The Consequences of Structural Racism on MCAT Scores and Medical School Admissions: The Past Is Prologue

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Abstract

Those in medical education have a responsibility to prepare a physician workforce that can serve increasingly diverse communities, encourage healthy changes in patients, and advocate for the social changes needed to advance the health of all. The authors of this Perspective discuss many of the likely causes of the observed differences in mean Medical College Admission Test (MCAT) scores between students from groups well represented in medicine and those from groups underrepresented in medicine. The lower mean MCAT scores of underrepresented groups can present challenges to diversifying the physician workforce if medical schools only admit those applicants with the highest MCAT scores. The authors review the psychometric literature, which showed no evidence of bias in the exam, and note that the differences in mean MCAT scores between racial and ethnic groups are similar to those in other measures of academic achievement and performance on high-stakes tests.

The authors then describe the ways in which structural racism in the United States has contributed to differences in achievement for underrepresented students compared with well-represented students. These differences are not due to differences in aptitude but to differences in opportunities. The authors describe the widespread consequences of structural racism on economic success, educational opportunity, and bias in the educational environment. They close with 3 recommendations for medical schools that may mitigate the consequences of structural racism while maintaining academic standards and admitting students likely to succeed. Adopting these recommendations may help the medical profession build the diverse physician workforce needed to serve communities today.
exams is not unique to medical schools. The Supreme Court has heard highly publicized legal cases challenging the appropriateness of admissions decisions that are made using characteristics beyond test scores. Many of these cases question why students with lower scores on standardized exams are admitted to institutions of higher education while students with higher scores are rejected. Implicit in this argument is the assumption that higher test scores are indicative of a better student. The reality is much more nuanced.

In evaluating applicants whose MCAT scores fall within the range of scores that predict success in medical school, admissions committees must consider other important characteristics that suggest that a given applicant will contribute to the workforce that is needed by communities across the country. Focusing on workforce needs, admissions committees may justifiably select applicants with MCAT scores at the lower end of the range predicting success in medical school because, for example, their rural backgrounds increase the likelihood that they will practice in an underserved area, because they speak the language and understand the culture of a major demographic group in the United States, or because their LGBTQ+ identity adds an important perspective to the educational and health care environments. Additionally, while the MCAT exam is designed to measure applicants’ academic preparation for medical school, it is not designed to measure or predict their performance related to other, essential competencies, such as interpersonal skills and communication, professionalism, and ethical behavior, or to take the place of other attributes that nonexam aspects of the admissions process evaluate.

**Group Differences in MCAT Scores**

Individuals of every race and ethnicity obtain scores from the low, middle, and high ranges of the MCAT score scale, but mean scores are lower for applicants from racial and ethnic groups underrepresented in medicine (URM) compared with mean scores for their peers who are from groups well represented in medicine. These group differences on the new MCAT exam are similar to those on the old exam, on other measures of academic achievement; and on high-stakes exams, such as the SAT, ACT, GRE, GMAT, and LSAT. Overlooking applicants with anything but the highest scores contributes to persistent challenges in diversifying medical school classes. This practice is particularly problematic when the weight accorded to MCAT scores in admissions decision making is greater than the weight given to other predictors of students’ success, such as demonstrated community service, clinical and research experiences, and personal competencies.

Seeking a quick solution, some have called for eliminating the MCAT exam or reporting scores as pass or fail. Eliminating the exam would prevent medical schools from using the scores to ensure that applicants have demonstrated sufficient achievement to be ready for medical school. A pass–fail scoring system would hinder the work of schools that employ holistic review admissions processes to admit applicants with a wide range of MCAT scores, including scores that would fall below a national pass–fail cutoff. Instead, leaders in medical education must work to understand the root causes of group differences in MCAT scores and propose, pilot, and disseminate appropriate countermeasures.

