

Letters

RESEARCH LETTER

Diversity in Graduate Medical Education in the United States by Race, Ethnicity, and Sex, 2012

Diversification of the physician workforce in the United States remains an ongoing goal,^{1,2} yet assessments of graduate medical education (GME) diversity, overall and across specialties are lacking. We assessed GME diversity by race, ethnicity, and sex in 2012.

Methods | Our study used publicly reported data to assess differences in representation by female and historically underrepresented minority groups in medicine (URMs) for the total GME pool³ compared with the US population,⁴ US practicing physicians,⁵ medical school graduates,⁶ and 20 largest residency training specialties³ (excluding transitional year). Categories evaluated were race, Hispanic ethnicity, and sex, defined as



Invited Commentary

consistent with the US Census.⁴ American Indians, Alaska Natives, Native Hawaiians, and Pacific Islanders (AI/AN/NH/PI) were grouped together. The University of Pennsylvania granted institutional review board evaluation and exemption for the study because primary data were obtained from public sources with no identifiable private or protected information.

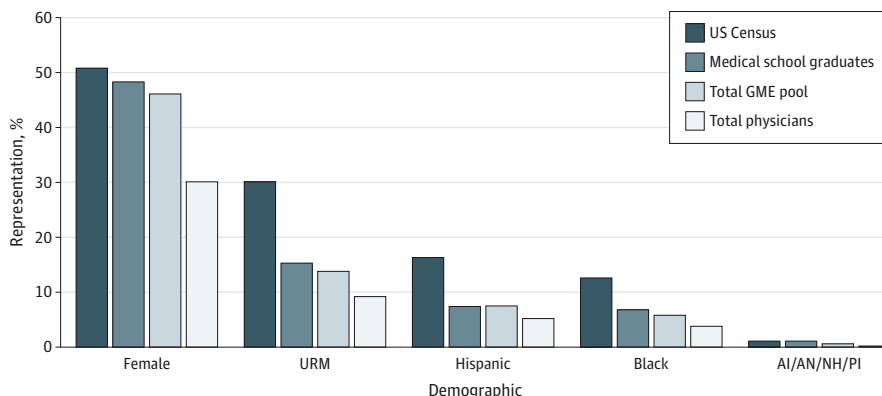
The URMs included blacks, Hispanics, and AIs/ANs/NHs/PIs. We used binomial tests to investigate significant differences in racial, ethnic, and sex distribution in the 2012 total GME trainee pool compared with (1) 2010 US Census, (2) 2012 medical school graduates from US schools, (3) 2012 US practicing physicians, and (4) 2012 trainees from each of the 20 largest residency training specialties. A 1-sided test was used for the US population comparison; 2-sided tests were used for 2 distinct samples. Adjusting for multiple comparisons, $P < .001$ was considered statistically significant.

Results | In 2012, there were 16 835 medical school graduates; 48.3% were female, and 15.3% were of URMs, including 7.4% who were Hispanic and 6.8% who were black (Figure 1). There were 115 111 trainees in GME; 46.1% were female and 13.8% were of URMs, including 7.5% who were Hispanic and 5.8% who were black (Figure 1). There were 688 468 practicing physicians; 30.1% were female and 9.2% were of URMs, including 5.2% who were Hispanic and 3.8% who were black. These groups were all underrepresented as trainees compared with the US population and medical school graduates ($P < .001$ for all comparisons), excluding Hispanic medical school graduates who were similarly represented to Hispanic GME trainees ($P = .85$).

Among specialties in 2012, the percentage of female trainees was lowest for orthopedics (13.8%) and highest for pediatrics (73.5%) and obstetrics and gynecology (82.4%) (Figure 2A). Women also accounted for more than 50% of GME trainees in 5 other specialties: dermatology (64.4%), internal medicine/pediatrics (58.2%), family medicine (55.2%), pathology (54.6%), and psychiatry (54.5%). The percentage of black trainees was lowest for otolaryngology (2.2%) and highest for family medicine (7.5%) and obstetrics and gynecology (10.3%) (Figure 2B); and the percentage of Hispanic trainees was lowest for ophthalmology (3.6%) and highest for psychiatry (9.3%), family medicine (9.0%), obstetrics and gynecology, and pediatrics (each 8.7%) (Figure 2C).

