Examining Trends in Underrepresented Minorities in Urology Residency

Govind Shantharam, Timothy Y. Tran, Heather McGee, and Simone Thavaseelan

OBJECTIVE
To examine trends in underrepresented minority (URM) representation in urology residency. Comparison is made between URM representation in urology residency and URM representation in other surgical fields as well as all medical fields. We hypothesized that percentage of URM in urology has been limited when compared to both surgical fields and all other fields.

MATERIAL AND METHODS
Data on the race and ethnicity of residents were collected from ACGME Data Resource Books from 2012 to 2017. We defined URM as the aggregate of Asian or Pacific Islander, Hispanic, Black, Native American/Alaskan and Other. The proportion of URM was compared to the proportion of White in urology vs other surgical specialties and all fields of medicine. Analysis consisted of chi-square testing for each year and for all years combined.

RESULTS
In total, 5005 urology residents, 67,699 surgical residents, and 367,440 residents in all fields were identified. Comparative analysis demonstrated a significantly lower proportion of URM trainees in urology (30.8%) than surgery (33.6%) and all fields (42.3%), \( P < .001 \) for both analyses. Similar trends were observed in year-over-year analysis. Subanalyses of Hispanic, Black, Native American/Alaskan and Other representation as well as Asian representation in urology demonstrated comparable results as that found in the primary analysis (\( P < .001 \) for comparison between both surgical fields and all medical fields).

CONCLUSION
The findings demonstrate that URM representation in urology trainees lags behind other fields. Recruitment and selection policies which take into account diversity are needed to improve inclusion of URM into the urologic pipeline and workforce. UROLOGY 127: 36−41, 2019. © 2019 Elsevier Inc.

Disparities in surgical outcomes have been and remain a problem for minority groups in this country.\(^1\) Notably, positive outcomes have been associated with patients seeing physicians from the same culture.\(^2\) Diversity in the healthcare workforce, including recruitment and retention of underrepresented minorities (URM), is critical to patient care and is one strategy to improve culturally competent surgical care.\(^3\) Diversity among urology residents and practicing physicians can create more varied role models, broaden perspectives and combat negative and inappropriate bias. Together, these factors can improve outreach to the community, improve trust and communication, and facilitate development of culturally appropriate clinical and research programs.

While studies have shown that resident diversity in orthopedic, plastic and otolaryngology surgery programs is lagging behind in recruiting a diverse workforce,\(^4\)-\(^9\) in-depth analysis of urology programs has not been performed. Recent strategic initiatives in other fields (eg, medical student mentorship in otolaryngology and funding URM for emergency medicine externships) have positively impacted the diversity of medical students applying to become residents.\(^10\)-\(^12\) It has been demonstrated that a diverse racial and ethnic student body composition, particularly at the medical school level, is associated with better preparing students to care for patients from other racial and ethnic backgrounds.\(^13\) To ultimately serve the diverse patient population needing urologic care, it is important to first understand the current status of racial and ethnic diversity in urology residency programs.

The purpose of this study was to examine the trends in the composition of URMs in urology residencies and to analyze changes in composition over the last 5 years relative to other fields. While urology recruitment practices are not significantly different than those of other surgical fields, we are beginning to understand what factors influence recruitment of URM into surgical fields (eg, minority physician mentorship and URM student outreach).\(^14\) We hypothesized that the proportion of URM in urology is...
significantly less than that in all other surgical fields and in all medicine fields. We suspected that this pattern had not significantly changed year-to-year.

METHODS

In this retrospective study, data on the race and ethnicity of residents were collected from Accreditation Council for Graduate Medical Education (ACGME) Data Resource Books between 2012 and 2017.

Data on residents’ specialties were divided into All fields (allergy and immunology, anesthesiology, dermatology, emergency medicine, family medicine, internal medicine, medical genetics, neurology, nuclear medicine, obstetrics and gynecology, pathology, pediatrics, PM&R, preventive medicine, psychiatry, radiation oncology, diagnostic radiology) and surgery (neurosurgery, ophthalmology, orthopedics, otolaryngology, plastic surgery, interventional radiology, general surgery, vascular surgery and thoracic surgery). The proportion of URM was defined as Asian or Pacific Islander, Hispanic, Black, Native American/Alaskan and Other and was compared to the proportion of White in urology vs other surgical fields and all fields of medicine. The category of “Other” is based on self-reported identification of a known ethnicity other than the ones available for selection in the ACGME data collection tool. This analysis was conducted for each year and for all years combined.

It should be noted that the definition of URM is variable in the literature. Since some studies do not include Asian as underrepresented groups, we also performed a sub-analysis that included only Hispanic, Black, Native American/Alaskan and Other residents, as well as a sub-analysis comparing the proportion of Asian residents to White residents.

