Three decades of demographic trends among academic emergency physicians

Emily C. Cleveland Manchanda MD, MPH1,2 | Albee Y. Ling PhD3
Jason L. Bottcher MS4 | Regan H. Marsh MD, MPH5,6 | David F. M. Brown MD6,7 | Christopher L. Bennett MD, MA8 | Maame Yaa A. B. Yiadom MD, MPH, MSCI8

1Department of Emergency Medicine, Boston Medical Center, Boston, Massachusetts, USA
2Boston University School of Medicine, Boston, Massachusetts, USA
3Quantitative Sciences Unit, Stanford University School of Medicine, Palo Alto, California, USA
4Independent Scientist, Palo Alto, California, USA
5Department of Emergency Medicine, Brigham and Women’s Hospital, Boston, Massachusetts, USA
6Harvard Medical School, Boston, Massachusetts, USA
7Department of Emergency Medicine, Massachusetts General Hospital, Boston, Massachusetts, USA
8Department of Emergency Medicine, Stanford University School of Medicine, Palo Alto, California, USA

Correspondence
Emily C. Cleveland Manchanda, MD, MPH, Boston Medical Center, Department of Emergency Medicine, 800 Harrison Ave., BCD Building, 1st Floor, Boston, MA 02118, USA. Email: emily.cleveland@bmc.org

Abstract
Purpose: To describe trends in emergency medicine faculty demographics, examining changes in the proportion of historically underrepresented groups including female, Black, and Latinx faculty over time.

Methods: Data from the Association of American Medical Colleges faculty roster (1990–2020) were used to assess the changing demographics of full-time emergency medicine faculty. Descriptive statistics, graphic visualizations, and logistic regression modeling were used to illustrate trends in the proportion of female, Black, and Latinx faculty. Odds ratios (OR) were used to describe the estimated annual rate of change of underrepresented demographic groups.

Results: The number of full-time emergency medicine faculty increased from 214 in 1990 to 5874 in 2020. Female emergency medicine faculty demonstrated increases in representation overall, from 35 (16.36%) in 1990 to 2247 (38.25%) in 2020, suggesting a 3% estimated annual rate of increase (OR 1.03, 95% CI 1.03–1.04) and within each academic rank. A very small positive trend was noted among Latinx faculty (n = 3, 1.40% in 1990 to n = 326, 5.55% in 2020; OR 1.01, 95% CI 1.01–1.02), whereas an even smaller, statistically insignificant increase was observed among Black emergency medicine faculty during the 31-year study period (N = 9, 4.21% in 1990 and N = 266, 4.53% in 2020; OR 1.00, 95% CI 0.99–1.00).

Conclusions: Although female physicians have progressed toward equitable representation among academic emergency medicine faculty, no meaningful progress has been made toward racial parity. The persistent underrepresentation of Black and Latinx physicians in the academic emergency medicine workforce underscores the need for urgent structural changes to address contemporary manifestations of racism in academic medicine and beyond.
INTRODUCTION

1.1 | Background

Demographics of the US physician workforce, and those of US emergency physicians specifically, fail to reflect the diversity of the overall population. Gender disparities and underrepresentation of Black and Latinx physicians are further compounded by inequities in academic rank and financial compensation. Diverse educational environments and workplaces benefit people from all backgrounds; they improve educational outcomes and promote cultural competency, effective problem solving, and group work. Further, diverse health care teams facilitate improved patient care and financial outcomes. Physician workforce diversity has implications both for access to care in underserved communities where physicians of color are more likely to work and for quality of care. Among Black and Latinx populations, concordance of patient–physician gender, race, and ethnicity have positive effects on patient experience, health outcomes, and health care expenditure.

1.2 | Importance

Eliminating gender and racial inequities among academic emergency physicians is challenging. Although equitable representation is only one component of creating inclusive workplaces, workforce diversity is nevertheless an important benchmark against which progress can be measured. In recent years women represented more than half of all medical students, but only 35%–39% of emergency residents. Further, little to no progress has been made in achieving equitable representation among Black and Latinx medical students or emergency residents. This is particularly concerning given the myriad of efforts enacted over the past decade to increase recruitment and retention of emergency physicians from demographic groups underrepresented in medicine (URiM).

1.3 | Goals of this investigation

The goal of our study was to perform an analysis of the academic emergency medicine workforce using 31 years of comprehensive demographic data. We sought to describe the proportion of emergency medicine faculty physicians who identified as female, Black, and Latinx each year and to understand how these proportions compare both to faculty physicians across clinical specialties and to the overall US population at large. Based on prior work describing the overall US physician workforce, studies describing the emergency medicine workforce in either a cross-sectional manner, and studies using other data sources, we anticipated that we would observe an increase in the proportion of female emergency physicians. We expected to find little (if any) progress toward equitable representation of URiM racial and ethnic groups among emergency medicine faculty. In addition to describing overall trends for emergency medicine faculty physicians who identify as female, Black, and Latinx, we also sought explore the changes in these groups’ representation over time by academic rank.

Where progress has been made toward equitable representation of URiM emergency medicine faculty relative to either the overall cohort of academic physicians or the general US population, we then developed a conceptual model to predict the time it will take for these groups to achieve parity (equitable representation relative to either comparator group). This study builds on prior work documenting gender, racial, and ethnic disparities in the academic emergency physician workforce. In addition, by quantifying the time to achieve parity we sought to assess the adequacy—or inadequacy—of past and current efforts toward equitable representation and workforce balance.

METHODS

2.1 | Study design and population

A total of 31 years (1990–2020) of demographic data on medical school faculty at US medical schools were obtained from the Association of American Medical Colleges (AAMC) faculty roster. The roster is updated annually and includes the aggregate number of faculty by self-reported sex, race, ethnicity, rank, and academic department. Sex is limited to male or female, but faculty are allowed to select multiple races (e.g., Asian, American Indian or Alaskan Native, Black or African American). Academic ranks studied included professor, associate professor, assistant professor, and instructor. Given that the intent of our study was to focus on URiM faculty in emergency medicine, we evaluated trends in representation among female, Black, and Latinx emergency physicians with planned subgroup analyses of demographic trends by academic rank. Because AAMC data were not primarily collected for our purpose, our analysis was a secondary analysis of previously collected data. This study was reviewed and approved by the institutional review board at the senior author’s institution (Protocol number 61151).

