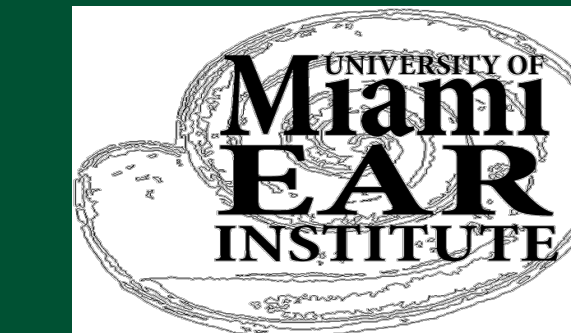


Female authorship trends in otolaryngology literature over a five-year period: 2015-2020



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BACKGROUND

- Despite increasing representation of women in medicine, only 15.8% of otolaryngologists are female ¹.
- Within otolaryngology, this disparity is exacerbated partly due to a relative lack of female faculty and thus female mentors within the field ¹.
- Previous studies have shown that female otolaryngology trainees consider the presence of same-gender residents and faculty when choosing to enter a field, and this may result in a lack of encouragement, mentorship, and further disparity in academic promotions ^{1,3}.
- A key measure of gender disparity in academic medicine is the difference between male and female led authorship.
- Research output is a metric weighed heavily when applying for academic promotions ⁴.
- A previous study identified that women held only 18.6% of directorship positions and 5.1% of chair positions in otolaryngology in 2020 ⁵.
- Along with this, female-authored articles comprised only a small portion of otolaryngology literature between years 2000 and 2015, even with a reported upward trend in female first authorship.
- In this study, female authorship representation in otolaryngology literature from 2015 to 2020 was examined. We assessed the proportion of females and males comprising of first and last authors, the gender association between the authorship positions, and trends in female authorship in seven prominent general and subspecialty otolaryngology journals.

OBJECTIVES

Assess gender representation in first and last authorship in otolaryngology literature between 2015-2020.

METHODS

- First, a computer script was designed using Python to search PubMed (www.pubmed.gov) and extract the first and last authors of all articles published from January 1st 2015 to December 31st 2020.
 - 4 general (*JAMA Otolaryngology Head and Neck*, *Laryngoscope*, *Otolaryngology Head and Neck*, *Head and Neck*)
 - 3 subspecialty journals (*Otology Neurotology*, *International Forum of Allergy and Rhinology*, *Ear Hear*).
- Next, the author names were run through a verified online gender determination tool (Gender API, <https://gender-api.com/en/>).
- For both first and last authors, we assessed the proportion of female and males and trends in female authorship. Additionally, odds ratios (OR) were calculated to determine how likely articles with female first authors also had a female last author.
- Statistical tests employed included students t-test to compare means, Jonckheere's test to assess trends, chi-square to compare proportions, and Fisher's exact test to calculate odds ratios.

Figure 1: Proportion of male and female first and last authors by journal from 2015-2020.