Statistical analysis consisted of chi-square testing calculated using Stata. Statistical significance was set at \( P < .05 \). This study required no prior Institutional Review Board (IRB) approval.

RESULTS

**Primary Analysis: Comparing the Proportion of URM Residents to White Residents**

In total, 5005 urology residents, 67,699 surgical residents and 367,440 residents in all fields were identified. In total, 30.8% of urology residents over the 5-year span were URM. The primary comparative analysis demonstrated a significantly lower proportion of URM trainees in urology than other surgical fields (30.8% vs 33.6%, \( P < .001 \)). This difference was even more pronounced in comparing urology to all medical fields (30.8% vs 42.3%). Similar trends were observed in year-over-year analysis (Table 1). The percentage of URM in both surgical subspecialties and in medical fields stayed relatively constant throughout the last 5 years (Fig. 1).

In analyses of both year-over-year data and overall data, the proportion of URM in urology relative to other surgical fields was significantly lower in 2013 (\( P = .01 \)), 2014 (\( P = .04 \)) and combined between all 5 years of the study (\( P < .001 \)). Compared to the proportion of URM in all medical fields, URM in urology is consistently significantly lower (Table 1).

**Subanalysis: Comparing the Proportion of Hispanic, Black, Native American/Alaskan and Other Residents to White Residents**

After excluding Asian/Pacific Islander trainees from the URM group, it is notable that the proportion of Hispanic, Black, Native American/Alaskan, and Other residents compose just 17.7% of the urologic trainees. A significantly lower proportion of these trainees were observed in urology compared with other surgical fields (17.7% vs 20.4%, \( P < .001 \)). This difference was even more pronounced in comparing urology to all medical fields (17.7% vs 25.6%). Similar trends were observed in year-over-year analysis (Supplementary Table 1). The percentage of Hispanic, Black, Native American/Alaskan, and Other in both surgical subspecialties and in medical fields stayed relatively constant over the first 3 years but had a slight decline in the last 2 years of the study period (Fig. 2).

**Subanalysis: Comparison of proportion of Asian residents to proportion of White residents**

Asian urology residents comprised 18.8% of all urology residents. The comparative subanalysis demonstrated a similar proportion of Asian trainees in urology than other surgical fields (18.8% vs 19.9%, \( P < .07 \)). However, the difference was significant in comparing urology to all medical fields (18.8% vs 28.0%, \( P < .01 \)). Similar trends were observed in year-over-year analysis with the

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URM, underrepresented minority.
exception of increasing Asian representation in urology over the last 2 years of the study period (Supplementary Table 2). The percentage of Asian in both surgical subspecialties and in medical fields stayed relatively constant throughout the last 5 years (Fig. 3).

**DISCUSSION**

It is well-documented that health outcomes for racial minority populations remain a significant issue, in part due to poor access to surgical care. One long-term strategy to mitigate healthcare disparities and address ethnically diverse patient populations is to increase the diversity of the composition of the surgical workforce. Minority physicians have been shown to provide culturally competent care, improve patient satisfaction when caring for minority populations, and, on average, practice in areas that reflect higher percentages of patients of their own ethnicity. Preliminary national initiatives, for example the Diverse Surgeons Initiative (DSI), have proved promising in providing minority surgeons the clinical knowledge and minimally invasive surgical skills to excel in residency and eventually in the surgical practice of diverse communities.

There are no studies examining trends in URM representation in urology training programs. Our findings show that URM trainees are a smaller composition of residents particularly compared to medical fields but especially compared to other surgical fields. There is a need to increase the number of URM trainees in urology, a need based on the principle of demographically representing the U.S. population served by urologists. To contextualize, URMs are 41.5% of the U.S. population, while URM trainees, over the last 5 years, are 30.8%. More specifically, Hispanic, Black, Native American and Other ethnicities are underrepresented at 17.7% of urology trainees when compared to 35.7% of the U.S. population. On the other hand, Asian Americans are overrepresented in urology at 18.8% when compared to 5.8% of the U.S. population.

The urology community should aim to better represent, at the resident level, the racial and ethnic diversity of patients to be served by future urologists.

While urology program directors are best positioned to address the lack of diversity in the pipeline, several challenges may exist in improving recruitment of URMs into urology. First, a recent analysis of urology program directors noted that many were not trained in racially or ethnically diverse programs. Additionally, many were not perceived as mentors who adequately address or train residents in addressing cultural barriers. Understandably, most consider USMLE performance and urology letters of recommendation the most important factors in assessing applicants. However, dominant consideration of these factors may overlook the need for addressing resident diversity, especially when one considers the factors associated with MCAT and USMLE performance (eg, parental income). Minority candidates educated through elementary and high school systems in financially disadvantaged communities may have less access to and funding for coursework that better prepare them to be lifelong

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**Figure 1.** A 5-year trends of URM representation in urology vs surgery vs all fields.

