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Trends in Female Leadership at High-Profile Otolaryngology Journals, 1997–2017

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Objectives: To determine the proportion and relative advancement of women in leadership positions at high-impact otolaryngology journals.

Methods: Nine clinical otolaryngology journals were selected based on high impact factor and subspecialty representation (journal impact factor, 2016: 1.16–2.95). The proportion of women editorial board members associate and/or section editors, and/or editor-in-chief was measured from 1997 to 2017. Comparisons were made to the proportion of women otolaryngology faculty at U.S. medical schools in 2017.

Results: From 1997 to 2017, female editorial board membership increased from 7.2% (range: 0.0%–12.8%) to 17.7% (range: 10.9%–38.9%) (P = 0.0001). In 2017, the proportion of female editorial board members was significantly less than the proportion of female academic otolaryngology faculty (17.7% vs. 27.7%, P = 0.0001), and there was threefold variation between journals. From 1997 to 2017, the proportion of female associate and/or section editors increased from 9.3% (range: 0.0–27.3) to 20.9% (range: 5.3% to 45.5%) (P = 0.09). In 2017, the proportion of female associate and/or section editors was not significantly different than the proportion of female associate or full professor academic otolaryngology faculty (20.9% vs. 19.5%, P = 0.73), but there was ninefold variation between journals.

Conclusion: Women were underrepresented on eight of nine otolaryngology editorial boards but appropriately represented at the associate and/or section editorship level. There was remarkable variation in representation at individual journals, which may provide future opportunities to examine best practices. Disparity exists in leadership at the most senior level of these high-profile otolaryngology journals: none had women editor-in-chiefs.

Key Words: Gender gap, achievement, otolaryngology, editorial board membership, female representation.

Level of Evidence: NA

INTRODUCTION

The representation of women in academic medicine and academic otolaryngology has improved steadily over the last several decades. The proportion of females entering medical school has now reached 50%. One-third of otolaryngology residents are women and 28% of otolaryngology faculty at U.S. medical schools are women.1,2 Despite this progress, female leadership and achievement in otolaryngology has lagged: 14% of full professors and 2% of otolaryngology academic chairs are women.1,2 Achievement and progression are based on a number of elements, including involvement in research, publications, and journal leadership. Amrein et al. showed that women were vastly underrepresented on editorial boards of 60 top-ranked medical journals in a range of medical and surgical specialties.3 In contrast, Choi and Miller reported that there was proportionate representation of female otolaryngologists as journal editors and editorial members.4 Others have reported that female otolaryngologists are more than sufficiently represented as members of professional societies and journal editorial boards and exceed the proportion of active female otolaryngologists.4,5–6 Additionally, Bergeron et al. showed that female authorship in otolaryngology journals significantly increased over four decades, and in 2008 was consistent with the proportion of women practicing otolaryngology in the workforce.7 However, as a caveat, 19.2% of these first female authors were nonphysicians.7

In this observational study, we measure the proportion of women who serve on editorial boards at nine highly respected otolaryngology journals over a 20-year period. In addition, we measure the relative advancement of women in leadership positions at these journals over this period. Although no absolute benchmark exists, we compare these proportions to a rational set of contemporary external benchmarks.

MATERIALS AND METHODS

This observational study reviewed female representation within editorial board leadership across nine clinical
otolaryngology journals from 1997 to 2017. The 2016 SCImago Journal & Country Rank (SJR) was used for initial screening.8 Initial journal criteria included being within the first SJR quartile for the category of otorhinolaryngology. Journals within first SJR quartiles of dentistry, oromaxillofacial surgery, or neurological sleep medicine were excluded. Basic science journals were also excluded, leaving seven remaining journals for review. For completeness of subspecialty coverage, the International Journal of Pediatric Otorhinolaryngology and JAMA Facial Plastic Surgery were selected based on having the highest SJR within their pediatric otorhinolaryngology and facial plastic surgery subcategories, respectively. Journal h-index and impact factors (IF) were also recorded as measures of society journal success.

The SJR accounts for both the number of citations received by a journal and the importance or prestige of the journals where such citations come from, whereas the journal h-index combines productivity (i.e., number of papers produced) and impact (number of citations).9 The IF is the average citations per document in a 2-year period. Of note, three journals were not in existence for the entirety of the 20-year period reviewed. Because of their relative high impact factor and significant clinical relevance to the mission of their corresponding subspecialty, they were included in the analyses for the years for which data was available.

Mastheads from January editions of each journal were reviewed for editorial membership and associate editorship for each journal for each year. Records were obtained via electronic journal subscription, paper archives, or interlibrary loan program. If mastheads could not be obtained from these resources, records were requested directly from society journal administration. A small portion of mastheads were unavailable either electronically or by journal administration; these proportions were adjusted accordingly for the total denominator available. Female representation was recorded for following categories: editorial board member, associate or section editor, and editor-in-chief. International board members were excluded because of the wide variability in the role of international board members at each journal. Public records and Web-based material were reviewed for cases of gender-ambiguous names.

As an external benchmark, the proportion of women serving in leadership roles at otolaryngology journals was compared to the proportion of women who serve as otolaryngology faculty at U.S. medical schools.1,2 The proportion of women present on editorial boards was compared to the proportion of women who serve at the assistant, associate, or full professor faculty level. The proportion of women who serve as associate or sectional editors was compared to the proportion of women who serve at the associate or full professor faculty level.

