Gender Diversity in Otolaryngology

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Dana Crosby, MD MPH; Jenny X. Chen, MD EdM
Society of University Otolaryngologists
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Disclosures

- No financial conflicts of interest
Female Otolaryngologists in the United States

Active otolaryngologists 18.3%\(^4\)

- Assistant Professor 40%\(^2\)
- Instructor 74%\(^2\)
- Residents 37.7%\(^1\)
- Professors: 18%\(^2\), 28%\(^2\)
- Associate Professor 28%\(^2\)
- Program Director 26.5%\(^3\)
- Chair 5.1%\(^3\)

\(^1\)AAMC. Report on Residents: Table B3, August 2021

\(^2\)AAMC. Faculty Roster: US Medical School Faculty, Table 13, December 2021

\(^3\)Epperson et al, Laryngoscope 2020:1664-1669

\(^4\)AAMC. 2020 Physician Specialty Data Report, December 2019
Other Measures of Gender Distribution

- Operative experiences, ACGME key indicator cases 2009-2017
  - Mean: 778.8 female, 813.6 male
  - Surgeon/supervisor: 602.6 female, 643.9 male
- AAO-HNSF CORE grants: 37% awarded to women (2010-2019)
- OHNS journals (9 clinical), 1997 to 2017
  - Editorial boards: 7.2% to 17.7% women
  - Associate/section editors: 9.3% to 20.9% women
- Canada: 41.9% trainees were women in 2019
  - 49.1% of surgical trainees
Gender Representation at Conferences, Executive Boards, Program Committees

AAO-HNSF, Triological, COSM: Barinsky et al, Laryngoscope 2020
Impacts at Different Stages of Career

- Medical students
- Residents
- Faculty
- Practice and community
Medical Students: Letters of Recommendation
Gender-based Differences In Letters Of Recommendation In Otolaryngology

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Disclosures

• This study is result of the work supported by the Women in Otolaryngology (WIO) Endowment Grant FY 2020
  • Recipient: Molly N. Huston, MD
Objectives

• Identify current gender-based differences in the description of otolaryngology residency applicants in letters of recommendation (LORs).

• Discuss the implications of gender biases in the early steps of aspiring otolaryngologists’ careers.
LORs have a crucial role in the selection process of applicants to interview and rank for residency positions.\textsuperscript{5}

Results from the 2020 NRMP Program Director Survey

1. Top 10 factors program directors use in selecting applicants to interview and in ranking

<table>
<thead>
<tr>
<th>Interview</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>USMLE Step 1 score</td>
<td>Interpersonal skills</td>
</tr>
<tr>
<td>LOR in the specialty</td>
<td>Interactions with faculty</td>
</tr>
<tr>
<td>Rotation in your department</td>
<td>Interactions with housestaff</td>
</tr>
<tr>
<td>Grades in required clerkship</td>
<td>Feedback from residents</td>
</tr>
<tr>
<td>AOA membership</td>
<td>Professionalism and ethics</td>
</tr>
<tr>
<td>MSPE/Dean’s Letter</td>
<td>LOR in the specialty</td>
</tr>
<tr>
<td>Involvement/Interest in research</td>
<td>Commitment to specialty</td>
</tr>
<tr>
<td>Personal Statement</td>
<td>Perceived interest in program</td>
</tr>
<tr>
<td>Class ranking/quartile</td>
<td>Personal knowledge of applicant</td>
</tr>
<tr>
<td>Professionalism and ethics</td>
<td>Leadership qualities</td>
</tr>
</tbody>
</table>

Source: NRMP Program Director Survey Results, 2020
How are women described in LORs?

LORs in otolaryngology:

- Messner and Shimahara, 2008
  - Female – physical appearance
- Friedman et al. 2017
  - Female – more team players and physical appearance
  - Male – more leadership potential
- Aunins et al. 2022
  - No significant differences in descriptors used in LORs for female and male applicants.