Throughout this manuscript we use terminology recommended by the American Medical Association (AMA) and AAMC in their Advancing Health Equity: A Guide to Language, Narrative, and Concepts. As such, faculty who self-identify as “Hispanic, Latino, or of Spanish origin” (the
category provided by the AAMC roster) are referred to throughout this manuscript with the more inclusive term Latinx; in line with prior work, Latinx faculty were analyzed in combination with faculty who self-identify as Multiple Race-Hispanic. The lack of specificity within the Asian race category precluded our evaluation of trends among specific URiM Asian groups (e.g., Laotian, Cambodian, or Indonesian physicians). Respondents who reported a racial category of American Indian or Alaskan Native, Native Hawaiian or Other Pacific Islander, Other, or Unknown and who reported “Other” under academic rank were included in the descriptive demographics but were omitted from the remainder of analyses because of their very small numbers.

In analyses comparing emergency physicians to academic physicians overall, the overall group represented all faculty from the 16 clinical specialties (anesthesiology, dermatology, emergency medicine, family medicine, internal medicine, neurology, obstetrics & gynecology, ophthalmology, orthopedic surgery, otolaryngology, pathology-clinical, pediatrics, physical medicine, psychiatry, radiology, and surgery) reported in the AAMC roster. A small number of faculty with missing sex data (ranged from n = 73 in 2018 to n = 241 in 2010) are not included in the aggregate roster reports and were not included in our analysis. No other data were missing or excluded from the analyses.

### 2.2 Statistical analysis

In our primary analysis, we used descriptive statistics and graphs to illustrate the trends by sex, race and ethnicity, and academic ranks over the years. Then, we used logistic regression to model the proportion of emergency medicine faculty physicians who identified as female, Black, and Latinx in each year from 1990 to 2020 (inclusive). The response variable in the logistic regression models was a 2-vector of directly modeling percentage as the outcome variable, we made use of the information contained in the number of females, Black, and Latinx respectively by using them as weights in the regression model.

In our secondary analysis, we explored the interactions of academic rank with female, Black, and Latinx emergency medicine faculty, respectively. We used chi-square tests to assess interaction terms between sex and race and ethnicity. We further stratified the trends in female, Black, and Latinx emergency medicine faculty by academic rank and the trends among female faculty by race and ethnicity. All statistical analyses were performed in R 3.5.1.

### RESULTS

We identified an overall population that ranged from 58,561 (1990) to 157,816 (2020) faculty physicians practicing in 16 clinical specialties. A total of 214 (1990) to 5874 (2020) emergency physicians were represented in the data (Table 1). In 1990 this included 35 (16.36%) female, 9 (4.21%) Black, and 3 (1.4%) Latinx (including multiracial Hispanic) faculty emergency physicians, whereas in 2020 this included 2247 (38.25%) female, 266 (4.53%) Black, and 326 (5.55%) Latinx faculty. Among these groups, only females saw a steady increase in their proportion over the course of the three-decade study period (Figure 1). Relative to 1990 AAMC data, the proportion of female emergency physicians increased by 21.89% by 2020, whereas the changes in the proportions of Black and Latinx emergency physicians were small (0.32% and 4.15%, respectively, see Table 2).

Over the past three decades, the proportion of female physician has increased steadily among both academic physicians overall and emergency medicine faculty specifically (Figure 1). Female emergency medicine faculty representation increased by an estimated 3% per year (OR 1.03, 95% CI 1.03–1.04) (Table 2). However, female faculty remain underrepresented among emergency medicine faculty relative to the overall cohort of academic physicians, a trend that has remained relatively stable over time. The proportion of female emergency medicine faculty increased across all academic ranks (Figure 2A). The proportion of female emergency medicine faculty at the level of instructor is similar to that of the academic physician workforce and the general population.

In examining the proportions of Black and Latinx physicians within emergency medicine, little changed over the study period. Black physicians remain severely underrepresented in both emergency medicine and academic faculty, a trend that has not improved over the past three decades (Figure 1 and Table 2). Although the trend in proportions for Black emergency medicine faculty differ by academic rank (P < 0.01), the rate of change was negative or flat within all academic ranks. We observed a very small increase over the 31-year study period in the proportion of Latinx emergency physicians. The estimated rate of increase among Latinx emergency medicine faculty overall is 1% (OR 1.01, 95% CI 1.01–1.02) and there was no statistically significant difference within academic ranks.

An examination of intersectional representation among URiM faculty revealed significant differences in female representation within racial and ethnic categories (P = 0.01) (see Table 3 and Figure 2B). The level of female representation among Black, Latinx, and Asian emergency physicians increased by 160% (1.48/0.93), 370% (1.75/0.47), and 480% (4.48/0.93), respectively. However, Black and Latinx emergency medicine faculty of both sexes remain severely underrepresented relative to both the overall academic physician population and the general US population.

A conceptual illustration of the time it may take for groups underrepresented among academic emergency medicine faculty to achieve parity, developed using linear regression models to make out-of-sample predictions, is presented in Supplemental materials.
TABLE 1  Summary statistics of emergency medicine faculty by sex, race and ethnicity, and academic rank in 1990 and 2020

