

Burnout and well-being in otolaryngology trainees: A systematic review

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Abstract

Objective: To comprehensively review the recent published literature to characterize current trends of burnout and well-being among otolaryngology trainees.

Methods: Study design: systematic review and meta-analysis. A comprehensive literature review from 2000 to 2021 of studies related to otolaryngology resident burnout and well-being, as well as the general topic of well-being among surgical residents was completed. All included studies were summarized qualitatively. For the quantitative analysis, only articles reporting a Maslach burnout inventory (MBI), modified MBI or Mini-Z- Burnout assessment were included.

Results: Twenty-five articles were included in the qualitative summary and nine articles in the quantitative analysis. In the qualitative summary, trainees were reported to have increased levels of distress and emotional hardening compared to attending otolaryngologists. Total hours worked per week and female gender were associated with worsened well-being. Residency program strategies to improve trainee well-being include program-sponsored wellness activities, dedicated wellness champions, and assistance with clerical burden. Implementation of protected nonclinical time has been shown to decrease burnout and increase well-being among trainees. Moreover, formal trainee mentorship programs have also been shown to reduce trainee burnout and stress. In the quantitative analysis, rates of trainee burnout ranged from 29.7% to 86% with an overall trend towards reduced rates of burnout from 2006 to 2021. Utilizing a weighted average, the overall burnout among otolaryngology residents was 58.6%.

Conclusions: Rates of burnout remain high among otolaryngology trainees. Implementing formal mentorship programs and providing protected time during regular work hours appear to be effective tools to improve resident well-being.

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KEYWORDS

burnout, ENT, otolaryngology, residents, wellness

Highlights

- Question: What is the current state of the literature in regard to otolaryngology trainee well-being and burnout?
- Findings: In this systematic review of 34 articles, otolaryngology trainees were reported to have increased levels of distress and emotional hardening compared to attending otolaryngologists. Total hours worked per week and female gender were associated with worsened well-being. Utilizing a weighted average, the overall burnout rate among otolaryngology residents was 58.6%. Implementation of protected nonclinical time has been shown to decrease burnout and increase well-being among trainees.
- Meaning: Rates of burnout among otolaryngology trainees remains high but have improved over time. Formal mentorship programs and introduction of protected non-clinical time may help to improve well-being.

INTRODUCTION

Burnout is a syndrome of emotional exhaustion, low personal accomplishment, and depersonalization. In contrast to depression, which pervasively impacts all aspects of life, burnout primarily involves a person's relationship to their work.¹ Among physician trainees, most matriculate to medical school with better-than-average mental health and lower-than-average rates of burnout. However, this trend reverses during medical training with resident physicians demonstrating worsened burnout and mental health than the general population.²⁻⁴ Thus, resident physician burnout and well-being have received increasing attention in recent years because higher rates of burnout are associated with decreased job performance, job satisfaction, and poor quality of life.⁵⁻⁹

There have been several notable changes to medical training over the past few decades aimed at improving resident well-being and mitigating burnout.⁷ Examples include the implementation of duty hour restrictions through the Accreditation Council for Graduate Medical Education (ACGME) and a new focus on resident wellness through various activities and extracurricular opportunities.^{7,10} Despite these implementations, resident physician burnout remains high. Otolaryngology trainees are no exception, with recent data demonstrating the prevalence of professional burnout in 35%, reduced well-being in 49%, and positive anxiety screening in 16%.³

This paper aims to comprehensively review the recent published literature to characterize current trends of burnout and well-being among otolaryngology trainees. The qualitative analysis examines otolaryngology trainee well-being compared to other specialties, the ways work hour restrictions have affected resident well-being, and published counterstrategies to improve resident well-being. The quantitative meta-analysis examines overall burnout rates among otolaryngology trainees and trends over time.

