



ORIGINAL RESEARCH

Factors related to wellness and burnout in academic otolaryngology: A pre- and Post-COVID-19 analysis

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Abstract

Objectives: Describe demographic and professional factors predictive of burnout in academic otolaryngology before and during the COVID-19 pandemic.

Methods: In 2018 and 2020, cross-sectional surveys on physician wellness and burnout were distributed to faculty members of a single academic institution's otolaryngology department. Faculty were dichotomized into low and high burnout groups for 2018 ($n = 8$ high burnout, 19%) and 2020 ($n = 11$ high burnout, 37%). To identify protective factors against burnout, three semi-structured interviews were conducted with faculty that reported no burnout.

Results: Forty-two participants (59%) in 2018 and 30 out of 49 participants (62%) in 2020 completed the survey. In multivariate analysis of 2018 survey data, full and associate professors had significantly lower odds of high burnout (OR 0.06, 95% CI 0.00–0.53; $p = .03$). Female gender was associated with increased in odds of high burnout (OR 15.55, 95% CI 1.86–231.74; $p = .02$). However, academic rank and gender did not remain independent predictors of high burnout in the 2020 survey. We identified significant differences in drivers of burnout brought on by the pandemic, including a shift from a myriad of work-related stressors in 2018 to a focus on patientcare and family obligations in 2020. Interview analysis identified three themes in faculty who reported no burnout: (1) focus on helping others, (2) happiness over compensation as currency, and (3) gratitude for the ability to have an impact.

Conclusion: Approximately 20% of faculty reported high burnout before the pandemic, and this proportion nearly doubled during the pandemic. The risk factors and themes identified in this study may help academic otolaryngologists prevent burnout.

Lay Summary: Factors driving burnout among academic otolaryngologists during the COVID-19 pandemic transitioned away from research, conferences, and work outside business hours toward family and patient responsibilities. Females report higher burnout and full professors report lower burnout.

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Level of evidence: III.

KEYWORDS

burnout, burnout syndrome, COVID-19, fatigue, practicing otolaryngologist, workplace

1 | INTRODUCTION

Physician burnout is a critical problem, with an estimated 36% of otolaryngologists and 44% of physicians across specialties reporting burnout in 2019.¹⁻⁸ With the onset of the COVID-19 pandemic in 2020, physicians faced unprecedented stressors and novel risk factors for burnout.⁹⁻¹³ As the public health and economic implications of physician burnout become clear, it is increasingly important to address drivers of physician burnout.¹⁴⁻¹⁷

Several studies have characterized risk factors for burnout in otolaryngology.¹⁸⁻²⁵ For example, females report substantially higher levels of emotional exhaustion than males,^{20,23} and academic chairs have among the lowest sense of personal accomplishment despite high objective accomplishment.^{24,26} While some studies have characterized burnout in otolaryngologists during the pandemic,¹⁰⁻¹³ there is a paucity of literature comparing risk factors before and after the start of the pandemic, as well as exploring how attitudes toward well-being have changed over time.

In this study, we aimed to characterize demographic and professional factors contributing to burnout among faculty within a large academic otolaryngology department before and after the start of the pandemic. Furthermore, semi-structured interviews from 2018 with participants that reported no burnout were conducted to identify attitudes that might be protective against burnout. As the first study comparing wellness in otolaryngology before and after the start of the pandemic, this work provides insights into contributors toward high burnout in both settings.

2 | METHODS

2.1 | Study design and participants

This was a Johns Hopkins Institutional Review Board-approved (IRB00205577) cohort-based single-institutional study of faculty within the Department of Otolaryngology – Head and Neck Surgery at Johns Hopkins University. In November to December 2018, a survey consisting of 9 questions was distributed to 71 faculty in the department. This survey included four questions that collected information on professional and demographic characteristics of the study sample (rank, gender, family responsibilities, and percentage of academic/protected time), four questions that collected information about frequency of burnout and self-reported contributing factors based on the Maslach Burnout Inventory, and one open-ended question that collected specific suggestions for how the department can reduce burnout. In July to August 2020, a similar 14-question survey was distributed electronically to

49 faculty, including 5 questions on professional and demographic characteristics, 6 questions on frequency of burnout and contributing factors, and 3 questions on coping mechanisms and suggestions of pilot interventions to reduce burnout. All participants were unpaid volunteers and acknowledged their consent prior to participation by clicking on the survey link and participating in the survey, as stated in the email communication.

