RESEARCH ARTICLES

Race and Gender Representation Amongst Otolaryngology Head and Neck Surgery Residency Programs

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Keywords: Diversity, Equity, Inclusion, Otolaryngology, Residency, Gender, Representation

https://doi.org/10.59867/001c.161481

Journal of the National Hispanic Medical Association

Vol. 4, Issue 1, 2026

ABSTRACT

Objective

Otolaryngology Head and Neck Surgery (OHNS) has historically been deficient in representation of racial and gender minorities. This database and literature review aims to assess and compare the representation of racial minorities and female residents in OHNS with other surgical subspecialty programs from 2018-23.

Study Design

Database and literature review.

Data Sources

Data was obtained from the U.S. Census Bureau, AAMC U.S. Physician Workforce Data Dashboard, the Medical School Applicants and Matriculant data, and the Accreditation Council Graduate Medical Education (ACGME) data resource book from 2018-19 through 2022-23.

Methods

Data was extracted on demographic trends, such as sex, gender, ethnicity, and race, across various U.S. surgical subspecialty residency programs. Descriptive statistics were utilized to evaluate demographic distribution, race/ethnicity, and sex/gender representation over time. A systematic PubMed search was conducted to include data regarding OHNS residency program structures, training outcomes, and case assignments amongst demographics. This research received an IRB exemption from the University of Florida Research Division of Research Operations (#ET00049672).

Results

Since 2018, there has been a 143% increase in Black/African American residents and a 97% increase in Hispanic/Latino/Spanish residents. OHNS residencies had a greater percentage of Black/African American residents when compared to integrated plastic surgery (3.5%) and ophthalmology (4.0%). In 2023, the

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percentage of female OHNS residents (42.6%) increased by 30%, and was greater than other competitive surgical fields, such as orthopedic surgery (20.3%) and neurosurgery (23.6%).

Conclusions

Over the last 5 years, OHNS residencies have made great strides in diversifying the field. Though this is a positive shift in gender and racial representation, there is a need for increased mentorship and initiatives to continue increasing diversity within the field.

Introduction

Diversity in medicine has increased the need for representation and inclusion, especially in surgical specialties like Otolaryngology-Head & Neck Surgery (OHNS). The field of OHNS has historically been deficient in representation of racial and gender minorities. This is prevalent in residency programs, in academia, and on a national level in leadership roles. The American Academy of Otolaryngology Head and Neck Surgery (AAO-HNS) Diversity and Inclusion Committee has made it a priority to set initiatives in place to increase racial and gender diversity through mentorship and pipeline programs. Despite small strides, race and gender representation continues to not fully represent the diversity among our own population. This is paramount as women are now the majority in medical schools across the United States.[1] Twenty percent of the U.S. population is Hispanic/Latino (HL) and 14% are Black/African American (AA).[2] From 2015 to 2024, AA females and HL females showed increased trend of 29.74% and 14.98% respectively in medical school applications.[3] This translates to more underrepresented minorities applying to medical schools and postgraduate training programs. However, even though there have been increases in absolute numbers, all racial and ethnic groups remained underrepresented among applicants and matriculants.[3] It is important for residency programs to attend to inequities as diversity in the medical workforce has been shown to enhance patient outcomes and cultural competency, reduce language barriers, and increase access to care for underserved communities.[4,5] Studies have shown that physicians with minority backgrounds tend to practice in underserved communities, and racial concordance is associated with patient satisfaction, lower mortality rates, and continuation of treatment.[6-9]

Women surgeons often confront microaggressions and gender-based biases, which affect evaluations and leadership goals.[10,11] Underrepresented in Medicine (URiM) report increased discrimination, which can lead to isolation and burnout.[12,13] These issues emphasize the need for inclusive OHNS programs to reduce burnout and increase resident well-being. This study examines sociodemographic differences among OHNS residents to shed light on the current landscape and composition of OHNS residency programs.