MATERIALS AND METHODS

Systematic search strategy

The study protocol was developed in accordance with the Preferred Reporting Items of Systematic Reviews and Meta-analysis (PRISMA) Statement guidelines. An experienced research librarian completed a comprehensive search with the input of study investigators. Databases were queried from January 2000 to February 2021 and included Cochrane Central Register of Controlled trials, Embase, MEDLINE, Scopus, and Web of Science Core Collection databases. Studies pertaining to the topics of otolaryngology resident burnout and well-being, as well as the general topic of well-being among surgical residents, were included in the analysis, so long as otolaryngology trainees were among the including subjects. The search strategy used controlled vocabulary with various combination of keywords including: "Resident," "House-staff," "Trainee," "ENT," "ear-nose," "ORL," "otorhinolaryngology," "otolaryngology," "otology," "rhinology," "laryngology," "neurotology," "head-and-neck surgery," "Burnout," "burn-out," "well-being," "wellbeing," "mental-health," "fatigue," "quality-of-life," "distress," and "stress." Inclusion criteria encompassed the published literature in the English-language that objectively analyzed the topics of burnout and well-being among otolaryngology trainees. Studies were excluded if they contained no objective data, did not include otolaryngology trainees among study subjects, or were an abstract without full data for review (Table 1). After inclusion and exclusion criteria were applied, study investigators also conducted a manual review of the bibliography of included articles to identify any additional relevant studies.

Selection of articles and data collection

After study criteria were applied and the manual search was conducted, two separate investigators performed independent review of the identified publications. All included studies were summarized qualitatively. For the quantitative analysis, only articles reporting a Maslach burnout inventory (MBI), modified MBI or Mini-Z-Burnout assessment were included. Both of these surveys are validated to measure

burnout.^{1,11} For each study, data were collected including type of burnout instrument utilized, number of participants, rate of burnout, and rates of emotional exhaustion, depersonalization and personal accomplishment if available. A PRISMA flow diagram summarizing identification, screening, and inclusion of articles is presented as Figure 1.

RESULTS

One thousand six hundred articles were identified in the librarian led systematic database search. Subsequently, duplicates were removed leaving 808 articles to be considered for the systematic review. The records were further screened, and 61 articles were assessed via full-text review. This yielded 25 articles to be included in the qualitative summary and nine articles to be included in the quantitative analysis (Figure 1).

Qualitative analysis: Rates of otolaryngology burnout compared to other specialties and factors that impact burnout

Of the 25 articles included in the qualitative analysis, two reported rates of burnout in otolaryngology trainees compared to other

TABLE 1 Inclusion and exclusion criteria

Inclusion:
<ul style="list-style-type: none"> Published literature that objectively analyzed the topics of burnout and well-being among otolaryngology trainees Studies containing burnout data amongst other medical specialty trainees was also included, so long as otolaryngology trainees were also included in the data Full Manuscripts published in English from January 1 2000 to February 2020
Exclusion:
<ul style="list-style-type: none"> Published literature that did not explicitly focus on the topics of burnout or well-being in otolaryngology Abstracts without full results available

