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We Should Abandon "Race" as a Biological Category in Biomedical Research

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In 2019, the American Association of Physical Anthropologists issued a statement on biological aspects of race, concluding that *"pure races, in the sense of genetically homogenous populations, do not exist in the human species today, nor is there any evidence that they have ever existed in the past."* The statement continues: *"... The only living species in the human family, Homo sapiens, has become a highly diversified global array of populations. The geographic pattern of genetic variation within this array is complex, and presents no major discontinuity. Humanity cannot be classified into discrete geographic categories with absolute boundaries... Partly as a result of gene flow, the hereditary characteristics of human populations are in a state of perpetual flux. Distinctive local populations are continually coming into and passing out of existence."*[1]

Certainly, groups of people living in separated geographic regions differ statistically in certain genetic traits, but these genetic differences are a property of local human populations and do not indicate "races." Genetic ancestry is not the same as "race."[2]

Although the National Institutes of Health still require research results to be reported by race and/or ethnicity,[3] the National Human Genome Research Institute states: *"Race is a fluid concept used to group people according to various factors including, ancestral background and social identity.... Race is an ideology and for this reason, many scientists believe that race should be more accurately described as a social construct and not a biological one."*[4]

Despite the evidence that biological races do not exist in the human species, categorizations based on a "self-definition of race" are abundant in medical studies, and many medical practitioners do still believe that they are informative regarding the biology of patients.

Some scientists use "race" to compare between arbitrary groups of patients and to get insights into pathomechanisms for disease or for individualized treatment. One such example, BiDil, a combination drug of isosorbide dinitrate and hydralazine had been found to reduce mortality in African-American patients with heart failure and was the first drug to be licensed for the use in this particular group. The study widely stirred criticism and disapproval by the scientific community.[5–7] It is problematic when secondary analyses with respect to "race" lead to the misinterpretation that biological differences are the true cause for differential health outcomes, when only correlations were identified in these studies. We suggest that "racial" differences in health outcomes are instead frequently a result of multiple testing or reflect sociodemographic causes that are wrongly interpreted as biological. By including "race" in the assessment of basic data and by considering it in subsequent health care choices, race-based medicine is propagated.[8] Without a clear understanding of the causes of racial differences in outcomes in a specific health context, it is not adequate to adapt different treatment recommendations. Doing so can harm patients and exacerbate health inequalities.

African American and White women, for example, seem to differ in the likelihood to develop urinary incontinence and pelvic organ prolapse,[9,10] but the causal mechanism behind this pattern is unclear. Studies often featured small sample sizes and did not account for potential confounding variables that were nonbiological. Nevertheless, results were usually interpreted as caused by a different biology between the human "races."

In the United States, African-American women have higher cesarean section rates than White women. The vaginal-birth-after-cesarean (VBAC) algorithm[8,11] predicts a lower likelihood of successful VBAC for women who identify as African American. Although other variables, for example, insurance type, also correlate with successful VBAC in this study, they were not included in the final algorithm. "Race" was included, suggesting a biological interpretation without a theory or enough evidence to support this. Because of the known benefits of a VBAC, application of such algorithms could worsen the health of African Americans, who already experience a much higher maternal mortality.[8]

We do not reason, however, that medicine should ignore differences between groups of humans. "Ethnicity," a term that pronounces the social and cultural background of a person, rather than "race"

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could be assessed, if the research question addresses disparities in health outcomes between socially different groups, and if there is a hypothesis for a plausible causal mechanism. In such research, the study aim has to be mentioned upfront and it has to be addressed with an appropriate study design as well as with thorough statistical methods. In some cases, causal mechanisms, for example, specific genotypes, which explain differences in disease frequency between groups, have been identified (eg, BRCA mutations for breast cancer and mutations of the β-globin gene for sickle cell anemia). However, these diseases do not align with "racial groups" but are linked to particular genotypes, which may be more or less frequent in certain populations.

Although race as a biological category is meaningless, "race" as a social construct is very real.[12] Socially defined categories of "race" have influenced human life for centuries and, therefore, have far-reaching consequences. It is racism, not "race," that causes differences in health outcomes between racial groups.[13]

Because "race" is not a biological category, using it as a means to subdivide the human species in biomedical research is useless because it tries to falsely explain differences in outcomes as a consequence of biological properties.

Biologists, anthropologists, and geneticists do not see evidence to subdivide the human species into racial groups.

The categorization of humans into biological "races" has not, does not, and most probably will not lead to valuable insights for the biomedical scientific community.

Continuing to use this arbitrary subdivision will lead to misleading and wrong findings and will cement a divide that does not naturally exist. Instead, it will rigidify cultural and political divides and contribute to conflict.

Using "race" as a means to subdivide the human species into biological categories should be abandoned.

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