Methods

This study examines demographic trends across various surgical subspecialty residency programs and in the U.S. Demographic data on residency programs and was obtained from the publicly available Accreditation Council for Graduate Medical Education (ACGME) Data Resource Book for the past five academic years. Data was collected year-by-year starting at 2018-19 up to 2022-23. The targeted population includes all residency program graduates in the U.S. accredited by the ACGME, along with data on applicants to medical school and trends within the physician workforce in surgical subspecialties. Inclusion criteria targeted only data relevant to U.S.-based medical training programs. Primary variables examined include demographic data on residents in surgical subspecialties such as sex, gender, ethnicity, and race. Gender data includes female and male residents. The race/ethnicity examined include non-Hispanic White/Caucasian (WC), Asian, Hispanic/Latino/Spanish (HL), Black/African American (AA), and American Indian/Alaskan Native (AI/AN), with minority populations identified as the latter three groups.[14] Demographic data on OHNS residency programs was compared to other surgical subspecialties, including orthopedic surgery, neurosurgery, ophthalmology, and integrated plastic surgery.

To examine the current U.S. population census, data was obtained from the U.S. Census Bureau website.[2] To examine trends within the current physician workforce among surgical subspecialties, data was obtained from the Association of American Medical Colleges (AAMC) U.S. Physician Workforce Data Dashboard. To examine data on medical school applicants, data was obtained from the AAMC Medical School Applicants and Matriculant dataset.[1]

Our primary outcome was change over time in the representation of females and minority residents in OHNS and other surgical subspecialty residency programs from 2018-23. Key measures included year-to-year changes, specialty growth or decline, gender and race growth or decline, and applicant demographics.

Descriptive statistics were utilized to evaluate demographic distribution and sex/gender representation in surgical subspecialty residency programs overtime. Race/ethnicity demographic counts for each academic year from 2018-19 through 2022-23 were tabulated and converted to annual totals and within-year proportions. The "Native Hawaiian" category (all zeros) and the "unknown" categories were excluded from the analysis. An 8-level contingency table of race/ethnicity by year (5 levels) was constructed and a Pearson chi-square test for independence was applied to evaluate whether the distribution of race/ethnicity categories differed across years. For sex/gender, yearly counts were similarly totaled and expressed as proportions. Variables such as "nonbinary" and "not reported" contained few observations and were grouped into another category, yielding a three-level analysis. A Pearson