To compare rates of change in representation, the number of women and men at various levels of editorial leadership were normalized to their own largest participation across the 20 years. This allowed comparisons between genders in the yearly changes as a proportion of the overall body of female versus male leaders. Descriptive analyses were performed. Differences in proportions were measured using the chi-square test where a P value less than or equal to 0.05 was statistically significant. A best-fit linear model was applied to longitudinal proportion data from 1997 to 2017, and goodness-of-fit was assessed via correlation (r-squared). An R² value of ≥0.8 was

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<th>Journal</th>
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IF = impact factor; SJR = SCImago Journal & Country Rank.

Fig. 1. The proportion of female editorial board members and female associate editors increased significantly over time at nine clinical otolaryngology journals from 1997 to 2017 (total N = 8,232). [Color figure can be viewed in the online issue, which is available at www.laryngoscope.com.]
considered good. Institutional review board approval was not required for this study because the data analyzed were all publicly available.

RESULTS
A total of 6,730 editorial positions (including 5,850 male and 880 female positions) and 1,502 associate and/or section editor names (including 1,324 male and 178 female names) were reviewed across nine clinical otolaryngology journals between 1997 and 2017. The 2016 journal impact factors ranged from 1.16 to 2.95 (Table I).

From 1997 to 2017, the proportion of female editorial board members increased from 7.2% (0.0%–12.8%) to 17.7% (10.9%–38.9%) \((P = 0.0001)\) (Fig. 1). The proportion of female associate editors increased from 9.3% (0.0%–27.3%) to 20.9% (5.3%–45.5%) \((P = 0.09)\) (Fig. 1). The rate of participation of men remained relatively stable, whereas the rate of participation of women increased by 2.7% per year (goodness of fit, \(r^2 = 0.92\)) (Fig. 2). The rate of participation of men as associate and/or sections editors increased an average of 1.89% per year over the 20-year period (goodness of fit, \(r^2 = 0.83\)), whereas the rate of participation of women as associate and/or sections editors dramatically changed in 2010 (Fig. 3). Before 2010, the rate of participation increased on average 0.8% per year (goodness of fit, \(r^2 = 0.37\)); after 2010, the rate of participation increased on average 9.6% per year (goodness of fit, \(r^2 = 0.86\)) (Fig. 3).

In 2017, 17.7% (N = 75 of 424) editorial board member positions were held by women and ranged from 10.9% to 38.9% across individual journals; this was significantly less than the 27.7% of academic otolaryngology faculty who were women \((P = 0.0001)\) (Fig. 4). In 2017, 20.9% (N = 23 of 110) of associate editors were women, which was not statistically different than the 19.5% of U.S. academic otolaryngology...
full or associate professors who were women ($P = 0.73$) (Fig. 5). However, representation of women section and/or associate editors varied more than ninefold by individual journal from 5.3% to 45.5%.

No journal had a female editor-in-chief during the time period studied. In 2018, one female was promoted to co-editor-in-chief.

**DISCUSSION**

In this study, we found that whereas the proportion of women on nine editorial boards significantly increased to approximately 18% in 2017, this was significantly less than the 28% of women who make up U.S. medical school otolaryngology faculty at the assistant, associate, and full professor rank. In addition, there was a threefold variation in female representation across journals. In fact, only one journal surpassed this national benchmark (Fig. 4). The proportion of women as associate or section editors increased to approximately 21% with a dramatic increase in representation since 2010, shifting from 0.8% change per year to 9.6% increase per year. On average, representation was not statistically different from the 20% of female academic otolaryngology faculty who were associate or full professors. However, there was ninefold variation between individual journals. Finally, none of the nine journals had a female editor-in-chief during this period. One woman was promoted to co-editor-in-chief in 2018.

Our findings contradict earlier publications in the otolaryngology literature. Specifically, Choi and Miller...
reported that women were proportionately represented on several otolaryngology editorial boards. Many of these comparisons were made with univariate analyses of small sample sizes that were underpowered to detect differences. In addition, they used the American Academy of Otolaryngology–Head & Neck Surgery self-reported survey data as an external benchmark. We chose the Association of American Medical Colleges U.S. medical school faculty survey data as a proxy because they represent a cohort of otolaryngologists active in scholarly activities. In 2017, women faculty made up 66%, 37%, 25%, and 14% of U.S. medical school otolaryngology faculty at the instructor, assistant, associate, and full professor rank, respectively. Finally, some of the disparities between findings here and previous publications can be attributed to trends over time. It is difficult to predict trends via a cross-sectional analysis, especially as the proportion of women in otolaryngology continues to grow.

Journal leadership has the potential to shape the future of research; the importance of having diverse perspectives cannot be underestimated in developing a breadth and depth to future content. In the corporate world, data shows that skill diversity that comes with gender representation and equality in the workforce is associated with corporate success. Significant progress in female otolaryngology leadership has been made over the last few decades. However, data here suggests that we must still be concerned about recruitment, development, and mentorship of future journal leadership.

One limitation of the study is that we were limited in our ability to associate editorial board diversity with journal success. All of these journals had high impact factors by otolaryngology standards; consequently, there was not a wide spread in the impact factors between journals. Additionally, there is an intrinsic delay between journal impact outcomes, measured over 2 to 3 years, and alterations in editorial board membership. In future studies, we would like to better understand the link between diversity and journal success.

CONCLUSION

Women were underrepresented on eight of nine otolaryngology editorial boards but appropriately represented at the associate and/or section editorship level when compared to outside benchmarks. There was remarkable variation in representation at individual journals, which may provide future opportunities to examine best practices. Disparities exist in leadership at the most senior level of these high-profile otolaryngology journals.

BIBLIOGRAPHY


