

# Examining the Otolaryngology Match and Relationships Between Publications and Institutional Rankings

Evan M. Ryan, MS<sup>1</sup>, Katie R. Geelan-Hansen, MD<sup>1</sup>,  
Kari L. Nelson, PhD<sup>2</sup>, and Jayme R. Dowdall, MD<sup>1</sup>

OTO Open  
2020, 4(2) 1–3  
© The Authors 2020  
Article reuse guidelines:  
[sagepub.com/journals-permissions](http://sagepub.com/journals-permissions)  
DOI: 10.1177/2473974X20932497  
<http://oto-open.org>



## Abstract

This study examines associations among publication number, National Institutes of Health (NIH) funding rank, medical school research rank, and otolaryngology department ranks of otolaryngology applicants during the 2018-2019 match cycle. Information regarding 2018-2019 otolaryngology applicants was collected from Otomatch.com and verified via department websites. Information was also collected regarding 2018 NIH funding rank and 2020 US News & World Report research rank of medical schools and otolaryngology departments. *T* tests and chi-square analyses were performed. Top 40 NIH funding rank, top 40 medical school research rank, and home institution department rank were separately associated with more publications and higher rates of matching into highly reputed otolaryngology departments (all  $P < .01$ ). Furthermore, applicants who matched into ranked otolaryngology departments averaged significantly more publications ( $P < .01$ ). Prospective otolaryngology applicants should take into account NIH funding rank, medical school research rank, and otolaryngology department rank, as they are associated with matching into high-ranking institutions.

## Keywords

otolaryngology match, publication number, NIH funding, department rank

Received April 27, 2020; accepted May 7, 2020.

**R**esearch has shown that the average otolaryngology applicant applies to  $>60\%$  of the total US otolaryngology programs during the residency application process.<sup>1</sup> As competitiveness of the otolaryngology match increases, multiple factors have been identified that affect the odds of matching into an otolaryngology residency.<sup>2-6</sup> Despite this, little research has been performed that associates an applicant's medical school reputation with publication number and how this reputation ultimately influences the likelihood of matching into highly ranked otolaryngology departments. The objectives of our study are (1) to examine

how research reputation and otolaryngology department rank of an applicant's medical school correlate with publication number and (2) to determine if these variables associate with matching into top otolaryngology departments.

## Methods

This study was exempt within the University of Nebraska Medical Center Institutional Review Board (006-20-EX). Information regarding 2019 otolaryngology applicant characteristics was collected from spreadsheets available on Otomatch.com and verified via department websites.<sup>7</sup> Applicants found on Otomatch.com who could not be corroborated via department websites were excluded from analyses. The 2018 National Institutes of Health (NIH) funding rank of an applicant's medical school and the 2020 US News & World Report (USNWR) research rank of an applicant's medical school were used as surrogates for research reputation. These data, including the 2020 USNWR rank of otolaryngology departments, were gathered via online information. As some medical schools and residency programs were affiliated with multiple otolaryngology departments, the highest ranking available was used. Publication data were obtained through PubMed searches.<sup>8</sup> Two-tailed, 2-sample *t* tests were performed associating publication numbers of applicants from top 40 NIH-funded medical schools, top 40 medical schools, ranked otolaryngology departments, and their nonranked counterparts. Furthermore, *t* tests were used to determine differences in publication number between those applicants who matched into ranked and unranked otolaryngology departments. Additional chi-