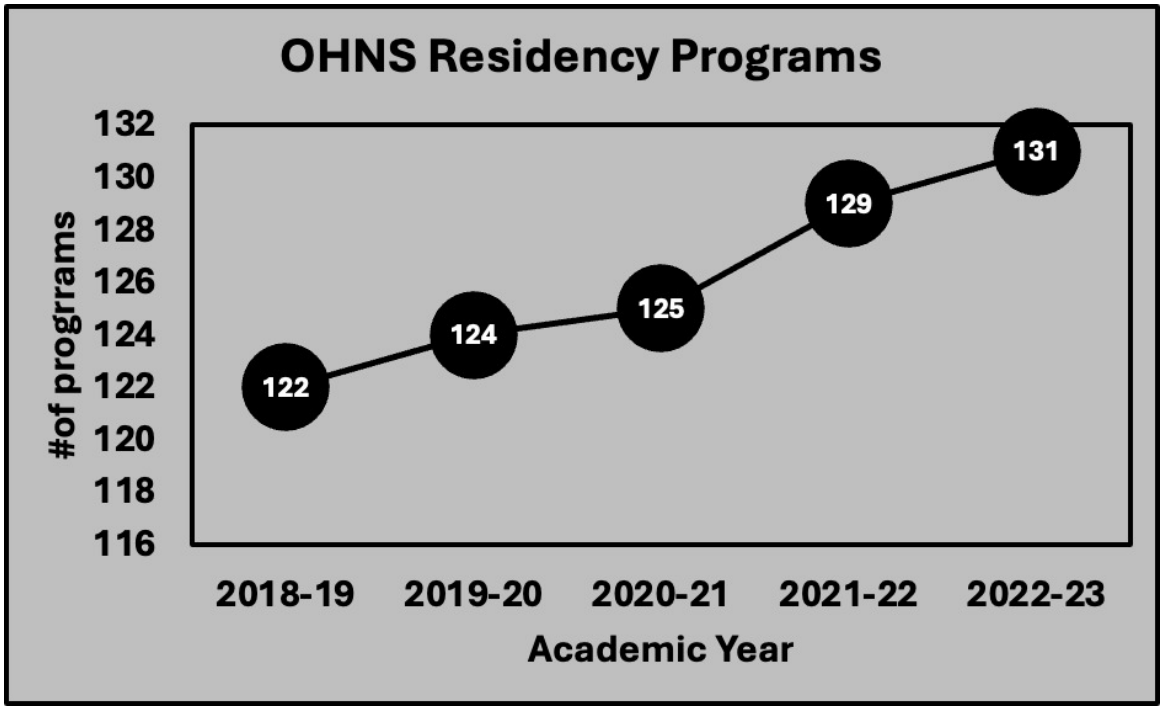


Figure 1. Number of U.S. OHNS Residency Programs in the Last Five Academic Years

χ^2 test of independence was then conducted using the same significance threshold. Statistical significance was assessed at a two-sided α of 0.05. All analyses were performed using GraphPad Prism version 10.3.1.[15]

A systematic PubMed search was conducted to include data regarding residency program structures, training outcomes, and case assignments amongst demographics in OHNS. National residency survey questionnaires and cohort study data from previous studies were analyzed to highlight factors contributing to bias and discrimination toward those underrepresented in OHNS.[16,17]

Results

Residency Program Data

The number of OHNS residency programs increased by 7.4% from 2018 to 2023, expanding from 122 to 131 [Figure 1]. This translates to an increase from 1,651 OHNS residency positions to 1,795. Of the 1,795 ENT residents in 2022-23, 764 were female.

RACE/ETHNICITY DATA

AA student representation increased by 8.1% and HL student representation increased by 6.4%. The percentage of AA OHNS residents increased to 4.1% in 2022-23 from 1.8% in 2018-19. The percentage of HL ENT residents increased to 7.4% in 2022-23 from 4.1% in 2018-19. Between 2018 and 2023, there has been a 143% increase in AA residents and a 97% increase in HL residents. AI/AN residents represented less than 1% of all OHNS

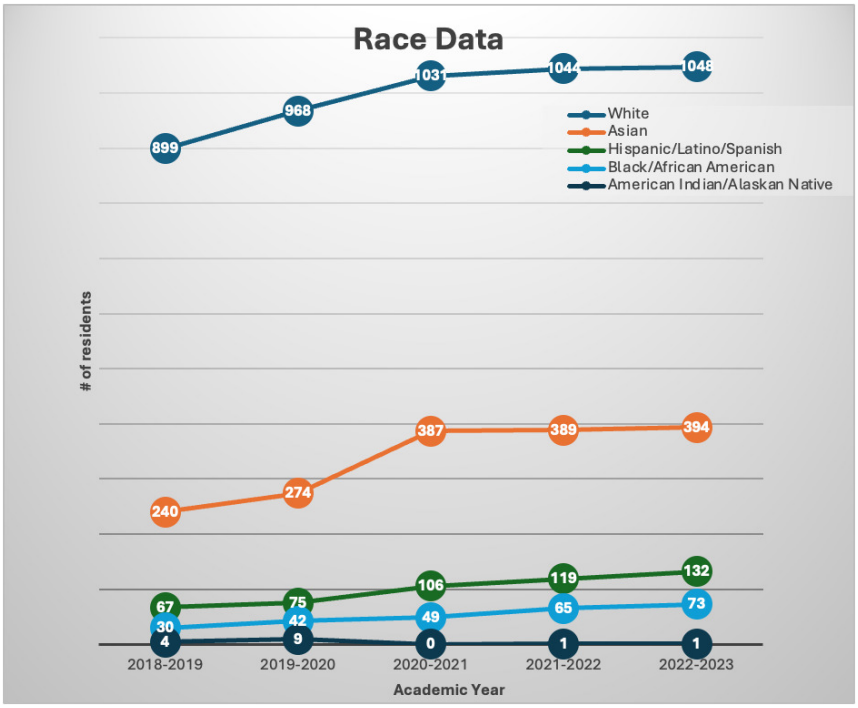


Figure 2. Distribution of Race/Ethnicity Identity Among OHNS Residents Over the Last Five Academic Years

residents. [Figure 2] The Pearson chi-square test of independence comparing racial distributions across five academic years resulted in χ^2 = 119.1, df = 24, p<0.001, which indicates that the overall race/ethnicity composition of the trainee cohort changed significantly over time. WC trainees remained the majority of the demographic groups and showed an increase of 16.6% between 2018 and 2023.

