Changes in Sex and Ethnic Diversity in Dermatology Residents Over Multiple Decades

Increased ethnic diversity of physicians is associated with increased access to health care for underserved communities, better anticipation of patient needs, and acceleration of medical research.\(^1\) Similarly, sex concordance between physicians and patients can improve communication and patient satisfaction.\(^2\) Although sex and ethnic diversity of US physicians have both increased over the past several decades, not all clinical specialties have been impacted equally. To better characterize the dermatology field’s evolution during this time period, we analyzed sex and ethnicity trends among dermatology residents and compared them with other specialties and medical school graduates over multiple decades.

Methods | Thirty-six years of self-reported ethnicity and 19 years of self-reported sex composition data of American College of Graduate Medical Education (ACGME)-registered dermatology, internal medicine, emergency medicine, obstetrics/gynecology, ophthalmology, general surgery, and orthopedic surgery residents were obtained from the National Graduate Medical Education Census.\(^3\) Similar ethnic and sex composition data of graduating medical school classes were obtained from the Association of American Medical Colleges (AAMC) Data Book.\(^4\) Ethnic groups were defined as white, Asian, African American, Hispanic, or other. Respondents could choose more than 1 category. The categories for sex were male or female. Changes in sex and ethnic compositions were analyzed across the periods for which data were available. Institutional review board approval was waived by the Beth Israel Deaconess Medical Center, because only publicly accessible data was used.

Using Stata 14 statistical software (StataCorp), specialty-specific logistic regression models were constructed to evaluate the proportion of residents across ethnicity and sex groups over time. Demographic differences over time between specialties were evaluated with the likelihood ratio test. To assess recent differences between specialties in sex and ethnic compositions, data from 2011 to 2013 were averaged and binomial proportions were compared using a 2-sample z test. All 2-sided \(P\) values <.05 were considered statistically significant.

Results | The percentage of female residents increased significantly in all specialties over 36 years. Dermatology exhibited an average annual increase in female residents of 1.1% (\(P < .001\)), while national medical school graduating classes showed an average annual increase of 0.80% (\(P < .001\)) (Figure 1A). Currently, the proportion of female dermatology residents (64.1%) is significantly greater than that of medical school graduates (48.1%; \(P < .001\)) (Figure 1B). Of the fields examined, the proportion of female residents ranged from 13.8% (orthopaedic surgery) to 82.3% (obstetrics/gynecology) (Figure 1B).

Dermatology did not show a significant change in the proportion of nonwhite residents relative to white residents, whereas medical school graduating classes showed an average increase of 0.43% per year in nonwhite graduates (\(P < .001\)) over a 19-year period (Figure 2A). The current nonwhite proportion of dermatology residents (30.4%) is significantly lower than that of medical school graduates (38.5%; \(P < .001\)) (Figure 2B). Of the specialties examined, nonwhite ranged from 22.2% (orthopedic surgery) to 58.4% (internal medicine) of residents (Figure 2B).

Discussion | Among dermatology residents in the years analyzed, the proportion of women increased significantly but the proportion of nonwhite residents was not significantly different. Currently, dermatologic health disparities exist for ethnic minorities, especially for those with skin cancer and atopic dermatitis.\(^5\) Lack of cross-cultural education and underrepresentation of ethnic minorities in research are thought to contribute to this disparity, highlighting the need for greater ethnic diversity among dermatologists.\(^5\)

Two limitations may affect the comparison of diversity between medical specialties and the national medical school graduating class. ACGME-reported data include graduates from non-US medical schools unlike AAMC-reported data; this proportion varies by specialty, with foreign medical graduates constituting approximately 3.8% of dermatology residents from 2011 to 2013.\(^3\) Second, the survey data comprise self-reporting of race and ethnicity.

Research has shown that sex and ethnic diversity can increase with greater mentorship and exposure to the field, institutional commitment, and decreased harassment and discrimination.\(^6\) To enhance and sustain the diversity of the dermatology workforce, residency directors should encourage participation in and promote development of programs addressing these critical issues, such as the American Academy of Dermatology Diversity Mentorship Program and Women’s Dermatology Society Mentorships. Additional research into factors that influence sex and ethnic diversity and additional supportive programs at the medical school and residency level are needed to promote diversity within dermatology to ensure delivery of the most equitable and effective health care possible to the entire US population.

Gordon Bae, BA
Mengting Qiu
Erin Reese, MPH
Vinod Nambudiri, MD, MBA
Susan Huang, MD
Figure 1. Population Comparisons: Sex

A, Thirty-six year trend in sex diversity of various medical specialties and medical school graduating class. There is a steady linear increase in the proportion of female trainees in all groups as shown by the line of best-fit. Ob/gyn indicates obstetrics/gynecology.

B, Comparison of current gender composition of various specialties and medical school graduating class. The national medical school average of female residents is 48.1%, as shown by the horizontal dashed line. Dermatology and ob/gyn are the only 2 specialties with significantly greater proportions of female residents compared to the national medical school average.

Author Affiliations: Beth Israel Deaconess Medical Center, Department of Dermatology, Boston, Massachusetts (Bae, Reese, Nambudiri, Huang); Harvard College, Department of Biology, Cambridge, Massachusetts (Qiu).

Corresponding Author: Susan Huang, MD, Department of Dermatology, 330 Brookline Ave, Shapiro 2, Boston, MA 02115 (shuang3@bidmc.harvard.edu).

Accepted for Publication: September 22, 2015.


Author Contributions: Mr Bae and Ms Qiu had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. Drs Huang and Nambudiri contributed equally to this report. Study concept and design: Bae, Qiu, Nambudiri, Huang. Acquisition, analysis, or interpretation of data: All authors. Drafting of the manuscript: Bae, Qiu, Nambudiri. Critical revision of the manuscript for important intellectual content: Bae, Reese, Nambudiri, Huang.

Downloaded From: https://archderm.jamanetwork.com/ by a Non-Human Traffic (NHT) User on 04/19/2019
Figure 2. Population Comparisons: Ethnicity

A. Proportion of nonwhite population between dermatology residents and medical school graduating class over 19 years. The dotted lines show the line of best fit for the 2 groups. There is a significant increase over the years analyzed only in the nonwhite proportion of the national medical school graduates. B. Comparison of current ethnic composition of various medical specialties and graduating medical school class. Currently, orthopedic surgery has the highest percentage of whites while internal medicine has the lowest percentage of whites. Dermatology has a significantly higher percentage of white residents compared with the national medical school graduate population.

Statistical analysis: Reese.
Obtained funding: Bae.
Administrative, technical, or material support: Huang.
Study supervision: Nambudiri, Huang.

Conflict of Interest Disclosures: None reported.
Funding/Support: The statistical analysis of this work was conducted with support from Harvard Catalyst, The Harvard Clinical and Translational Science Center (National Center for Research Resources and the National Center for Advancing Translational Sciences, National Institutes of Health Award UL1 TR001102) and financial contributions from Harvard University and its affiliated academic healthcare centers.

Role of the Funder/Sponsor: Harvard Catalyst, Harvard University and its affiliated academic healthcare centers, and the National Institutes of Health had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

Additional Contributions: We thank Dr Murray Mittleman, Professor of Epidemiology at Harvard School of Public Health and Professor of Medicine at Harvard Medical School, for his help with the statistical analysis of the data. Dr Mittleman was not compensated for his contributions.