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# Standardized Letters of Recommendation and Success in the Urology Match

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Distinguishing between top residency applicants is challenging, but crucially important to ensure the continued success of individual programs and the field as a whole. Letters of recommendation (LOR) have long served as an important tool for selection of residents. In a survey by Weissbart et al, it was among the most important factors for selection of urology residents.<sup>1</sup> In order to overcome the shortcomings of narrative LORs (such as subjectiveness, ambiguity, low inter-rater reliability, gender bias, etc.), standardized LORs (SLORs) were introduced in several specialties.<sup>2-4</sup>

We have previously investigated the use of SLORs in urology for the first time.<sup>5</sup> Two main letter formats were found among residency applications submitted to our program for the 2020-2021 match cycle. Although a significant ceiling effect (ie, applicants are highly ranked) existed in both formats, we found correlations between SLOR domains and conventional application metrics. Moreover, discrepancies between female and male applicants were not found in urology SLORs. In the present study, we aimed to build upon our previous findings using the 2020-2021 match results and evaluate the differences in applicant characteristics and SLOR domain ratings based on the match results. We hypothesize that matched applicants will have higher domain ratings compared to the unmatched cohort.

## METHODS

All 311 applications submitted to the corresponding author's residency program for the 2020-2021 match cycle were reviewed and 90 SLORs corresponding to 82 applicants were found. We

have previously defined domains of each SLOR format. To obtain the match outcome for each applicant, we performed a search through Urology Match 2021 Google sheet.<sup>6</sup> Finally, the applicants were compared with regards to their domain ratings. We applied Wilcoxon rank-sum and *t* tests to evaluate the differences between subgroups of the study. We performed univariate logistic regression to assess the association between domain ratings and match result. SLOR domains were considered as predictor variables and match result was the dependent variable. A multivariable logistic regression model was also created while controlling for United States medical licensing examination (USMLE) Step 1 score, applicant type (ie, Allopathic programs [MD], Osteopathic programs [DO], international medical graduates [IMG]), and number of peer-reviewed articles. Statistical significance was set at a *P* value <.05. All statistical tests were performed using STATA 14.2. The STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) statement was followed for the design and reporting of this study.<sup>7</sup> This study was approved by our institutional review board.

## RESULTS

Of 82 applicants with SLORs, 66 (80.5%) successfully matched into urology. Males comprised 56.1% and 75% of matched and unmatched applicants, respectively (*P* = .17). Matched applicants were younger compared to unmatched applicants (*P* = .01). Applicants' race was not significantly associated with the match result (*P* = .15). Matched applicants had significantly higher scores both in USMLE Step 1 (245.2 vs 231.4, *P* <.01) and Step 2 (254 vs 245.1, *P* = .01). MD applicants were more likely to match compared to DO applicants and IMGs (*P* = .04). In addition, matched applicants had a significantly higher number of peer-reviewed publications compared to unmatched applicants (*P* <.01). There was only one reapplicant in our cohort who successfully matched into urology in the 2020-2021 match cycle. **Table 1** demonstrates other applicant characteristics stratified by match outcome.

Of 66 matched applicants, 48 (72.7%) and 18 (27.3%) had SLORs in format 1 and 2, respectively. Matched applicants had higher means in all domains of both SLOR formats (**Table 2**). Such differences were statistically significant in "potential as a urology resident" (*P* <.01), "potential as an academic urology attending" (*P* <.001), "performance as a sub-intern" (*P* <.001), and "likely rank position" (*P* = .01) in format 1, and "other

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**Table 1.** Applicant characteristics based on the match result

	Matched	Unmatched	P value
Total SLORs, n (%)	66 (80.5)	16 (19.5)	
Type of SLOR, n (%)			1.00
Format 1	48 (72.7)	12 (75.0)	
Format 2	18 (27.3)	4 (25.0)	
Gender, n (%)			.17
Female	29 (43.9)	4 (25.0)	
Male	37 (56.1)	12 (75.0)	
Age, mean (SD)	26.6 (1.4)	28.5 (2.8)	.01
Race, n (%)			.15
White	36 (54.6)	5 (31.3)	
Asian	14 (21.2)	2 (12.5)	
African American	8 (12.1)	2 (12.5)	
Hispanic	6 (9.1)	4 (25.0)	
Other	1 (1.5)	1 (6.3)	
Unknown	1 (1.5)	2 (12.5)	
USMLE Step 1 score, mean (SD)	245.2 (1.4)	231.4 (4.1)	<.01
USMLE Step 2 CK score, mean (SD)	254.0 (1.7)	245.1 (2.8)	.01
Applicant type, n (%)			.04
US graduate MD	63 (95.5)	13 (81.3)	
DO	3 (4.6)	1 (6.3)	
IMG	0 (0)	2 (12.5)	
Percentage of Honors in core clinical clerkships, mean (SD)	57.5 (5.0)	38.9 (10.2)	.11
Honor society membership(s), n (%)			
Alpha Omega	20 (30.3)	1 (6.3)	.06
Alpha			
Gold Humanism Honor Society	8 (12.1)	2 (12.5)	1.00
Other	11 (16.7)	4 (25.0)	.48
Medical school rank*, n (%)			.18
Top 40	33 (50.0)	5 (31.3)	
Non-top 40	33 (50.0)	11 (68.8)	
Publications, median (IQR)			
Peer-reviewed article	2.5 (1 - 3)	1 (0 -1.5)	<.01
Poster presentation	4 (2 - 8)	3 (2 - 6)	.43
Oral presentation	1.5 (1 - 4)	1 (0 - 2.5)	.21
Book chapter	0 (0 - 0)	0 (0 - 0)	.59