SEX/GENDER DATA

The proportion of female OHNS residents has persistently increased over the last five years. In 2023, women made up 53% of all U.S. medical students. The percentage of female OHNS residents increased from 36.1% in 2018-19 to 42.6% in 2022-23. This reflects a 30% increase in the number of female OHNS residents since 2018. [Figure 3]. In 2022-23, the percentage of female OHNS residents (42.6%) was lower than the percentage of integrated plastic surgery female residents (47.4%), but higher than ophthalmology (40.2%), neurosurgery (23.7%), and orthopedic surgery (20.3%) [Figure 4]. The Pearson chi-square test of independence comparing race/ethnicity distributions across five academic years resulted in χ^2 = 92.37, df = 4, p<0.001. This shows that the overall sex/gender composition of the trainee cohort also changed significantly over time.

HL AND AA RESIDENTS IN SURGICAL SUBSPECIALTIES

The percentage of AA OHNS residents (4.1%) was less than neurosurgery (5.6%) and orthopedic surgery (5.2%), but higher than ophthalmology (4.0%), and integrated plastic surgery (3.5%). The percentage of HL OHNS residents

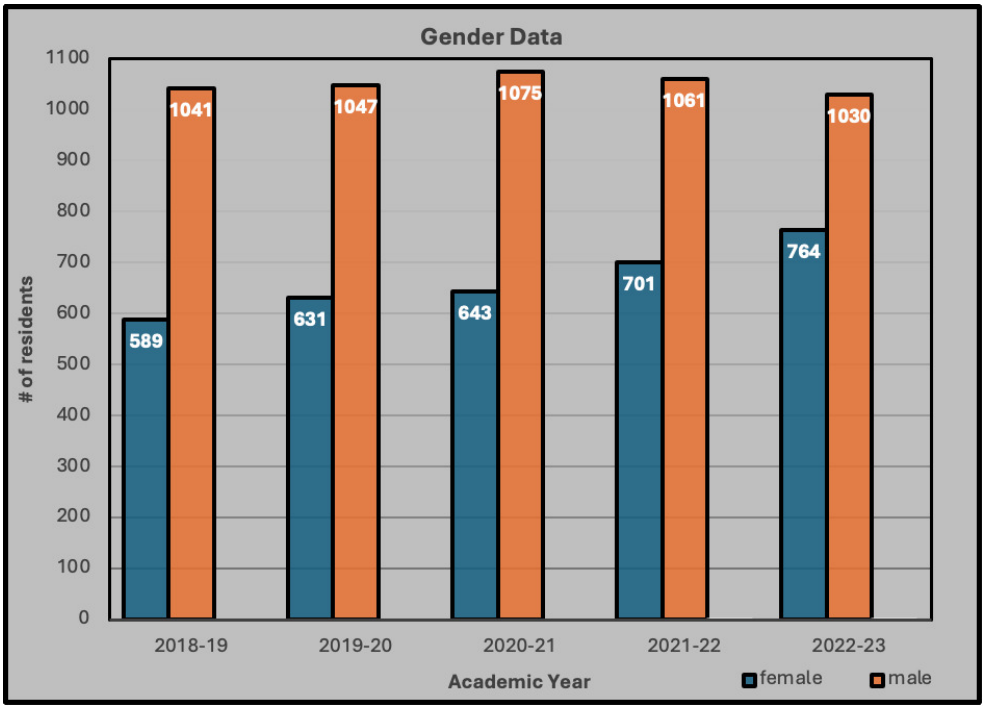


Figure 3. Sex/Gender Distribution Among OHNS Residents Over the Last Five Academic Years

