

PEER-REVIEWED CME ARTICLE: MEDICAL EDUCATION

Avoiding Racial Essentialism in Medical Science Curricula

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Abstract

A wave of medical student activism is shining a spotlight on medical educators' sometimes maladroit handling of racial categories in teaching about health disparities. Coinciding with recent critiques, primarily by social scientists, regarding the imprecise and inappropriate use of race as a biological or epidemiological risk factor in genetics research, medical student activism has triggered new collaborations among students, faculty, and administrators to rethink how race is addressed in the medical curriculum. Intensifying critiques of racial essentialism are a crucial concern for educators since bioscientific knowledge grounds the authority of health professionals. Central ethical issues—racial bias and social justice—cannot be properly addressed without confronting the epistemological problem of racial essentialism in bioscience teaching. Thus, educators now face an ethical imperative to improve academic capacities for robust interdisciplinary teaching about the conceptual apparatus of race and the recalibration of its use in teaching both genetics and the more pervasive and urgent social causes of health inequalities.

Introduction

The need for US medical schools to improve teaching about racial inequalities in health and disease has become acute: it is an ethical responsibility. National protests against racial discrimination in police actions and beyond have had particular salience on college campuses. Because of the shifting terrain of premedical undergraduate education, in which students have been exposed to more history and sociology of medicine, current medical students are sometimes more aware than their professors of how racism manifests in medicine and medical education [1]—including the intensifying scientific controversies regarding human genetic variation [2].

Consequently, medical students are asking for increased diversity among faculties and trainees, commitments to improve educators' and fellow students' social and behavioral competence, and reduction of stigmatizing biases in clinical settings. In collaboration with interested faculty and administrators, students are also asking for deeper engagement with social and structural causes of persistent and widening health disparities [3-5]. And students are contesting a preclinical curriculum that merely documents racial health disparities (without explanation), offers presumptive explanations that are disproportionately biological, and deploys race uncritically as a biological or epidemiological risk factor.

These concerns (of course not limited to students, as there are important initiatives involving residents and faculty members as well) have an intrinsically ethical character, rooted in awareness of historical legacies of racialized vulnerabilities and ongoing social injustices in our country. Medical schools have an ethical responsibility to teach the social and [structural causes](#) of health inequality and to engage with the epistemological aspects of racial categorization (and would even if students were *not* asking!).

Many physicians and medical educators are confused about the meanings of race and feel ill-equipped to engage debates about race in the classroom or uncomfortable using race in clinical practice [1, 6]. The ethical obligation that medical educators now feel with new intensity, to improve pedagogies regarding race, must include revising how we use racial categories even in our descriptive bioscientific teaching—especially in genetics. Indeed, the rise of student activism at this historical moment is, in part, an outcome of the plethora of studies invoking genetic differences for racial disparities in health and disease [7]. Whether and how race is used or misused in genetics research and teaching is important because bioscientific knowledge is a key source of clinical authority. We thus must expand faculty capacities to teach about race with nuance and multidisciplinary awareness.

Racial Essentialism in Genetics and Other Medical Biosciences

The idea of innate differences among races has been foundational to science since the Enlightenment—and this idea persists in medical education and clinical medicine. For example, the idea of innate racial differences in lung capacity was first promulgated by Thomas Jefferson in his *Notes on the State of Virginia*. It took 50 years for his philosophical musings to acquire an empirical foundation in the hands of plantation physician Samuel Cartwright; the idea has since become deeply embedded in medicine globally [8]. Although poorly supported by accumulated evidence, pulmonary function tests are “corrected” for race [8]. Similarly, the idea of innate differences persists in laboratory tests for glomerular filtration rate that are also “corrected” for race in the US (but not everywhere) on the presumption that blacks by nature have higher muscle mass and therefore higher creatinine levels [9]. The medical literature on hypertension is rife with genetic explanations of the disease's higher prevalence among US blacks than whites,

