Race, ethnicity, and racism in the nutrition literature: an update for 2020

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ABSTRACT
Social disparities in the US and elsewhere have been terribly highlighted by the current COVID-19 pandemic but also an outbreak of state-sponsored violence. The field of nutrition, like other areas of science, has commonly used 'race' to describe research participants and populations, without the recognition that race is a social, not a biologic, construct. We review the limitations of classifying participants by race, and recommend a series of steps for authors, researchers and policymakers to consider when producing and reading the nutrition literature. We recommend that biomedical researchers, especially those in the field of nutrition, abandon the use of racial categories to explain biologic phenomena but instead rely on a more comprehensive framework of ethnicity; that authors consider not just race and ethnicity but many social determinants of health, including experienced racism; that race and ethnicity not be conflated; that dietary pattern descriptions inform ethnicity descriptions; and that depersonalizating language be avoided.

Keywords: Race, racism, ethnicity, research methods, social determinants of health

Text

Recent debate about the role of race in society has been stimulated in particular by the coronavirus disease 2019 (COVID-19) pandemic and by episodes of state-sponsored violence and murder (1). These have highlighted persistent social inequities, and have reinvigorated the discussion about race and racism in biomedical research. Indeed, racial scapegoating during the current pandemic has been noted (2). As with other pandemics, research studies have reported racial/ethnic disproportions in case fatality rates globally, with clear inequities in the United States and Europe (3). Higher COVID-19–related mortality and hospitalization rates have been observed among members of African-American, Latinx, and other minority groups (4), and have been attributed to various biologic, socioeconomic, and behavioral factors (5), but none has been definitively proven. Indeed, the difficulty of identifying exactly what underlies such differential susceptibility to COVID-19 highlights the limited understanding we have of the population variability that has traditionally been approached through the lens of race/ethnicity.

Like many other branches of science, nutrition has a long history of utilizing broad categorizations of people when designing research studies and interpreting the findings. Geographically, for example, populations may consume very different diets and occupy very different environments, and understanding the variable health consequences is a key aim of clinical and public health nutrition. In this situation, it is essential to describe where the study took place, and who participated.

For decades, the concept of “race” has been commonly used to categorize research participants—though this applies in particular to scientists in the United States—and in recent decades the term has been rejected by many scientists in favour of other approaches. The application of race in scientific research is increasingly understood to be problematic. The reality of race lies not in human biology itself, but in human society: it is fundamentally an issue of how we treat people.

In this piece, we discuss how we can best move forward in addressing the issue and effects of race in the nutrition literature (6). While the medical literature is rife with examples of differences in health outcomes based on racial categories (7), the nutrition literature also contains numerous examples of works in which race has been invoked to explain differences in body composition (8), anti-oxidant status (9), dietary intake (10), propensity to obesity (11), diabetes (12), glucose homeostasis (13), cardiovascular diseases (14), the small yet “fat” fetus (15), and many other outcomes, though we note that the same biological variability could also be approached through other interpretative frameworks. We review the limitations of classifying research participants by race, and recommend a series of steps for authors, researchers, and policymakers to consider when producing and reading the nutrition literature. Our overriding argument is that the terms “race” and “racial” have no well-founded biological or physiological meaning (16), and that when referring to population variability they should be augmented by, or discarded in favor of, other terms that provide more informative ways to assess both population differences in health and the impact of the practice of racism and similar discrimination on health outcomes.

Limitations in the Use of Race and Ethnicity Data

The fact that the term race has been widely used in biomedical research and practice may appear to give it scientific validity. In order to understand how problematic the term is, we briefly review several ways in which the term race provides an inaccurate understanding of population differences.

Reliance on race as a biological variable

Because race is generally, though often only loosely, attributed to physical phenotype (e.g., skin color, facial and hair features, among others) (17), there is a mistaken tendency to see "racial" characteristics as biological features of a person or population. A long history of misguided attempts to attribute race to biology exists (18), and at worst these have historically supported claims of racial superiority, racial purity, apartheid, and genocide (19, 20). Even when such overt claims are absent, medical students and residents have persistent, erroneous concepts about physiologic differences between populations categorized along racial lines (21). It is important to understand that the concept of race emerged as a socio-political concept both to classify humans and to justify a group's dominance over another (22). The term race is generally applied to very large proportions of humanity, and there is inevitably huge genetic variability within any such single grouping, while at the same time any genetic differences between groupings are trivial relative to the equivalent genetic similarities (23, 24). Indeed, some authors have proposed that current genetic science has made the concept of race obsolete (25). Thus, race is a social construct (26), not a biologic construct, and should be treated accordingly.

We should note, however, that the concept of race still has a critical role to play in the literature linking the experience of racism with a range of biologic, social, psychologic, and myriad other health-related outcomes (7). In the nutrition and metabolism field, for example, exposure to racism has been associated with hypertension (27), obesity risk (28), telomere attrition (29), and epigenetic ageing (30). Moreover, the literature around health inequities clearly shows that a person's experience of race and ethnicity has a large role to play in his/her quality and quantity of life.