|                      | 1990       | 2020       | Change     |
|----------------------|------------|------------|------------|
|                      | No. (N = 214) | %          | No. (N = 5874) | %          | No. (N = 5660) | %          |
| Sex (female)         | 35          | 16.36      | 2247        | 38.25      | 2212          | 21.89      |
| Race and ethnicity   |            |            |            |            |              |            |
| Non-Hispanic white   | 186         | 86.92      | 4266        | 72.63      | 4080          | −14.29     |
| Black or African American | 9          | 4.21       | 266         | 4.53       | 257           | 0.32       |
| Asian                | 13          | 6.07       | 732         | 12.46      | 719           | 6.39       |
| Hispanic, Latino, or of Spanish origin* | 2          | 0.93       | 194         | 3.30       | 192           | 2.37       |
| American Indian or Alaskan Native | 0          | 0          | 13          | 0.22       | 13            | 0.22       |
| Native Hawaiian or Other Pacific Islander | 0          | 0          | 4           | 0.07       | 4             | 0.07       |
| Other                | 0           | 0          | 49          | 0.83       | 49            | 0.83       |
| Multiple Race – Hispanic* | 1          | 0.47       | 132         | 2.25       | 131           | 1.78       |
| Multiple Race – Non-Hispanic | 2          | 0.93       | 99          | 1.69       | 97            | 0.76       |
| Unknown              | 1           | 0.47       | 119         | 2.03       | 118           | 1.56       |
| Academic Rank        |            |            |            |            |              |            |
| Professor            | 26          | 12.15      | 655         | 11.15      | 629           | −1         |
| Associate professor  | 45          | 21.03      | 1,038       | 17.67      | 993           | −3.36      |
| Assistant professor  | 112         | 52.34      | 3,385       | 57.63      | 3273          | 5.29       |
| Instructor           | 27          | 12.62      | 683         | 11.63      | 656           | −0.99      |
| Other                | 4           | 1.87       | 113         | 1.92       | 109           | 0.05       |

*Referenced as Latinx in the text.

FIGURE 1  Trends in proportion of female, Black, and Latinx emergency medicine faculty from 1990 to 2020, compared to all academic clinical faculty* (clinical). *The overall clinical faculty group represents all faculty from the 16 clinical specialties (anesthesiology, dermatology, emergency medicine, family medicine, internal medicine, neurology, obstetrics & gynecology, ophthalmology, orthopedic surgery, otolaryngology, pathology-clinical, pediatrics, physical medicine, psychiatry, radiology, and surgery) reported in the Association of American Medical Colleges roster.
TABLE 2  Trends of female, Black, and Latinx representation in emergency medicine by academic rank from academic years 1990–2020

| Rank             | 1990 No. | 1990 %  | 2020 No. | 2020 %  | Overall change (%) | Annual rate of change in OR (95% CI) |
|------------------|----------|---------|----------|---------|--------------------|-----------------------------------|
| Female Overall   | 35       | 16.36   | 2247     | 38.25   | 21.89              | 1.03 (1.03–1.04)                   |
| Professor        | 2        | 7.69    | 134      | 20.46   | 12.77              | 1.04 (1.03–1.05)                   |
| Associate professor | 5      | 11.11   | 334      | 32.18   | 21.07              | 1.04 (1.03–1.04)                   |
| Assistant professor | 20   | 17.86   | 1395     | 41.21   | 23.35              | 1.04 (1.03–1.04)                   |
| Instructor       | 6        | 22.22   | 330      | 48.32   | 26.1               | 1.04 (1.04–1.05)                   |
| Black or African American Overall | 9  | 4.21    | 266      | 4.53    | 0.32               | 1.00 (0.99–1.00)                   |
| Professor        | 1        | 3.85    | 14       | 2.14    | –1.71              | 0.99 (0.97–1.01)                   |
| Associate professor | 1       | 2.22    | 36       | 3.47    | 1.25               | 1.02 (1.00–1.03)                   |
| Assistant professor | 5      | 4.46    | 180      | 5.32    | 0.86               | 0.99 (0.98–1.00)                   |
| Instructor       | 2        | 7.41    | 34       | 4.98    | -2.43              | 1.01 (0.99–1.02)                   |
| Latinx (Hispanic, Latino, or of Spanish origin) Overall | 3  | 1.4     | 326      | 5.55    | 4.15               | 1.02 (1.01–1.02)                   |
| Professor        | 0        | 0       | 27       | 4.12    | 4.12               | 1.03 (1.01–1.05)                   |
| Associate professor | 0       | 0       | 39       | 3.76    | 3.76               | 1.03 (1.01–1.04)                   |
| Assistant professor | 1      | 0.89    | 207      | 6.12    | 5.23               | 1.02 (1.01–1.03)                   |
| Instructor       | 1        | 3.7     | 47       | 6.88    | 3.18               | 1.01 (1.00–1.03)                   |

Note: Odds ratios (OR) and 95% confidence intervals (CI) were used to provide an estimated annual rate of change for each underrepresented group. For example, an OR of 1.03 suggests that on average the proportion of female physicians has been increasing by 3% for each successive year in the study period.

FIGURE 2  Trends in proportion of female emergency medicine faculty from 1990 to 2020 by subgroup, compared to compared to all academic clinical faculty* (clinical). A. Trends in female emergency medicine faculty by academic rank; B. Trends in female emergency medicine faculty by race and ethnicity. * The overall clinical faculty group represents all faculty from the 16 clinical specialties (anesthesiology, dermatology, emergency medicine, family medicine, internal medicine, neurology, obstetrics & gynecology, ophthalmology, orthopedic surgery, otolaryngology, pathology-clinical, pediatrics, physical medicine, psychiatry, radiology, and surgery) reported in the Association of American Medical Colleges roster.
TABLE 3  Trends of female representation in emergency medicine from academic years 1990–2020 by race and ethnicity

| Race/Ethnicity                        | 1990 | 2020 | Overall change (%) | Annual rate of change in OR (95% CI) |
|--------------------------------------|------|------|--------------------|-------------------------------------|
| Overall                              | 35   | 2247 | 21.90              | 1.03 (1.03–1.04)                    |
| Non-Hispanic white                   | 29   | 1523 | 12.38              | 1.03 (1.02–1.04)                    |
| Black or African American            | 2    | 142  | 1.48               | 1.03 (1.02–1.04)                    |
| Latinx (Hispanic, Latino, or of Spanish origin) | 1    | 130  | 1.75               | 1.03 (1.02–1.04)                    |
| Asian                                | 2    | 318  | 4.48               | 1.03 (1.03–1.04)                    |

Note: Odds ratios (OR) and 95% confidence intervals (CI) were used to provide an estimated annual rate of change for each underrepresented group. For example, an OR of 1.03 suggests that on average the proportion of female physicians has been increasing by 3% for each successive year in the study period.