### Why Group Differences Exist

The recognition that mean MCAT scores differ between white, black, and Latinx populations has led many to view the exam as intrinsically biased. However, psychometric studies show that this is not the case. Psychometric validity exists when a high-stakes exam neither over- nor underpredicts the subsequent performance of different examinee populations. Scores from the old MCAT exam did not show bias against black and Latinx medical students in predicting their success in medical school and on licensing exams (i.e., the success rates of students from these races/ethnicities were not higher than their scores predicted). Early research on the new exam shows that new scores predict success in the first year of medical school comparably for examinees from URM and non-URM backgrounds.

In this Perspective, we provide a closer look at these group differences, which reveal that while the MCAT exam predicts medical school performance in the same way for students from different backgrounds, the educational opportunities afforded to students from kindergarten to the time they take the MCAT exam are not equitable. Unequal opportunities in housing, education, and other areas of society for different populations have led to differing levels of academic achievement, reflected in mean score differences on high-stakes examinations and in other measures of academic success between URM and non-URM students with similar aptitudes. These unequal opportunities and the resulting differences in achievement have their roots in structural racism.

### Structural Racism and Unequal Opportunity

Centuries of structural and interpersonal racism and bias have contributed to racial and ethnic disparities in wealth, health, and educational opportunity. While overt discrimination against people of color was outlawed in the 1960s, hundreds of years of legalized discrimination before that time created the conditions in which minority populations remain significantly disadvantaged, even today. When first introduced, government programs, such as Social Security, the Federal Housing Administration loan program, and the GI Bill, implicitly or explicitly prevented minority populations from receiving benefits, causing them to endure substantial, sustained economic disadvantage. These and other programs also promoted residential segregation and prevented home ownership among people of color, concentrating minority populations in low-income neighborhoods with inadequate access to quality housing, economic/occupational opportunity, health care, fresh food, quality schools, and public safety. In addition, the criminal justice system continues to produce disparate outcomes for people of color, contributing to family fragmentation, poverty, and diminished employment opportunities for previously incarcerated individuals.

These and other discriminatory practices have negatively affected economic success in minority populations. In 2016, the
The negative impact of these social systems and practices on educational opportunity is striking. Because the major source of local government funding for public schools comes from property taxes, housing inequality leads to educational inequality.\(^4^6,4^7\) Supplemental Digital Appendix 1 available at http://links.lww.com/ACADMED/A734 includes 2 illustrations of the persistent impact of 20th-century discriminatory housing policies on 21st-century educational opportunity.\(^4^1,4^2\) Panel A shows a 1935 map of redlined communities in San Francisco, California, that were deemed hazardous for mortgage lending because of their high concentration of black residents.\(^4^3\) Panel B shows a map of low-quality schools today concentrated in the same geographic areas as the redlined communities in 1935.\(^4^2\)

Across the nation, black and Latinx children are more likely than white children to live in poverty, experience food insecurity, reside in single-parent households, and grow up in families where no parent has full-time, year-round employment.\(^5^0\) Minority children also are more likely to attend low-quality day care and show elevated blood lead levels.\(^2^0\) Black and Latinx students are more likely to attend schools with high teacher turnover, inexperienced teachers, and teachers who are not certified in the subjects they teach.\(^2^0,4^3\) In addition, unstable parental employment may require children to change schools more frequently.\(^2^0\) Black and Latinx students are more likely than Asian or white students to attend a high-poverty school\(^4^4\) and to report the presence of gangs in school.\(^4^5\) High schools in low-income areas are much less likely to offer advanced placement coursework or skilled college advisors.\(^4^6,4^7\)

These unequal educational opportunities continue into college. Lack of family wealth may lead minority students to begin their college education in the community college system\(^4^8\) and to work during school, leaving them with less time for studying, unpaid internships, shadowing, and other experiences. Minority students from lower-resourced colleges and universities may have less access to the necessary prerequisites for medical school, academically beneficial experiences such as research projects, or experienced and accessible health professions career advisors.\(^4^9,5^0\)