Reliance on race as a reliable and static variable

Despite the provision of a fixed number of racial and ethnic categories by documents from the US Government, National Institutes of Health (31), and other agencies, these categories are limiting, are incomplete, have varied over time, and are closely associated with changing political objectives (32). Individuals commonly identify among several ancestral and ethnic groups, and in doing so often invoke more specific terms relating to geography, nationality, or language. Self-identification of racial groups has proven difficult: the criteria and norms have changed over time and, as discussed above, are too broad to be scientifically useful (33). The understanding of "Whiteness" has also evolved over time, with some groups originally discriminated against subsequently being included within this categorization (34).

Lack of clarity on methods used to categorize race

While self-identification has been the most common method in recent periods to determine race, racial categories have variously been assigned to research subjects by investigators, medical examiners, hospital admitting clerks, and others (6), generating further opportunities for prejudice and misclassification to impact scientific data.

Use of race as a proxy for social class

One author has noted that US researchers are more likely to describe subjects in term of race rather than social class, as more commonly done in Canada and the United Kingdom (35). While categorizations of race with socioeconomic status and social class are moderately correlated in the United States, it is important to take a more nuanced approach, for racial prejudice compounds socioeconomic barriers to health care and services (36). Racial discrimination can lead directly to economic inequalities, so exposure to such stresses, as well as social class itself, merit assessment in research studies.

Conflating race and ethnicity

The American Journal of Clinical Nutrition has recently recommended that the term "race" be used to describe racial categories based on physical appearance; "ethnicity" to describe traditions, lifestyle, language, diet, and values; and "ancestry" to describe ancestry informative markers based on genetic or genomic data (17). We commonly receive papers where subjects are described as "European" or "English" or "Hispanic," without any indication of how these terms were defined or how they were determined to apply to the subjects described. Certainly the association of diet and culture with ethnic categories is an area of interest to the broader nutrition field, and may in part underpin the relationships between ethnicity and nutrition and health outcomes. We revisit below how a more comprehensive approach can resolve these problems.

Race and Racial Discrimination

If race is not a valid biological concept, how and why should we use this concept in the scientific literature? Clearly, the issue of race looms large in society because it has such profound effects. Many of these effects materialize through broader social interactions, but being categorized as a particular "race" may also directly affect access to and the nature of medical treatment, as for example where algorithms incorporating such a term are used (37).

More generally, individuals may be subject to many forms of racial discrimination, which can profoundly affect many traits relevant to nutritionists. Discrimination affects the physical and social environments in which people live; their access to healthy diets; their exposure to commercial pressures to consume unhealthy commodities, such as tobacco and alcohol; and their opportunities for healthy behaviors, such as physical activity (38–40). Activation of the stress response has a wide range of metabolic effects that may interact with the above factors, and may influence a wide range of exposures or outcomes in nutritional studies (41–43). For these reasons, it is not appropriate to discard the issue of race from nutrition research, but rather to develop a new approach to address it constructively.

A new approach to biological variability

We need a new comprehensive framework through which to address the many different components of biological and behavioral variability that drive or emerge from differential nutritional outcomes. Such a framework can be provided by the concept of ethnicity: a composite marker of biology and identity that is better placed to handle the complexity of human variability. In the United States, ethnicity has widely been considered synonymous with cultural identity, which in turn has been contrasted with a gene-based concept of race.

However, a much broader conceptualization of ethnicity allows many levels of biology to be taken into account. A review of ethnic variability in cardiovascular risk by Chaturvedi (44) provides a valuable example of how many different aspects of biology and behaviour can be explored, without use of the term "racial."

While the notion of race as a primordial, fundamental trait, widely attributed to genotype, should be discarded, this does not mean that genetic ancestry itself is irrelevant to nutritional health (45). However, genetic variability is only 1 of many biological mechanisms that are important, while a range of components of behavior and culture also merit attention. **Table 1**, updated from Wells (46), lists a wide range of "levels of biology" relevant to cardiometabolic health, where evidence exists for ethnic differences in relevant traits. It should be readily apparent that with the exception of genotype, every other component of variability may incorporate the consequences of experiencing racial discrimination, as well as other relevant environmental factors.

Recommendations

Given these limitations in the use of race as a descriptive variable in much of the nutrition and medical literature, and the fact that race alone has limited biologic relevance to outcomes of interest (with the critical exceptions noted above related to the experience of racism and the documentation of health inequities), we recommend the following (and have amended our instructions to authors accordingly).