4 LIMITATIONS

Our work has several limitations. First, although our study focuses on demographic trends among Black and Latinx physicians in academic emergency medicine, it is clear that American Indian, Alaskan Native, Native Hawaiian, and Pacific Islander physicians remain severely underrepresented as well. The small numbers of these physician populations within the AAMC roster indicate this, and highlight the need for targeted research to better understand trends and specific challenges within these historically marginalized communities. Similarly, our analyses do not include trends among individuals who indicated that they are of “Other” race or “Multiple Race—non-Hispanic,” as we did not feel that they could reasonably be grouped with other underrepresented cohorts in our analyses. The reporting of multiple races by faculty has increased over time; as this demographic group continues to grow both in the US population and among emergency medicine faculty, additional study is needed to understand how best to incorporate multiracial individuals into demographic workforce analyses.

Second, examination of trends over time by gender is limited by the binary (male/female) options included in the AAMC roster. We were therefore unable to explore trends among faculty with gender identities that may be underrepresented in medicine. Third, our examination of trends over time at the national level may fail to identify institutions, states, or regions where substantial progress toward achieving racial and gender equity among emergency medicine faculty has been made. Fourth, our data reflect self-reported demographics that are presented in aggregate; the accuracy of those data is not externally verifiable, and a small proportion of faculty did not report race or ethnicity (n = 1 in 1990 and n = 119 in 2020, between 0.47%–2.03% of the emergency medicine faculty cohort, see Table 1). Although it is possible that differential rates of self-reporting could occur among female, Black, Latinx, and other URiM academic faculty relative to males or white physicians, the AAMC data set maintains the most comprehensive data source for information on the US academic medical workforce. There are no other comparable resources.

Finally, our data are limited to faculty at US medical schools who report to the AAMC faculty roster; although the roster is the most comprehensive resource of academic faculty at US medical schools, we likely underestimate the total number of academic faculty (both overall and in emergency medicine). This is a limitation shared by our work and all prior works using this data set.

5 DISCUSSION

We present an analysis of three decades of demographic trends among emergency medicine faculty at US medical schools.

The recruitment and retention of URiM faculty became an explicit priority among US academic medical institutions during the period studied. Multispecialty medical organizations including the AAMC,41 the AMA,42 the National Medical Association,43 the Society for Academic Emergency Medicine,44 and American College of Emergency Physicians45 all identify increasing gender, racial, and ethnic diversity among physicians as an explicit priority. Trends toward equitable representation among female, Black, and Latinx emergency medicine faculty largely mirror those seen among clinical faculty across all specialties included in the AAMC faculty roster. The trajectories of these groups reveal both some successes as well as persistent challenges in the recruitment, retention, and promotion of underrepresented demographic groups in academic emergency medicine.

The increased representation among female emergency medicine faculty demonstrated in this study is similar to that of the trend seen across medical specialties over the past 31 years and reveals significant progress toward achieving gender parity among academic emergency physicians. These findings bolster evidence from other data7 that reach the same conclusions.

Nevertheless, much work remains to achieve gender equity, particularly within all academic ranks. Leaders in academic emergency medicine must examine their departmental policies and workplace cultures to identify factors that support or erode efforts toward achieving gender equity.46 Departments must move beyond simply developing supportive parental leave47,48 and lactation49,50 policies. These are certainly necessary, yet as Cameron et al. have noted, “barriers to gender equity in academic medicine extend far beyond gaps in women’s career trajectories related to (assumed, expected) maternity leave and child raising.”51 Ample evidence- and consensus-based recommendations52 exist to foster recruitment, retention and promotion of female faculty in emergency medicine.
and must be implemented to ensure and accelerate progress. Attention should be paid to gender inequities that emerge in residency training, which may include problematic differences in feedback given to female residents,53 delayed milestone achievement due to gender bias among evaluators,54 and more challenging interprofessional interactions.55–57 The latter persist beyond training,58 and in conjunction with other factors such as differential access to informal networking opportunities,51,52 can contribute to a more hostile workplace culture59 and fewer opportunities for advancement for women in academic emergency medicine.

Normative beliefs regarding gender-appropriate behavior also complicate whether women are perceived as effective leaders,51,60–62 which may be particularly problematic for the promotion of women in emergency medicine. Specific attention must be paid to promoting female faculty from assistant to associate professor and full professor, as our data suggest the time it will take to achieve parity within these senior ranks may be far longer than among earlier-career female emergency medicine faculty. Intentional departmental focus on improving mentorship, sponsorship, and systematic career stewardship for female assistant and associate professors may bend these curves toward achieving gender parity in higher academic ranks within a shorter time frame. In addition, retaining senior female faculty in academia will be key to ensuring progress toward parity with their male colleagues. The promotion and retention of female faculty may also bolster broader initiatives aimed at achieving greater workforce diversity and inclusion, as some evidence suggests that female academic emergency physicians may be more aware than their male counterparts of the extent to which unconscious gender and racial biases affect faculty recruitment, development, and promotion.63

The lack of progress over the last three decades toward equal representation of Black and Latinx academic emergency physicians observed in this study speaks to the deep and structural nature of inequitably distributed opportunity in the United States. The persistent and pervasive effects of structural racism64 ensure that the pipeline of physicians of color remains extremely small. This is all the more disturbing given the many efforts to strengthen the pipeline of students, residents,28,29 and faculty of color in medicine,65 including in emergency medicine. The failure to make strides toward equity may in part result from a lack of explicit recognition of racism and other structural factors that continue to disadvantage and limit the inclusion of people of color in medicine and academic emergency medicine in particular. Subtle and overt forms of racism in medicine and medical culture persist throughout our institutions, making entry into and successful career-building within academic medicine challenging and statistically unlikely for people of color. The extraordinary and deeply committed students of color who persevere through an education system stacked against them such that they matriculate into US medical schools continue to bear increased burdens relative to their white colleagues;66 the increased racialized stress takes the form of microaggressions67 and stereotype threat68 throughout medical education; as they progress through training as applicants,69 residents,70,71 and faculty,65,72–74 Black physicians and other physicians of color endure these same taxing manifestations of racism. As these contemporary manifestations of centuries of racial injustice in the United States persist within our institutions and departments, it should not surprise us to learn that no progress has been made toward achieving racial equity among emergency medicine faculty at US medical schools.

