as physicians are unable to anticipate whether they will be able to meet the necessary costs to manage a private practice.

The weaknesses of this study include biases related to the survey protocol. This study uses a nonrandomized, or convenience, sample, which limits the interpretation of the study only to the group that was surveyed. In addition, we were unable to determine whether there was a significant difference between responders and nonresponders, and considering our low response rate of approximately 19% and small sample size, there is a not an inconsiderable possibility that significant findings were missed. Similarly, this survey relies on the honesty of the participants, including answering truthfully and only completing the survey once. One final limitation to consider is that low-density areas are not well represented in our survey. The county of Gillespie, with an estimated population of 27,617, was the only low-density area reported.¹³ Future surveys would benefit from recruiting smaller counties so as to assess the impact of COVID-19 on these counties and on the otolaryngologists who serve them.

Conclusions

COVID-19 has had and continues to have significant repercussions on the well-being and practice of otolaryngologists throughout

the state of Texas. The impact of COVID-19 may differ compared with other specialties because otolaryngology is significantly affected by both the risks of COVID-19 and the governmental regulations in response to COVID-19. As a result of the changing nature of the pandemic, otolaryngology and other specialties at high risk such as anesthesiology and oral maxillofacial surgery would benefit from future studies assessing the effects of COVID-19 as they arise. Because a leading cause of pandemic burnout was the uncertainty surrounding the pandemic, long-term studies assessing how different approaches to controlling the spread of the virus affected otolaryngologists will be helpful. How otolaryngologists respond to those changes may uncover further insight on contributing factors to pandemic burnout that may be useful guidance for future global health crises such as pandemics. Studies evaluating the extent of burnout and the feasibility of potential actions that can be taken to combat burnout in the workplace may benefit otolaryngologists. A larger number of responses may have been obtained by shortening the survey and focusing the questions on one aspect of the practice of otolaryngology during the COVID-19 pandemic, such as burnout. Increasing the frequency of reminders and duration of the study also may improve the response rate. In addition, a survey with a larger sample size along with an assessment of otolaryngologists at the national level may be beneficial.

Acknowledgment

The authors thank Ky Camero for assistance with the data collection.

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