



ABSTRACT

Objective: To evaluate gender-based differences in narrative letters of recommendation (NLORs) and standardized letters of recommendation (SLORs) submitted for applicants to an Otolaryngology Head and Neck Surgery (OHNS) residency program.

Study Design: Retrospective review.

Methods and Materials: Nine hundred fifty-eight letters of recommendation (LORs) submitted to one OHNS program in 2013–2014 were analyzed.

Results: NLORs (n = 590) and SLORs (n = 368) were reviewed. Male writers composed over 85% of LORs. Compared with male writers, female writers of LORs were more likely to compose a letter of minimal assurance (p < 0.025). Female writers of LORs were more likely than male writers to rank applicants higher in communication skills (p < 0.035) and match potential (p < 0.045). Analysis of LORs by applicant gender revealed that female applicants were more likely than male applicants to be described as “team players” (p < 0.025) and less likely to receive a letter of minimal assurance (p < 0.001). Compared with SLORs, NLORs written for male applicants were more likely to reference their “leadership potential” (p < 0.001). Female applicants were less likely to be described as “bright” (p < 0.001) and more likely to have their appearance mentioned (p < 0.03) in NLORs when compared to SLORs.

Conclusion: Although SLORs were officially adopted in 2012 in OHNS, they are still not widely used. NLORs allow authors more descriptive opportunity than SLORs. Greater awareness of historical biases has likely contributed to more equitable letter writing, though impactful gender biases remain when reviewing applicants.

BACKGROUND

Every year, medical students and residency programs are charged with navigating “The Match.” Residency programs require a plethora of materials from applicants. Within OHNS, LORs have consistently been considered one of the most important factors by residency program directors in the decision to offer an interview to prospective residents. In 2008, 71% of OHNS residency programs cited the use of LORs in determining whether to interview an applicant; by 2014, 100% of programs indicated LOR utilization in their determination.^{1,2}

Yet, there is little standardization amongst OHNS residency programs in the evaluation of LORs. Gender biases may present in each component of the NLOR, particularly in the subjective discussion of an applicant’s behavioral attributes. Studies have shown that female applicants are more likely to be described as “compassionate”, “sensitive”, and “enthusiastic” in NLORs, whereas male students are more often lauded for their “[responsibility]” and “[excellence] in a particular field”.^{3,4,5} In addition to biases resulting from the gender of the applicant, subtle partiality has also become apparent when comparing male and female letter writers. Male writers were more likely to comment on the physical appearance of a female applicant than female writers.⁵

To standardize evaluations of LORs and circumvent the biases incurred when using NLORs, the Council of Emergency Medicine Residency Directors created an SLOR in 1995.⁶ When the SLOR was first introduced for OHNS residency selection in 2011-2012, it proved to be a more objective and reliable measure than the NLOR for comparison among the pool of applicants.⁷ Further, inter-rater reliability amongst letter readers was greater for the SLOR both in emergency medicine and OHNS.^{7,8} However, we believe SLORs are not exempt from gender bias. A narrative portion still remains an integral part of the SLOR. **Thus, this study aims to determine the extent to which gender biases exist in SLORs when compared to NLORs written for applicants to the OHNS residency program at Rutgers New Jersey Medical School (NJMS) in Newark, New Jersey for the 2013-2014 Match.**

RESULTS

A total of 958 LORs for 239 applicants were reviewed. Of the 239 applicants, 161 (67.4%) were male and 78 (32.6%) were female. Average USMLE Step 1 score for applicants who submitted applications to this program was 236. Three hundred sixty-eight letters (38.4%) were in the standardized format and 590 (61.6%) were narrative. There were 558 distinct letter writers, the majority of whom wrote one or two letters. **Of the 558 letter writers, 477 (85.5%) were male and 81 (14.5%) were female.**

Of the 800 LORs written by academic OTOs, the majority were written by an OTO at the level of Chairperson, followed by Professor, Assistant Professor, and Associate Professor (**Figure 1**). An analysis of academic rank of letter writer by gender revealed that of the 59 female OTO letter writers, the majority (n = 25, 42.4%) were Assistant Professors. Conversely, of the 363 male OTO letter writers, the majority (n=111, 30.6%) were Professors (**Figure 1**). Male and female applicants were equally as likely to have a female compose a letter on their behalf (p = 0.17).