• Communal traits have been associated with negative relationship in hiring decisions in academia

Methods

- Cross-sectional study
- Single-institution academic otolaryngology residency program during the 2019-2020 application cycle
- 400 terms classified into 24 categories

1. Gendered Terms
2. Grindstone
3. Standout
4. Activities
5. Inventive/Curious
6. Consistent/Cautious
7. Efficient/Organized
8. Easygoing/Careless
9. Outgoing/Energetic
10. Solitary/Reserved
11. Friendly/Compassionate
12. Challenging/Detached
13. Sensitive/Nervous
14. Secure/Confident
15. Physical
16. Age
17. Social
18. Agentic Personality
19. Communal
20. First Person
21. Second Person
22. Agentic Orientation
23. Desire
24. Technical Skill

Linguistic Inquiry and Word Count: LIWC2015

614 LORs
157 applicants
428 letter writers
3-4 letters per applicant
## Results

### Applicant demographics

<table>
<thead>
<tr>
<th></th>
<th>Overall (100.0)</th>
<th>Female</th>
<th>Male</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (mean (SD))</td>
<td>26.54 (1.60)</td>
<td>26.48 (1.47)</td>
<td>26.59 (1.69)</td>
<td>0.695</td>
</tr>
<tr>
<td>Race/ethnicity (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>77 (51.7)</td>
<td>33 (54.1)</td>
<td>44 (50.0)</td>
<td>0.185</td>
</tr>
<tr>
<td>Asian</td>
<td>46 (30.9)</td>
<td>17 (27.9)</td>
<td>29 (33.0)</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>12 (8.1)</td>
<td>6 (9.8)</td>
<td>6 (6.8)</td>
<td></td>
</tr>
<tr>
<td>Hispanic, Latino or Spanish</td>
<td>6 (4.0)</td>
<td>1 (1.6)</td>
<td>5 (5.7)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>5 (3.4)</td>
<td>1 (1.6)</td>
<td>4 (4.5)</td>
<td></td>
</tr>
<tr>
<td>Two or more</td>
<td>3 (2.0)</td>
<td>3 (4.9)</td>
<td>0 (0.0)</td>
<td></td>
</tr>
<tr>
<td>US Region of undergraduate education (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Region 1: Northeast</td>
<td>36 (22.9)</td>
<td>16 (25.0)</td>
<td>20 (21.5)</td>
<td>0.16</td>
</tr>
<tr>
<td>Region 2: Midwest</td>
<td>39 (24.8)</td>
<td>19 (29.7)</td>
<td>20 (21.5)</td>
<td></td>
</tr>
<tr>
<td>Region 3: South</td>
<td>53 (33.8)</td>
<td>16 (25.0)</td>
<td>37 (39.8)</td>
<td></td>
</tr>
<tr>
<td>Region 4: West</td>
<td>27 (17.2)</td>
<td>11 (17.2)</td>
<td>16 (17.2)</td>
<td></td>
</tr>
<tr>
<td>Outside of the US</td>
<td>2 (1.3)</td>
<td>2 (3.1)</td>
<td>0 (0.0)</td>
<td></td>
</tr>
<tr>
<td>US Region of medical school education (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Region 1: Northeast</td>
<td>27 (17.2)</td>
<td>15 (23.4)</td>
<td>12 (12.9)</td>
<td>0.169</td>
</tr>
<tr>
<td>Region 2: Midwest</td>
<td>47 (29.9)</td>
<td>20 (31.2)</td>
<td>27 (29.0)</td>
<td></td>
</tr>
<tr>
<td>Region 3: South</td>
<td>61 (38.9)</td>
<td>19 (29.7)</td>
<td>42 (45.2)</td>
<td></td>
</tr>
<tr>
<td>Region 4: West</td>
<td>22 (14.0)</td>
<td>10 (15.6)</td>
<td>12 (12.9)</td>
<td></td>
</tr>
</tbody>
</table>
## Results (cont)