While economics are important, a high socioeconomic status does not protect students of color from the negative effects of structural and interpersonal racism.\(^5^1\) Studies have documented that even at low-poverty schools, discipline in K–12 education is more frequent and severe for children of color than for white children,\(^5^2,5^3\) leading to interrupted or terminated school experiences. Opportunities to participate in gifted and talented programs are more often denied to minority students in school systems that do not employ sound selection procedures, a finding that persists across socioeconomic levels.\(^5^4\) Even minority students from middle or high socioeconomic levels can experience the negative effects of low expectations, denying them the encouragement and support to pursue educational opportunities beyond high school.\(^5^5,5^6\)

These and many other examples of structural and interpersonal racism underpin the observed group differences between URM and non-URM students in academic achievement and in scores on high-stakes exams. As we have explained, social, economic, employment, health, and criminal justice challenges all negatively affect students’ achievement. Not all URM students experience all of these trials, but most experience at least some of them. Despite multiple barriers to success, many aspiring medical students from URM groups demonstrate substantial achievement, earning MCAT scores that are within the range that predicts success in medical school.\(^1^6\) Equitable interpretation of MCAT scores requires consideration of the context in which each applicant earned those scores, rather than assuming that all applicants had equal opportunities.

**What Can Be Done?**

Addressing this opportunity gap is daunting for medical educators, but it is not impossible. Leaders in medical education can address the impact of unequal opportunity on the diversity of the nation’s physician workforce using 3 critical levers: admissions processes, pipeline programs, and curriculum.

**Admissions processes: Use MCAT scores wisely**

Medical school leaders must instruct and support their admissions committees to understand and use MCAT scores appropriately, eschewing the use of such scores for anything other than identifying the achievement level that students need to succeed in their institutions. The MCAT exam enables every medical school to identify applicants whose current level of achievement may be too low to succeed in their school. Beyond that cutoff, selecting students based on small differences in scores is not supported by the data on the reliability of the exam.\(^1^6\) Despite this psychometric evidence, admissions officers describe pressure from institutional stakeholders to select students with the highest scores because the ranking of the medical school depends in part on the mean MCAT score of the matriculating class.\(^3^7\)

Medical schools that have assembled classes of capable, diverse students use several strategies. First, they identify the full range of MCAT scores associated with success at their school. Then, they consider each applicant’s score in context, recognizing that a history of multiple adverse educational experiences related to race or ethnicity may lead to scores that are lower than those of other applicants but still predictive of success.\(^5^8\) Furthermore, these schools build a learning environment in which the obstacles to achievement that may have existed for their students before entry into medical school are highly attenuated or eliminated.

The University of California, San Francisco, School of Medicine, for example, published data documenting that the gap in standardized exam scores between URM and non-URM students narrows at each stage of medical school, suggesting that a supportive learning environment may help URM students achieve success at a faster rate than their non-URM peers.\(^5^9\) Morehouse School of Medicine also reported achievement in fostering the success of students who entered the school with a wide range of MCAT scores.\(^6^0\) The success of holistic
review in diversifying medical school classes has led residency programs to adopt a similar approach to selecting interns, recognizing that excess weighting of scores on the standardized, high-stakes USMLE Step exams interferes with the goal of diversifying residency programs.51,62

Achieving greater diversity through admissions requires making changes to the whole admissions process. Medical schools are exploring multiple strategies for achieving this aim, for example, employing anonymous voting systems; blending interviewers to academic metrics; and using multiple mini-interviews and scoring rubrics to give equal weight to experiences, attributes, and academic metrics. In addition, ensuring diversity in the composition of admissions committees and encouraging admissions committee members to complete training in mitigating unconscious bias can help them make judgments about academic and professional promise given each applicant’s unique context.25,63

Pipeline programs: Enhance opportunities for applicants to prepare for medical school

Medical schools and national medical education organizations must redouble their efforts to address the proximate barriers to success for URM students aspiring to become physicians. Success on the MCAT exam requires exam-specific preparation in addition to high-quality higher education. The Association of American Medical Colleges (AAMC) has worked to decrease barriers to test preparation by providing free study guides and tools and reduced-price registration for applicants with financial hardship.64 Additionally, the AAMC has collaborated with the Khan Academy and the Robert Wood Johnson Foundation to provide a collection of free, online, video-based tutorials on the topics covered on the MCAT exam.65 Unfortunately, use of these test preparation resources is lower among premedical students from lower socioeconomic backgrounds and those who attend lower-resourced schools.21

