Race Matters? Examining and Rethinking Race Portrayal in Preclinical Medical Education

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Abstract

Critical examination of "health disparities" is gaining consideration in medical schools across the United States, often as elective curricula that supplement required education. However, there is disconnect between discussions of race and disparities in these curricula and in core science courses. Specifically, required preclinical science lecturers often operationalize race as a biological concept, framing racialized disparities as inherent in bodies. A three- and five-month sampling of lecture slides at the authors' medical school demonstrated that race was almost always presented as a biological risk factor.

This presentation of race as an essential component of epidemiology, risk, diagnosis, and treatment without social context is problematic, as a broad body of literature supports that race is not a robust biological category. The authors opine that current preclinical medical curricula inaccurately employ race as a definitive medical category without context, which may perpetuate misunderstanding of race as a bioscientific datum, increase bias among student–doctors, and ultimately contribute to worse patient outcomes.

At the authors' institution, students approached the medical school administration with a letter addressing the current use of race, urging reform. The administration was receptive to proposals for further analysis of race in medical education and created a taskforce to examine curricular reform. Curricular changes were made as part of the construction of a longitudinal race-in-medicine curriculum. The authors seek to use their initiatives and this article to spark critical discussion on how to use teaching of race to work against racial inequality in health care.

The use of race in medical education in teaching about epidemiology and diagnosis without social context is problematic. Race itself is not a robust biological category; expert literature argues that racial categories are social constructions, defined by region-specific cultural and historical ideas rather than inherent biological characteristics.[1–3] Genetic studies demonstrate that 6.3% of genetic variance is determined by race, and that genetic differences are far higher within than between racial groups.[4] Genetic analysis shows that "genetic variation tends to be distributed in a continuous, overlapping fashion among populations" rather than into discrete and nonoverlapping entities,[5] though medical discourse on race consistently treats racial groups as immutable and genetically homogenous. Ancestral alleles can affect disease rates and medication efficacy.[6,7] However, these alleles do not align neatly with commonly used racial groupings, as admixture and migration have produced such broad variation that reductive race categories cannot be substituted for genetic ancestry.[8–15] Inaccurate portrayal of race in medical education as biologic reifies its legitimacy as a biomedical variable despite the imprecisions of this premise. This may cause physicians to employ racial signifiers as clinically meaningful without full examination or understanding of their complex formation.[16,17]

Background

Although a broad body of literature argues that race is not a biological category,[1–3] we hypothesize that teaching it as such strengthens students' existing racial biases.[18] Indeed, as Condit et al[19] note, "many theorists of race and racism have argued that an important component of racism is the assumption that differences among racial groups are based in biology, are inherited, and therefore may be immutable." Examples of such arguments can be found in the literature.[20–22] Condit et al[19] further state that previous "studies have suggested that persons who accept genetic explanations for racial differences tend to score relatively high on traditional measures of prejudice." Racial bias is pervasive in our society and is among the many factors that contribute to the large and persistent racial health disparities in the United States.[23] There is an extensive body of knowledge demonstrating that practicing physicians have racialized implicit biases and that these biases result in substandard care for black Americans.[24–28] Racialized disparities include lower rates of major surgical procedures for black Medicare patients, lower rates of parenteral analgesic and sedative administration for long-bone fractures for African American children presenting to emergency departments, and lower quality of basic hospital services such as pneumonia and congestive heart failure care for black patients.[25,26,29,30]

In our experiences, students are frequently taught to look for race and associate it with specific diseases. This teaching is part of a larger system, which pathologizes race. This gives rise to the complicated paradox of race consciousness in medicine: It may be harmful if used only to reify biological conceptions of race, yet beneficial when documenting health inequity within a scientific, social, and political context. Thus, while race can be an important epidemiologic category, we argue that using race without social contextualization may serve to strengthen existing stereotypes and misconceptions

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of genetic immutability. For example, it is important to document and study disparities in asthma among children of color, yet discussion of these data must include larger structural factors and etiologies. Teaching these disparities without teaching context suggests inherent difference and may lead students to presume that causes of inequality lie reductively or solely in biology.