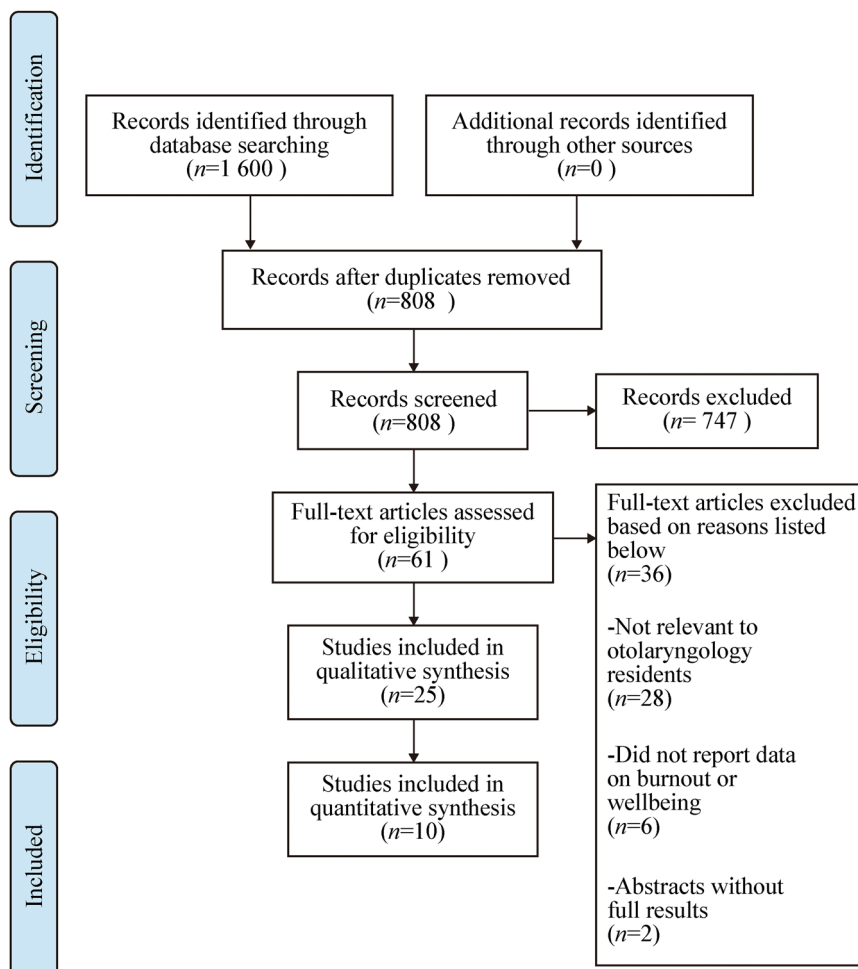


FIGURE 1 Preferred reporting items of systematic reviews and meta-analysis (PRISMA) diagram

specialties. In studies comparing incident rates of resident burnout among different medical specialties, burnout among otolaryngology residents seems to be near the average of burnout experienced by all resident physicians, with rates ranging from 4% to 44.8%.^{4,12} Dyrbye et al.⁴ reported a prospective study with 3588 participants published in 2018 that reported burnout rates among residents in various specialties. In this study, the rates of burnout ranged from 29% to 63.8% with dermatology having a lowest rate of burnout and urology having the highest rate of burnout. Otolaryngology was near the average with a burnout rate of 44.8%, including a total of 67 otolaryngology residents participating. This study did not investigate specialty specific reasons for differences in burnout rates. In 2016, Pulcrano et al.¹² investigated burnout rates among residents and attending physicians in different specialties. They reported overall higher rates of burnout in residents compared to attending surgeons; however, this portion of the data was not broken down by specialty. Among their reported data, they found that otolaryngology attendings experienced burnout rates as high as 41.3%.

Two studies reported analysis of specific factors associated with burnout and well-being among otolaryngology trainees. In a cohort of 340 US otolaryngology trainees, hours worked per week, and female gender were found to be associated with worsened well-being. Hours worked per week was also found to be associated with worsened rates of burnout. Compared to attending otolaryngologists, trainees reported increased levels of distress and increased emotional hardening.¹³ Among Australian otolaryngology trainees, rates of burnout were significantly associated with training geography distant from social support and number of years training in a rural setting. In this study, the burnout subdomain of emotional exhaustion was especially increased among trainees, with 70% screening positive for burnout in this subdomain.⁵

Qualitative analysis: How the ACGME work hour restrictions affected resident well-being and burnout

Seven articles analyzed the impact of ACGME work hour restrictions on resident burnout and well-being. The impact of ACGME work hour restrictions has been closely examined in many studies^{10,14}; several studies have specifically examined the impact of work hour restrictions on otolaryngology residents.^{10,13,15,16}

In 2003, Baldwin et al.⁶ surveyed 3604 PGY1 and PGY2 residents of several specialties, including otolaryngology, and showed that total work hours were significantly correlated with reported stress and hours of sleep per week. They also reported that residents averaging more than 80 work hours per week were more likely to be involved in a personal accident or injury, a serious conflict with other staff members, or a significant medical error.