2.2 | Interviews

We conducted semi-structured interviews of three faculty in 2018 that reported that they never feel burnt out. At present, no validated questionnaires probing how physicians avoid burnout have been published; therefore, we devised eight open-ended questions. Participants were asked the following questions:

- Why are you not burned out?
- What do you do to prevent burnout?
- How do you balance personal and professional life?
- What personal wellness strategies do you practice on a regular basis?
- How do you deal with professional stressors?
- How do you maintain interest and enthusiasm for work?
- What activities contribute most to your sense of personal accomplishment?
- Which of your personal attributes do you think help you avoid burnout?

Detailed notes were taken during each interview and subsequently de-identified in order to preserve anonymity. Two members of the research team independently analyzed the interview notes at the conclusion of all interviews to identify major themes from the interviews. The results were also cross-referenced with NVivo (Burlington, MA) thematic analysis.

2.3 | Statistical analysis

All analyses were performed using STATA version 14 (College Station, TX) and R version 4.2.1 (Vienna, Austria). Multivariate imputation by chained equations was used to intelligibly impute a few missing survey responses ($n = 3$ rank, $n = 3$ gender) in order to preserve the limited sample size. Descriptive analyses were conducted to evaluate responses to survey questions. Faculty were dichotomized into a high burnout group (burned out a “few times per week” or more) and a

TABLE 1 Characteristics of otolaryngology faculty ($n = 72$).

	2018 ($n = 42$) ^a	2020 ($n = 30$) ^a	p^b
Gender			.7
Male	27 (64)	18 (60)	
Female	15 (36)	12 (40)	
Rank			.5
Assistant professor	18 (43)	13 (43)	
Associate professor	13 (31)	6 (20)	
Full professor	11 (26)	11 (37)	
Any burnout	26 (62)	22 (73)	.3
High burnout	8 (19)	11 (37)	.094
Child/elder care responsibilities	29 (69)	17 (57)	.3
Hours worked overtime			.9
0–5	5 (12)	13 (43)	
5–10	11 (26)	5 (17)	
10–15	12 (29)	11 (37)	
15–20	8 (19)	5 (17)	
>20	6 (14)	5 (17)	
Percent protected academic/research time			.002*
0–10%	5 (12)	13 (43)	
10–20%	7 (17)	5 (17)	
20–33%	3 (7)	4 (13)	
33–50%	6 (14)	3 (10)	
50–75%	9 (21)	5 (17)	
>75%	12 (29)	0 (0)	

^a n (%).^bPearson's Chi-squared test; Fisher's exact test.

low/no burnout group (burned out a “few times per month” or less). To compare 2018 and 2020 responses, Chi-squared and Fisher's exact tests were used to compare 2018 and 2020 participant demographics and burnout rates. Univariate and multivariate logistic regressions were used to evaluate associations between potential contributing factors and high burnout. A p -value of $<.05$ was considered statistically significant.

3 | RESULTS

3.1 | Demographics

After sending the surveys to all otolaryngology faculty, the response rate for the 2018 survey was 59%. The response rate for the 2020 survey was 61%. The demographic characteristics of otolaryngology faculty that completed the surveys in 2018 and 2020 are presented in Table 1. There was no significant difference in the sex ($p = .50$) or departmental rank ($p = .50$) composition of the 2018 and 2020 cohorts. In 2018, there were 18 (43%) Assistant Professors, 13 (31%) Associate Professors, and 11 (26%) Professors. Similarly, in 2020, there were 13 (43%) Assistant Professors, 6 (20%) Associate Professors, and 11 (37%) Professors included in this study. There was no difference in the number of overtime hours worked between 2018 and 2020 ($p = .90$); a majority of

respondents reported worked 10 or more hours per week outside of a 50-h work week in both 2018 ($n = 26$, 62%) and 2020 ($n = 21$, 70%). Finally, there was a significant difference between the percent of protected academic/research time that faculty had in 2018 and 2020 ($p = .002$), with 50% of faculty having over 50% protected time in 2018 versus just 17% of faculty having over 50% protected time in 2020.