**Figure 2.** A 5-year trends of Hispanic, Black, Native American/Alaskan and Other representation in urology vs surgery vs all fields.

**Figure 3.** A 5-year trends of Asian representation in urology vs surgery vs all fields.
test-takers. Strategies to overcome this barrier include programs designed to (1) equip URM for success in medical education through individual advising, (2) customize training on learning behaviors and strategies to solidify adaptive skills for lifelong learning, and (3) track USMLE data for minority candidates thru the AUA Match to determine its influences on match outcomes. However, it is important to note that recognition of recruitment practices that prioritize standardize testing scores might be part of structural racism. Furthermore, excessive focus on the individual URMs role in addressing inequality in urology recruitment makes the mistake of misplacing the onus of addressing structural racism on the individual instead of the institution level which can indirectly promote further bias and discrimination. Training in recognizing applicants who can positively affect diverse patient communities can assist in the complexity of the decision-making process as program directors select future urologists. The proportion of URM in training programs remains significantly low and although the pipeline to urologic residency remains narrow and a rarefied group, we must actively address implicit bias in recruitment practices through program director and faculty development trainings.

One mechanism of introducing implicit bias into the candidate selection process is through cognitive traps. Some cognitive traps include basing negative associations on first impressions, presuming a good or bad fit of a candidate based on demographics such as gender, race or ethnicity, and demonstrating a propensity to recruit “like” candidates to “clone” the current makeup of trainees. Reckoning with unconscious bias in residency selection committees requires understanding of fair application of standard selection criteria to all applicants, understanding how bias can seep into the process and employing practices to mitigate such cognitive errors. One strategy, for instance, is to meet with committee members prior to the resident search to help prime their thinking about ways in which bias can affect the recruitment and selection process. Such a strategy, in addition to adopting other successful practices related to the use of human capital and institutional resources, can neutralize a seemingly pernicious cycle of racially disproportionate hiring. Application of these practices to the urology workforce can improve the rate at which URMs are represented in urology residency. Here again it is important to note that while implicit or unconscious bias as an individually mediated form of racism can influence recruitment, structural racism that occurs at the institutional level through policies, laws, norms, and customs that can disadvantage some social groups (intentional or unintentional) is equally insidious. Faculty engaged in recruitment require some basic structural competency in recognizing societal conditions that produce hiring inequalities over and above cultural competency.

Despite being the first urology-specific study of URM representation, it has a few limitations. First, racial and ethnic data reported to ACGME as “unknown” is not included in this analysis, as this data may include ethnicities categorized as either white or URM. Given the relatively small number of urology residents as it is, this reported field likely constitutes an insignificant number of URM not captured in the analysis. Another limitation of the dataset is the inability to subanalyze by gender or geographic/AUA sections which might have provided insight into areas of the country which might be more successful in diverse representation.

Furthermore, an in-depth analysis of the relative makeup in the medical student applicant pool feeding into residency programs was not able to be performed. This is an important consideration in determining the cause of current trends and should be evaluated when generating new initiatives to increase the applicant pool of URMs to the field of urology. According to data published by AAMCC on ERAS applicants from U.S. Medical School in 2017-2018, White urology applicants comprised 52.8% of all applicants while 58.1% of all urology residents were White in the year prior (2016-2017). Similarly, Hispanic, Black, Native American and Other applicants to urology comprised 21.4% in 2017-2018, while 15.8% of residents were of those ethnicities in the prior year. Lastly, Asians comprised 23.4% of all applicants, while 21.0% of all urology residents in the prior year were Asian.

The AUA currently reports match rates and statistics based on gender and senior medical student status; including race and ethnicity in the reports shared with the academic urologic community could uncover a disparity and provide further checkpoints to intervene on bias or advocate for recruitment and selection practices that promote fair treatment of minorities. Although this study did not examine the causes of the trends observed, future studies should examine such causes, with special attention given to the effectiveness of pipeline initiatives and current guidelines aimed at increasing the proportion of URM trainees.

Finally, it would be judicious to assess how other fields, particularly surgical fields, are addressing issues of diversity and to potentially apply those models to urology. One emergency medicine residency program, for example, demonstrated as high as a threefold increase in URM interviewees from a pilot intervention strategized around increasing URM faculty visibility and funding for externships. Similarly, one otolaryngology program started a mentored clerkship initiative for URM medical students which favorably influenced students’ decision to apply to the field. Diversity is only meaningful if inclusion is a simultaneous aim, and inclusion requires true community building for URMs that creates thoughtful resources and mentorship to promote success.