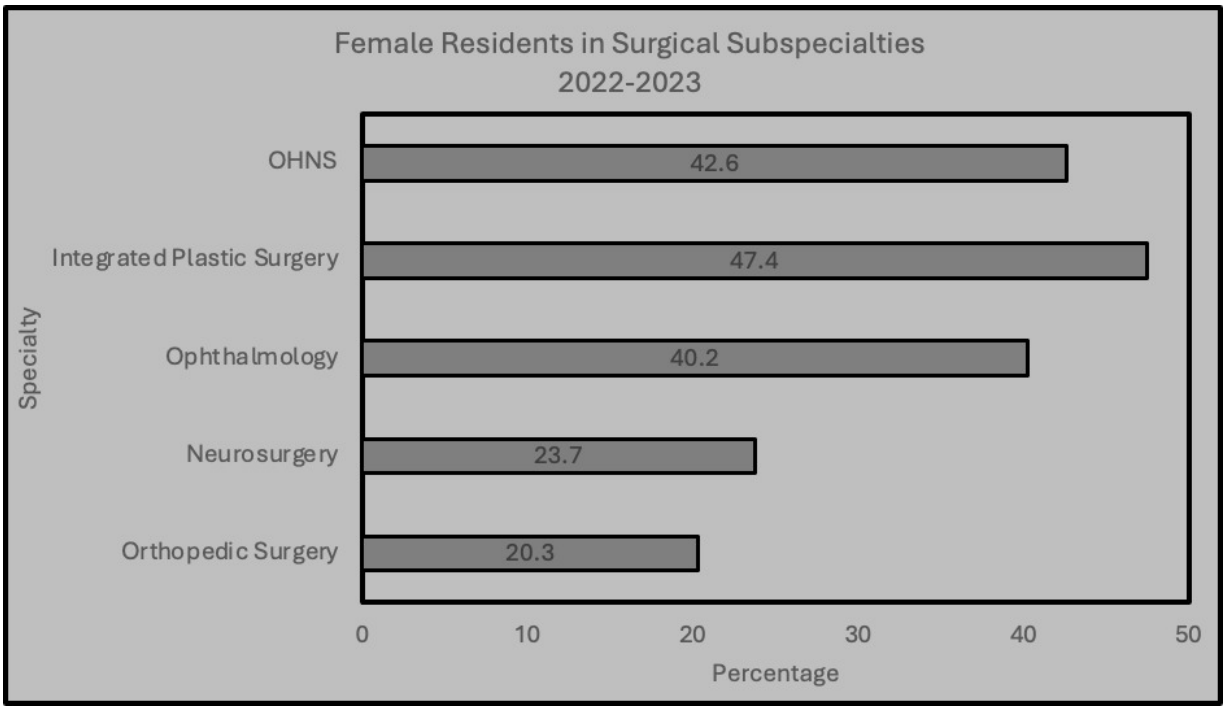


Figure 4. Percentage of Female Residents in Surgical Subspecialties in the 2022-23 Academic Year

(7.4%) was less than integrated plastic surgery (8.9%) and neurosurgery (8.9%), similar to orthopedic surgery (7.4%), and greater than ophthalmology (7.2%) [Figure 5].