3.2 | Reporting of burnout

There was no significant difference in the overall rate of burnout between 2018 and 2020, with 26 (62%) in 2018 and 22 (73%) in 2020 ($p = .30$). There was also no significant difference in the rate of faculty reporting high levels of burnout between 2018 and 2020, with 8 (19%) in 2018 and 11 (37%) in 2020 ($p = .09$).

3.3 | Predictors of high burnout

After dividing the survey responses into 2018 and 2020 cohorts, parallel univariate (Table 2) and multivariate (Table 3) logistic regressions were conducted to identify predictors of high burnout. In univariate analysis, female gender was associated with a significantly greater

TABLE 2 Univariate logistic regression—predictors of high burnout.

	2018 (n = 42)			2020 (n = 30)		
	Odds ratio	95% CI	p	Odds ratio	95% CI	p
Gender (ref = male)	8.33	1.60–64.53	.02	1.43	0.31–6.61	.64
Rank (ref = assistant professor)						
Associate/full professor	0.07	0.00–0.45	.02	0.87	0.19–4.01	.86
Child/elder care responsibilities	0.69	0.14–3.90	.66	0.87	0.19–4.01	.86
Protected research/academic time (ref = 0–10%)						
10–20%	0.60	0.12–3.40	.54	1.43	0.31–6.61	.64
Hours worked overtime (ref = 0–10)						
>10	1.03	0.22–5.71	.97	1.23	0.25–7.15	.80

TABLE 3 Multivariate logistic regression—predictors of high burnout.

	2018 (n = 42)			2020 (n = 30)		
	Odds ratio	95% CI	p	Odds ratio	95% CI	p
Gender (ref = male)	15.55	1.86–231.74	.02	1.39	0.29–6.62	.42
Rank (ref = assistant professor)						
Associate/full professor	0.06	0.00–0.53	.03	0.06	0.17–4.41	.85
Child/elder care	0.99	0.10–12.93	1.00	0.80	0.14–4.47	.79
Protected research/academic time (ref = 0–20%)						
>20%	0.28	0.02–2.94	.28	1.41	0.23–9.57	.71
Hours worked overtime (ref = 0–10)						
>10	2.64	0.30–33.97	.40	1.15	0.10–11.55	.90

	2018 (n = 42) ^a	2020 (n = 30) ^a	p ^b
Epic	24 (57)	8 (27)	0.010
Patient care	25 (60)	17 (57)	0.808
Work activities outside business hours	27 (64)	8 (27)	0.002
Family responsibilities	16 (38)	11 (37)	0.902
Department/Institution Committee Work	13 (31)	6 (20)	0.299
National/International Society Work	16 (38)	3 (10)	0.013
Academic work	25 (59)	9 (30)	0.013
Research	20 (47)	3 (10)	0.001

^an (%).^bPearson's Chi-squared test; Fisher's exact test.**TABLE 4** Sources of burnout before and during the COVID-19 pandemic (n = 72).

odds of high burnout in 2018 (OR 8.33, 95% CI 1.60–64.53; $p = .02$), but this was not observed in the 2020 responses (OR 1.39, 95% CI 0.29–6.62; $p = .42$). Relative to assistant professors, associate, and full professors had a significantly decreased odds of experiencing high levels of burnout (OR 0.07, 95% CI 0.00–0.45; $p = .02$) but this was also not observed in the 2020 responses (OR 0.87, 95% CI 0.19–4.01; $p = .86$). Family responsibilities, percentage of academic time, and overtime work were not significant predictors of high burnout in either survey year. Controlling for covariates in multivariate regressions, female gender was still associated with greater odds of high burnout in 2018 (OR 15.55, 95% CI 1.86–231.74; $p = .02$). In the

same year, more senior departmental rank was still associated with significantly lower odds of high burnout (OR 0.06 95% CI 0.00–0.53; $p = .03$). These variables were not identified as significant predictors in the 2020 survey data.