Despite having similar distributions in resident profiles as other surgical fields, newly adopted initiatives should be urology-specific and scaled within and throughout urology programs. These initiatives may involve increasing the proportion of URM in medical school, increasing urology exposure in medical school, providing early...
mentoring opportunities to URM medical students interested in urology, understanding the perceptions of minority students as they choose training programs, and connecting minorities to community and minority specific professional development. Selecting and recruiting URM urology faculty can provide visible role models and signal an inclusive community for potential student applicants. Minority academic urologists play a key role in facilitating these initiatives but majority allies would be equally powerful to disrupt the status quo.

CONCLUSION
There is an unmet need for racial and ethnic diversity in healthcare and in urology training programs and workforce specifically. Urology lags behind other fields in promoting a diverse resident representation. This study demonstrates the need to reevaluate current recruitment and selection practices in urology and lays the foundation to understand our current workforce demographics to set targets to improve diversity which adds value to the resident, practicing urologist and patient communities and the field at large.

SUPPLEMENTARY MATERIALS
Supplementary material associated with this article can be found in the online version at https://doi.org/10.1016/j.urology.2018.10.061.

REFERENCES

EDITORIAL COMMENT
In 2016, the Harvard Business Review published an essay on the impact of diversity on the effectiveness and productivity of teams. The authors cited many studies including a trial that demonstrated a more than 50% improvement in diverse teams pricing stocks compared with more homogenous teams. The authors concluded that “enriching your employee pool with representatives of different genders, races, and nationalities is key for boosting your company’s joint intellectual potential.”1 Census data from the American Urological Association demonstrated that African American, Latino, and Indigenous American comprised 3.3% of the total urologic workforce in 2016, and yet represent nearly 30% of the United States population. There is certainly

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an opportunity for our field to become more diverse as we endeavor to improve our research and clinical efforts. However, to build more heterogeneity in our workforce, data are needed to assess the current composition of our urology residency pipeline.

For this reason, the study by Shantharam et al in this issue of Urology is an extremely important analysis of the prevalence of underrepresented minorities (URM) in urologic training programs in the United States. The authors demonstrated that URM—defined as African American, Latino, Indigenous/Native American, and Asian/Pacific Islander, and other persons—represented 30.8% of urology residents from 2012 to 2017. They note that urology lagged behind all other surgical specialties in URM representation by 9% and behind all other medical fields by 37%. The data shows that there is an opportunity for urology to close the gap in URM representation and the authors provide examples of interventions that have worked in other fields to improve diversity. This includes funded externships, URM faculty development and exposure, and methods to increase early exposure to urology in medical school (eg, shadowing programs for URM high school and college students). Structured mentorship can also help URM students interested in urology prepare and navigate the rigorous application and selection processes.

Further examination of ethnicity-specific data from Shantharam, et al, demonstrated that Asian/Pacific Islanders represented 18.8% of urology residents despite representing 5.8% of the US general population. In contrast, African American, Latino, Indigenous Americans, and other minorities represented 17.7% of urology residents despite representing 35.7% of the US population. Data from the AAMC demonstrated that African American, Latino, Native/Indigenous American, and other minorities comprised a small proportion of medical school graduates in 2015 at 6.5%, 6.4%, 0.3%, and 9.2%, respectively. These findings highlight the importance of granularity in analyzing representation of URMs in the urology workforce. More specifically, it is unclear how geography, socioeconomic status, ethnicity, and other confounders impact URM students’ decision to apply to urology and their competitiveness for residency positions.

Standardized testing alone has not proven to correlate with academic and professional success. For this reason, major universities across the United States are redefining their admissions processes and abandoning traditional criteria for identifying successful students. In addition, letters of recommendation, applicant names, and even pictures can all be wrought with implicit biases that may affect the competitiveness of aspiring urologists. A recent study by Capers et al showed that having medical school admission committee members complete the implicit association test (IAT) resulted in the enrollment of the most diverse class at their institution, with 48% of participating committee members believing that knowledge of their IAT results influenced their interview strategy; 21% of participants expressed that knowledge of their IAT score impacted their admissions decision. Understanding structural barriers in our recruitment processes require careful and deliberate consideration from our leaders in urology, as we consider the pipeline of students to medical careers and how we as a field can encourage greater URM representation. For students, this means facilitating earlier and more robust exposure, strong mentorship, thinking beyond test scores, and better understanding what barriers keep talented URMs from our field.

**Yaw A. Nyame,** Department of Urology, University of Washington, Seattle WA

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