



HHS Public Access

Author manuscript

Circ Cardiovasc Qual Outcomes. Author manuscript; available in PMC 2022 February 11.

Published in final edited form as:

Circ Cardiovasc Qual Outcomes. 2021 February ; 14(2): e007868. doi:10.1161/
CIRCOUTCOMES.121.007868.

The Groundwater of Racial and Ethnic Disparities Research. A Statement from Circulation: Cardiovascular Quality & Outcomes

Khadijah Breathett, MD, MS,

Division of Cardiovascular Medicine, Sarver Heart Center, University of Arizona, Tucson, AZ

Erica S. Spatz, MD, MHS,

Division of Cardiovascular Medicine, Yale School of Medicine, New Haven, CT

Daniel B. Kramer, MD, MPH,

Division of Cardiovascular Medicine, Beth Israel Deaconess Medical Center, Boston, MA

Utibe R. Essien, MD, MPH,

Division of General Internal Medicine, University of Pittsburgh School of Medicine, PA

Rishi K. Wadhera, MD, MPP, MPhil,

Division of Cardiovascular Medicine, Beth Israel Deaconess Medical Center, Boston, MA

Pamela N. Peterson, MD, MSPH,

Division of Cardiovascular Medicine, University of Colorado, Anschutz Medical Campus, Aurora, CO; Division of Cardiology, Denver Health Medical Center, Denver, CO

P. Michael Ho, MD, PhD,

Division of Cardiovascular Medicine, University of Colorado, Anschutz Medical Campus, Aurora, CO

Brahmajee K. Nallamothu, MD, MPH

Division of Cardiovascular Medicine, University of Michigan, Ann Arbor, MI

Abstract

The Fish. The Pond. The Groundwater. Imagine that you have a personal pond filled with fish. When viewing your pond, you notice that one fish has died, floating belly-up. You decide that the fish must have been ill and think nothing more of it. The next day, you notice that half of the fish in your pond are now dead. You are alarmed and decide to contact the neighborhood management services to investigate your pond. Something must be wrong with the local system. The following day, however, you discover that all of your neighbors with ponds have noticed the same thing. In fact, half of the fish are dead throughout all waterways in the entire state. At this point, it is clear something deeper must be wrong. This is when you need to analyze the groundwater feeding these ponds. The fish are not at fault, and not even the local systems. Rather the underlying structures

Corresponding Author: Khadijah K. Breathett, MD, MS, University of Arizona, Sarver Heart Center, 1501 North Campbell Avenue, PO Box 245046; Tucson, AZ 85724. Phone: 520-626-1416. kbreathett@shc.arizona.edu.

Disclosures: Disclosures provided by Khadijah Breathett, Erica S. Spatz, P. Michael Ho, and Brahmajee K. Nallamothu in compliance with American Heart Association's annual Journal Editor Disclosure Questionnaire are available at https://www.ahajournals.org/pb-assets/policies/COI_09_2020-1600719273583.pdf.

through which the fish seek life has failed. Imagine that instead of fish, we are discussing patients.

1

—Paraphrase of Groundwater Approach Metaphor by Love and Hayes-Greene of The Racial Equity Institute.

When the same patient populations are repetitively suffering throughout the U.S. from disproportionate rates of cardiovascular disease and other forms of disease, we should consider the role that society – i.e., the groundwater – has on the outcome. For too long, racial and ethnic disparities in healthcare quality and outcomes reported by researchers in scientific journals have attributed such differences to individual factors or local systems with less attention paid to the underlying role of societal factors.² Yet health equity will likely remain out of reach if such methods to understand and intervene upon racial and ethnic disparities do not intentionally address entrenched systematic challenges such as structural racism. In a recent article in *Health Affairs*, Dr. Rhea Boyd and colleagues proposed a call to action for scientific journals and the investigators they serve to take a broader perspective and methodically begin to examine structural factors including racism when studying racial and ethnic disparities.³ This is an important piece, and it led us to self-reflection. Scientific journals are a critical component of the groundwater of the research enterprise. In this editorial, we briefly address the role of scientific journals in reporting racial and ethnic disparities and describe our evolving view of best practices for publishing disparities research submitted to *Circulation: Cardiovascular Quality and Outcomes*. As always, this is an ongoing conversation in which we hope to engage with our readership over time to improve the publication process.