<table>
<thead>
<tr>
<th>Category of terms</th>
<th>Rate of terms used (%) in LOR (median)</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LORs for female applicant (n=249)</td>
<td>LORs for male applicant (n=365)</td>
</tr>
<tr>
<td>Word count</td>
<td>174.00</td>
<td>175.00</td>
</tr>
<tr>
<td>Gendered Terms</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Grindstone</td>
<td>0.37</td>
<td>0.18</td>
</tr>
<tr>
<td>Standout</td>
<td>0.48</td>
<td>0.17</td>
</tr>
<tr>
<td>Activities</td>
<td>0.40</td>
<td>0.12</td>
</tr>
<tr>
<td>Inventive/Curious</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Consistent/Cautious</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Efficient/Organized</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Easygoing/Careless</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Outgoing/Energetic</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Solitary/Reserved</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Friendly/Compassionate</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Challenging/Detachhed</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Sensitive/Nervous</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Secure/Confident</td>
<td>0.58</td>
<td>0.69</td>
</tr>
<tr>
<td>Physical</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Age</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Social</td>
<td>1.57</td>
<td>0.87</td>
</tr>
<tr>
<td>Agentic Personality</td>
<td>0.72</td>
<td>0.72</td>
</tr>
<tr>
<td>Communal</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>First Person</td>
<td><strong>1.63</strong></td>
<td><strong>1.30</strong></td>
</tr>
<tr>
<td>Second Person</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Agentic Orientation</td>
<td>0.63</td>
<td>0.62</td>
</tr>
<tr>
<td>Desire</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Technical Skill</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Significant P-value ≤0.05, Mann-Whitney U
Discussion/Conclusion

• Otolaryngology applicants are described similarly in LORs

• Use of social terms (e.g. barriers, children, husband) in LORs for females has been previously described in other specialties (e.g., transplant surgery fellowship)

• Statistical significance vs practical significance
Limitations/Future directions

• **Limitations**
  • LIWC software is unable to differentiate context of terms
  • Selection bias
  • Pre-determined list of terms

• **Future directions**
  • Increasing women applicants may be another important factor in addressing the gender gap in otolaryngology (e.g. more exposure of medical students to the field)
Residents: Operative Autonomy

Jenny Chen
The Effect of Gender on Resident Operative Autonomy

Jenny X. Chen, MD EdM
Neurotology Fellow, Johns Hopkins University
✉️ jxchen@jhmi.edu

SUO/AADO/OPDO Annual Combined Meeting 2022
Does gender affect resident operative experiences?

How can we study this quantitatively?

Meyerson et al. 2017: “Evaluations of operative autonomy [of 33 thoracic surgery residents] reveal a significant bias against female residents.”
System for Improving and Measuring Procedural Learning in the OR
Zwisch scale of Autonomy

Resident Behavior
- Mimics independence
- Recovers from most errors
- Recognizes transitions
- Accomplishes next steps
- Actively assists
- First assists
- Opens and closes

Attending Behavior
- Does majority of key portions
- Narrates the case, anatomy, skills

4 Supervision only
- Gives no unsolicited advice for >50% of key portions

3 Passive Help
- Follows for >50% of key portions
- Coaches refinement

2 Active Help
- Leads for >50% of key portions
- Coaches technical skills

1 Show and Tell
- Does majority of key portions
- Narrates the case, anatomy, skills
Study 1: All Surgical Specialties

Autonomy in the Operating Room: A Multicenter Study of Gender Disparities During Surgical Training

- 71 programs: 39 general surgery, 14 specialties, 18 fellowships
- 1927 trainees (41% female)
- 1328 attendings (29% female)
- 39,621 assessments by attendings in 5 years
Controlling for attending, training level and surgical procedure, there was a **significant difference in ratings** of surgical autonomy for male and female residents (B=-0.0199, P=0.008).