although hypertension prevalence is higher in Spaniards, Finns, and Germans than in US blacks [10]. While a recent systematic review of genomic studies that focused on race and cardiovascular research indicates that the contribution of genetic difference among races is minimal at best [11], the eighth Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 8) guidelines for hypertension categorize treatment strategies by race [12]. Even in the case of tuberculosis, which was a highly racialized disease until the mid-twentieth century, when environmental explanations of its cause assumed dominance [13], genetic predisposition has reappeared in the biomedical literature as an explanation for blacks' greater susceptibility to the disease [14]. Finally, teaching about a monogenetic disease like cystic fibrosis (CF) often begs important social questions. As Wailoo and Pemberton have queried: How did we arrive at its standard introductory description (since the 1990s) as "the most common lethal genetic disease afflicting Caucasians" [15] from a previous time when we recognized its multiethnic distribution? How does the whiteness of CF shape performance of standard CF genetic screening batteries among other "races"? Beyond genetics, how important are social or environmental exposures or health care access in determinations of "racial" differences in CF outcomes?

Debates over Race, Genetics, and Knowledge Production

The recent call by an interdisciplinary team of scholars at the National Academies of Sciences, Engineering, and Medicine to convene a panel to consider how "to move past the use of race as a tool for classification" [16] is a timely articulation of the long-standing debate concerning the meaning of race in medicine. Yudell et al. argue for development of [alternate approaches](#) to using race in human genetics research and genetic explanations of health and disease. They join many other scholars in emphasizing that race is a sociopolitical, not a biological, concept [7, 11, 17, 18] and in raising concerns about biological conceptions of race that continue to inform biomedical research studies [19]. They note the analytic imprecision of race in genetic research as a proxy for ancestry [16]. The use of race in biomedicine is thus a consequential matter of knowledge production, one with important ethical ramifications.

The expansion of genetically oriented research on racial disparities devolves in part from the National Institutes of Health (NIH) mandate of the early 1990s to incorporate US census categories in NIH-funded research [20]. This mandate led to many important studies, summarized by the Institute of Medicine (now the National Academy of Medicine) in a 2003 report [21], which provided careful documentation of the depth and persistence of racial health disparities in the US. Yet, inattention to causal frameworks and the fluid nature of racial categories also had an unintended consequence [20, 22]. Research centered on genetic explanations of racial disparities in disease has expanded [2]—despite well-established and compelling, though still not fully developed, evidence that socioeconomic factors and structural policies such as segregation, resource allocation, and so on are the major causes of disparities [23, 24]. This research emphasis

on genetic explanations has been carried into the medical science classroom and into standardized national examinations [1].

To date, medical schools have responded to student activism primarily by developing curricular materials on implicit bias, usually measured by the Implicit Association Test (IAT), and its effects on medical decision making [25]. Indeed, clinician bias and preexisting preferences held by medical students for white and upper-class patients have been documented [26]. Faculties and administrators across the country have organized workshops wherein students and professors reflect on how unconscious bias affects clinical interactions [27]. Yet other zones in which to interrogate bias, such as the biomedical research that forms the knowledge base for medicine, the preclinical curriculum in which this is taught, and assessment methods, remain to be studied in depth. While illuminating for some aspects of the clinical encounter, the IAT assesses a limited psychological aspect of a complex social phenomenon. Measureable entities have a certain appeal, but the IAT cannot account for the many ways in which racism and other biases manifest structurally and work in institutional contexts.

Failure to resolve whether race is a social construct or a genetically bounded entity remains at the heart of tensions shaping curricular efforts on race [28]. To explore these tensions, some [medical curricula](#) are moving beyond implicit bias by including lectures or discussions on race as a social or biological concept and electives (many of them student driven), speakers' series, journal clubs, and book clubs exploring the complex history of race and racism in medicine and the clinic [29]. However, we believe that even these promising initiatives leave the key epistemological issues largely untouched: the structural, social, and cultural ways in which racism shapes our knowledge base in medicine and leads to health inequalities. Even if scientists and medical professors hold different views, which they undoubtedly will, they should at least acknowledge and incorporate such challenges to conventional thinking into their teaching. While it will be no simple matter to dislodge current investments in genetic explanations of racialized health inequalities, medical curricula will be morally enriched by educators' efforts to pursue appropriate uses of race in the medical context.