A 2016 study by Nida et al.¹⁷ surveyed 190 otolaryngology residents and found that only 37.6% of residents supported the implementation of the 2011 ACGME adjustments in the 80-h work week, with many respondents reporting that work-hour restrictions

had a negative effect on surgical training. Of these 190 participants, 14% reported working more than 80 h per week despite the restriction. The authors report that it is possible that this number is also underreported as some residents may have hesitations or feel pressured into underreporting duty hours under the current restrictions. Another study by Bui et al.¹⁸ reported that residents who experienced burnout were more likely to work more than 80 h per week, have greater clerical duties, and miss educational activities more frequently. Larson and colleagues also found a correlation between hours worked in a week and increased burnout rates and levels of distress.¹³

A study by Brunworth and colleagues, surveying program directors (PDs) from a variety of specialties analyzed the methods in which duty hour regulations have been implemented and associated impact on resident well-being. They found that 35.7% of programs tracked work hours electronically, 33.1% of programs utilize home call, which can bypass the need for a postcall day and 23.1% of programs hired additional healthcare professionals such as advanced practice providers, to help reduce resident clerical burden.¹⁹ This study also found that 33% of PDs felt that the imposed work hour restrictions had a negative effect on patient care. However, 39% of participants felt resident workload was excessive before the restrictions, and 67% felt as though the restrictions improved resident mental health.¹⁹ It should be noted that the ACGME further revised their requirements in 2017 to add further emphasis on maintenance of personal well-being which also included opportunities to attend appointments for personal care, even during working hours.^{14,20} However, given that the actual work hour restrictions were not altered, no specific studies have reported investigations into how these new rules have affected otolaryngology trainees.

Qualitative analysis: Strategies to improve well-being during residency

Seven articles reported program strategies to improve well-being during residency. Many have worked to implement strategies to help combat resident burnout including implementing wellness activities, regularly surveying emotional health, assigning mentors, and providing seminars on mindfulness or meditation. A pilot needs assessment study of otolaryngology trainees by Kashat et al.²¹ in 2020 indicated that the most important wellness topics were mindfulness, wellness in the workplace, nutrition, dealing with medical errors and shame, and the wellness activities of physicians. The authors also defined specific systemic barriers to wellness through a structured focus group resulting in actionable changes such as improved access to after-hours parking and access to call rooms and lockers.

A 2020 study of surgical trainees, including otolaryngology residents, showed that having program-sponsored opportunities for wellness activities, dedicated faculty and wellness champions, and assistance with clerical burden were able to decrease rates of resident burnout and depression among trainees.¹⁹ Another study by

Hsu et al.¹⁰ showed that residents who were officially assigned mentors reported statistically significant higher scores with regard to satisfaction with the overall mentorship experience and well-being. Garcia et al.²² studied otolaryngology resident well-being via the Physician Well-Being Index and fatigue via the Epworth Sleepiness Scale (ESS). They reported worsened well-being scores for residents on head and neck oncologic services and for residents during the PGY2 year; they also noted an inverse relationship between well-being with number of hours worked per week and higher scores on the ESS.

An anonymous 50-item survey of the 107 American otolaryngology PDs was completed in 2018 reporting that 47.7% of PDs regularly surveyed emotional health among their residents and 72.7% of programs utilized faculty mentors for the residents. Moreover, 88.6% of programs have at least one wellness lecture per year.²³ Residents were allowed a mean 18.76 vacation days and 3.73 additional wellness days.²³ While this study provided insight into the current trends, it also revealed that practices are widely variable. Moreover, 25% of the responding programs were non-compliant with the wellness requirements mandated by the ACGME.²³ Some additional strategies used by PDs aimed at resident wellness include seminars in mindfulness or meditation, resident social events, providing healthy meals and mentorship programs.²³ A 2017 study by Zhang et al.⁷ found that formal mentorship programs had a positive effect on reducing resident stress and burnout by using utilizing MBI surveys at 3, 6, 9, and 12 months after implementation.

Stevens et al.²⁴ found that there was a decrease in burnout and an increase in well-being associated with implementation of a 2 h per week protected nonclinical time among otolaryngology trainees. MBI, Mini-Z, and Well-Being Index surveys were conducted at 6-week intervals until Week 32 after implementing the protected time. Among the 19 residents who were surveyed, there was also noted to be a decrease in emotional exhaustion.