Underrepresentation of Black and Latinx physicians in the academic emergency medicine workforce underscores the need for urgent structural changes to address contemporary manifestations of racism in undergraduate and graduate medical education, academic emergency medicine, and society at large. In order to change the trajectory of academic emergency physician demographics in the United States, structural change will be required to address the myriad factors that coexist to discourage and exclude Black, Latinx, and other physicians of color from academic emergency medicine faculty. Concrete strategies have been described for how to do so51,72,75–78 and must be implemented across our departments if we hope to bend the demographic curve of our physician groups toward equity.

Much of the progress we have made toward achieving gender parity in medicine may be attributable to the intentional acknowledgement of gender discrimination at the national, institutional, and departmental levels. Effective interventions and strategies for improving gender parity emerged only after sexism in medicine and medical education was named and broadly identified as an intolerable problem. In the same vein, explicit discussion about racism in medicine, including its structural and interpersonal manifestations, is a critical—though insufficient—prerequisite to addressing this challenging and multi-faceted problem. The events of 2020, including the murder of George Floyd as well as deep racial inequities amidst the COVID-19 pandemic in the United States, have brought racism into the mainstream national discourse. It remains to be seen whether these conversations will lead to meaningful structural changes that improve racial equity in our educational and medical systems. Nevertheless, the renewed interest in discussing and addressing racism and other forms of discrimination in medicine certainly leaves room for optimism about our likelihood of effectively addressing systems of oppression in the future. Some health care institutions have taken concrete steps toward explicitly addressing racial equity among faculty. For example, the Boston University Medical Group developed and is now implementing a Commitment to Operationalize Racial Equity Tool,75 which includes a step-by-step guide for both evaluating racial equity and identifying explicit racial equity goals within each department across the Boston University School of Medicine. The effectiveness of this and similar interventions remains to be evaluated. Such tools provide both the opportunity for research—to test the efficacy of departmental policy interventions—and for departmental leaders looking for a starting point for structural changes that may advance equity. Further research exploring barriers to and facilitators of promotion of URiM faculty would substantially inform efforts to improve representation among higher academic ranks. In addition, studies focused on understanding both the rates and reasons for attrition of URiM faculty, both out of academia and out of the clinical workforce, are needed to understand how best to support faculty from underrepresented demographic groups. Specific efforts are also needed to understanding trends in training, recruiting and
promoting emergency physicians from American Indian/Alaskan Native and other groups with numbers too small to be included in this analysis.

Although the past three decades have seen an increase in female representation among emergency faculty physicians, no meaningful progress has been made toward racial equity. The persistent, marked underrepresentation of Black and Latinx physicians in the academic emergency medicine workforce underscores the need for urgent structural changes to address contemporary manifestations of racism in academic medicine and beyond.

AUTHOR CONTRIBUTIONS

Christopher L. Bennett conceived of this study, Albee Y. Ling and Jason L. Bottcher conducted data analysis. Emily C. Cleveland Manchanda, Maame Yaa A. B. Yiadom, and Christopher L. Bennett interpreted the data with input from Albee Y. Ling and Jason L. Bottcher. Emily C. Cleveland Manchanda wrote the manuscript with contributions from Maame Yaa A. B. Yiadom, Albee Y. Ling, and Christopher L. Bennett; Regan H. Marsh and David F. M. Brown provided critical content, statistical data analysis. Emily C. Cleveland Manchanda, academic medicine and beyond.

REFERENCES

1. Association of American Medical Colleges. Diversity in Medicine: Facts and Figures 2019. Association of American Medical Colleges; 2019. https://www.aamc.org/data-reports/workforce/report/diversity-medicine-facts-and-figures-2019. Accessed December 1, 2020.

2. Madsen TE, Linden JA, Rounds K, et al. Current status of gender and racial/ethnic disparities among academic emergency medicine physicians. Acad Emerg Med. 2017;24(10):1182-1192. https://doi.org/10.1111/acem.13269 Choo EK, ed

3. Agrawal P, Madsen TE, Lall M, Zeidan A. Gender disparities in academic emergency medicine: strategies for the recruitment, retention, and promotion of women. AEM Educ Train. 2020;4(Suppl 1):S67-S74. https://doi.org/10.1002/aet2.10414

4. Landry AM, Stevens J, Kelly SP, Sanchez LD, Fisher J. Underrepresented minorities in emergency medicine. J Emerg Med. 2013;45(1):100-104. https://doi.org/10.1016/j.jemermed.2012.11.064

5. Bennett CL, Raja AS, Kapoor N, et al. Gender differences in faculty rank among academic emergency physicians in the United States. Acad Emerg Med. 2019;26(3):281-285. https://doi.org/10.1111/acem.13685

6. Jena AB, Khullar D, Ho O, Olencki AR, Blumenthal DM. Sex differences in academic rank in US Medical Schools in 2014. JAMA. 2015;314(11):1149. https://doi.org/10.1001/jama.2015.10680

7. Jena AB, Olencki AR, Blumenthal DM. Sex differences in physician salary in US Public Medical Schools. JAMA Intern Med. 2016;176(9):1294. https://doi.org/10.1001/jamainternmed.2016.3284

8. Guiton G, Chang MJ, Wilkerson L. Student body diversity: relationship to medical students’ experiences and attitudes. Acad Med. 2007;82(10):S85. https://doi.org/10.1097/ACM.0b013e31813ffe1e

9. Saha S, Guiton G, Wimmers PF, Wilkerson L. Student body racial and ethnic composition and diversity-related outcomes in US medical schools. JAMA. 2008;300(10):1135-1145. https://doi.org/10.1001/jama.300.10.1135

10. Terenzi P, Pancarella ET, Bluming GS. Students’ out-of-class experiences and their influence on learning and cognitive development: a literature review. J Coll Stud Dev. 1996;40(5):610-623. https://paper/Students%27-Out-of-Class-Experiences-and-Their-on-and-Terenzini-Pascarella/98ac7a09c348d5cf4754ae0ba7d497bcc825e12. Accessed March 30, 2021.