CK, clinical knowledge; DO, doctor of osteopathic medicine; IMG, international medical graduate; IQR, interquartile range; MD, doctor of medicine; SD, standard deviation; SLOR, standardized letter of recommendation; US, United States; USMLE, United States medical licensing examination.

Statistically significant P values are shown in **bold** typefaces.

\* According to the 2021 US News and World Report.

stakeholder assessments" ( $P = .02$ ) and "overall rank of candidate" ( $P < .01$ ) domains in format 2.

Univariate logistic regression model revealed significant associations between match result and "potential as a urology resident"

**Table 2.** Comparison of domain ratings based on the match result

Domain	Matched	Unmatched	P value
Format 1			
Potential as a urology resident	4.4	3.5	<.01
Potential as an academic urology attending	4.0	2.8	<.001
Performance as a sub-intern	4.3	3.1	<.001
Urologic knowledge base*	2.5	2.1	.40
Performance relative to other sub-interns	3.5	2.8	.21
Likely rank position	3.4	2.1	.01
Format 2			
Communication	3.3	3.0	.44
Professionalism	3.5	3.0	.23
Team player	3.3	2.8	.17
Teachability/response to feedback	3.3	2.8	.18
Technical aptitude	3.0	2.5	.17
Leadership potential	3.1	2.3	.11
Knowledge base	3.1	2.8	.68
Other stakeholder assessments	3.1	2.0	.02
Overall rank of candidate	3.3	2.0	<.01

Values are mean of domain ratings.

Statistically significant P values are shown in **bold** typefaces.

\* This domain has a 4-point scale.

(odds ratio [OR] = 3.8; 95% confidence interval [95%CI] 1.6-8.9;  $P < .01$ ), "potential as an academic urology attending" (OR = 3 .2; 95%CI 1.6-6.7;  $P < .01$ ), "performance as a sub-intern" (OR = 5.9; 95%CI 2.0-17.1;  $P < .01$ ), and "likely rank position" (OR = 2.5; 95%CI 1.1-5.7;  $P = .03$ ) (Table 3). In multivariable logistic regression "potential as a urology resident" (OR = 3.1; 95%CI 1.1-8.4;  $P = .02$ ), "potential as an academic urology attending" (OR = 2.6; 95%CI 1.1-6.1;  $P = .01$ ), "performance as a sub-intern" (OR = 6.1; 95%CI 1.6-23.7;  $P < .01$ ), and "likely rank position" (OR = 2.4; 95%CI 0.9-6.3;  $P = .04$ ) were associated with match success. We were not able to create a regression model for format 2 domains due to the low number of observations.

## DISCUSSION

In this study, we present substantial differences among matched and unmatched applicants in terms of their SLOR domain ratings. Put simply, unmatched applicants had lower mean ratings in all SLOR domains compared to matched applicants. These findings are particularly interesting as we previously observed a significant ceiling effect in SLOR domains among applicants.<sup>5</sup> We also showed significant associations between some domains of format 1 and match success in regression analyses. These can support the value of SLORs in distinguishing between highly qualified urology applicants and correlating with match success. This can be explained by the observed correlations between SLOR domains and important application metrics in the

**Table 3.** Univariate and multivariable logistic regression models of SLOR format 1 domains as predictors of match success

Domain	Univariate, OR (95%CI)	P value	Multivariable, OR (95%CI)	P value
Potential as a urology resident	3.8 (1.6 - 8.9)	<b>&lt;.01</b>	3.1 (1.1 - 8.4)	<b>.02</b>
Potential as an academic urology attending	3.2 (1.6 - 6.7)	<b>&lt;.01</b>	2.6 (1.1 - 6.1)	<b>.01</b>
Performance as a sub-intern	5.9 (2.0 - 17.1)	<b>&lt;.01</b>	6.1 (1.6 - 23.7)	<b>&lt;.01</b>
Urologic knowledge base	1.4 (0.6 - 3.1)	.42	1.0 (0.4 - 2.8)	.93
Performance relative to other sub-interns	1.6 (0.7 - 3.6)	.24	1.3 (0.5 - 3.4)	.64
Likely rank position	2.5 (1.1 - 5.7)	<b>.03</b>	2.4 (0.9 - 6.3)	<b>.04</b>

CI, confidence interval; OR, odd ratio; SLOR, standardized letter of recommendation. Statistically significant P values are shown in **bold** typefaces.

previous study.<sup>5</sup> Indeed, this is particularly important as many of the “traditional” metrics to differentiate between competitive applicants including honor society memberships, poster presentations, clerkship honors, and medical school ranking did not reach statistical significance and their importance can vary significantly across institutions.

