

Examining Parity among Black and Hispanic Resident Physicians



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BACKGROUND: The US physician workforce does not represent the racial or ethnic diversity of the population it serves.

OBJECTIVES: To assess whether the proportion of US physician trainees of Black race and Hispanic ethnicity has changed over time and then provide a conceptual projection of future trends.

DESIGN: Cross-sectional, retrospective, analysis based on 11 years of publicly available data paired with recent US census population estimates.

PARTICIPANTS: A total of 86,303 (2007–2008) to 103,539 (2017–2018) resident physicians in the 20 largest US Accreditation Council for Graduate Medical Education resident specialties.

MAIN MEASURES: Changes in proportion of physician trainees of Black race and Hispanic ethnicity per academic year. Projected number of years it will then take, for specialties with positive changes, to reach proportions of Black race and Hispanic ethnicity comparable to that of the US population.

KEY RESULTS: Among the 20 largest specialty training programs, Radiology was the only specialty with a statistically significant increase in the proportion of Black trainees, but it could take Radiology 77 years to reach levels of Black representation comparable to that of the US population. Obstetrics/Gynecology, Emergency Medicine, Internal Medicine/Pediatrics, and Orthopedic Surgery demonstrated a statistically significant increase in the proportion of Hispanic trainees, but it could take these specialties 35, 54, 61, and 93 years respectively to achieve Hispanic representation comparable to that of the US population.

CONCLUSIONS: Among US residents in the 20 largest specialties, no specialty represented either the Black or Hispanic populations in proportions comparable to the overall US population. Only a small number of specialties demonstrated statistically significant increases. This conceptual projection suggests that current efforts to promote diversity are insufficient.

KEY WORDS: Accreditation Council for Graduate Medical Education; physician workforce; workforce diversity.

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INTRODUCTION

The American Academy of Medical Colleges (AAMC)'s 2020 report demonstrates that the United States (US) physician workforce does not represent the racial or ethnic diversity of the population it serves.¹ However, efforts to diversify the physician workforce have been an active area of focus for decades. These efforts are partly in response to literature demonstrating health disparities among racial and ethnic minorities, increased health care access for underserved communities, and increased patient compliance when patients are cared for by physicians that connect with their social context.^{2,3} Other works have shown improvement in patient care delivery and plan adherence outcomes with the inclusion of broader social perspectives in the culture of care delivery.^{2,4} At a more fundamental level, independent of the patient benefits of increasing Black and Hispanic physician representation, governing bodies, national organizations, and member institutions recognize the importance of, and need for, a more diverse workforce.^{1,3,5}

However, many have found that efforts are inadequate to meet needs. The inadequacy of these efforts is in the setting of a growing body of work demonstrating ongoing barriers to a more diverse workforce; barriers that reflect persistent biases, racism, and discrimination within healthcare.^{6–8} Despite this, and a growing focus on the topic, there is limited work that comprehensively explores trends in racial and ethnic representation among different medical specialties.⁵ In an effort to understand our current state, we use the most comprehensive database on resident physicians to examine trends in the racial and ethnic diversity of Black and Hispanic physician trainees across the twenty largest medical specialties over the last 11 years. In addition, we present a conceptual illustration of what our future state could look like if the current trends continue.

METHODS

We reviewed 11 academic years (AY) of publicly available data on Accreditation Council for Graduate Medical Education (ACGME) training programs from the National GME Census (AY 2007–2018).⁴ The National GME Census is a comprehensive database of demographic information on trainees in ACGME-accredited programs. Using AY 2007 data, we examined the proportion of physician trainees of Black race and Hispanic ethnicity among the twenty largest specialties; these account for the majority (81.4% in AY 2007 to 79.3% in AY 2017) of all ACGME trainees. To assess the presence of trends over the 11-year period, we used logistic regression modeling with the number of trainees aggregated by each of the 11 specialty-years, AY year as the predictor, and annual proportion of Black and Hispanic trainees as 2 outcomes. Odds ratios (OR) and confidence intervals (CI) were used to assess for direction and significance of trend; OR are based on statistical trend modeling for the 11-year period. To account for multiple testing, we used an alpha-level significance of 0.0025. We then focused on specialties with a significant annual increase in the proportion of Black or Hispanic residents and estimated the year in which these specialties would achieve representation proportional to the US population.

To estimate projected annual increase (PAN) in population representation, we fit ordinary least squares regression models for the proportion of Black and Hispanic trainees using year as the predictor and Newey-West standard errors to account for autocorrelation. We used marginal estimation methods to generate out-of-sample predictions for proportions of Black and Hispanic trainees for each year (from 2018 onward) to calculate the number of years required for physician trainees in each specialty to reach the current racial-ethnic proportions of the US population. We used an alpha-level significance of 0.01 to account for multiple testing. The benchmark for proportional representation was the recent 2018 US Census population estimates for the US. We used Stata version 15 (College Station, TX) for all analyses. The institutional review board at Brigham and Women’s Hospital by Partners Healthcare in Boston, MA, deemed this work exempt.