11. Gomez LE, Bernet P. Diversity improves performance and outcomes. J Natl Med Assoc. 2019;111(4):383-392. https://doi.org/10.1016/j.jnma.2019.01.006

12. Komaromy M, Grumbach K, Drake M, et al. The role of Black and Hispanic physicians in providing health care for underserved populations. N Engl J Med. 1996;334(20):1305-1310. https://doi.org/10.1056/NEJM19960516342006

13. Marrast LM, Zallman L, Woolhandler S, Bor DH, McCormick D. Minority physicians’ role in the care of underserved patients: diversifying the physician workforce may be key in addressing health disparities. JAMA Intern Med. 2014;174(2):289-291. https://doi.org/10.1001/jamainternmed.2013.12756

14. Saha S, Komaromy M, Koeppell TD, Bindman AB. Patient-Physician racial concordance and the perceived quality and use of health care. Arch Intern Med. 1999;159(9):997. https://doi.org/10.1001/archinte.159.9.997

15. Cooper LA, Roter DL, Johnson RL, Ford DE, Steinwachs DM, Powe NR. Patient-centered communication, ratings of care, and concordance of patient and physician race. Ann Intern Med. 2003;139(11):907. https://doi.org/10.7326/0003-4819-139-11-20031201-00009

16. Takeshita J, Wang S, Loren AW, et al. Association of racial/ethnic and gender concordance between patients and physicians with patient experience ratings. JAMA Netw Open. 2020;3(11):e2024583. https://doi.org/10.1001/jamanetworkopen.2020.24583

17. Shen MJ, Peterson EB, Costas-Muníez R, et al. The effects of race and racial concordance on patient-physician communication: a systematic review of the literature. J Racial Ethn Health Disparities. 2018;5(1):117-140. https://doi.org/10.1007/s40615-017-0350-4

18. Saha S, Taggart SH, Komaromy M, Bindman AB. Do patients choose physicians of their own race? Health Aff Proj Hope. 2000;19(4):76-83. https://doi.org/10.1377/hlthaff.19.4.76

19. Meghani SH, Brooks JM, Gipson-Jones T, Waite R, Whitfield-Harris L, Deatrick JA. Patient–provider race-concordance: does it matter in improving minority patients’ health outcomes? Ethn Health. 2009;14(1):107-130. https://doi.org/10.1080/13557850802227031

20. Greenwood BN, Carnahan S, Huang L. Patient-physician gender concordance and increased mortality among female heart attack patients. Proc Natl Acad Sci U S A. 2018;115(34):8569-8574. https://doi.org/10.1073/pnas.1800097115

21. Greenwood BN, Hardeman RR, Huang L, Sojourner A. Physician–patient racial concordance and disparities in birthing mortality for newborns. Proc Natl Acad Sci. 2020;117(35):21194-21200. https://doi.org/10.1073/pnas.1901430117

22. Jetty A, Jabbarpour Y, Pollack J, Huerto R, Balch, Peterson S, Patient-physician racial concordance associated with improved healthcare use and lower healthcare expenditures in minority populations. J Racial Ethn Health Disparities. 2022;9(1):68-81. https://doi.org/10.1007/s40615-020-00930-4

23. Jolliff L, Leadley J, Coakley E, Sloane R. Women in US academic medicine and science: statistics and benchmarking report. 2012. https://www.aamc.org/data-reports/workforce/report/diversity-medicine-facts-and-figures-2019. Accessed July 25, 2022. https://www.hopkinsmedicine.org/HealthAff ProjHope/98ac7a09c348d5cf4754ae0ba7d497bcc825e12. Accessed March 30, 2021.

24. Bennett CL, Baker O, Rangel EL, Marsh RH. The gender gap in surgical residencies. JAMA Surg. 2020;155(9):893-894. https://doi.org/10.1001/jamasurg.2020.2171
25. Deville C, Hwang WT, Burgos R, Chapman CH, Both S, Thomas CR. Diversity in graduate medical education in the United States by race, ethnicity, and sex. 2012. JAMA Intern Med. 2015;175(10):1706. https://doi.org/10.1001/jamainternmed.2015.4324

26. Heron SL, Lovell EO, Wang E, Bowman SH. Promoting diversity in emergency medicine; summary recommendations from the 2008 council of emergency medicine residency directors (CORD) academic assembly diversity workgroup. Acad Emerg Med Off J Soc Acad Emerg Med. 2009;16(5):450-453. https://doi.org/10.1111/j.1553-2712.2009.00384.x

27. Boatright D, Tunson J, Caruso E, et al. The impact of the 2008 council of emergency residency directors (CORD) panel on emergency medicine resident diversity. J Emerg Med. 2016;51(5):576-583. https://doi.org/10.1016/j.jemermed.2016.06.003

28. Boatright D, Branzetti J, Duong D, et al. Racial and ethnic diversity in an emergency medicine residency program: a pilot intervention with three principal strategies. Acad Med. 2016;91(7):958-961. https://doi.org/10.1097/ACM.0000000000001095

29. Garrick JF, Perez B, Anaebere TC, Craine P, Lyons C, Lee T. The diversity snowball effect: the quest to increase diversity in emergency medicine: a case study of highland’s emergency medicine residency program. Ann Emerg Med. 2019;73(6):639-647. https://doi.org/10.1016/j.annemergmed.2019.01.039

30. Clayborne EP, Martin DR, Goett RR, Chandrasekaran EB, McGreevy J. Diversity pipelines: the rationale to recruit and support minority physicians. J Am Coll Emerg Physicians Open. 2021;2(1):e12343. https://doi.org/10.1002/jemp2.12343