Other findings:

- No gender difference in autonomy at the start of residency. The gap widened as training progressed.
- Female trainees logged a lower proportion of more complex cases than male trainees at the same levels.
- Female trainees rated their own autonomy (and performance) worse than male trainees as compared to paired attending ratings.
Factors affecting operative autonomy and performance during otolaryngology training: A multicenter trial

- 5 large academic programs
- 92 residents (52% female)
- 78 attendings (24% female)
- 1238 assessments by attendings in 1 year
Study 2: Otolaryngology

Factors affecting operative autonomy and performance during otolaryngology training: A multicenter trial

- Female gender had a small negative impact on ratings of autonomy (not significant, B=-0.28, p=0.1).
- No difference in the proportion of more complex cases logged by male and female residents.
- Self-assessments of surgical autonomy (and performance) were not associated with trainee gender.
Next steps in research

• Continue to **collect otolaryngology data** to investigate variables that affect resident operative experiences, including gender.
  
  • Multicenter study was conducted at 5 large academic programs with a high percentage of female residents (52% vs. 38%* nationally in 2019)

• Compare surgical specialties or types of programs within specialties to identify **protective factors** against gender differences.

• **Qualitatively** study gender differences in assessment and feedback.

Thank you

Collaborators

- Stacey Gray (Harvard Medical School)
- Elliott Kozin (Harvard Medical School)
- Deepa Galaiya (Johns Hopkins)
- Francis Deng (Johns Hopkins)
- Brian George (Univ Michigan)
- Marita Teng (Mount Sinai)
- Mark Thorne (Univ Michigan)
- Michael Platt (Boston Univ)
- Stephen Pletcher (UCSF)
- Edward Chang (Harvard Business School)
- Jordan Bohnen (Beth Israel Deaconess MC)
- Shari Meyerson (Univ Kentucky)

Funding

- 2019 AAO-HNSF Women in Otolaryngology Research Grant
- 2017 AAO-HNSF Resident CORE Grant

Contact me:

- jxchen@jhmi.edu
- @jennyxchen

Society for Improving Medical Professional Learning
Select References


Faculty: Leadership
Dana Crosby
Components of Promotion

- Service
- Research
- Leadership/Reputation
Otolaryngology 18%
Plastic Surgery
Cardiovascular Disease
Vascular Surgery
Pulmonary Disease
Vascular and Interventional Radiology
Urology
Neurological Surgery
Thoracic Surgery
Interventional Cardiology
Sports Medicine (Orthopedic Surgery)
Orthopedic Surgery
Landscape of Promotion

Assistant Professor
N=456
- M: 24%
- 76%

Associate Professor
N=248
- M: 20%
- 80%

Professor
N=258
- M: 12%
- 88%

Chair
N=98
- M: 3%
- 97%

Proportion of Faculty by Academic Rank (% of Total)

- Overall
- Midwest
- Northeast
- South
- West

- Professor
- Associate Professor
- Assistant Professor

Eloy, 2013/2014
Excuses...

- Cohort Effect: Fewer women overall and as proportion increases so will women in leadership roles

- Personal Preference: Women choose/want to work part time

- Mommy Track: Women are too busy with home/family requirements
Service

- Contributors to gender pay gap
  - Referring providers perception
  - Patient perception
  - Departmental or institutional support

Lindsay, 2021
Even after accounting for age, experience, faculty rank, research productivity, and clinical revenue, significant gender pay gaps exist across all professor levels.
Research: h-index
Research: NIH Funding

Eloy, 2013
Leadership

Female Representation in Otolaryngology Leadership Roles

Madison Epperson, BA; Christopher J. Gouveia, MD; Meredith E. Tabangin, MPH; Vinita Takiar, MD, PhD; Rebecca Howell, MD; Mekibib Altaye, PhD; Stacey L. Ishman, MD, MPH; Alice L. Tang, MD

- **15.3% (62/405) leadership positions** (Chair/residency PD/fellowship PD)
  - **5.1% (5/99)** Department Chairs
  - **26.5% (27/102)** residency PD
  - **14.7% (30/204)** fellowship PD
Leadership with fewer years in practice?

Fig. 1. Distribution of academic rank in men and women holding directorship positions. A majority of males holding directorship positions are full professors. The largest proportion of females holding directorship positions are associate professors.