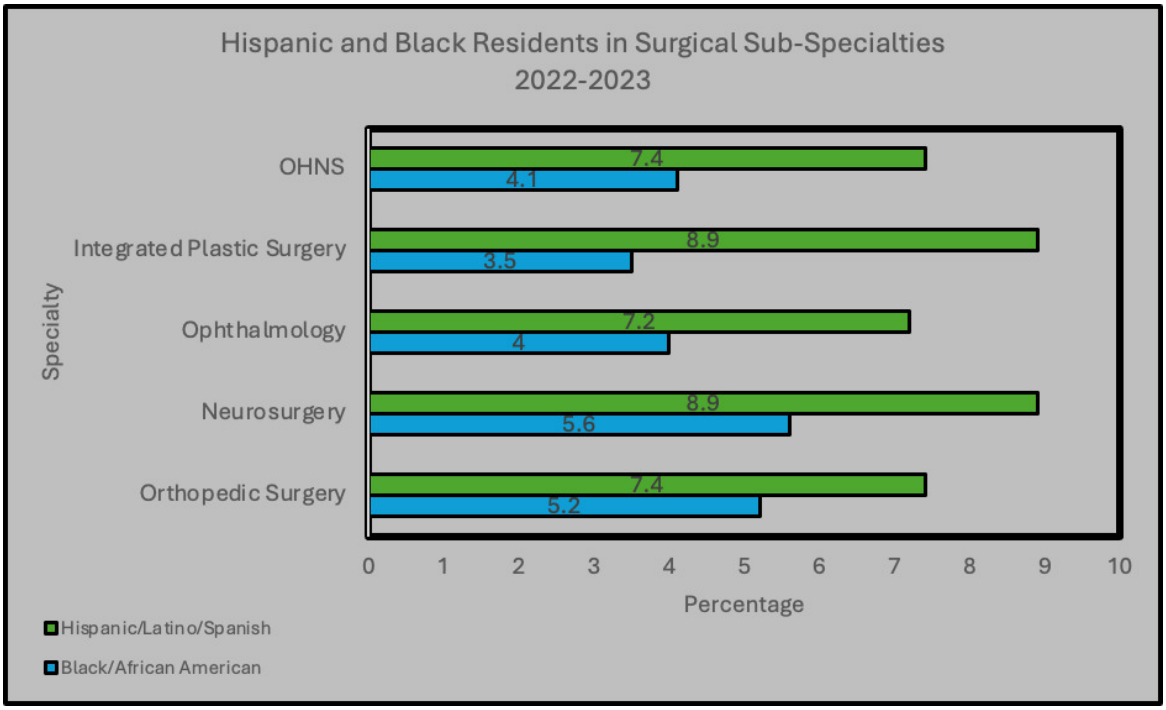


Figure 5. Percentage of Hispanic/Latino/Spanish and Black/African American Residents in Surgical Sub-specialties in the 2022-23 Academic Year

Discussion

Diversity in medicine has increased the need for representation and inclusion, especially in surgical specialties like OHNS. The AAO-HNS has made progress, yet gaps remain. Racial and gender inequalities affect resident experiences, recruitment, retention, and even performance. These inequalities can undermine resident physicians' well-being and the quality of care for different patients.[4,11,12]

Between 2018 and 2023, there was a noticeable shift in OHNS residency programs. These changes were observed both in the quantity of programs as well as resident diversity. The number of programs increased by 7.38%, expanding from 122 programs to a total of 131 by the end of this period. This change also brought a rise in representation for historically marginalized populations. Of these, AA residents surged by 143%, while HL resident representation increased by 97%. Looking further into this, we found that this trend was also apparent as we looked at the representation of these populations in the medical student cohorts. AA student representation increased by 8.1% and HL student representation increased by 6.4%. Sex and gender diversity also saw an increase with a record high of 42.6% female resident representation in 2023, a 30% increase since 2018.

When we compare this to other surgical fields, we see that OHNS has achieved a higher degree of diversity than fields like ophthalmology and integrated surgery. OHNS has seen a greater proportion of AA residents in 2023, increasing from 1.8% in 2018 to 4.1%. Nevertheless, it is still trailing

behind neurosurgery and integrated plastic surgery for HL representation. The rise in sex/gender diversity among OHNS residencies aligns with the trends seen nationwide.

The difference in female representation in OHNS (42.6%) stands out in comparison with other competitive fields such as orthopedic surgery (20.3%) and neurosurgery (23.6%). Ophthalmology came close to OHNS with 40.1% of residents being female. This suggests focused initiatives aimed at enhancing gender diversity might be producing positive outcomes across multiple fields. In 2023, women made up 53% of all U.S. medical students. This change mirrors the health care sector's emphasis on gender equality and has had a beneficial influence on the makeup of residency programs.

These changes in cohort composition may be a result of the efforts made by the AAO-HNS Diversity Committee, which, since 2007-08, has invested time and money into tools that have been proven to increase equity in other areas of medicine.[18] For example, the W. Harry Barnes Endowment and the Diversity Endowment have created opportunities and allocated funds for minority students to travel to audition rotations, conferences, and residency interviews through travel grants. Additionally, they have created diversity committees with individuals who are passionate about this subject and are actively working to implement strategies to diversify the field.[19] The AAO-HNS also sponsors similar activities by providing their own travel grant for URiM.[20] Nevertheless, apart from these specific specialty-led initiatives, the observed increase trends are most likely multifaceted, influenced by the global events of 2020.

Mentorship, interviews, and ranking all have strong effects on determining OHNS candidates for residency and further diversity in the field. Supporting URiM students through these efforts and milestones have been proven to not only have a real impact on residency cohorts but also provide a sense of unique support that can only be achieved through representation in medicine. Mentorship provides tangible and intangible support, connecting trainees to research, projects, funding, and professional networks. Mentors can validate the trainee's identity and aspirations, offer encouragement in moments of doubt, and model what a successful career can look like for someone of a similar background. The role of professional sponsorship and personal affirmation has been described as a crucial factor in why mentorship disproportionately benefits women and URiM trainees. In this sense, mentorship is a structural intervention to promote equity within OHNS.[4, 21,22]

Although these developments show forward progress, it is important to acknowledge certain constraints. Primarily, the information at hand does not seek to understand the root reasons behind the changes noticed, like recruitment strategies, shifts in application trends, or organizational regulations focused on promoting inclusion. Moreover, while there has been

a rise in the number of minority residents, their proportional representation is still underrepresented when compared to the general population.[4,5,7] There might also be differences among residency programs that are not reflected in the overall data analysis, as this analysis was obtained through publicly available data that may not always be entirely accurate due to limitations in self-reporting.