3.4 | Sources of burnout

Sources of burnout before and during the pandemic are described in Table 4. The top three contributors to burnout in 2018 were (1) work activities outside of business hours, (2) patient care/academic work

TABLE 5 Representative quotations from 2018 interviews.

Theme	Sample quotations
Focusing on helping others	I receive tremendous value internally for the work that I do. When I help someone overcome their hearing loss for example, I personally receive value from that.—Participant 1
	My primary motivation is helping people with their medical care, while everything else is secondary. Keeping focused on this is important, or else medicine becomes just a job.—Participant 2
Happiness as the currency rather than compensation	A very important component of my wellness is an active decision to not allow happiness in life to be tied to how I am paid. Unlike in business, in our work we are compensated not just with money, but also with the opportunity to do things that we like as a part of our jobs such as teaching and research.—Participant 1
	Certain patients/procedures I may choose to take on reimburse well, but I found that those cases did not bring joy to my practice, so I cut down on those cases, even if hurt my bottom line. I had to make the active decision that my bottom line or my “currency” is not from reimbursements but from my impact factor, the impact I have on a patient and their family.—Participant 2
	I find tremendous upside to being my own boss, and to me, freedom has cash value. Life satisfaction has value.—Participant 3
Gratitude for the ability to have an impact.	Having parents go through the medical system and being in the waiting room after they had surgery has made me recognize how important it is to treat and to talk to patients as human beings.—Participant 2
	I receive tremendous value internally for the work that I do. I tell patients to come in 6 weeks after cochlear implant for example, and ask them a standard set of things that I plan to learn from my patients. The check-up allows me to loop in and see positive things that are happening for the patient after surgery.—Participant 1

(tied for second), and (3) Epic/EMR documentation. In 2020, the top three factors driving burnout were (1) patient care, (2) family responsibilities, and (3) academic work. A greater proportion of faculty ranked Epic/electronic medical record (EMR) documentation as a source of burnout in 2018 (57%) than did faculty in 2020 (27%) ($p = .01$). Similarly, a greater proportion of faculty ranked work activities outside business hours (64% in 2018 vs. 27% in 2020), national/international

society work (38% in 2018 vs. 10.0% in 2020), academic work (60% in 2018 vs. 30% in 2020), and research (48% in 2018 vs. 10% in 2020) as drivers of burnout ($p = .002$, $p = .01$, $p = .01$, and $p = .001$, respectively). Of note, in 2018, every potential source of burnout that was listed on the survey was marked as a contributor to burnout by at least 30% of faculty. Contrastingly, in 2020, only patient care (56.7%) and family responsibilities (37%) received at least 30% of the faculty's votes as contributors to burnout; votes for all other sources of burnout fell below 30%.

3.5 | Reducing burnout

The last question on the survey solicited suggestions for interventions to reduce burnout in an open-ended response format. In 2018, the six themes most commonly noted in order of reducing frequency in the responses were (1) increase access to scribes, (2) minimize required lectures or activities after work hours, (3) reduce administrative and bureaucratic overhead including online trainings, (4) hire additional mid-level practitioners, (5) improve support staff training to help respond to patient questions, and (6) automate features in the EMR. In 2020, suggestions were sparser, focusing mostly on (1) reducing time spent on Zoom meetings due to “Zoom fatigue,” (2) improving the lack of consistency in the setting of disrupted operating room schedules during COVID-19, and (3) automating features in and obtaining more support for the EMR. Fitness was also a topic of interest in the 2020 data: 90% of faculty indicated that exercise was a coping mechanism for pandemic-related stressors, and 53% indicated interest in departmental exercise support or virtual fitness programs.

3.6 | Themes from interviews in 2018

We conducted semi-structured interviews with three faculty participants that responded that they never feel burned out from work. The goal of the interviews was to establish a preliminary understanding of how otolaryngologists are capable of avoiding experiencing burnout in terms of personal attributes, personality traits, outlook, practice setting, and wellness strategies. The three overarching themes identified from the interviews were (1) focus on helping others, (2) happiness as the currency rather than compensation, and (3) gratitude for the ability to have an impact. Representative responses are presented in Table 5.