Most of the study participants reported using the time to finish other tasks required by their job such as responding to emails, dictating, or performing research. Without the protected time, they reported that these tasks would typically be added to the end of the workday.²⁴

Quantitative analysis: Current trends of burnout in otolaryngology residency

Nine studies, from the years 2005 to 2020, met criteria to be included in the quantitative summary of burnout rates among otolaryngology residents (Table 2).^{4,8,13,15,18,24–28} Study population sizes ranged from 22 to 514 participants with some heterogeneity in study population depending on the inclusion or exclusion of interns and fellows among the study population. Several larger studies looked at multi-institution rates of resident burnout, while the remainder included single institution experiences. Eight out of nine studies utilized the MBI scoring system²⁹; five of the publications used the full 22-item MBI survey, three used a modified MBI scoring system that simply assessed for whether a respondent screened positive or negative for burnout, and one study used a Mini-Z burnout assessment.

In one paper by Hill et al.,⁸ an overall burnout rate was not specifically reported. However, they reported all of the subdomain scores included in the MBI, including emotional exhaustion (EE), depersonalization (DP), and personal accomplishment (PA). Based on previous studies with MBI, it has been determined that combining rates of high EE and DP is shown to correlate with rates of burnout.⁸ For this reason, the rate of EE and DP listed in Hill's paper was used for the overall burnout rate.

Overall rates of burnout ranged from 29.7% to 86%. Utilizing a weighted average, the overall burnout among otolaryngology

TABLE 2 Studies included for quantitative analysis

Paper Author	Instrument	No. of participants	Burnout rate (%)	Average EE	Average DP	Average PA	High EE (%)	High DP (%)	High PA (%)
Larson	Modified MBI	154	35	-	-	-	-	-	-
Hill	MBI	22	31.8	25.13	11.45	38.22	31.8	63.6	18.2
Golub	MBI	514	86	22.4	10.7	38.0	33	53	48
Dyrbye	Modified MBI	67	44.8	-	-	-	-	-	-
Bui	Modified MBI	20	57.9	-	-	-	-	-	-
Reed	Modified MBI	182	50	-	-	-	-	-	-
Aldrees	MBI	85	33	29.5	10.7	32.33	62	55	17
Civantos	Mini-Z Burnout Assessment	165	29.7	-	-	-	-	-	-
Stevens	MBI	19	37	-	-	-	-	-	-

Note: Scale: low EE ≤ 18, high EE ≥ 27, potential EE range = 0–54; low DP ≤ 5, high DP ≥ 10, potential DP range = 0–30; high PA ≥ 40, low PA ≤ 33, potential PA range = 0–48.

Abbreviations: DP, depersonalization; EE, emotional exhaustion; MBI, Maslach burnout inventory; PA, personal accomplishment.

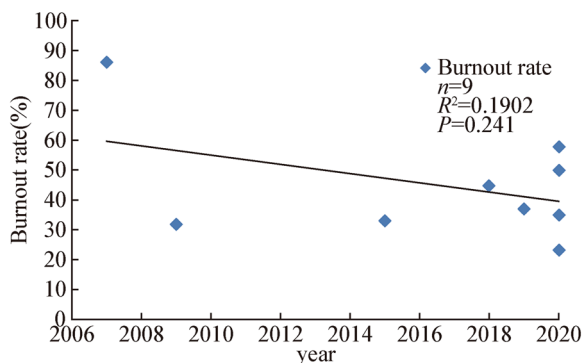


FIGURE 2 Rates of burnout over time. The graph above shows the reported burnout rates from the data reported in the systematic review

residents was 58.6%. A best-fit line was used to assess for a trend in otolaryngology resident burnout over time; however, this was not statistically significant ($p = 0.241$) (Figure 2).

DISCUSSION

Otolaryngology trainee well-being and burnout is increasingly recognized as an important area of investigation. This systematic review summarizes how rates of burnout among otolaryngology trainees compare across specialties, how work hour restrictions have impacted trainee well-being, current counterstrategies to reduce resident burnout and a quantitative meta-analysis of overall rates of otolaryngology trainee burnout and trends over time.

Surgical training is a time during which several unique stressors may lead to increased risk of burnout. Increasing time spent at work such as hours worked per week and number of nights on call per week have been associated with worsened burnout and well-being among otolaryngology trainees. Otolaryngology trainees also report more callousness and more emotional hardening, compared to their attending counterparts.¹⁴ Uniquely over the past year, the COVID-19 pandemic has added more stress to the medical training process. One study of otolaryngology residents found that 51.3% experienced more stress and 58.8% experienced more anxiety during the COVID-19 pandemic compared to previous years.^{9,28} However, numerous other areas remain to be explored or definitively answered. Does otolaryngology resident well-being change during subspecialty rotations as daily demands fluctuate based on volume of inpatient care? Does the clerical burden of the electronic health record directly impact trainee burnout?