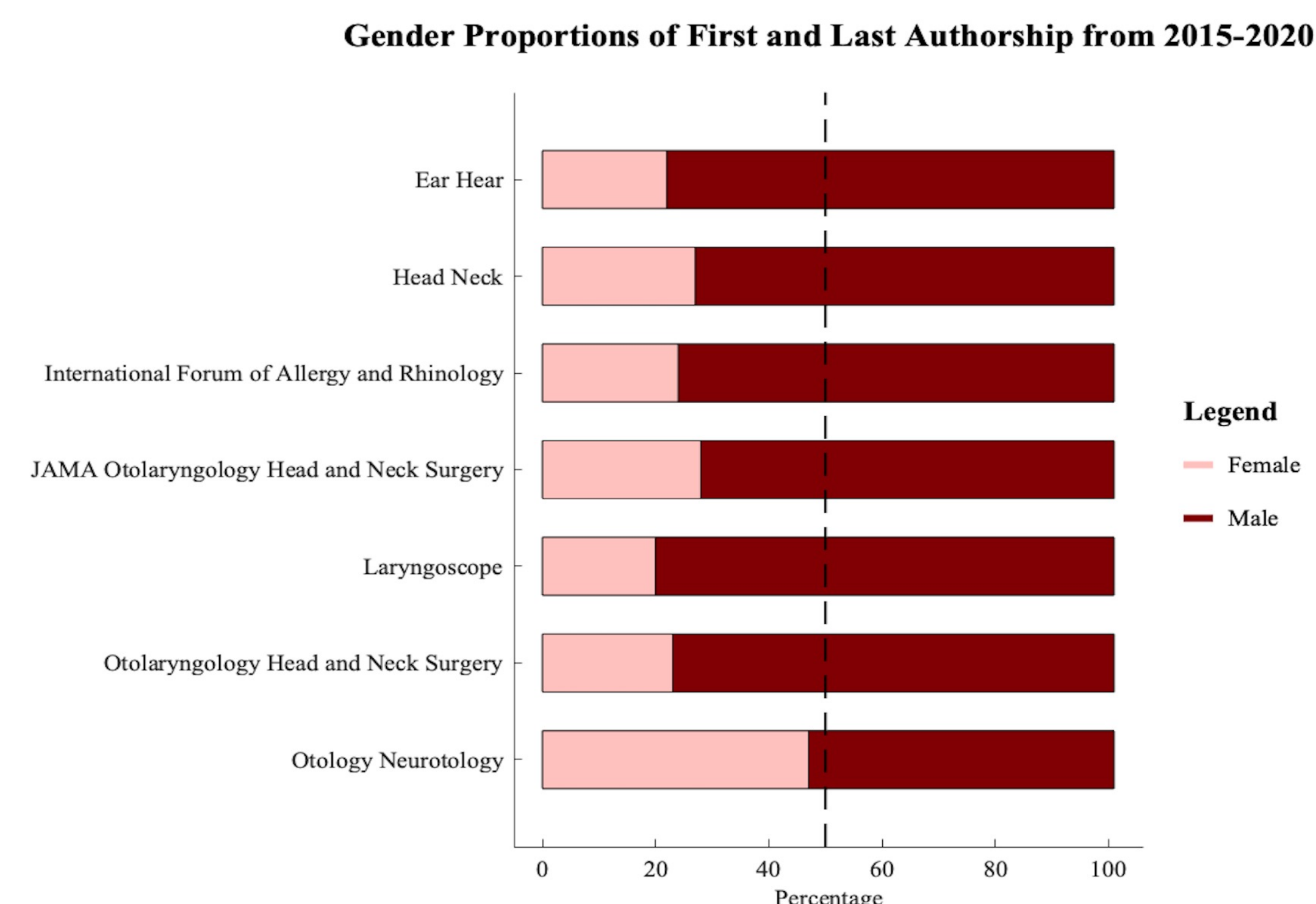
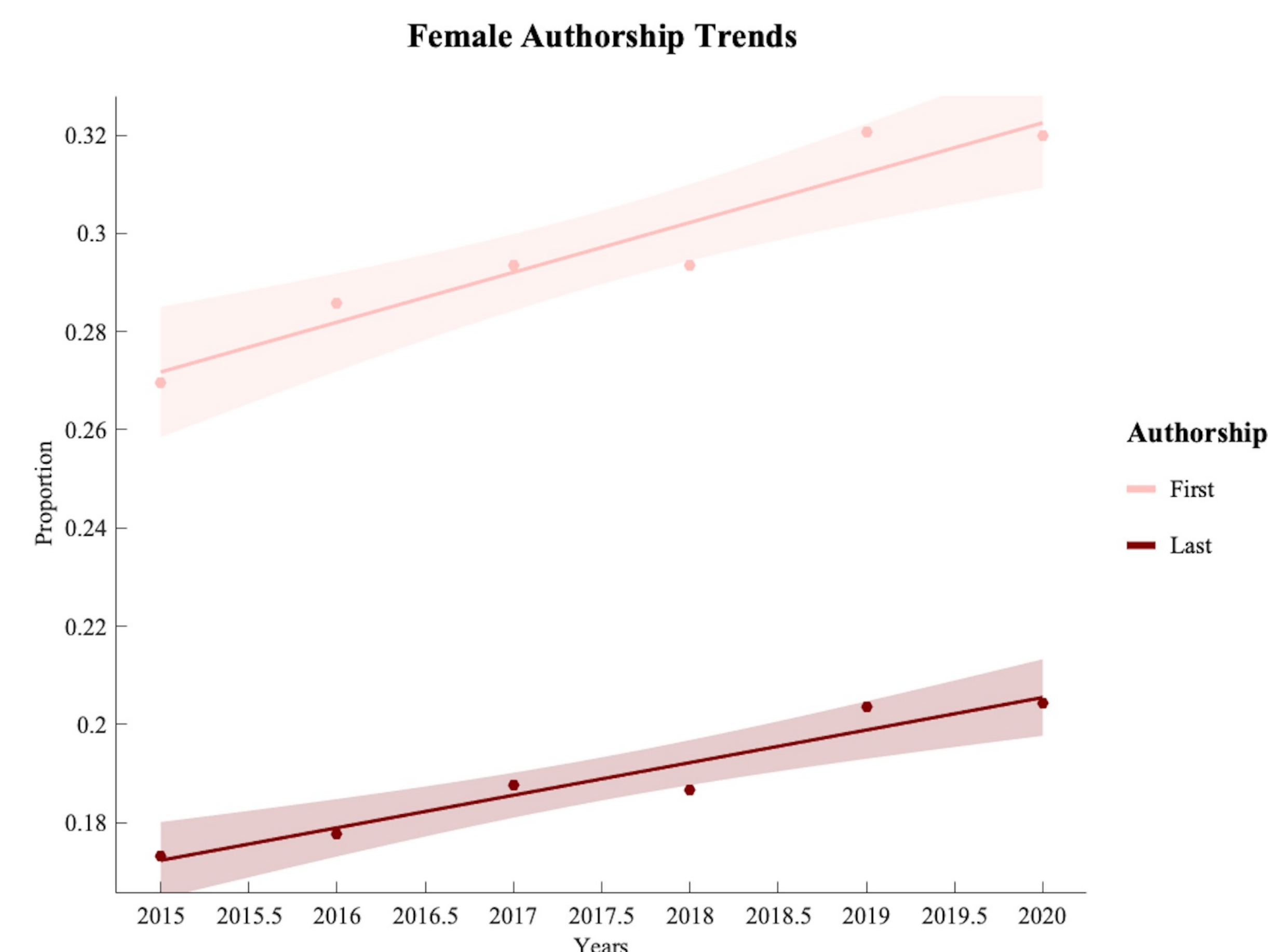