Both "historical evidence and contemporary genetic research" suggest that "racial profiling" in medicine can lead to serious medical errors."[31] For example, when patients present outside of simplified racial paradigms, they may receive delayed or missed diagnoses.[32–38] Furthermore, physician assessments of patient race are routinely incomplete or incorrect.[39,40] Physician evaluation of skin color phenotype as a part of clinical decision making, especially without consultation of patients themselves, thereby presents another source for compromised care.[16] Practice becomes based on inaccurate assumptions within an already-imperfect classification system that is not scrutinized to the standard level of scientific rigor.

Lastly, we argue that by focusing on race as a biology, significant aspects of health care inequality remain unaddressed. Thus, this type of teaching reinforces unconscious physician bias in two important ways. First, this pedagogy privileges biomedical concepts of race over social understanding of health status or disease etiology, which echoes and supports bias of student–doctors towards scientific or biomedical models of health and disease. Second, the assumption that racial categories can be used as risk factors and pathological markers enforces understandings of race as biology, which may fortify racial bias and stereotyping. Both may ultimately contribute to worse patient outcomes. We feel that medical education has a responsibility not only to contextualize and complicate the concept of race instead of simplifying it but also to identify, address, and actively prevent bias in student–doctors.

Needs Assessment

As medical students with previous exposure to critical race theory, anthropology, and sociology, we noticed that the way race was presented in mandatory curriculum content inaccurately presented race as biology. Although there is a literature on medical pedagogy around race, current studies on implementation are lacking.[41–44] We set out to quantify and analyze the presentation of race in the preclinical curriculum with the hypothesis that slides normatively reified race as biological. We were concerned that this narrative could perpetuate an inaccurate comprehension of race and reinforce implicit bias.

In 2015, an informal survey of all four years at Warren Alpert Medical School of Brown University (n = 180) showed that 76% of students felt that the medical school curriculum as a whole did not adequately prepare them to address race and racialized health disparities in concrete ways as physicians, and 89% of students supported curriculum reform to better address race and racialized health disparities. This demonstrates strong student desire to build a more robust and nuanced discussion of race in medical education and indicates the importance of and urgency for reform. Although anecdotal, we believe that these findings are likely consistent with student desires at other medical institutions.

We conducted a three-month and five-month survey of first- and second-year preclinical lectures, respectively, to examine slides' operationalization of racial signifiers; this included approximately 350 mandatory preclinical lectures spanning two basic science "blocks" and six organ system "blocks." In total, mention of race was found in 102 slides.

Slides' use of racial signifiers was coded by a minimum of three students as "biological" or "social/multifactorial." Slides were then coded as "explicit biological difference" if lecturers employed genetic biomarkers or discussed innate racial predisposition, while "Implicit biological difference" was coded when race was mentioned without discussion of social context. Slides that mentioned race were secondarily classified by application; these categories included "epidemiology without context"; "risk, diagnostic, or treatment factor"; "vignette or patience case"; and "race correction" (i.e., adjustment of some physiological measurement for patient race).

Out of the 102 slides that mentioned race, the vast majority suggested biological risk (96%), with 38% of slides (n = 39) noting explicit biological difference, and 58% (n = 59) implying biological difference. Only 4% (n = 4) acknowledged social determinants of racialized disease disparities (Figure 1). Regarding methodology, 50% of slides presented race alongside epidemiology without context; 42% as a risk, diagnostic, or treatment factor; 6% as an element of a vignette or patient case; and 2% as an indication for race correction of a physiological measurement (Figure 2).