“Race is the child of racism, not the father.” Ta-Nehisi Coates^{4,5}

Research on racial and ethnic disparities is a common and critical area of investigation in the health sciences. To best understand such disparities, scientific investigation and reporting need to recognize the historical foundation of race and take care to avoid perpetuating racism. Race is a social, not biological, construct that was designed to separate one population from another.^{2,5} While the use of race has changed over the years – from justifying slavery to currently embedding separatism of economic, academic and political opportunity – race has served to grant additional privileges to certain populations (i.e., “White race”) at the exclusion of others, and this is a global phenomenon.²

Race is rooted in the development of U.S. health structures and healthcare delivery systems.^{2,5,6} For example, low-quality hospitals disproportionately serve Black patients, leading to the risk of poorer quality cardiovascular care.⁷ Additionally, the inclusion of race in risk calculations has been based (or justified) on epidemiological associations of race with outcomes, sometimes resulting in “interpreting racial disparities as immutable facts rather than as injustices that require intervention.”⁸ Some risk calculators may exacerbate disparities by recommending underuse of therapeutic inventions and referrals to cardiologists among Black patients, and has been observed in multiple datasets.^{8,9} Similarly models that use artificial intelligence are at risk for worsening racial disparities by including race as a factor without addressing systemic factors that contribute to racial and ethnic

disparities. When faced with clinical uncertainty during simulations where only patient race varies, clinicians have demonstrated racial bias with recommendations for cardiovascular therapies such as heart catheterizations and heart transplants for White patients but not Black patients.^{10,11}

Racism is the belief that “different races possess distinct characteristics, abilities, or qualities, especially so as to distinguish them as inferior or superior to one another.”¹² Racism has multiple forms including: individual racism – personal belief; institutional racism – legalized and normalized structure of disadvantaging racial groups within an institution; and structural racism – the “normalization and legitimization of an array of dynamics that are historical, cultural, institutional, and interpersonal that routinely advantage White individuals.”^{2,13} With structural racism, one population is offered inherent privilege and benefits over others in a manner that is pervasive throughout society and culture.¹⁴ Structural racism underlies the widespread disparities in health and health outcomes that are ubiquitous in the published literature and thus must be at the forefront of disparities research.¹⁴

Use and misuse of race (and similarly ethnicity) is an important issue for the disparities research that is commonly published in scientific journals. For example, a key first principle for such work relies on measuring race and ethnicity correctly. Ideally this is done by enabling people to self-report race and ethnicity. This not only respects individuals’ identities but provides a means of capturing individuals’ lived experiences, which is critical for understanding and eradicating disparities. Instead, however, individuals and/or populations are often misclassified by administrative measures that may rely on staff labeling individuals based on physical appearance, geography or “ethnic-sounding” names. These approaches are often inaccurate and can be used to make assumptions or even policy that is misguided.¹⁵ In a similar vein, how race is categorized after data collection occurs can also matter. For instance, describing subjects as White versus Non-White upholds a belief that White race is the standard by which all other populations should be measured. While this may not be the intention and may be due to underrepresentation of Black, Indigenous, and People of Color, it reflects tenets of structural racism.

Finally, default attribution of racial and ethnic disparities to genetic etiologies demonstrate misunderstanding of what racial and ethnic populations represent. Race and ethnicity correlate with ancestry, and we do not discount important work being conducted on the role of genetic etiologies in health research. Yet in the absence of specific genetic admixture testing and hypotheses, it would be more constructive to also consider the role of societal factors in explaining observed differences.

Race is associated with so much more than genetics and ancestry, including social determinants of health (e.g., income, education, housing) that also are inextricably linked to systemic and structural racism.¹⁶ This is true not only in North America, but has been demonstrated in similar studies of health disparities across the world.¹⁷ In such studies, the focus should be primarily on the disparity that has been defined by the Institute of Medicine, now National Academy of Medicine, as racial and ethnic differences in the 1) operation of

healthcare systems and legal and regulatory climates and 2) discrimination through bias, stereotyping, and unequal treatment in the setting of clinical uncertainty.²

Best Practices for Scientific Manuscripts on Racial and Ethnic Disparities

Scientists and scientific journals have the opportunity to facilitate best practices and ultimately impact racial and ethnic disparities. The written interpretations of science by a few, shape the future creation of history and science for many – that is, we can change the groundwater. Coinciding with this article, we at *Circulation: Cardiovascular Quality and Outcomes* are promoting forward change with new instructions for authors performing racial and ethnic disparities research. This information is concurrently available at <https://www.ahajournals.org/disparities-research-guidelines>. These are emerging guideposts and represent a small step toward a better direction for our journal and scientific publishing. To supplement these specific author instructions, we also provide more general insights below into how our editorial team has been considering research that tackles these important topics. To be most effective, we have realized that disparities research requires reframing all phases of the research protocol to ultimately achieve cardiovascular health equity. Although the focus is on racial and ethnic disparities, the principles described here may apply to other forms of disparities research (e.g., gender or disability).