Challenges to Medical Education Reform: A Role for Humanities and Social Sciences

Simultaneous with the expansion of genetics research on race, scholars of race in the humanities and social sciences have contested the bioracial essentialist enterprise, offering nongenetic explanations of health disparities and uncovering the long history of problematic beliefs in biological races [8, 30–33]. Unfortunately, medical school faculties lack the disciplinary range of undergraduate faculties, and biomedical perspectives dominate the curriculum. There is nothing in the medical curriculum like the critical race theory that has flourished in legal studies since the late 1980s when some law schools, with more elective time and a long tradition of incorporating critical social theory and history into coursework, began integrating critical race theory into their curricula [34,

35]. The highly centralized and standardized curriculum in medical schools, however, is more constrained than that of law schools, in part due to the mandates of accrediting agencies.

Some medical schools have departments of social medicine, history, or medical humanities that foster critical discussions about race and social determinants. But many do not. Consequently, medical faculties competent to teach global race theory or critical scholarship on race and racism are limited. Most critical scholarship on social and historical contexts of race and health in the past decade has taken place in disciplines outside biomedicine—with limited dialogue with faculty in biological sciences or medicine [36]. With incoming medical students increasingly versed in humanities and social sciences perspectives on health and increasing representation of social concerns on national examinations, such as the Medical College Admission Test® (MCAT®) and the United States Medical Licensing Examination®, this is an important moment to reflect on possibilities of integrating interdisciplinary perspectives on race into medical bioscience education.

There is no quick fix to redirect the medical curriculum on racial health disparities from its current focus on genetic explanations to social and structural explanations. Indeed, given unique challenges presented by the medical curriculum, harmful profiling in the clinic can result if race is presented in a routinized way and students are not introduced to the nuances of the controversies over race in medicine [37, 38]. A curriculum that addresses racial disparities in a substantive way requires an intellectually engaging space where bioscience and clinical faculty and students can be introduced to the historical, sociological, and anthropological scholarship on race in medicine, its continuities and discontinuities.

While public health faculty can provide important expertise for addressing racism in medicine, public health schools face dilemmas similar to those of medical schools [39]. And, like medical students, public health student activists are responding to tensions between social understandings of health inequality and the biomedical framework [40].

Another major limitation to integrating critical perspectives on race into the medical curriculum is the dominant mode of student assessment. Geared to licensing examinations, multiple-choice assessment is inadequate for evaluating understandings of complex, controversial, and fluid relationships among race, racism, bodily difference, and health.

Conclusion

How should we in medical schools teach race, genetics, and health to health professionals with respect and care, when the topic invites radically different perspectives and even differing definitions and understandings of the concept of race

over time and from place to place? How should we approach curricular reform? Given extensive interdisciplinary scholarship on race and racism in medicine and the recent call by Yudell et al [16] for alternative approaches to the use of race in genetics research, medical science educators must now, at the very least, acknowledge and teach the controversy and avoid facile use of race as a “bioscientific datum” [41]. There is extensive curricular material from the fields of social epidemiology, medical anthropology, and sociology of medicine that examines the health consequences of racism. Medical schools need to draw on interdisciplinary university faculty to teach about the roots of structural racism. In a recent article calling for reform of health professions education, an interdisciplinary team of researchers underscore the urgent need to address how structural racism shapes medical institutions, including research and practices that focus on biological differences. Significantly, the authors argue that we need to “recognize racism, not just race” [42].

Emerging curricula drawing on social justice frameworks or “structural competency” are promising developments [43, 44]. First formulated in 2012 as a theoretical approach to rethink cultural competency education, structural competency focuses on educating students about the changing structural forces in society that produce health inequality and poor patient care [45]. From the perspective of structural competency, it would be possible to examine racial essentialism and remove it from medical teaching while retaining a focus on the health effects of racism and racialized social vulnerabilities, as student activists have so poignantly articulated [1, 29]. But this goal cannot be realized without commitments to interdisciplinary collaborations that engage, not simplify, the contemporary controversy over race, racism, and disparities. In an environment where questions, reservations, and opposition can be openly entertained, faculty and students should work together with members of the communities they serve to develop a richer knowledge base to interrogate the problematic history of race in medicine and the legacy of this history in the persistence of health inequalities.

Some tentative steps have been taken by students and educators, as discussed above. But we need to do much more. Given increasing attention to race in medicine and ongoing student activism, this is an exciting moment to renew the process of engaging the controversy, with the goal of improving health for all.