These students also may not have ready access to knowledgeable individuals who can advise them on best practices to prepare for the MCAT exam. Health professions advisors play an important role in preparing undergraduate students to be strong, academically qualified medical school applicants; however, such advisors are not equitably distributed across the nation’s higher education institutions. Underresourced institutions are less likely to provide institutional or financial support for premedical advising.66 Recognizing the value of high-quality health professions advisors, the National Association of Advisors for the Health Professions offers advising services free of charge to students from colleges that do not have dedicated health professions advisors.27

Many medical schools have developed partnerships with communities and schools across the educational continuum to support URM and socioeconomically disadvantaged students interested in health professions careers. The success of these endeavors depends on a broad-based institutional commitment to diversity that is sustained with financial support and based in respectful community engagement. For example, the University of Illinois at Chicago Urban Health Program includes initiatives that span elementary school through undergraduate education and provides access to and preparation for all health professions; it is aimed at the needs of URM students, many of whom attend underresourced schools.67 Medical schools also sponsor programs that enable prehealth advisors from nearby undergraduate institutions to learn more about the medical school admissions process and MCAT exam preparation.59–71

Other schools embrace their role as an anchor institution, leveraging their system’s procurement, investment, and employment opportunities to improve the educational and economic milieu for those in the surrounding community, including those aspiring to health professions careers.22

Curriculum: Educate physician–citizens

As a profession and as individuals, physicians are trusted for their ability to think critically and advise individuals and communities about threats to health. No greater threat to health exists today than the disparities in our social systems, which shorten lives, obstruct access to evidence-based health care, impoverish families, incarcerate generations, and attenuate educational achievement. The next generation of physicians can take on this work if we are able to build a diverse workforce through holistic admissions and help them to develop the expertise they need. All medical schools must train the next generation of physicians to understand the existence and extensive ramifications of structural racism and the resultant health and health care disparities. Additionally, recognizing how structural racism leads to interpersonal bias may help physicians address their own personal biases that contribute to health care inequities.72

Diversifying medical school classes is a critical first step in educating physicians to work effectively with individuals from all populations. Schools also must establish core competencies related to understanding structural racism and its influence on health and health care disparities. In addition, structural competence and antiracism curricula should be introduced in undergraduate and graduate medical education.74–76

Conclusions

Structural racism is the result of centuries of discrimination against people of color in the United States. Its roots are deep and its consequences far-reaching. Medical education and the profession of medicine are as affected by this stain as other social systems are. The medical profession can successfully educate the diverse physician workforce that our communities need and prepare all physicians to be the citizens our democracy needs if we collectively commit to understanding and counteracting the impact of structural racism on medical student selection and education and on the provision of health care. Embracing new ideas about what MCAT scores are desirable may be more acceptable if the purpose behind this necessary mindset change is to mitigate the effects of society’s structural racism.

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References

7 Morrison E, Grbic D. Dimensions of diversity and perception of having learned from individuals from different backgrounds: The particular importance of racial diversity. Acad Med. 2015;90:1651–1657.
17 Regents of the University of California v Bakke, 438 US 265 (1978).
18 Fisher v University of Texas, 579 US ___ (2016).
32 Logan JR. The persistence of segregation in the 21st century metropolis [published online ahead of print June 17, 2013]. City Community. doi:10.1111/cico.12021
35 Hahn RA, Truman BI, Williams DR. Civil rights as determinants of public health and racial and ethnic health equity: Health care, education, employment, and housing in the United States. SSM Popul Health. 2018;4:17–24.


70 Illinois Medical School Admissions Consortium. Medical school admissions workshop, University of Illinois at Chicago; October 31, 2014; Chicago, IL.