What We Found

We found that race is often presented in our medical school lectures (and, we venture, most medical school lectures) without context or justification. For example, racial categories are used as independent risk factors for diseases such as sarcoidosis, cystic fibrosis,

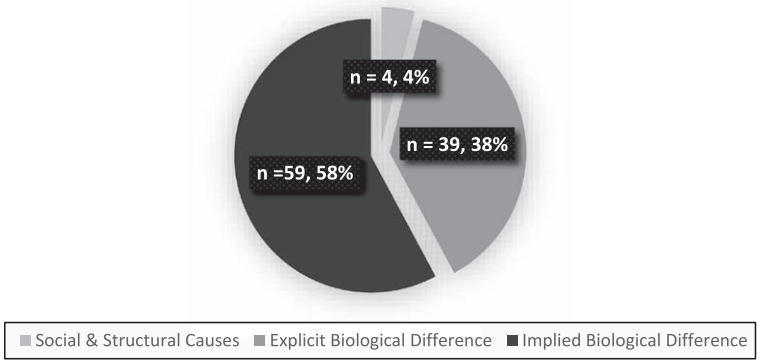

Figure 1 Explanation for race-based associations in preclinical lecture slides, Warren Alpert Medical School of Brown University, 2014–2015. The authors examined slides' operationalization of racial signifiers; this included approximately 350 mandatory preclinical lectures spanning two basic science "blocks" and six organ system "blocks." In total, mention of race was found in 102 slides.

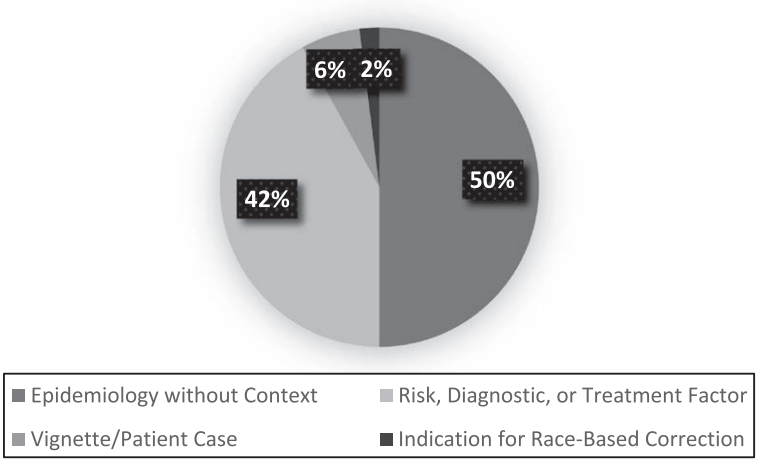

Figure 2 Method of presentation of race in preclinical lecture slides, Warren Alpert Medical School of Brown University, 2014–2015. The authors examined slides' operationalization of racial signifiers; this included approximately 350 mandatory preclinical lectures spanning two basic science "blocks" and six organ system "blocks." In total, mention of race was found in 102 slides.

hypertension, and focal segmental glomerulonephritis. These racial associations are used as diagnostic "hints" in medical school exams, reflecting standardized clinical assessments such as the United States Medical Licensing Examination Step 1. On our second-year pulmonology examination, two questions included patient race. Both hypothetical patients were "African American," and both had sarcoidosis. As previously mentioned, emphasizing and repeating race–disease associations may lead to harms such as delayed diagnosis and medical errors.[32–38] As our medical school exams are designed to prepare students for licensing exams, these practices indicate the wider deployment of teaching race as a risk factor. Such practice enforces the use of race as a simplistic signifier of illness, which pathologizes race itself, treats it as an easily visualized diagnostic tool, and obscures its complex role in illness.

Other lecture slides teach the practice of race "correction" for highly variable physiological measures such as spirometry values and glomerular filtration rates. The principle of race correction relies on the idea that people of different racial categories are inherently and biologically different, and therefore their bodily measurements require correction using a white standard. Though disciplines such as medical anthropology, history, and sociology have problematized this practice, this controversy has not translated into clinical practice or medical education. Race-based adjustment of spirometer values, for example, stems from data produced during the era of plantation slavery, when civil war physicians compared the lungs of black and white soldiers. However, recent reviews of current spirometry data find that evidence for intrinsic racial variation is poor.[45] Spirometer adjustments define a new physiologic normal for black patients; new literature suggests that this practice decreases black Americans' eligibility for disability because of the difficulty of documenting disease on top of presumed worse lung function.[45]