1. Develop questions and methodological strategies informed by conceptual frameworks.

Much of published disparities research has been descriptive rather than focusing on mechanisms and interventions to overcome enduring racial and ethnic disparities. To move the field forward requires a better application of conceptual frameworks that get at the underlying structures and processes that lead to disparities. Scientists can consider using frameworks such as the National Institute of Minority Health and Health Disparities Research Framework to develop study questions that consider domains of influence (e.g., behavioral, sociocultural/environmental) with levels of influence (e.g., individual, interpersonal, societal).¹⁸ They can also consider developing questions and methods informed by additional approaches like critical race theory, which is a multidisciplinary anti-racist framework to “identify, understand, and undo the root causes of racial hierarchies.”¹⁹ Other emerging theories may be suitable as well and advance the field.

2. Explicitly describe rationale and classification for inclusion of racial and ethnic patient populations in the methods section.

We now require a clear description of how race and ethnicity were classified within data sources that were utilized. Of course, we recognize that the use of historical data sources may have limitations in some studies. Our goal is not to restrict publishing such work, as this could inadvertently diminish the field. Important work is still possible using this information, but such classifications must be defined. Our aspirational vision of what the future should hold is described in bullet points below.

- Specific, self-identified classifications similar to the 2020 U.S. Census are preferred when available, in which race is assessed separately from ethnicity, multiple choices can be selected, and write-in of specific origin is also offered [Race: American Indian or Alaska Native, Asian, Black or African American,

Native Hawaiian or Pacific Islander, White, and additional write-in descriptions of origin; Ethnicity: Hispanic or Latino and additional write-in descriptions of origin (e.g., Cuban, Mexican)].²⁰

- Potential limitations of existing data sources should also be explicitly described in the article, including whether or not the data is representative of the geographic location.
- Race and ethnicity should be capitalized when described in manuscripts and used as adjectives rather than nouns.
- Black, Indigenous, and People of Color should not be categorized as “Non-White”. Ideally, the use of “Other race” and “Minority race” should be avoided as well since this can perpetuate White race as the standard. Describing the specific racial and ethnic populations are preferred and small population groupings by race/ethnicity should be used sparingly. A need for anonymity would be an appropriate exception.

Lastly, the methods section should describe how race and ethnicity were analyzed in statistical models. In articles not dealing with health disparities directly, reasons for including or not including racial and ethnic populations as covariates in statistical models still should be described. While race and ethnicity are important non-modifiable variables to investigate, their relation to outcomes should be understood and conveyed as associations; causal inferences should be avoided. Too often, authors erroneously assign causal inference for disparities upon Black, Indigenous, and People of Color, which can suggest culpability. The statistical analyses and reporting should align with the selected conceptual model.

3. Form diverse and inclusive study teams and cite their scholarship.

The inclusion of diverse study team leaders and stakeholders who are familiar with the research area can elevate all phases of the research. Decades of community based participatory research and patient-partnered research models underscore how patients, community leaders, and scientists that experience racial and ethnic disparities can provide unique perspectives based on lived experiences while simultaneously sharing knowledge and pushing the field towards equity. Adopting this model into all types of research, including epidemiological investigations and randomized controlled trials would promote more impactful research. As part of this approach, it is also essential to provide comprehensive attribution of prior work of scientists of color, who are often overlooked.²¹ We are considering the opportunity to include voluntary sections within articles that emphasize the goals of inclusiveness for a study akin to a pilot program being deployed at the scientific journal *Cell*.²²

4. Contextualize discussion of results within conceptual frameworks and models.

Conceptual models can identify pathways to equity, and should be included in the methods as above as well as the discussion when appropriate. Authors should focus on helping to move the field forward by identifying contributing factors and strategies for eradicating systemic barriers such as institutional or structural racism. This also means examining social

determinants of health and considering how next-step policies, interventions, and implementation science may promote more equitable health outcomes.