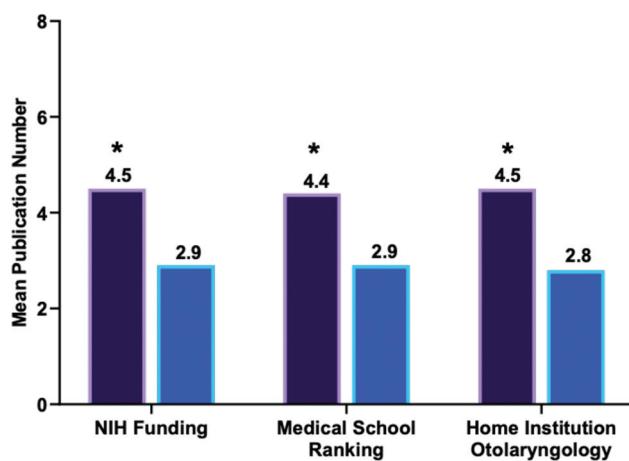
<sup>1</sup>Department of Otolaryngology-Head and Neck Surgery, University of Nebraska Medical Center, Omaha, Nebraska, USA

<sup>2</sup>Graduate Medical Education Office, University of Nebraska Medical Center, Omaha, Nebraska, USA

## Corresponding Author:

Evan M. Ryan, MS, Department of Otolaryngology-Head and Neck Surgery, UNMC, 981225 Nebraska Medical Center, Omaha, NE 68198-1225, USA.  
Email: evan.ryan@unmc.edu





**Figure 1.** Mean publication number based on National Institutes of Health (NIH) funding, medical school research rank, and home institution otolaryngology rank (left = ranked; right = unranked). \* $P < .01$ .

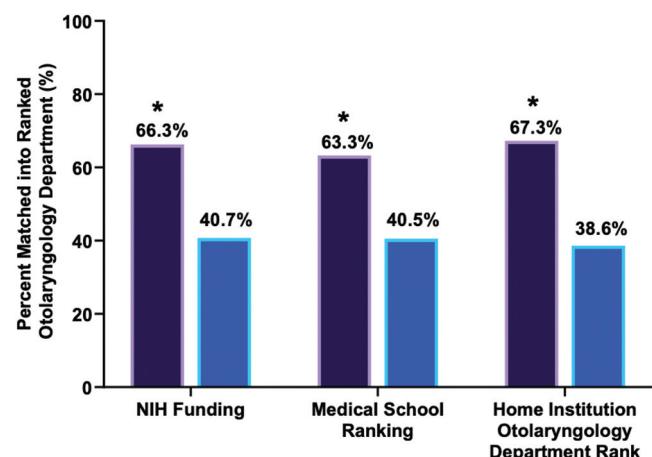
square statistics were utilized to separately investigate NIH funding rank, medical school research rank, otolaryngology department rank, and their influence on matching into a ranked otolaryngology department.

## Results

Information for 317 matched applicants was available on Otomatch.com. After exclusion, we identified publication number and institutional rankings for 304 applicants who matched into otolaryngology during the 2018-2019 cycle. Of note, NIH funding rankings and *USNWR* medical school research rankings featured largely similar institutions, with 83.3% of top 40 research schools per *USNWR* also being in the top 40 NIH funding rankings. Interestingly, 76.9% and 71.8% of ranked otolaryngology departments were also in the top 40 of *USNWR* research rankings and NIH funding rankings, respectively.

The mean number of publications of matched applicants was 3.4. *T* tests revealed a significantly higher mean number of publications in applicants from top 40 NIH-funded medical schools (4.5 vs 2.9,  $P < .01$ ), from top 40 research-ranked medical schools (4.4 vs 2.9,  $P < .01$ ), and from home institutions with ranked otolaryngology departments (4.5 vs 2.8,  $P < .01$ ; **Figure 1**) in comparison with their unranked counterparts. Furthermore, those applicants who matched into a ranked otolaryngology department exhibited significantly higher number of publications than those who matched into unranked departments (4.0 vs 2.8,  $P < .01$ ).

The percentage of applicants who matched into a ranked otolaryngology department was 66.3% for those who attended a top 40 NIH-funded school, 63.3% for those who attended a top 40 medical school in terms of research, and 67.3% for those who attended a medical school with a ranked otolaryngology department. In contrast, the percentage of applicants who matched into a ranked otolaryngology department was 40.7% for those who did not attend a top



**Figure 2.** Percentage matched into ranked otolaryngology departments based on National Institutes of Health (NIH) funding, medical school research rank, and home institution otolaryngology rank (left = ranked; right = unranked). \* $P < .01$ .