References

1. Tsai J, Ucik L, Baldwin N, Hasslinger C, George P. Race matters? Examining and rethinking race portrayal in preclinical medical education. *Acad Med*. 2016;91(7):916-920.
2. Duster T. Social diversity in humans: implications and hidden consequences. *Cold Spring Harb Perspect Biol*. 2014;6(5):a008482. <http://cshperspectives.cshlp.org/content/6/5/a008482.long>. Accessed April 27, 2017.

3. Bassett M. #BlackLivesMatter—a challenge to the medical and public health communities. *N Engl J Med*. 2015;372(12):1085-1087.
4. Bedard R, Crawford-Roberts A, Eisenstein L, et al. A letter to our patients on racism. *Medium*. July 12, 2016. <https://medium.com/@docs4blm/a-letter-to-our-patients-on-racism-4b71a3e6917c#jdmm0d3af>. Accessed April 26, 2017.
5. Hardeman RR, Medina EM, Kozhimannil KB. Structural racism and supporting black lives—the role of health professionals. *N Engl J Med*. 2016;375(22):2113-2115.
6. Hunt LM, Truesdell ND, Kreiner MJ. Genes, race, and culture in clinical care: racial profiling in the management of chronic illness. *Med Anthropol Q*. 2013;27(2):253-271.
7. Koenig BA, Lee SSJ, Richardson SS, eds. *Revisiting Race in a Genomic Age*. New Brunswick, NJ: Rutgers University Press; 2008.
8. Braun L. *Breathing Race into the Machine: The Surprising Career of the Spirometer from Plantation to Genetics*. Minneapolis, MN: University of Minnesota Press; 2014.
9. Levey AS, Bosch JP, Lewis JB, Greene T, Rogers N, Roth D. A more accurate method to estimate glomerular filtration rate from serum creatinine: a new prediction equation. *Ann Intern Med*. 1999;130(6):461-470.
10. Cooper RS, Wolf-Maier K, Luke A, et al. An international comparative study of blood pressure in populations of European vs. African descent. *BMC Med*. 2005;3:2. <https://bmcmmedicine.biomedcentral.com/articles/10.1186/1741-7015-3-2>. Accessed April 27, 2017.
11. Kaufman JS, Dolman L, Rushani D, Cooper RS. The contribution of genomic research to explaining racial disparities in cardiovascular disease: a systematic review. *Am J Epidemiol*. 2015;181(7):464-472.
12. James PA, Oparil S, Carter BL, et al. 2014 evidence-based guideline for the management of high blood pressure in adults: report from the panel members appointed to the eighth Joint National Committee (JNC 8). *JAMA*. 2014;311(5):507-520.
13. Roberts S. *Infectious Fear: Politics, Disease, and the Health Effects of Segregation*. Chapel Hill, NC: University of North Carolina Press; 2009.
14. Liu PT, Stenger S, Li H, et al. Toll-like receptor triggering of a vitamin D-mediated human antimicrobial response. *Science*. 2006;311(5768):1770-1773.
15. Wailoo K, Pemberton SG. *The Troubled Dream of Genetic Medicine: Ethnicity and Innovation in Tay Sachs, Cystic Fibrosis, and Sickle Cell Disease*. Baltimore, MD: Johns Hopkins University Press; 2006:60.
16. Yudell M, Roberts D, DeSalle R, Tishkoff S. Taking race out of human genetics. *Science*. 2016;351(6273):565.
17. Wailoo K, Nelson A, Lee C, eds. *Genetics and the Unsettled Past: The Collision of DNA, Race, and History*. New Brunswick, NJ: Rutgers University Press; 2012.