5. Avoid generalized genetic explanations for racial and ethnic disparities.

Racial and ethnic groups are heterogeneous social constructs. We recognize that there is valuable work being done on the role of genetic ancestry and disease. Although race has some correlation with genetic ancestry, it also denotes important information on social determinants of health varying from environmental exposures to socioeconomic wealth to racism and discrimination.¹⁶ We encourage authors to avoid generalized ancestral genetic claims to explain results of social constructs unless the conceptual model specifically focuses on genetic data and addresses heterogeneous heritage and genetic admixture.

Next Steps at Circulation: Cardiovascular Quality and Outcomes

Moving from racial and ethnic disparities to cardiovascular health equity requires better standards and changes from within the journal. As an editorial team, we are interested in working with authors to incorporate these principles into their work and will use these best practices to evaluate future submissions on racial and ethnic disparities research. We hope to inspire more work in the field and know that we will learn important lessons with our authors during this process. We are dedicated to broadening the audience base and will provide additional outlets to promote disparities research through editorials and social media approaches (e.g., CQO Commentators and Twitter Journal Clubs) that involve multiple thought leaders from diverse demographics and disciplines.

Recognizing that achieving cardiovascular health equity requires promotion of diverse talent and ideas, it remains our priority to continue efforts to diversify our authorship, reviewers, and editorial teams. In this way, we have an ask for our authors and reviewers to help us collect appropriate categorizations of race, ethnicity and other intersectional demographics. While this may seem intrusive, it will be completely voluntary and not affect our decision-making around a submission. We view it as necessary to understand who we are and the collective diversity that is represented through our journal. As such, please take time to complete the journal profile form when you submit or review your next manuscript if you agree with this goal. Additional updates that allow for more expansive journal profile demographics from American Heart Association will be coming soon.

We strive for excellence in cardiovascular quality and outcomes. Diverse representation extending beyond disparities research submissions will help us reach these goals at *Circulation: Cardiovascular Quality and Outcomes*. Together and through efforts to change the international groundwater, we will work to achieve cardiovascular health equity for all racial and ethnic populations.

Acknowledgments

Sources of Funding: Dr. Breathett has research funding National Heart, Lung, and Blood Institute (NHLBI) K01HL142848, R25HL126146 subaward 11692sc, and L30HL148881; University of Arizona Health Sciences, Strategic Priorities Faculty Initiative Grant; and University of Arizona, Sarver Heart Center, Novel Research Project Award in the Area of Cardiovascular Disease and Medicine, Anthony and Mary Zoia Research Award; and Women As One.