Figure 2: Overall trends in female first and last authorship from 2015-2020



RESULTS

- Of the 18,882 articles analyzed, 16,603 articles and 32,291 authors were included.
- When combining all journals, female first authorship increased by 5% over the study period from 26.9% to 31.9% ($P=0.019$).
- Female last authors increased by 3% from 17.3% to 20.4% ($P=0.007$).
- Similar increases were noted in general journals for female first authorship (3.2% $P=0.007$) and last authorship (2.3%, $P=0.007$).
- Female first authorship increased by 8.5% ($P=0.045$) and female last authorship increased by 3.8% ($P=0.007$) in subspecialty journals.
- On average, each unique male author published more articles (2.68) than did each unique female author (2.08, $P<0.001$).
- 25% of all authors were female and the proportion of women first authors (30%) was higher than that of women last authors (19%, $P<0.001$).
- Articles with female first authors were 1.85 times more likely to have a female last author (CI, 1.70-2.01; $P<0.001$).

CONCLUSION

- Over the last five years, female first and last authorship increased at similar rates, however women published less frequently than men.
- Female first authors were more likely to have female principal investigators.
- Over the study period, female first and last authorship in otolaryngology literature reached a new height since 2015 as more women joined the otolaryngology workforce. Although, disparities are still present.
- Greater emphasis should be placed on attracting women to careers in academic otolaryngology by providing fewer barriers to entry and opportunities for academic development.
- More importance should be placed on fostering cross-gender mentorship opportunities.

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