31. Association of American Medical Colleges Diversity Policy and Programs. Diversity in the Physician Workforce: Facts & Figures. Association of American Medical Colleges; 2010. Accessed November 24, 2020. https://www.aamc.org/data-reports/diversity-in-medicine/underrepresented-in-medicine

32. Bennett CL, Salinas RY, Locasico JJ, Boyer EW. Two decades of little change: an analysis of U.S. medical school basic science faculty by sex, race/ethnicity, and academic rank. PLOS ONE. 2020;15(7):e0235190. https://doi.org/10.1371/journal.pone.0235190

33. American Medical Association and Association of American Medical Colleges. Advancing Health Equity: a Guide to Language, Narrative and Concepts. 2021. Available at https://www.aama-assn.org/system/files/aama-aamc-equity-guide.pdf

34. Underrepresented in Medicine Definition. AAMC. Accessed December 1, 2020. https://www.aamc.org/what-we-do/diversity-inclusion/underrepresented-in-medicine

35. American Medical Association and Association of American Medical Colleges. Advancing Health Equity: a Guide to Language, Narrative and Concepts. 2021. Available at https://www.aamc.org/what-we-do/diversity-inclusion/underrepresented-in-medicine/00404000-00004

36. Lett LA, Orji WU, Sebro R. Declining racial and ethnic representation in clinical academic medicine: a longitudinal study of 16 US medical specialties. PLOS ONE. 2018;13(11). https://doi.org/10.1371/journal.pone.0207274

37. Bennett CL, Salinas RY, Locasico JJ, Boyer EW. Two decades of little change: an analysis of U.S. medical school basic science faculty by sex, race/ethnicity, and academic rank. PLOS ONE. 2020;15(7):e0235190. https://doi.org/10.1371/journal.pone.0235190

38. Crawford MJ, The R Book. 2nd ed. John Wiley & Sons; 2012. Accessed December 1, 2020. https://onlinelibrary.wiley.com/doi/book/10.1002/9781118448908

39. Chen K, Cheng Y, Berkout O, Lindheim O. Analyzing proportion scores as outcomes for prevention trials: a statistical primer. Prev Sci Off J Soc Prev Res. 2017;18(3):312-321. https://doi.org/10.1007/s11121-016-0643-6

40. Core Team R. R: a language and environment for statistical computing. Published online 2018. Accessed December 1, 2020. https://www.R-project.org/

41. Diversity & Inclusion. AAMC. Accessed February 1, 2021. https://www.aamc.org/what-we-do/diversity-inclusion

42. McAneny B. Why the AMA is committed to a diverse physician workforce. American Medical Association. Published April 24, 2019. Accessed February 1, 2021. https://www.ama-assn.org/about/leadership/why-ama-committed-diverse-physician-workforce

43. National Medical Association. NMA Priority Issues 2019–2020. Accessed February 1, 2021. https://www.nmanet.org/page/NMA-Priority-Issues-2019-2020

44. SAEM Statement on Diversity and Inclusion. Accessed February 1, 2021. https://www.saem.org/home/misc/saem-statement-on-diversity-and-inclusion

45. Parker RB, Stack SJ, Schneider SM. ACEP diversity summit 2016 attendees. why diversity and inclusion are critical to the American College of Emergency Physicians’ Future Success. Ann Emerg Med. 2017;69(6):714-717. https://doi.org/10.1016/j.annemergmed.2016.11.030

46. AAMC Statement on Gender Equity. AAMC. Accessed January 12, 2021. https://www.aamc.org/what-we-do/diversity-inclusion/aamc-statement-gender-equity

47. Lewin MR. Pregnancy, parenthood, and family leave during residency. Ann Emerg Med. 2003;41(4):568-573. https://doi.org/10.1067/mem.2003.127

48. Naples Robin. Women in emergency medicine: developing a departmental parental leave policy. Common Sense Am Acad Emerg Med. 2016:25-27. Nov/Dec.

49. Haas MRC, Landry A, Joshi N. Breast practices: strategies to support lactating emergency physicians, Ann Emerg Med. 2020;75(6):681-690. https://doi.org/10.1016/j.annemergmed.2020.01.012

50. Cleveland Manchanda EC, Vogel LD, Kass D, Rouhani SA. Best practices for lactation support at conferences and standardized testing centers. Obstet Gynecol. 2020;135(2):475-478. https://doi.org/10.1097/AOG.0000000000003661

51. Cameron P, LeBlanc C, MacLeod A, MacLeod T, O’Hearn S, Simpson C. Women leaders’ career advancement in academic medicine: a feminist critical discourse analysis. In: Papa R, ed. Handbook on Promoting Social Justice in Education. Springer International Publishing; 2020:1779-1803. https://doi.org/10.978-3-030-14625-2_17

52. Choo EK, Kass D, Westergaard m, et al. The development of best practice recommendations to support the hiring, recruitment, and advancement of women physicians in emergency medicine. Acad Emerg Med. 2016;23(11):1203-1209. https://doi.org/10.1111/acem.13028

53. Mueller AS, Jenkins TM, Osborne M, Dayal A, O’Connor DM, Arora VM. Gender differences in attending physicians’ feedback to residents: a qualitative analysis. J Grad Med Educ. 2017;9(5):577-585. https://doi.org/10.4300/JGME-D-17-00126.1

54. Dayal A, O’Connor DM, Qadri U, Arora VM. Comparison of male vs female resident milestone evaluations by faculty during emergency medicine residency training. JAMA Intern Med. 2017;177(5):651. https://doi.org/10.1001/jamainternmed.2016.9616

55. Brucker K, Whitaker N, Morgan ZS, et al. Exploring gender bias in nursing evaluations of emergency medicine residents. Acad Emerg Med. 2019;26(11):1266-1272. https://doi.org/10.1111/acem.13843

56. Wear D, Keck-McNulty C. Attitudes of female nurses and female residents toward each other: a qualitative study in one U.S. teaching hospital. Acad Med. 2004;79(4):291-301. https://doi.org/10.1097/00001888-200404000-00004

57. Cleveland Manchanda EC, Chary AN, Zanial N, et al. The role of gender in nurse-resident interactions: a mixed-methods study. West J Emerg Med Integrating Emerg Care Popul Health. 2021;22(4):919-930. https://doi.org/10.5811/westjem.2021.3.49770