RESULTS

In 2018, 13.4% of the US population identified as Black and 18.3% as Hispanic. We found the total ACGME trainee population in AY 2017 included 5.5% who identified as Black and 7.8% as Hispanic. Obstetrics and Gynecology (10.38 to 8.62%) had the highest proportion of residents who identified as Black; Otolaryngology (2.56 to 2.34%) had the lowest proportion (Table 1). Among the 20 largest specialty training programs, Radiology was the only specialty with a statistically significant increase in the proportion of Black trainees. At the current pace, Radiology could take 77 years (PAN 0.13%

Table 1 Change in Representation of Residents who Identify as Black in the Twenty Largest ACGME-Accredited Specialties from ACADEMIC Years 2007–2008 until 2017–2018 with Corresponding Odds Ratio (OR) and 99.75% Confidence Interval (CI)

	2007– 2008 (%)	2017– 2018 (%)	OR (99.75% CI)
Obstetrics and gynecology	10.38	8.62	0.98 (0.97–0.99)
Family medicine	6.76	7.68	1.01 (1.00–1.02)
Psychiatry	7.33	7.16	0.99 (0.97–1.00)
Internal medicine/pediatrics	7.76	6.31	0.96 (0.93–0.99)
Anesthesiology	5.31	6.25	1.00 (0.99–1.02)
Physical medicine and rehabilitation	7.52	5.99	0.99 (0.96–1.02)
Internal medicine	5.37	5.8	1.01 (1.00–1.01)
Pediatrics	6.64	5.77	0.99 (0.98–1.00)
Neurological surgery	4.15	5.14	1.01 (0.97–1.05)
Surgery, general	6.03	5.07	0.98 (0.96–0.99)
Pathology, anatomic and clinical	3.9	4.54	1.00 (0.97–1.04)
Emergency medicine	4.84	4.43	0.99 (0.97–1.01)
Neurology	4.03	4.33	1.00 (0.96–1.03)
Orthopedic surgery	3.96	4.04	0.99 (0.96–1.01)
Dermatology	3.64	3.67	0.99 (0.95–1.03)
Radiology, Diagnostic	2.25	3.63	1.04 (1.02–1.07)
Plastic surgery*	4.48	3.43	0.97 (0.92–1.02)
Urology	3.67	3.11	0.98 (0.94–1.02)
Ophthalmology	2.52	2.63	0.98 (0.93–1.03)
Otolaryngology	2.56	2.34	0.96 (0.91–1.01)

*Legend: Only 1 (Radiology) of the 20 largest specialties demonstrated a statistically significant increase in proportion of Black trainees. (*Starting in 2009–2010, Plastic Surgery represents both “Plastic Surgery” and “Plastic Surgery-Integrated” pathways)*

(99% CI 0.07–0.19%)) to reach levels of Black representation comparable to that of the US (Supplemental Figure).

Obstetrics and Gynecology (7.36 to 10.14%) had the highest proportion of residents who identified as Hispanic; Dermatology (5.13 to 4.9%) had the lowest proportion (Table 2). Emergency Medicine, Internal Medicine/Pediatrics, Obstetrics/Gynecology, and Orthopedic Surgery demonstrated a statistically significant increase in the proportion of Hispanic trainees (Table 2). To achieve Hispanic representation comparable to that of the US population respectively, Orthopedic Surgery (PAN 0.14% (99% CI 0.06–0.22%)) could require 93 years, Internal Medicine/Pediatrics (PAN 0.20% (99% CI 0.03–0.36%)) could require 61 years, Emergency Medicine (PAN 0.20% (99% CI 0.12–0.27%)) could require 54 years, and Obstetrics/Gynecology (PAN 0.23% (99% CI 0.12–0.35%)) could require 35 years (Supplemental Figure).

DISCUSSION

We found that Obstetrics and Gynecology had the highest proportion of residents who identified as Black or Hispanic, but no specialty represented either Black or Hispanic trainees in proportions comparable to the overall US population. In contrast to the 13.4% of the US population who identified as Black and 18.3% who identified as Hispanic, the majority of clinical specialties were found to have single-digit proportions

Table 2 Change in Representation of Residents who Identify as Hispanic in the Twenty Largest ACGME-Accredited Specialties from Academic Years 2007–2008 until 2017–2018 with Corresponding Odds Ratio (OR) and 99.75% Confidence Interval (CI)