References

1. Love B, Hayes-Greene D. The Groundwater Approach [Internet]. Racial Equity Institute. 2018 [cited 2020 Aug 7]; Available from: <https://www.racialequityinstitute.com/groundwaterapproach>
2. Smedley B, Stith A, Nelson A. Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care (with CD) [Internet]. Institute of Medicine; National Academies Press; 2003 [cited 2012 Jun 2]. Available from: <https://download.nap.edu/openbook.php?isbn=030908265X>
3. Boyd RW, Lindo EG, Weeks LD, McLemore MR. On Racism: A New Standard For Publishing On Racial Health Inequities | Health Affairs Blog [Internet]. 7 2,2020 [cited 2021 Jan 3]; Available from: <https://www.healthaffairs.org/doi/10.1377/hblog20200630.939347/full/>
4. Coates T-N. Between the world and me. First edition. New York: Spiegel & Grau; 2015.
5. Historical Foundations of Race [Internet]. National Museum of African American History and Culture. 2019 [cited 2020 Dec 1]; Available from: <https://nmaahc.si.edu/learn/talking-about-race/topics/historical-foundations-race>
6. Breathett K, Jones J, Lum HD, Koonkongsatian D, Jones CD, Sanghvi U, Hoffecker L, McEwen M, Daugherty SL, Blair IV, et al. Factors Related to Physician Clinical Decision-Making for African-American and Hispanic Patients: a Qualitative Meta-Synthesis. *J Racial Ethn Health Disparities*. 2018;5:1215–1229. [PubMed: 29508374]
7. Capers Q, Sharalaya Z. Racial Disparities in Cardiovascular Care: A Review of Culprits and Potential Solutions. *J Racial and Ethnic Health Disparities*. 2014;1:171–180.
8. Vyas DA, Eisenstein LG, Jones DS. Hidden in Plain Sight — Reconsidering the Use of Race Correction in Clinical Algorithms. *N Engl J Med*. 2020;383:874–882. [PubMed: 32853499]
9. Breathett K, Liu WG, Allen LA, Daugherty SL, Blair IV, Jones J, Grunwald GK, Moss M, Kiser TH, Burnham E, et al. African Americans Are Less Likely to Receive Care by a Cardiologist During an Intensive Care Unit Admission for Heart Failure. *JACC Heart Fail*. 2018;6:413–420. [PubMed: 29724363]
10. Schulman KA, Berlin JA, Harless W, Kerner JF, Sistrunk S, Gersh BJ, Dubé R, Taleghani CK, Burke JE, Williams S, Eisenberg JM, Escarce JJ. The effect of race and sex on physicians' recommendations for cardiac catheterization. *N Engl J Med*. 1999;340:618–626. [PubMed: 10029647]
11. Breathett K, Yee E, Pool N, Hebdon M, Crist JD, Knapp S, Larsen A, Solola S, Luy L, Herrera-Theut K, Zabala L, Stone J, McEwen MM, Calhoun E, Sweitzer NK. Does Race Influence Decision Making for Advanced Heart Failure Therapies? *J Am Heart Assoc*. 2019;8:e013592. [PubMed: 31707940]
12. Racism | Definition of Racism by Oxford Dictionary on [Lexico.com](https://www.lexico.com/en/definition/racism) also meaning of Racism [Internet]. Lexico Dictionaries | English. 2021 [cited 2021 Jan 7]; Available from: <https://www.lexico.com/en/definition/racism>
13. Lawrence K, Keleher T. Chronic Disparity: Strong and Pervasive Evidence of Racial Inequalities [Internet]. Berkeley, CA: 2004. [cited 2021 Jan 11] Available from: <https://www.intergroupresources.com/rc/Definitions%20of%20Racism.pdf>
14. Churchwell Keith, Elkind Mitchell S.V., Benjamin Regina M., Carson April P., Chang Edward K., Lawrence Willie, Mills Andrew, Odom Tanya M., Rodriguez Carlos J., Rodriguez Fatima, et al. Call to Action: Structural Racism as a Fundamental Driver of Health Disparities: A Presidential Advisory From the American Heart Association. *Circulation*. 2020;142:e454–e468. [PubMed: 33170755]
15. Eicheldinger C, Bonito A. More Accurate Racial and Ethnic Codes for Medicare Administrative Data. *Health Care Financ Rev*. 2008;29:27–42. [PubMed: 18567241]
16. Borrell LN, Elhawary JR, Fuentes-Afflick E, Witonsky J, Bhakta N, Wu AHB, Bibbins-Domingo K, Rodríguez-Santana JR, Lenoir MA, Gavin JR, et al. Race and Genetic Ancestry in Medicine — A Time for Reckoning with Racism. *N Engl J Med*. 2021;0:null 10.1056/NEJMms2029562.
17. Anderson I, Robson B, Connolly M, Al-Yaman F, Bjertness E, King A, Tynan M, Madden R, Bang A, Coimbra CEA, et al. Indigenous and tribal peoples' health (The Lancet–Lowitja Institute Global Collaboration): a population study. *Lancet*. 2016;388:131–157. [PubMed: 27108232]

18. NIMHD Research Framework [Internet]. NIMHD. 2018 [cited 2021 Jan 4]; Available from: <https://www.nimhd.nih.gov/about/overview/research-framework/research-framework.html>
19. Ford CL, Airhihenbuwa CO. Commentary: Just What is Critical Race Theory and What's it Doing in a Progressive Field like Public Health? *Ethn Dis*. 2018;28:223–230. [PubMed: 30116090]
20. Marks R, Jones N. Collecting and Tabulating Ethnicity and Race Responses in the 2020 Census [Internet]. 2020 [cite 2021 Jan 4] Available from: <https://www2.census.gov/about/training-workshops/2020/2020-02-19-pop-presentation.pdf>
21. Ginther DK, Basner J, Jensen U, Schnell J, Kington R, Schaffer WT. Publications as predictors of racial and ethnic differences in NIH research awards. *PLOS ONE*. 2018;13:e0205929. [PubMed: 30427864]
22. Sweet DJ. New at Cell Press: The Inclusion and Diversity Statement. *Cell*. 2021;184:1–2. [PubMed: 33417857]