Additionally, we opine that racial categories are often used indiscriminately in class lectures without consideration of their complex and varied meanings. A discussion of hemolytic anemia, for example, conflated black and African racial groups, using the labels "African" and "black" interchangeably despite their differing definitions. These slides highlight the poor examination of the distinctions and nuances of racial identity, geographic origin, and history in the formation of socially meaningful racial signifiers. Whereas the label of "African American" refers specifically to people with American nationality and African geographic ancestral origin who are exposed to the cultural, societal, and political repercussions of race in the United States, "black" refers only to black skin phenotype, which includes all nationalities and upbringings, as well as geographic origins from Sub-Saharan Africa, the Afro-Caribbean, the Middle East, or Latin America. This further calls to attention the point that the general usage of "race" often confuses matters of ancestry and social geography. The two categories actually refer to completely different social groups, neither of which in turn represents a discrete genetic or biological group.

Lecturers' continued suggestion of race as explicit or implicit biology insinuates that differences in disease incidence can be explained by genetic or physiologic risk. This is problematic not only because race is not a firm biological category but, further, because this framing of health disparities allows ignorance of multifactorial social and structural determinants of disease. Such emphasis on biology fails to expose the complex reality of inequality as it pertains to race.

Moving Forward

As a result of collected data, medical students at our institution organized in December 2014 to send a letter detailing the problematic aspects of teaching race as biology to the medical education administration. In 2015, as a result of continued conversations, the Medical Curriculum Committee created a Race in Medicine Task Force which seeks to execute a comprehensive internal review of preclinical lecture slides and introduce longitudinal changes to the curriculum.

Since the formation of the task force, students and administrators have collaborated to implement changes to first- and second-year orientation, doctoring, and preclinical courses as part of the creation of a longitudinal curriculum on race in medicine. First-year medical students were asked to read *Blindspot: Hidden Biases of Good People*,[46] a book on implicit biases, and take the Implicit Association Test[47] in preparation for a small-group discussion. Students were required to view the documentary *American Denial*[48] and participate in dialogue with the film's producer. The pulmonary, renal, and human reproduction blocks added one guest lecture and two small-group sessions, covering the use and history of the spirometer, racialized hypertension guidelines, and differences in morbidity and mortality in black and white children. The school has also added faculty development in which course leaders critically evaluated the concept of race. Finally, sessions on race and medicine are planned for both our

medical school's third-year clinical skills clerkship and longitudinal integrated clerkship.

In the eight months since the first student–faculty conversation on systemic curricular reform around race and medicine, there has been an expansion in school curriculum and culture. As we look towards incorporating further institutional changes regarding race in the medical curriculum, the opportunity for student, faculty, and administration collaboration is great. Our ultimate goal is the development of a robust infrastructure that is based in course work, faculty development, and institutional culture and that is coordinated by a committed staff member dedicated to working directly against racial health disparities.

Conclusion

Although race is often used in biomedical research, epidemiology, medical practice, and education, succinct guidelines for the appropriate use of race in medicine remain elusive and controversial. For medical students and physicians alike, the significance of race within the clinic is poorly understood, and thus poorly used. The operationalization of race in medical practice without proper grounding in sociopolitical context perpetuates bias among medical students. These biases manifest both as irreducible personal and implicit biases but also as ignorance of wider structural and systemic racism which produce profound inequities in health between whites and minorities, ultimately contributing to disparities in patient outcomes.

This article certainly does not aim for the elimination of race discussion in medical education. Indeed, removing race from the curriculum rather than expanding the conversation around race would dissolve opportunities to correct past mistakes. We are excited to see this conversation continue: Students at our institution and elsewhere are and have been committed to developing robust race and health disparities curricula for many years, and faculty as well as administrative response has been supportive. Through open conversation and examination around the value of racial signifiers, it becomes more possible to train physicians in both biology and structural determinants of health. Our work indicates that the current preclinical medical curriculum inadequately addresses the role of race in epidemiology, health disparities, medical research, and clinical practice. While we have added multiple opportunities for discussion as part of a longitudinal curriculum on race in medicine, we are hopeful that continued student–faculty partnership and administrative efforts will expand this work. We advocate for institutions of medical education to teach the controversies surrounding race in medicine so that future physicians will be equipped to comprehensively address disparity and inequity in their practice.

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