4 | DISCUSSION

This study characterizes the prevalence and risk factors for burnout in otolaryngology by presenting the experiences of faculty from a single academic otolaryngology department. Specifically, we found that although rates of burnout remained relatively consistent, the factors driving burnout during the COVID-19 pandemic transitioned away from research, national conferences, and work activities outside

business hours toward family care and patient responsibilities. Our findings provide insights into both contributors toward burnout before and during the pandemic as well as resources that promote well-being among academic otolaryngologists.

Studies employing the Maslach Burnout Inventory-Human Services Study (MBI-HSS) have reported high or moderate levels of burnout in 70% of academic otolaryngologists²⁰ and 84% of academic chairs of otolaryngology departments.²⁴ Although the MBI-HSS is considered to be the gold standard for evaluating occupational burnout, its length (22 items) is thought to limit its utility among physicians.²⁷ Furthermore, self-reported burnout (such as a yes/no question) is strongly correlated with scores on the MBI-HSS among physicians.²⁷⁻²⁹ Thus, in our surveys, we utilized self-reported measures of burnout.

There were no differences in basic demographic/academic characteristics in 2018 versus 2020, aside from the percent of protected research time; yet, sources of burnout identified by both cohorts differed significantly. EMR documentation, work activities outside of business hours, society work, academic work, and research were all more frequently identified as contributors to burnout prior to the pandemic. In 2018, every source of burnout that was listed on the survey was marked as a contributor by at least 30% of faculty. Contrastingly, in 2020, only patient care (57%) and family responsibilities (37%) received at least 30% of the faculty's votes as contributors to burnout. Furthermore, the most cited response ("work activities outside business hours") (64%) for burnout in 2018 dropped to just 27% in 2020 ($p = .002$). This suggests that, following the onset of the pandemic in 2020, otolaryngologists' major concerns shifted toward attending to their families and patients. Widespread cancellation of many national/international society meetings and increased family care responsibilities may explain the decrease in research/academic time reported by 2020 survey respondents.³⁰ Furthermore, Civantos et al. (n surveyed = 163) reported that otolaryngologists, who are at increased risk of transmitting airborne illnesses like COVID-19, experienced heightened stress from the fear of infecting their families.¹³ Otolaryngologists also faced patient-care challenges with the suspension of elective procedures at the start of the pandemic. Momin et al. ($n = 38$) found that a common stressor among otolaryngologists was an inability to meet their patients' needs.¹⁰

Lower rank was independently associated with high burnout in 2018. In a prior study of academic otolaryngologists, full professors had significantly lower levels of emotional exhaustion compared to associate professors, while assistant professors had a slightly lower but similar levels compared to associate professors.²⁰ In this study's 2018 cohort, no full professors reported burnout, associate professors reported high burnout with low frequency (7.7%), and assistant professors reported the highest frequency of high burnout (39%). The higher burnout rates for less senior faculty may be due to specific responsibilities at each academic rank and pressure to pursue promotions. In 2020, burnout frequency increased across the board for full, associate, and assistant professors to 18%, 57%, and 42%, respectively. We suspect that the marked increase in the associate and full professor burnout may be why academic rank was not a significant predictor of high burnout in 2020. One study found that being in practice for longer was associated with

lower burnout.¹⁸ Length of practice may be a mediating variable between academic rank and burnout, which should be explored in future studies.

Female faculty reported higher rates of high burnout than their male counterparts in 2018; this association persisted after controlling for rank, family responsibilities, amount of academic/protected time, and extra hours worked per week. Consistent with the trends found in our 2018 analysis, the three faculty members who did not report burnout were male and at the associate professor level or above, supporting the finding of higher rates of burnout in women and in junior faculty. In a 2019 survey of over 15,000 U.S. physicians, the prevalence of burnout was 50% in women compared to 39% in men.¹ Studies in otolaryngology have similarly demonstrated that female physicians experience greater burnout.^{20,23} Multiple underlying factors include female otolaryngologists' fewer role models, lack of parity in salaries, workplace biases, and childbearing/childcare.³¹⁻³⁴ Interestingly, however, female sex was not found to independently increase risk of burnout in 2020. This may be due to the fact that childcare responsibilities increased for all individuals and salary-related benefits (employer retirement contributions and merit pay increases) were suspended for all faculty at our institution, thus impacting both sexes. Additionally, women faced higher levels of burnout at baseline even before the pandemic; as such, in this cohort surveyed, the burden of burnout increased more pre- to post-pandemic in male faculty relative to female faculty.