Analysis of the content of LORs from the perspective of both author and applicant gender revealed few, yet impactful, differences. **Among the narrative portion of all LORs, male writers were less likely to compose a letter of minimal assurance than females (Odds Ratio 0.62, p = 0.02) (Table 1).** In all other aspects, when analyzing all LORs regardless of letter type, male and female writers of did not significantly differ in their description of applicants. However, there were significant differences within the SLOR. **Female writers of SLORs were more likely than male letter writers to rank applicants higher in communication skills (p < 0.035) and match potential (p < 0.045).**

Analysis of all LORs by applicant gender indicated that female applicants were more likely to be described as a “team player” than male applicants (p = 0.02) and less likely to receive a letter of minimal assurance (p < 0.001).

Lastly, we sought to analyze differences between narrative and standardized letters with respect to applicant gender. **Compared with SLORs, NLORs written on behalf of male applicants were more likely to reference their “leadership potential” (p < 0.001). Female applicants were less likely to be described as “bright” (p < 0.001) and more likely to have their appearance mentioned (p < 0.03) in NLORs when compared to SLORs (Table 2).**

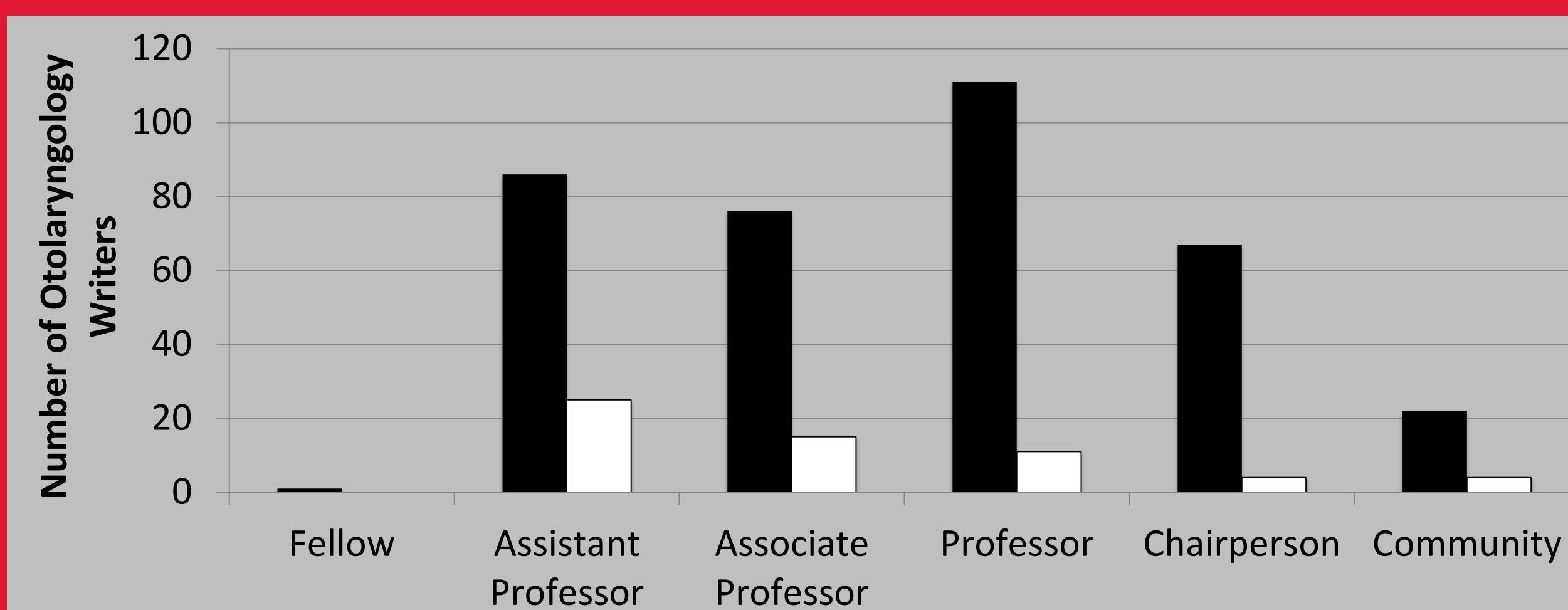


Figure 1. Number of otolaryngology letter writers by academic rank. Black bars represent male writers; white bars represent female writers.

Table 1. Comparison of Narrative Content of all Letters of Recommendation by Gender of Letter Writer

Category	Female Writer		Male Writer		Odds Ratio	P Value
	Present	Absent	Present	Absent		
Grindstone Adjective	80	37	517	311	0.77	0.25
Gets Along with Others	24	93	184	644	1.11	0.77
High Match Rank	24	93	190	638	1.15	0.64
Compassion	24	93	151	677	0.86	0.64
Team Player	30	87	193	625	0.88	0.66
Intelligence	41	75	313	515	1.11	0.68
Leadership Potential	12	105	81	746	0.95	0.87