58. Matziou V, Vlahioti E, Perikaris P, Matziou T, Megapanou E, Petsios K. Physician and nursing perceptions concerning interprofessional communication and collaboration. J Interprof Care. 2014;28(6):526-533. https://doi.org/10.3109/13561820.2014.934338
59. Kilminster S, Downes J, Gough B, Murdoch-Eaton D, Roberts T. Women in medicine - is there a problem? A literature review of the changing gender composition, structures and occupational cultures in medicine. Med Educ. 2007;41:39-49. https://doi.org/10.1111/j.1365-2992.2006.02645.x 

60. Linden JA, Breaud AH, Mathews J, et al. The intersection of gender and resuscitation leadership experience in emergency medicine residents: a qualitative study. AEM Educ Train. 2018;2(2):162-168. https://doi.org/10.1002/aet2.10096 

61. Streiff S, Tschan F, Hunziker S, et al. Leadership in medical emergencies depends on gender and Personality. Simul Healthc J Soc Simul Healthc. 2011;6(2):78-83. https://doi.org/10.1097/SHJ.0b013e318209382b 

62. Stockard J. Gender Socialization. In: Chaftz JS, ed. Handbook of the Sociology of Gender. Handbooks of Sociology and Social Research. Springer US; 2006:215-227. https://doi.org/10.1007/0-387-36218-5_11 

63. Cleveland Manchanda EC, Macias-Konstantopoulos WL. Tackling gender and racial bias in academic emergency medicine: the perceived role of implicit bias in faculty development. Curr Use. 2020;12(11):e11325. https://doi.org/10.7759/cureus.11325 

64. Bailey ZD, Feldman JM, Bassett MT. How structural racism works—racist policies as a root cause of U.S. racial health inequities. N Engl J Med. 2021;384:768-773. https://doi.org/10.1056/NEJMms2025396. null. 

65. Rodriguez JE, Campbell KM, Fogarty JP, Williams RL. Underrepresented minority faculty in academic medicine: a systematic review of URM faculty development. Fam Med. 2014;46(2):100-104. 

66. Hill KA, Samuels EA, Gross CP, et al. Assessment of the prevalence of medical student mistreatment by sex, race/ethnicity, and sexual orientation. JAMA Intern Med. 2020;180(5):653. https://doi.org/10.1001/jamainternmed.2020.0030 

67. Espaillat A, Panna DK, Goede DL, Gurka MJ, Novak MA, Zaidi Z. An exploratory study on microaggressions in medical school: what are they and why should we care? Perspect Med Educ. 2019;8(3):143-151. https://doi.org/10.1007/s40037-019-0516-3 

68. Bullock JL, Lockspeiser T, Del Pino-Jones A, Richards R, Teherani A, Hauer KE. They don’t see a lot of people my color: a mixed methods study of racial/ethnic stereotype threat among medical students on core clerkships. Acad Med. 2020;95(11):S58-S66. https://doi.org/10.1097/ACM.00000000000030428 

69. Ellis J, Otugo O, Landry A, Landry A. Interviewed while Black. N Engl J Med. 2020;383:2401-2404. https://doi.org/10.1056/NEJMp2023999 

70. Osseo-Asare A, Balasuriya L, Huot S, et al. Minority resident physicians’ views on the role of race/ethnicity in their training experiences in the workplace. JAMA Netw Open. 2018;1(5):e182723. https://doi.org/10.1001/jamanetworkopen.2018.2723 

71. Molina MF, Landry AI, Chary AN, Burnett-Bowie SAM. Addressing the elephant in the room: microaggressions in medicine. Ann Emerg Med. 2020;76(4):387-391. https://doi.org/10.1016/j.annemergmed.2020.04.009 

72. Rodriguez JE, Campbell KM, Pololi LH. Addressing disparities in academic medicine: what of the minority tax? BMC Med Educ. 2015;15:1-5. https://doi.org/10.1186/s12909-015-0290-9 

73. Peterson NB, Friedman RH, Ash AS, Franco S, Carr PL. Faculty self-reported experience with racial and ethnic discrimination in academic medicine. J Gen Intern Med. 2004;19(3):259-265. https://doi.org/10.1111/j.1525-1947.2004.02409.x 

74. Price EG, Gozu A, Kern DE, et al. The role of cultural diversity climate in recruitment, promotion, and retention of faculty in academic medicine. J Gen Intern Med. 2005;20(7):565-571. https://doi.org/10.1111/j.1525-1947.2005.0127.x 

75. Office of Equity, Vitality, & Inclusion, Boston University Medical Group. Commitment to Operationalize Racial Equity (CORE). Published online March 1, 2021. Accessed April 1, 2022. http://www.bumc.bu.edu/bumg/files/2021/10/Commitment-to-Operationalize-Racial-Equity_FINAL.pdf 

76. Blackstock U. Why black doctors like me are leaving academic medicine. STAT News. Published January 16, 2020. Accessed January 18, 2021. https://www.statnews.com/2020/01/16/black-doctors-leaving-faculty-positions-academic-medical-centers/ 

77. Choi DAMK. We need more Black doctors. Here are 5 ways medical schools can help ease the shortage. USA TODAY. Published July 25, 2020. Accessed January 18, 2021. https://www.usatoday.com/story/opinion/2020/07/25/reverse-black-doctor-shortage-close-racial-health-care-gap-column/5473447002/ 

78. Arno K, Davenport D, Shah M, Heinrich S, Gottlieb M. Addressing the urgent need for racial diversification in emergency medicine. Ann Emerg Med. 2021;77(1):69-75. https://doi.org/10.1016/j.annemergmed.2020.06.040 

AUTHOR BIOGRAPHY

Emily Cleveland Manchanda, MD, MPH, is an Assistant Professor of Emergency Medicine at the Boston University School of Medicine, the Assistant Program Director for the Boston Medical Center Executive Fellowship in Health Equity, and works clinically in the Emergency Department at Boston Medical Center.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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