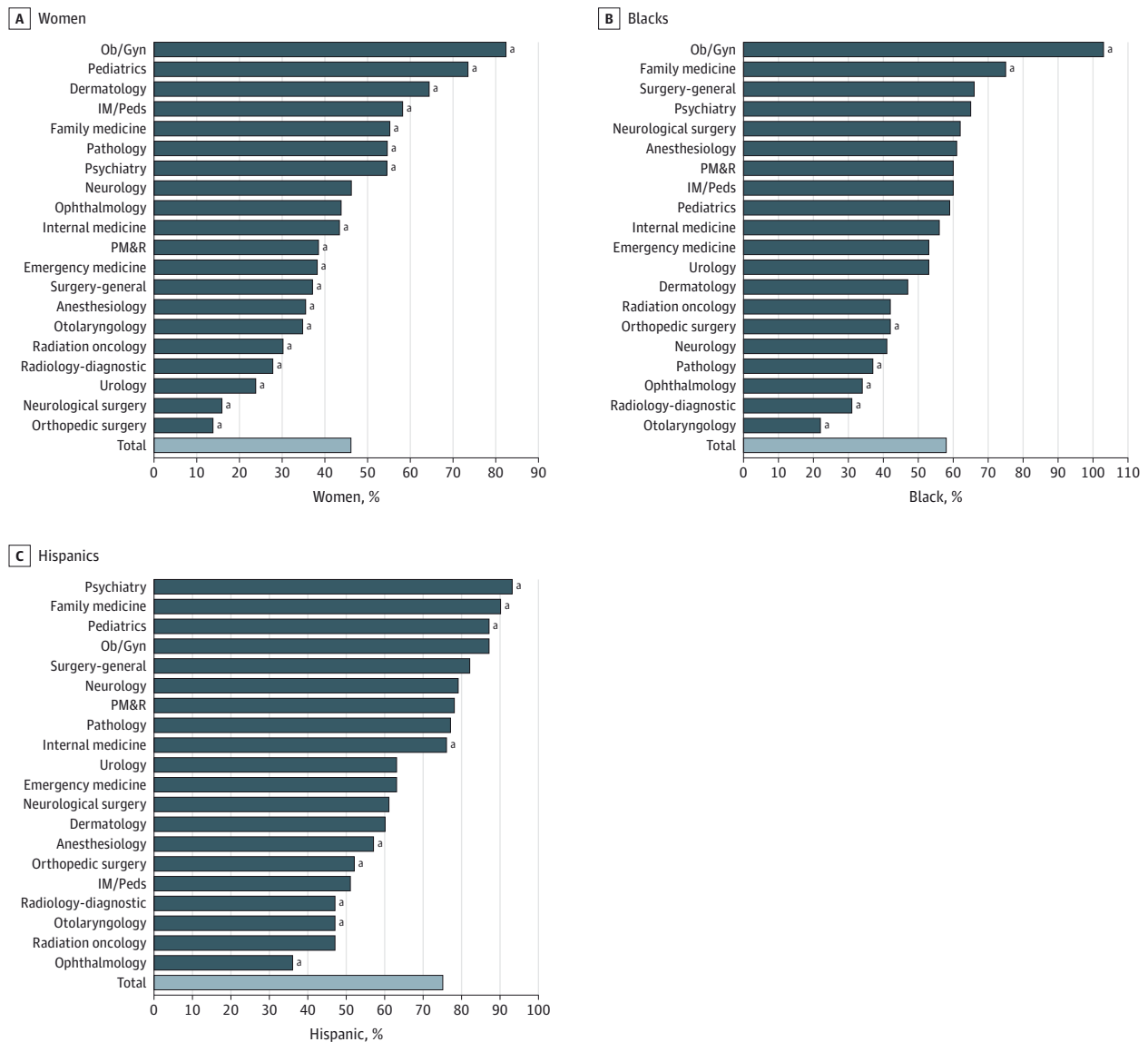
Discussion | In 2012, women accounted for the majority of GME trainees in 7 specialties. In no specialties, however, were the percentages of black or Hispanic trainees comparable with the representation of these groups in the US population. The percentages of black and Hispanic trainees varied widely between specialties, with obstetrics and gynecology noteworthy for having 10.3% of trainees who were black and 8.7% who were Hispanic. Radiology, orthopedic surgery, and otolaryngology were

Figure 1. Distribution in the 2010 US Population, 2012 Medical School Graduates, 2012 Practicing Physicians, and the 2012 Graduate Medical Education (GME) Trainee Pool



When comparing the total GME percentage representation for each demographic with the other groups, representation was significantly different for all groups ($P < .001$ for all comparisons, except for the Hispanic medical school graduates and trainees [$P = .85$]). Not shown are the male sex, non-Hispanic ethnicity, "other" race, and white race categories. AI indicates American Indian; AN, Alaska Native; NH, Native Hawaiian; PI, Pacific Islander; URM, underrepresented minorities in medicine (non-URM category is not shown).

Figure 2. 2012 Graduate Medical Education (GME) Trainee Specialty Distributions



Distributions in order of descending representation. A, Distribution by female sex. B, Distribution by black race. C, Distribution by Hispanic ethnicity. Ob/Gyn indicates obstetrics and gynecology; IM/Peds, internal medicine/pediatrics; PM&R, physical medicine and rehabilitation.

^aSignificantly different proportion ($P < .001$) in comparison with the total GME pool.

the only specialties with representation significantly decreased for women, blacks, and Hispanics. Continued efforts are needed to increase the diversity of the physician workforce in the United States, particularly in the specialties with the lowest representations of women, blacks, or Hispanics.

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