	2007– 2008 (%)	2017– 2018 (%)	OR (99.75% CI)
Obstetrics and gynecology	7.36	10.14	1.03 (1.01–1.04)
Pediatrics	8.68	9.95	1.01 (1.00–1.02)
Psychiatry	8.62	9.07	1.00 (0.98–1.01)
Family medicine	8.33	8.99	1.00 (0.99–1.01)
Surgery, general	7.64	8.49	1.01 (1.00–1.02)
Pathology, anatomic and clinical	5.96	8.03	1.02 (1.00–1.05)
Neurology	7.42	8.01	1.00 (0.97–1.02)
Internal medicine	7.78	7.74	0.99 (0.98–1.00)
Emergency medicine	5.49	7.65	1.03 (1.02–1.05)
Physical medicine and rehabilitation	7.52	7.47	0.98 (0.95–1.01)
Plastic surgery*	6.02	7.41	1.01 (0.97–1.05)
Anesthesiology	6.13	7.06	1.01 (0.99–1.03)
Neurological surgery	5.79	6.69	1.03 (0.99–1.06)
Internal medicine/pediatrics	3.53	6.58	1.04 (1.01–1.08)
Otolaryngology	4.51	6.19	1.02 (0.99–1.06)
Radiology, Diagnostic	4.81	6.06	1.01 (0.99–1.03)
Ophthalmology	4.79	5.86	0.99 (0.96–1.03)
Orthopedic surgery	3.83	5.55	1.03 (1.01–1.05)
Urology	4.56	5.24	1.02 (0.98–1.05)
Dermatology	5.13	4.9	1.00 (0.96–1.03)

*Legend: Only 4 (Emergency Medicine, Internal Medicine/Pediatrics, Obstetrics/Gynecology, and Orthopedic Surgery) of the 20 largest specialties demonstrated a statistically significant increase in proportion Hispanic trainees. (*Starting in 2009–2010, Plastic Surgery represents both “Plastic Surgery” and “Plastic Surgery-Integrated” pathways)*

of residents who identify as either Black or Hispanic. This absence of appropriate diversity is not limited to a particular discipline and is present in other primary care specialties (e.g., Family Medicine, Internal Medicine, and Internal Medicine/Pediatrics). Furthermore, only a small number of specialties demonstrated statistically significant increases in the representation of Black or Hispanic trainees over time and, equally important, the majority of specialties showed no significant increases in representation over the period analyzed. The current pace for establishing proportional representation of Black and Hispanic trainees among the specialties we studied is absent for improvement in most, and in those with notable increases they are a generation (or more) away.

A limitation of this conceptual approach is projections assume racial-ethnic proportions of the population will remain constant, at 2018 levels. Actual time-to-parity will inherently vary depending on how the US population changes over time. Our goal, however, was not to identify the exact year at which a certain specialty would achieve appropriate representation. Rather, it was to illustrate how the targeted change in representation is not being achieved with current efforts. We anticipate that this current illustration likely underestimates actual time to appropriate representation; the expected rate of change in diversity of the physician trainee population will likely lag behind that of the actual rate of change in the US population. We also anticipate that the US population will become less homogenous and more complex.⁹ It should also be noted that

the current study focuses on resident physicians of Black race and Hispanic ethnicity; we are unable to comment on other minority populations (e.g., American Indians/Alaska Native and Native Hawaiian/Pacific Islander).⁵

These findings are concerning given that the resident population defines the future physician workforce. Even when resident diversity matches that of the US population, it will likely take decades still for this to translate into changes within the US physician workforce. Notably so given current AAMC estimates demonstrate that most US physicians are white (68.2%), while only a minority identify as either Black (2.6%) or of Hispanic ethnicity (3.8%), and that US physician demand is projected to grow disproportionately within minority populations.¹

A precursor to the resident physician population is medical students; an absence of diversity in medical school matriculants and medical students subsequently translates into an absence of diversity in the graduate medical education workforce. Although the AAMC requires medical schools to have pathway programs in place, and despite increases in the proportion of Black and Hispanic medical students, barriers and biases (e.g., implicit white race preference in medical school admissions,¹⁰ insufficient recruitment and retention of individuals from racial and ethnic minorities,¹¹ and financial barriers to medical school for disadvantaged populations¹²) within medicine make it less likely for Black or Hispanic candidates to succeed. Even among faculty, non-whites have disproportionately lower rates of promotion.¹³ Consequently, non-white medical students and residents are faced with a low number of physicians with similar socio-cultural experiences that often facilitate mentor-mentee relationships.

CONCLUSION

We identify an absence of change over time in Black and Hispanic representation among resident physicians in nearly all medical specialties. In the minority of specialties with some degree of representation improvement over time, we find the time to proportional representation is decades (or a generation) away. Efforts to improve parity in representation to date have not resulted in an appropriate racial and ethnic representation among resident physicians. More direct action is needed to remove barriers limiting entry and success. To effectively address the persistence of underrepresentation within our workforce, we must acknowledge the systemic and structured biases that have shaped our profession’s current demography and perpetuated the underrepresentation of Black and Hispanic physicians within medicine.

Author Contribution: All authors had full access to the data; they take responsibility for the integrity of the data and accuracy of the data analysis.

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Declarations:

Conflict of Interest: The authors declare that they do not have a conflict of interest.

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