It is important not only to pave a path forward to address the disparities in representation among resident physician cohorts, but also to address the challenges that they face in residency. Burnout prevalence among resident physicians is 50%, with OHNS residents experiencing burnout at a rate of 58.6%.[23] Long work hours with minimal institutional support can cause emotional weariness, and racial and gender bias exacerbate it. Women surgeons often confront microaggressions and gender-based biases, which affect their evaluations and leadership goals. URiM report increased discrimination, which can lead to isolation and burnout. More importantly, having more women in the field created opportunities for mentorship, which has proven to be a strong contributor to students entering the medical field and matching into residency.[24] Mentorship and reverse mentoring can help marginalized residents thrive personally and professionally. Outreach to high-level medical and college students may also help further diversify the sector by finding and developing talent. Diversifying OHNS is ethical and enhances patient care as URiM physicians are more likely to serve underserved populations and build trust among these communities.[4]

Limitations

Our analysis is limited by the sample size and the use of two points for comparison. Even though this approach allows for preliminary inferential analysis, it does not capture the complete trajectory of change and trends in sex/gender or race/ethnicity representation over time within OHNS residency programs. Additionally, the dataset did not contain cross-tabulated demographic information, which prevented intersectional group analysis. Nevertheless, this study provides a foundation for future research through meaningful insight into the state of diversity and highlights areas that warrant continued monitoring not only in the OHNS field, but also in other surgical subspecialties. Future studies should incorporate multiple time points across longer intervals and additional medical training careers like general surgery to allow a more detailed assessment while building on the observations reported here and exploring intersectional patterns.

Conclusion

This study demonstrates that the OHNS field has comparatively greater trends of increased representation of URiM relative to other surgical subspecialties. The positive developments in promoting diversity and gender balance are promising. Maintaining this improvement requires ongoing

dedication. Studies on the underlying reasons for OHNS program representation disparities are needed. Program-level diversity initiatives should also be studied. Lawmakers, educators, and residency program administrators should prioritize ways to attract and support underrepresented groups, whether that includes racial, gender, socioeconomic status considerations, or all the above.

Published: May 26, 2026 EDT.

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REFERENCES

1. AAMC. 2023 FACTS; U.S. medical school applications and matriculants by school, state of legal residence, and gender, 2023-2024. https://www.aamc.org/data-reports/data/2023-facts

2. Bureau. USC. QuickFacts: United States. Census.gov. Accessed March 5, 2025. https://www.census.gov/quickfacts/fact/table/US/PST045223

3. Lv G, Jiang X, Franklin J, Li M, Yuan J, Lu ZK. Diversity and equity in medical education over the past decade: applications, matriculations, and the growing gaps. *BMC Med Educ*. 2025;25(1):947. doi:10.1186/s12909-025-07498-9

4. Truesdale CM, Baugh RF, Brenner MJ, et al. Prioritizing Diversity in Otolaryngology–Head and Neck Surgery: Starting a Conversation. *Otolaryngol Neck Surg*. 2021;164(2):229-233. doi:10.1177/0194599820960722

5. Majerczyk D, Behnen EM, Weldon DJ, et al. Racial, Ethnic, and Sex Diversity Trends in Health Professions Programs From Applicants to Graduates. *JAMA Netw Open*. 2023;6(12):e2347817. doi:10.1001/jamanetworkopen.2023.47817

6. Cohen JJ. The Consequences of Premature Abandonment of Affirmative Action in Medical School Admissions. *JAMA*. 2003;289(9):1143. doi:10.1001/jama.289.9.1143

7. Fenton D, Hamzat I, Dimitroyannis R, et al. Assessment of Demographic Changes of Workforce Diversity in Otolaryngology, 2013 to 2022. *JAMA Otolaryngol Neck Surg*. 2023;149(7):628. doi:10.1001/jamaoto.2023.1130