Perhaps just as important as determining burnout prevalence is identifying strategies to mitigate this condition. Although the data is limited, some techniques have been used with varying degrees of effectiveness. Use of resident wellness champions, research mentors, offering opportunities for wellness events, and allowing time for residents to pursue their own healthcare needs have shown positive

effects on wellbeing and burnout.^{24,26,30-32} Additionally, implementation of protected nonclinical time has shown to improve resident burnout and well-being.²⁴ This data suggests that even small modifications to the day to day routine of otolaryngology residents can have a measurable impact on overall sense of wellbeing and reported rates of burnout. Despite studies demonstrating effective strategies, there is no standardization of practices or resources among otolaryngology residency programs aimed at targeting burnout and wellness.²³

The ACGME has worked to improve resident well-being with updated program requirements, but many of the strategies implemented by some of the studies above are not a part of the ACGME guidelines. In 2017, the ACGME released new changes that allows residents protected time to attend appointments for personal care, even if these appointments fall during work hours.²⁰ While updating program requirements every year to include new policies shows good intentions, it would be beneficial to further investigate the effectiveness of the ACGME policies on combating wellbeing and burnout. It may be difficult for programs of different sizes to implement changes in the same way based on the higher demands and fewer resources that may be available to some programs. It would also be interesting to further investigate the reception of these changes by residents and faculty due to potential disruption of the residency educational process as some of the changes by the ACGME have previously been shown to be controversial and potentially detrimental.¹⁷

Residency can be an intense and at times stressful period during medical training.¹⁵ Identifying and working to improve burnout is important due to the long-term effects of burnout.³³ Burnout among physicians has been associated with negative clinical outcomes, unfavorable productivity, higher rates of self-reported error, reduced work hours, and even early retirement.³⁴⁻⁴⁰ Additionally, burnout can have a financial impact on the healthcare system. One case model estimated that there is approximately 4.6 billion dollars related to physician turnover and reduced clinical hours attributable to burnout each year in the United States.⁴¹

While awareness of trainee burnout is increasing, there is currently no standard for monitoring burnout amongst trainees. Similarly, there is no well-delineated structure of guidelines for increasing trainee well-being that programs can look to. However, based on the data presented in this paper, it appears that two fairly straightforward initiatives could be easily implemented by the majority of residency programs to combat burnout and improve well-being: having a formal faculty mentorship program for trainees and allowing residents some protected time during regular work hours to complete tasks outside of clinical patient care. Moreover, having frank discussions with trainees about systemic issues that affect their well-being may also lead to actionable changes such as improved access to parking or locker room availability. In our experience, we have recently made a systematic change to provide residents with a day of protected research time per week instead of the traditional 3-6-month research block. This time allows for longitudinal research, but also provides trainees a time during the

week in which they can get caught up on clinical duties and have a mental break. Anecdotal trainee feedback to date has been universally positive.

CONCLUSION

Rates of burnout remain high among otolaryngology trainees, although they appear to be improving over time. Implementing formal mentorship programs and providing protected time during regular work hours appear to be effective tools to improve resident well-being.

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

ETHICS STATEMENT

This systematic review and meta-analysis was considered exempt from IRB review.

AUTHOR CONTRIBUTIONS

Skye K. Lawlor: idea generation, study design, data collection, analysis, manuscript drafting, manuscript approval; **Christopher M. Low:** idea generation, study design, data collection, analysis, manuscript drafting, manuscript approval; **Matthew L. Carlson:** idea generation, study design, analysis, manuscript drafting, manuscript approval; **Karthik Rajasekaran:** idea generation, study design, data analysis, manuscript drafting, manuscript approval; **Garret Choby:** idea generation, study design, data collection, analysis, manuscript drafting, manuscript approval.

DATA AVAILABILITY STATEMENT

Data are available via source literature, for which all citations are included in the manuscript.

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