Our findings were in line with the previous studies in other specialties. In a study on SLORs in orthopedic surgery residency, Samade et al found significant differences in 8 of 9 domains between matched and unmatched applicants.<sup>8</sup> They also showed that summative rank statement (the 10th question in the orthopedic SLOR) was associated with match success and could be useful in offering interviews and creating rank lists. In a study of otolaryngology applicants, 5 of 10 SLOR domains correlated with successful match.<sup>9</sup> In another study on otolaryngology LORs, the authors quantified the narrative LORs based on five content-based categories and compared them with SLORs with regards to their rank list. Interestingly, they found significant correlations with means of cumulative SLOR scores while means of cumulative narrative LOR scores had no significant correlations with their rank list.<sup>10</sup> This further endorses the idea that information available in SLORs is similar to the criteria used to rank applicants.

SLORs have been shown to have higher inter-rater reliability and significantly reduced the time needed for both writing and reviewing the letters.<sup>10, 11</sup> A survey of plastic surgeons indicated that most respondents scored SLORs as a useful tool for assessment of applicants.<sup>12</sup> However, the use of SLORs in urology is still limited, as we observed only 82 out of 311 (26.4%) applicants with at least one SLOR.<sup>5</sup> Future studies can determine the perception of letter writers and readers about the widespread use of SLORs in urology. In addition, surveys from urology faculty can bring to light suggestions to refine the urology SLORs.

A limitation of this study was the relatively low number of observations that could have affected the power of our statistical analyses. We would expect to observe statistically significant differences in more SLOR domains given the differences in their means. It also limited our ability to create robust regression models to assess the ORs between domain ratings in format 2 and match success. With improvement and widespread use of SLORs in future urology match cycles, such analyses could better clarify the value of each SLOR in urology match.

## CONCLUSIONS

Despite a reported ceiling effect in urology SLORs, matched applicants were more likely to have higher domain ratings compared to unmatched applicants. Furthermore, several key domains of format 1 SLOR were associated with successful match into urology. Compared to many traditional metrics and letters of recommendation, SLORs may help better differentiate between highly qualified applicants and may assist with formulating rank lists.

## References

- Weissbart SJ, Stock JA, Wein AJ. Program directors' criteria for selection into urology residency. *Urology*. 2015;85:731–736.
- Keim SM, Rein JA, Chisholm C, et al. A standardized letter of recommendation for residency application. *Acad Emerg Med*. 1999;6:1141–1146.
- Hu AC, Gu JT, Wong BJF. Objective measures and the standardized letter of recommendation in the otolaryngology residency match. *Laryngoscope*. 2020;130:603–608.
- Kaffenberger JA, Mosser J, Lee G, et al. A retrospective analysis comparing the new standardized letter of recommendation in dermatology with the classic narrative letter of recommendation. *J Clin Aesthet Dermatol*. 2016;9:36–42.
- Nabavizadeh B, Hakam N, Sadighian MJ, et al. Characterizing standardized letters of recommendation in urology residency applications. *Urology*. 2021;158:18–25.
- Urology Match 2021 Google Sheet. Available at: <https://docs.google.com/spreadsheets/d/1o2w4G4pkBQkrUGvBaXwzCxZGxo0AnDAL1V7rKIqhHks/edit#gid=916120002> Accessed June 14, 2021.
- Vandenbroucke JP, von Elm E, Altman DG, et al. Strengthening the Reporting of Observational Studies in Epidemiology (STROBE): explanation and elaboration. *Epidemiology*. 2007;18:805–835.
- Samade R, Balch Samora J, Scharschmidt TJ, Goyal KS. Use of standardized letters of recommendation for orthopaedic surgery residency applications: a single-institution retrospective review. *J Bone Joint Surg Am*. 2020;102:e14.
- Kimple AJ, McClurg SW, Del Signore AG, Tomoum MO, Lin FC, Senior BA. Standardized letters of recommendation and successful match into otolaryngology. *Laryngoscope*. 2016;126:1071–1076.
- Perkins JN, Liang C, McFann K, Abaza MM, Streubel SO, Prager JD. Standardized letter of recommendation for otolaryngology residency selection. *Laryngoscope*. 2013;123:123–133.
- Prager JD, Perkins JN, McFann K, Myer 3rd CM, Pensak ML, Chan KH. Standardized letter of recommendation for pediatric fellowship selection. *Laryngoscope*. 2012;122:415–424.
- Reghunathan M, Mehta I, Gosman AA. Improving the standardized letter of recommendation in the plastic surgery resident selection process. *J Surg Educ*. 2021;78:801–812.