Negative Language/ Doubt Raiser	4	113	38	790	1.36	0.81
Bright	19	98	124	704	0.91	0.83
Stringing Terms	12	102	122	707	1.17	0.68
Letter of Minimal Assurance	69	46	399	429	0.62	0.02*
Humor	6	111	32	796	0.74	0.46
Appearance	5	112	20	808	0.55	0.19

*Statistically significant, P < 0.05

Table 2. Comparison of Narrative and Standardized Letters of Recommendation by Gender of Applicant

Category	Female Applicant		P Value	Male Applicant		P Value
	NLOR	SLOR		NLOR	SLOR	
Grindstone Adjective	1.88	1.21	9.2 x 10⁻⁴*	1.72	1.04	9.0 x 10⁻⁸*
Gets Along with Others	0.69	0.28	5.5 x 10⁻⁴*	0.67	0.31	2.1 x 10⁻⁵*
High Match Rank	0.44	0.62	0.20	0.55	0.51	0.65
Compassion	0.74	0.30	0.003*	0.53	0.19	3.8 x 10⁻⁶*
Team Player	0.85	0.51	0.02*	0.59	0.35	0.003*
Intelligence	1.08	0.83	0.16	0.92	0.71	0.06
Leadership Potential	0.31	0.17	0.11	0.33	0.08	1.40 x 10⁻⁵*
Negative Language/ Doubt Raiser	0.07	0.11	0.41	0.10	0.12	0.68
Bright	0.03	0.28	3.0 x 10⁻⁴*	0.39	0.31	0.25
Stringing Terms	0.47	0.17	0.001*	0.44	0.20	0.001*
Letter of Minimal Assurance	1.07	1.28	0.24	1.08	1.24	0.21
Humor	0.15	0.00	‡	0.12	0.07	0.23
Appearance	0.13	0.02	0.03*	0.06	0.05	0.62

*Statistically significant, P < 0.05

‡Sample size too small. P value cannot be calculated

CONCLUSIONS

- We believe that SLORs are favorable to NLORs in many aspects, including minimization of gender bias; however we do not believe that they completely eradicate this bias.
- The narrative portion included in the SLOR should not be eliminated. The subjective description of applicants is the primary reason for the inclusion of an LOR in an application.
- Instead, further attempts at elimination of gender bias must be undertaken to yield a gender neutral subjective review. Part of the onus falls on letters writers, who are obliged to recognize areas in which they may be introducing bias into their narrative.
- We hope that publications such as this alert writers to these biases, prompting them to review future letters they compose with a more critical eye.

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