There was no association between burnout and overtime hours worked per week. However, this contradicts two prior studies in otolaryngologists found that the number of hours worked per week was a significant predictor of burnout.^{18,20} Notably in, most respondents (88% in 2018 and 87% in 2020) worked more than five extra hours per week. As such, it is possible that our sample was too homogenous to detect significant differences. Alternatively, it has been proposed that surgeons' perceptions of imbalance between career and personal life may be a greater contributor toward burnout than their actual practice setting or case load.³⁵ Interpreted in this context, respondents' perceptions of overtime work may be a greater contributor toward burnout rather than the work itself, which should be further explored in future studies.

We identified several internal and external resources that may help promote professional well-being and prevent burnout. Participants in 2018 suggested reducing the burden of administrative tasks (e.g., hire scribes, automate features in the EMR, reduce online trainings) and minimizing work-related activities outside of work hours, consistent with the top-ranked pre-pandemic contributors toward burnout. In our interviews with those that did not experience burnout, we identified major themes, including gratitude and happiness in helping others, that helped prevent burnout. In 2020, suggestions focused on reducing time on Zoom meetings, improving consistency in work schedules, and providing more support for EMR. Departments may be able to incorporate these insights about prioritizing workplace efficiency and encouraging gratitude to reduce burnout and promote the main drivers in professional fulfillment in medicine: efficiency of practice, a culture of wellness, and personal resilience.¹⁴

As a result of the 2020 survey findings that highlighted interest in exercise programming, a departmental fitness challenge was initiated

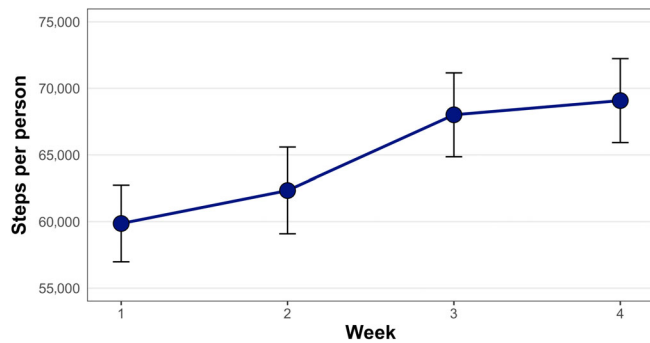


FIGURE 1 Average number of steps per week per participant over the 4-week exercise program. The average number of steps per week increased with each subsequent week. Error bars represent the standard error of the mean (SEM).

to increase physical activity. Teams of faculty and staff logged pedometer data over a 4-week program. At its conclusion, we found a steady increase in step count, illustrating the power that departmental exercise programs can have on team members' health (Figure 1). Considering that physical exercise has been shown to be protective against burnout among physicians,^{36,37} other otolaryngology departments can consider organizing similar initiatives.

We note several important limitations of this study. This was a single-institution study, which limited the sample size and generalizability of these findings. A multi-institutional study with more otolaryngology faculty may identify additional and more broadly relatable risk factors for burnout. Given the cross-sectional nature of the two surveys, causality should not be inferred. Additionally, we did not collect information regarding subspecialty practice or age to protect anonymity. We also only interviewed the three participants who were not burned out and volunteered information, limiting the generalizability of their responses. Finally, some confidence intervals (e.g., gender in Tables 2 and 3) within our analyses were wide, which is a limitation of our data; they reflect a higher degree of uncertainty in the estimate and can impact the validity and reliability of the results.

5 | CONCLUSION

The two cross-sectional surveys presented in this study identified potential risk factors for burnout as well as actionable interventions to prevent burnout among academic otolaryngologists. We found that self-reported contributors to burnout significantly changed during the COVID-19 pandemic. Future longitudinal studies are needed to properly understand the efficacy of any interventions.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

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None.

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