<u>Biomedical researchers, especially those in the field of nutrition, should abandon the use of racial categories to explain biologic phenomena</u>

As noted above, race is a social construct which has no clear relationship to biology or physiology. We stress again that we are not claiming that disease incidence, prevalence, and outcomes are equivalent among groups that have undergone different lived experience within racialized societies: they are most obviously not. Nor are we denying the importance of experienced racism and racial discrimination on explaining differences in health and nutrition outcomes: this is clearly the case, too. Nor are we claiming that the widespread practice of assigning race to an individual is not an important social determinant of health: it is a crucial determinant. What we are instead saying is that researchers who use race as an explanatory variable in their analyses, either as an implied genetic variable or without exploring other social variables, are using a variable whose measurement, as noted above, has questionable validity and reliability. In addition, researchers need to be aware that such practices may perpetuate certain stereotypes. "Scientific use of a social category may be interpreted as endorsement of its validity" (65). As noted above, race alone can rarely, if ever, be relied upon as a biologic explanation for nutritional diseases, dietary patterns, or health or nutrition outcomes. At the level of mechanism, nongenetic mechanisms such as epigenetic variability, intergenerational effects, and differences in the microbiome should be taken into consideration.We therefore encourage a broader conceptual approach, based principally on ethnicity.

<u>Social determinants of health are not limited to race and ethnicity</u>

Race and ethnicity are important factors, but other determinants of health include sex, socioeconomic status, social class, education, housing, income, occupation, employment

status, immigration status, legal status, language use, disability status, and others (66). More comprehensive description of a population's social class and status may well relate more closely to health and nutrition outcomes than race (67). In turn, the nutrition literature should explore how a population's race and experience of racism determine these other factors. For instance, if racism limits a group's ability to live in a neighbourhood with a walkable environment and access to nutritious foods, and obesity rates are higher in that population, is that fact related to the group's race or to systemic racism? Detailed descriptions of research subjects' social and other characteristics are often indicated, and should be more widely explored.

When race or ethnicity are characterized, specify the method with which these classifications were made

Examples of classification methods can be self-report, parent report, defined by other observers, or categorized by governmental organizations; each has obvious shortcomings. A succinct explanation of these methods is important for replication purposes, and to the integrity of the scientific method.

Full descriptions of ethnic background may well include dietary pattern descriptions

As noted above, dietary patterns are often associated with cultural patterns and personal/communal identity, and indeed help contribute to sense of self, as well as community. Describing these differences among different groups, and any associations with health outcomes, remains an important goal of nutritional epidemiology. It should be noted that some prospective cohorts that have been influential in linking diet and disease may lack substantial racial and ethnic diversity [the first Nurses' Health Study cohort was 97% self-reported as white, whereas the third nurses' cohort is 14% "racial or ethnic minority" (68)]. Larger, more representative cohorts are needed, as well as cohorts from low- and middle-income countries.

Words matter

Authors and journals should avoid pejorative terms to describe individuals or groups, stigmatizing language, and the use of depersonalizing plural nouns ("Blacks," "Asians," etc.) (6). This is analogous to the realization in the medical literature more broadly that describing people as "diabetics" (69) or "obese" or "non-compliant" has adverse consequences to communication and does not foster a patient-centered attitude. Use of "White versus non-White" comparisons may carry the erroneous assumption that White subjects are normative. Moreover, labels as seemingly specific as "Chinese adult men," "African-American children under age 5 years," or "adult members of the Yoruba people" encompass literally millions of individuals with complex and nonuniform social and health statuses (24).

Conclusion

As editors, authors, and researchers ourselves, we realize that we have made many of these same errors noted above. With this piece, we hope to raise consciousness about how the routine use of race in the nutrition literature might reflect or promote systemic racism, whereas instead our goal should be to highlight racial inequities that should be vigorously opposed (70). Realization of the inherent limitations and possible adverse consequences of

our routine characterization of research populations along limited and imperfect racial categories, as well as the commitment to not conflate race with biology, can be a step in the nutrition community bending the proverbial arc of history towards justice.

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TABLE 1 Components of ethnicity relevant to variability in cardiometabolic risk, with examples

Biological component	Example
DNA content	Frequency of ApoE polymorphism (47)
Gene effect	Physiological effect of FTO gene (48)
DNA expression	Global DNA methylation (49)
Life history	Growth and maturation patterns (50)
Biological ageing	Telomere attrition (51)
Morphology	Body composition (52)
Proteomics	Protein markers of cardiovascular disease (53)
Microbiome	Genetic variability of the biota (54)
Biochemistry	Inflammatory response (55)
Physiology	Blood pressure (56)
Behavior	Physical exercise (57)
Physical environment	Quality of urban environment (58)
Social environment	Social support networks (59)
Education	Educational opportunities and attainment (60)
Access to health care	Bureaucratic procedures (61)
Health care	Clinical management (62)
Commercial pressures	Targeting by commercial companies (38)
Exposure to discrimination	Negative targeting of identity (63)
Values and beliefs	Values and beliefs relating to foods (64)

ApoE, apolipoprotein E; FTO, fat mass and obesity-associated protein.