18. Krieger N. Stormy weather: race, gene expression, and the science of health disparities. *Am J Public Health*. 2005;95(12):2155-2160.
19. Chen G, Doumatey AP, Zhou J, et al. Genome-wide analysis identifies an African-specific variant in SEMA4D associated with body mass index. *Obesity (Silver Spring)*. 2017;25(4):794-800.
20. Epstein S. *Inclusion: The Politics of Difference in Medical Research*. Chicago, IL: University of Chicago Press; 2007.
21. Smedley BD, Stith AY, Nelson AR, eds; Institute of Medicine Committee on Understanding and Eliminating Racial and Ethnic Disparities in Health Care. *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*. Washington, DC: National Academies Press; 2003.
22. Nobles M. *Shades of Citizenship: Race and the Census in Modern Politics*. Stanford, CA: Stanford University Press; 2000.
23. Williams DR, Wyatt R. Racial bias in health care and health: challenges and opportunities. *JAMA*. 2015;314(6):555-556.
24. Phelan JC, Link BG. Is racism a fundamental cause of inequalities in health? *Annu Rev Sociol*. 2015;41:311-330.
25. van Ryn M, Saha S. Exploring unconscious bias in disparities research and medical education. *JAMA*. 2011;306(9):995-996.
26. Haider AH, Sexton J, Sriram N, et al. Association of unconscious race and social class bias with vignette-based clinical assessments by medical students. *JAMA*. 2011;306(9):942-951.
27. Dembosky A. UCSF doctors, students confront their own unconscious bias. *KQED News*. August 4, 2015. <https://ww2.kqed.org/stateofhealth/2015/08/04/ucsf-doctors-students-confront-their-own-unconscious-bias/>. Accessed March 31, 2017.
28. Duster T. Race and reification in science. *Science*. 2005;307(5712):1050-1051.
29. Austin C, Crawford-Roberts A, Kahn M, Lynch G, Mirand C, Ostrer L. Beyond implicit bias: a medical student course of race and racism in medicine. Paper presented at: 144th Annual Meeting of the American Public Health Association; November 1, 2016; Denver, CO.
30. Hammonds EM, Herzig RM, eds. *The Nature of Difference: Sciences of Race in the United States from Jefferson to Genomics*. Cambridge, MA: MIT Press; 2009.
31. Bridges KM. *Reproducing Race: An Ethnography of Pregnancy as a Site of Racialization*. Berkeley, CA: University of California Press; 2011.
32. Montoya MJ. *Making the Mexican Diabetic: Race, Science, and the Genetics of Inequality*. Berkeley, CA: University of California Press; 2011.
33. Hatch AR. *Blood Sugar: Racial Pharmacology and Food Justice in Black America*. Minneapolis, MN: University of Minnesota Press; 2016.
34. Krenshaw K, Gotanda N, Peller G, Thomas K, eds. *Critical Race Theory: The Key Writings that Formed the Movement*. New York, NY: New Press; 1996.

35. UCLA Law. Critical Race Studies. <https://law.ucla.edu/centers/social-policy/critical-race-studies/about/>. Accessed October 29, 2016
36. Wemrell M, Merlo J, Mulinari S, Hornborg AC. Contemporary epidemiology: a review of critical discussions within the discipline and a call for further dialogue with social theory. *Sociol Compass*. 2016;10(2):153-171.
37. Acquaviva KD, Mintz M. Perspective: are we teaching racial profiling? The dangers of subjective determinations of race and ethnicity in case presentations. *Acad Med*. 2010;85(4):702-705.
38. Ripp K, Braun L. Race/ethnicity in medical education: an analysis of a question bank for step 1 of the United States Medical Licensing Examination. *Teach Learn Med*. 2017;29(2):115-122.
39. Jee-Lyn García J, Sharif MZ. Black Lives Matter: a commentary on racism and public health. *Am J Public Health*. 2015;105(8):e27-e30.
40. Fairchild AL, Rosner D, Colgrove J, Bayer R, Fried LP. The EXODUS of public health. What history can tell us about the future. *Am J Public Health*. 2010;100(1):54-63.
41. Tsai, Ucik, Baldwin, Hasslinger, George, 916.
42. Hardeman, Medina, Kozhimannil, 2114.
43. Wear D, Zarconi J, Aultman JM, Chyatte MR, Kumagai AK. Remembering Freddie Gray: medical education for social justice. *Acad Med*. 2016;92(3):312-317.
44. Metz J, Roberts DE. Structural competency meets structural racism: race, politics, and the structure of medical knowledge. *Virtual Mentor*. 2014;16(9):674-690.
45. Metz J, Hansen H. Structural competency: theorizing a new medical engagement with stigma and inequality. *Soc Sci Med*. 2014;103:126-133.

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