40 NIH-funded medical school, 40.5% for those who did not attend a top 40 research-ranked medical school, and 38.6% for those who attended a medical school with an unranked otolaryngology department. Chi-square analyses of these data demonstrated separate statistically significant associations between matching into a ranked otolaryngology department and attending a top 40 NIH-funded medical school ( $P < .01$ ), a top 40 ranked medical school in terms of research ( $P < .01$ ), and an institution with a ranked otolaryngology department ( $P < .01$ ; **Figure 2**).

## Discussion

While previous research has focused on how research reputation and publication number affect the absolute chance of matching into otolaryngology, our research demonstrates that they also affect where an applicant matches. Our study shows that institutions with a significant research reputation and highly ranked otolaryngology departments are more likely to match students at top-tier departments. Otolaryngology applicants continue to “shotgun” apply to multiple programs to increase their likelihood of interviewing at top institutions. Our study indicates that if applicants do not attend highly ranked medical schools and do not have a number of publications (on average, 4 publications in our study), they will have a lesser chance of matching at a top-ranked program as compared with their counterparts. Moreover, this research demonstrates potential bias for top-ranked programs to prefer applicants from highly reputed medical schools.

The primary limitation of our study is that it does not take into account the likelihood that applicants who attend highly reputed medical schools are more likely to apply to higher-ranked programs. Furthermore, our study does not control for those applicants who remained at their home institutions. Applicants from highly ranked medical schools likely have greater chances of matching at their home institutions due to familiarity.

To our knowledge, this is the first study to examine the relationships among an applicant's medical school funding, research rank, department rank, and total publication production and how each of these variables associates with matching into a top-ranked otolaryngology program.

## Acknowledgments

We thank Kaeli Samson, MS, for her contribution with the statistical analysis.

## Author Contributions

**Evan M. Ryan**, contributed to the design and implementation of the research, to the analysis of the results and to the writing of the manuscript; **Katie R. Geelan-Hansen**, contributed to the design and implementation of the research, to the analysis of the results and to the writing of the manuscript; **Kari L. Nelson**, contributed to the design and implementation of the research, to the analysis of the results and to the writing of the manuscript; **Jayme R. Dowdall**, contributed to the design and implementation of the research, to the analysis of the results and to the writing of the manuscript

## Disclosures

**Competing interests:** None.

**Sponsorships:** None.

**Funding source:** None.

## References

1. Chang CWD, Erhardt BF. Rising residency applications: how high will it go? *Otolaryngol Head Neck Surg*. 2015;153(5):702-705.
2. National Resident Matching Program. *Results and Data: 2019 Main Residency Match*. National Resident Matching Program; 2019.
3. Hauser LJ, Gebhard GM, Blumhagen R, Carlson NE, Cabrera-Muffly C. Applicant characteristics associated with successful matching into otolaryngology. *Laryngoscope*. 2016;127(5):1052-1057.
4. Kaplan AB, Riedy KN, Grundfast KM. Increasing competitiveness for an otolaryngology residency. *Otolaryngol Head Neck Surg*. 2015;153(5):699-701.
5. Stringer SP, Cassisi NJ, Slattery WH. Otolaryngology residency selection process: medical student perspective. *Arch Otolaryngol Head Neck Surg*. 1992;118(4):365-366.
6. Ward M, Pingree C, Laury AM, Bowe SN. Applicant perspectives on the otolaryngology residency application process. *JAMA Otolaryngol Head Neck Surg*. 2017;143(8):782.
7. Otomatch. Accessed January 20, 2020. <http://otomatch.com>
8. US National Library of Medicine, National Institutes of Health. PubMed. Accessed January 20, 2020. <https://www.ncbi.nlm.nih.gov/pubmed>