8. Agarwala A, Patel J, Stephens J, et al. Implementation of Prevention Science to Eliminate Health Care Inequities in Achieving Cardiovascular Health: A Scientific Statement From the American Heart Association. *Circulation*. 2023;148(15):1183-1193. doi:10.1161/CIR.0000000000001171

9. Snyder JE, Upton RD, Hassett TC, Lee H, Nouri Z, Dill M. Black Representation in the Primary Care Physician Workforce and Its Association With Population Life Expectancy and Mortality Rates in the US. *JAMA Netw Open*. 2023;6(4):e236687. doi:10.1001/jamanetworkopen.2023.6687

10. Heisler CA, Godecker AL, Verran D, Sinha MS, Byam J, Miller P. Workplace microaggressions: results of a survey of the American College of Surgeons members. *Am J Obstet Gynecol*. 2024;231(2):265.e1-265.e8. doi:10.1016/j.ajog.2024.04.044

11. Barnes KL, Dunivan G, Sussman AL, McGuire L, McKee R. Behind the Mask: An Exploratory Assessment of Female Surgeons' Experiences of Gender Bias. *Acad Med*. 2020;95(10):1529-1538. doi:10.1097/ACM.0000000000003569

12. Guille C, Sen S. Burnout, Depression, and Diminished Well-Being among Physicians. Hardin CC, ed. *N Engl J Med*. 2024;391(16):1519-1527. doi:10.1056/NEJMra2302878

13. Samuels EA, Boatright DH, Wong AH, et al. Association Between Sexual Orientation, Mistreatment, and Burnout Among US Medical Students. *JAMA Netw Open*. 2021;4(2):e2036136. doi:10.1001/jamanetworkopen.2020.36136

14. Valenzuela F, Romero Arenas MA. Underrepresented in Surgery: (Lack of) Diversity in Academic Surgery Faculty. *J Surg Res*. 2020;254:170-174. doi:10.1016/j.jss.2020.04.008

15. GraphPad. *Prism Version 10.3.1 for Windows*. GraphPad Software Inc; 2024. https://www.graphpad.com/

16. Gurgel RK, Cardon BR, Allen CM, et al. Evaluating gender parity in operative experience for otolaryngology residencies in the United States. *The Laryngoscope*. 2020;130(7):1651-1656. doi:10.1002/lary.28306

17. Thompson-Harvey A, Drake M, Flanary VA. Perceptions of Otolaryngology Residency Among Students Underrepresented in Medicine. *The Laryngoscope*. 2022;132(12):2335-2343. doi:10.1002/lary.30090

18. AAO-HNS. Diversity, Equity and Inclusion. American Academy of Otolaryngology – Head and Neck Surgery. Accessed June 1, 2024. https://www.entnet.org/about-us/diversity-equity-inclusion/

19. AAO-HNS. Harry Barnes Endowment Travel Grant. Accessed June 1, 2024. https://www.entnet.org/resource/harry-barnes-endowment-travel-grant/

20. AAO-HNS. Diversity Endowment URM Away Rotation Grant. Accessed June 1, 2024. https://www.entnet.org/resource/diversity-endowment-urm-away-rotation-grant/21

21. Hsu AK, Tabaee A, Persky MS. Mentorship in otolaryngology residency: The resident perspective. *The Laryngoscope*. 2010;120(6):1263-1268. doi:10.1002/lary.20858

22. Mahendran GN, Walker ER, Bennett M, Chen AY. Qualitative Study of Mentorship for Women and Minorities in Surgery. *J Am Coll Surg*. 2022;234(3):253-261. doi:10.1097/XCS.0000000000000059

23. Lawlor SK, Low CM, Carlson ML, Rajasekaran K, Choby G. Burnout and well-being in otolaryngology trainees: A systematic review. *World J Otorhinolaryngol - Head Neck Surg*. 2022;8(2):118-125. doi:10.1002/wjo2.21

24. Abdulrazzak A, Chandler A, Lu R, et al. Mini-medical school programs decrease perceived barriers of pursuing medical careers among underrepresented minority high school students. *J Osteopath Med*. 2021;121(12):883-890. doi:10.1515/jom-2021-0125