Fig. 2. Years in practice of residency/fellowship directors by academic rank and gender.
Over a 35-year period, women physicians in academic medical centers were less likely than men to be promoted to the rank of associate or full professor or to be appointed to department chair, and there was no apparent narrowing in the gap over time.

Have we made progress?

Richter, 2020
What are the barriers?

- **Service**
  - Payor/procedure mix
  - Referral patterns

- **Research**
  - Lack of mentorship/opportunity
  - Lack of blinding in submissions for publication/funding
  - Different temporal trajectory

- **Leadership**
  - Uncompensated time-intensive roles not as favorable for promotion, yet vital
  - Nurturing roles
  - Lack of opportunity due to perceived disinterest or unavailability
Women in the Workplace

Kathleen Yarumchuk
Women in the Workplace
LeanIn.Org and McKinsey & Company

Kathleen Yaremchuk, MD MSA
2015 and 2022, over 810 companies participated in the study, and more than 400,000 people were surveyed on their workplace experiences.

The pandemic has changed what women want from their companies

Including the growing importance of opportunity, flexibility, employee well-being, and diversity, equity, and inclusion.
The “broken rung” remains broken.

Men significantly outnumber women at the manager level, and women can never catch up. There are simply too few women to promote into senior leadership positions.

More women leaders are leaving their companies.
Why are women leaving?

- Women leaders want to advance, but they face stronger headwinds than men.
  - Women leaders are as likely as men at their level to want to be promoted and aspire to senior-level roles.
  - In many companies, however, they experience microaggressions that undermine their authority and signal that it will be harder for them to

- **Women leaders are 2x as likely** as men leaders to be mistaken for someone more junior.

- **37% of women leaders** have had a coworker get credit for their idea, compared to 27% of men leaders.
Women leaders are overworked and under-recognized

- Compared to men at their level, women leaders do more to support employee well-being and foster diversity, equity, and inclusion—work that dramatically improves retention and employee satisfaction, but is not formally rewarded in most companies.

- **Women leaders are 2x as likely** as men leaders to spend substantial time on DEI work.

- **40% of women leaders** say their DEI work isn’t acknowledged at all in performance reviews.

- **43% of women leaders** are burned out, compared to only 31% of men at their level.
Women leaders want a better work culture

- Women leaders are significantly more likely than men leaders to leave their jobs because they want more flexibility or because they want to work for a company that is more committed to employee well-being and diversity, equity, and inclusion.

- **49% of women leaders** say flexibility is one of the top three things they consider when deciding whether to join or stay with a company, compared to 34% of men leaders.

- **Women leaders are more than 1.5x** as men at their level to have left a previous job because they wanted to work for a company that was more committed to DEI.
Action Steps

Credit: Group on Women in Medicine and Science (GWIMS), AAMC
Tools and Tips
Career Advancement in Otolaryngology

- Provide opportunities for professional development
  - Strong mentoring programs, career counseling/planning
  - Equitable and diverse networking opportunities
  - Nominate/self-nominate for leadership positions

- Institutional strategies
  - Educate leaders, faculty, and staff on impact of unconscious bias
    - Second generation gender bias "work cultures and practices that appear neutral and natural on their face...reflect masculine values and life situations of men who have been dominant in the development of traditional work settings." (Carter, 2011)
  - Address institutional climate/culture disconnect between personal priorities and institution
  - Address conflation of familial issues with women’s issues
AAMC Checklist for Bias

- Pay attention to situations where unconscious biases could emerge
- Evaluate your activities daily and notice where you are vulnerable to hidden assumptions/expectations
- Seek regular feedback on your inclusive behaviors from trusted colleagues
- Be mindful of the language you use when introducing women and URM’s.
- When writing evaluations, consider the adjectives you use to describe women and URM’s? Do they differ from the ones you typically employ for white men of the same caliber?
- Be cognizant of whose insights are acknowledged in meetings and amplify the voices of those whose contributions and voices are overlooked

Amy Gottlieb, MD November 2019
#PayAttentionBiasWIMS