WHAT'S RACE GOT TO DO WITH IT?

WHY WE CARE ABOUT HOW RACE IS USED IN MEDICAL RESEARCH, PRACTICE AND CLINICAL DECISION-MAKING, AND WHY YOU SHOULD, TOO.

By: Ebiere Okah, MD, Resident
University of Minnesota North Memorial Family Medicine Residency

By: Andrea Westby, MD, FAAFP, Faculty
University of Minnesota North Memorial Family Medicine Residency

The practice of medicine—the traditions, diagnoses, treatments and guidelines—is ever-changing. We now acknowledge human papillomavirus infection as the primary driver of cervical cancer. Hormone replacement therapy is no longer routinely recommended for postmenopausal women. Rate control is preferred over rhythm control in atrial fibrillation. However, as we look back at the past hundred years, our profession has been slow to release the grip that the concept of biological race has had on our science and our medical practice.

Most of us have heard and acknowledge the truth of race as a social construct. While we may accept the truth of this science in theory, this has not changed the way we practice medicine. In fact, we often have perpetuated the myth of race and ethnicity as markers of disease. We describe our patients in racial terms and our guidelines and laboratory criteria, like glomerular filtration rate, use race. We use race as a proxy for genetics, ancestry and biology when it is not.

We are not the first people to challenge the use of race in medicine. Many prolific researchers and activists have been arguing against treating race as biological for years[1-3]. We brought our resolution on eliminating race-based medicine to the Minnesota Academy of Family Physicians' (MAFP) House of Delegates this year because we see the negative results of medicine's error when it comes to race, and we wanted the MAFP and Minnesota's family physicians to be part of the change. When we started to bring this issue forward, we encountered some resistance, but mostly many questions. We wanted to share our answers with you, not because we are the experts, but because we see the importance of this issue and the need for reform.

WHAT IS RACE?

Race is a social construct that does not represent shared genetic ancestry. It is, instead, a way of categorizing people based on physical characteristics and geographic ancestry. The United States (US) Census identifies five racial categories: white; black; Asian; American Indian and Alaska Native; and Native Hawaiian and Pacific Islander. Under this system, Middle Easterners and North Africans are classified as white, and people who hail from countries as different as Afghanistan, India and China are all classified as Asian.

These racial categories, however, are not universal, as they vary between societies and have changed over time. For example, an individual could be both white in Brazil and black in the US. In addition, at various points in Virginia's history, people who had 1/4th, 1/8th, 1/16th or any African ancestry were legally defined as black and, therefore, subject to racially discriminatory laws[4]. In the US, blackness was constructed to be overly inclusive, such that a person with seven white great-grandparents and one black great-grandparent could still be considered black and, therefore, used for slave labor. Thus, it is curious that, given this broad definition of "black," black people are treated as a distinct racial category with genetically distinct health risk factors and different treatment protocols.

Given that politics, not science, guided the construction of race, it is not surprising that there are no genetic features shared by all people who belong to the same racial category. Most of our genetic variability occurs within racial groups, and belonging to the same racial group does not imply greater genetic similarity[5,6]. For example, an Asian person may have more genetic similarity to a white person than to another Asian person. This is because blacks, whites and Asians are not actually distinct groups of people, although we have been socialized to see them as such.

IF RACE ISN'T REAL, THEN WHY ARE THERE GENETIC DIFFERENCES THAT CLUSTER WITHIN DIFFERENT POPULATIONS?

Our genetic diversity is derived from random genetic mutations passed down over generations. Very few genetic mutations provide a survival benefit or are clinically relevant. Natural selection is the theory that genetic mutations that are advantageous to survival result in an increase in the prevalence of these mutations, as the people with said mutations have greater longevity and more time to reproduce. A common example of this can be seen in sickle cell disease. People with sickle cell disease have a shorter life expectancy than those without the disease. However, sickle cell carriers—those who are capable of passing on the sickle cell gene but do not carry the

disease—are less likely to die from malaria. Therefore, in malaria-endemic areas, having sickle cell trait is a genetic advantage, which is why people with sickle cell trait and disease are clustered in malaria-endemic regions.

Sickle cell disease is often perceived to be limited to black people, but the prevalence of sickle cell varies significantly between black-majority countries, and it is also present in countries with few black people. For instance, sickle cell disease is not common in South Africa, but it is a common disease in Saudi Arabia and India, which are white and Asian countries, respectively[7]. In fact, there are tribes in India where approximately 40% of the population are sickle cell carriers[8]. When one considers that there are more people living in India than in the continent of Africa, the notion that sickle cell disease is an African or black disease is false. So rather than thinking about sickle cell disease in racial terms, we must consider it a disease more prevalent in populations with genetic ancestry from malaria-endemic areas.

WHAT ABOUT EPIGENETICS?

Epigenetics is the study of changes in gene expression that are not due to changes in the genetic code itself. Evidence suggests that trauma and adverse events lead to epigenetic changes that are then inherited by offspring. Racial trauma, stress, discrimination and systemic racist practices, such as financial and environmental disinvestment in minority communities, have been proposed as an etiology of epigenetic changes[9]. Mouse models indicate that epigenetic changes can be reversed with removal of the initial stressors and exposure to an enriched environment[10]. Therefore, what we perceive to be health disparities caused by innate racial difference could, in actuality, be due to reversible epigenetic changes.

WHAT IS THE HARM OF USING RACE IN MEDICINE?

Race is a social construct and, when we treat it as a substitute for genetic ancestry, it prevents us from investigating and addressing racism, the cause of the racial health disparities. Treating race as a proxy for genetics also actively harms black, brown and Indigenous communities. By treating race as biological, we place the blame of racial disparities on communities already suffering from racism and enforce the racist belief that these communities are genetically inferior.

Additionally, the way we think and talk about race and racial health disparities affects how we perceive and treat patients. Recent research by Brian Donovan presented at the American Association for the Advancement of Science Conference[11,12] showed that merely mentioning the prevalence of certain diseases by race was associated with the belief that race influenced intelligence. A 2016 study evaluating medical students and residents showed that those who believed blacks and whites to be biologically different rated the pain experienced by black patients, in comparison to white patients, as lower and recommended inappropriate treatments[13].

WE USE RACE IN MANY OF OUR MEDICAL CALCULATIONS AND GUIDELINES. THESE MEASUREMENTS (EGFR, ASCVD, ETC.) ARE VERY USEFUL. HOW CAN WE CONTINUE TO USE THESE VARIABLES IF WE DO NOT USE RACE?

Equations ultimately provide estimates and are only as good as the data used to validate and develop them. Medical calculations using race were developed without a clear and consistent definition of race. Also, there is no guidance on how these equations should be used with multiracial people. How should we treat patients with one black and one Asian or one white parent? Which GFR calculation or ASCVD risk score do we use? Which first line blood pressure medication do we start? Does self-perceived identity or external physical appearance matter more when determining race?

IF WE TREAT ALL INDIVIDUALS WITHOUT REGARD TO OBSERVED BIOLOGICAL RACE DIFFERENCES, AREN'T WE DOING PEOPLE OF COLOR A DISSERVICE?

While not biologically real, race has had actual negative biological effects through racism (see epigenetics above for one, but not the only, example). Thus, while it may be necessary to continue to be knowledgeable of the race-based health disparities when screening for disease, it is equally important to avoid attributing these differences to genetic ancestry or immutable biological differences. We, as clinicians and researchers, need to look further than race as the cause for these disparities and identify and address the actual causes of the disparate disease burden and treatment outcomes. Racially disparate treatment and lived experiences result in racially disparate health outcomes. We need to treat the socially-induced racial disparities by addressing racism.

Dr. Okah received a MAFP Foundation Resident Research Grant for her study The Association Between a Color-blind Racial Ideology and the Use of Race in Medical Decision-making.

REFERENCES

1. Roberts, D. E. (2008). Is Race-Based Medicine Good for Us?: African American Approaches to Race, Biomedicine, and Equality. The Journal of Law, Medicine & Ethics, 36(3), 537–545 doi:10.1111/j.1748-720X.2008.302.x

2. Bonham, V. L., Green, E. D., & Pérez-Stable, E. J. (2018). Examining How Race, Ethnicity, and Ancestry Data Are Used in Biomedical Research. JAMA, 320(15), 1533–1534. doi:10.1001/jama.2018.13609

continued on page 18

continued from page 17

3. Cunningham, B. A., Bonham, V. L., Sellers, S. L., Yeh, H. C., & Cooper, L. A. (2014). Physicians' anxiety due to uncertainty and use of race in medical decision making. Medical care, 52(8), 728–733 doi:10.1097MLR.0000000000000157

4. Va. Code § 49 (1887).

5. Jorde, L. B., & Wooding, S. P. (2004). Genetic variation, classification and "race". 36(11), 1–6. doi:10.1034/ng1435

6. Barbujani, G., Magagni, A., Minch, E., & Cavalli-Sforza, L. L. (1997). An apportionment of human DNA diversity. Proceedings of the National Academy of Sciences of the United States of America, 94(9), 4516–4519. doi:10.1073/pnas.94.9.4516

7. Jastaniah W. (2011). Epidemiology of sickle cell disease in Saudi Arabia. Annals of Saudi medicine, 31(3), 289–293. doi:10.4103/0256-4947.81540

8. Colah, R. B., Mukherjee, M. B., Martin, S., & Ghosh, K. (2015). Sickle cell disease in tribal populations in India. The Indian journal of medical research, 141(5), 509–515. doi:10.4103/0971-5916.159492

9. Kuzawa, C. W., & Sweet, E. (2009). Epigenetics and the embodiment of race: Developmental origins of US racial disparities in cardiovascular health. American Journal of Human Biology, 21(1), 2–15. doi:10.1002/ajhb.20822

10. Gapp, K., Bohacek, J., Grossmann, J., Brunner, A. M., Manuella, F., Nanni, P. & Mansuy, I. M. (2016). Potential of environmental enrichment to prevent transgenerational effects of paternal trauma. Neuropsychopharmacology, 41(11), 2749–2758. doi:10.1038/npp.2016.87

11. Donovan, B. (2019) Human Genetic Variation and its Effect on Adolescents Conceptualizing Race, in session "Human Genetic Variation and Education: Not a Socially Neutral Endeavor". American Association of the Advancement of Science, Feb 2019. https://aaas.confex.com/aas/2019/meetingapp.cgi/Session/21348

12. Donovan, BM, Semmens, R, Keck, P, et al (2019). Toward a more humane genetics education: Learning about the social and quantitative complexities of human genetic variation research could reduce racial bias in adolescent and adult populations. Science Education. 103: 529– 560. doi:10.1002/sce.21506

13. Hoffman, K. M., Trawalter, S., Axt, J. R., & Oliver, M. N. (2016). Racial bias in pain assessment and treatment recommendations, and false beliefs about biological differences between blacks and whites. Proceedings of the National Academy of Sciences of the United States of America, 113(16), 4296–4301. doi:10.1073/pnas.1516047113