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Reporting of Race, Ethnicity, and Ancestry Remains Inadequate in Kidney Research

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INTRODUCTION

Guidance for the use of the terms race, ethnicity, and ancestry has been proposed and many journals have developed guidelines (Figure 1). Race is a complex sociopolitical construct representing the composite of skin color, social elements, and perceived differences.[1] Race has been used to divide individuals into groups, which has fueled racism, and led to systematic racial discrimination in health care.[1] On the other hand, the measurement of disparities between groups is the only way to recognize their existence.[1] Ethnicity represents the common values, cultural norms, and behaviors of people who are often linked by a shared culture, religion, nationality, geography, or language.[1] Self-reported race and ethnicity can align but can also be discrepant. For example, an individual may report Black race, but Jamaican ethnicity. Individuals may also have difficulty assigning themselves to one specific group, and self-reported answers can differ depending on the categories offered. In contrast, ancestry is a biological quantitative trait representing the shared genetic inheritance from common ancestors.[1] Measurement of ancestry is frequently done with genome-wide genotyping and statistical techniques such as principal components of ancestry to create continuous measures of genomic variation that may assign individuals to groups or remain as quantitative traits.[1–3] The terms "race", "ethnicity", and "ancestry" are often used interchangeably and inaccurately which can lead to misinterpretation and perpetuate systemic racism.[1]

Assessment of the use of race, ethnicity, and ancestry is particularly pressing in kidney research. The removal of the African American race adjustment from the Chronic Kidney Disease Epidemiology creatinine-based estimated glomerular filtration rate equation brought the issue to the forefront.[4] Treatments for apolipoprotein L1 nephropathy are being tested but will only apply to individuals with apolipoprotein L1 G1 and G2 risk alleles. These risk alleles only exist in individuals with African ancestry, but cryptic or unknown ancestry may lead to individuals with apolipoprotein L1 risk alleles without having self-identified as Black race or of African ethnicity. Further, genetic testing in nephrology is rapidly growing, and the prevalence of variants of uncertain significance varies between ancestries.

We sought to systematically evaluate how the terms race, ethnicity, and ancestry were utilized in kidney research; and examine if factors in the design and delivery of research were associated with the use of the terms.

RESULTS

Of 214 screened articles, 140 articles were eligible (Supplementary Figure S1, Supplementary Table S1). Sixty-nine studies (51%) had corresponding authors from the United States of America. Ninety-one studies (67%) involved participants of multiple ancestries, but White race or ethnicity represented most participants in 104 studies (77%). Race was used in 91 studies (67%), ethnicity in 66 (49%), and ancestry in 20 (15%). Among the 98 studies that incorporated either race or ethnicity, 49 (47%) employed both terms. In the 20 studies using ancestry, 7 (35%) used the term exclusively (Supplementary Table S2). Despite 49 of the 135

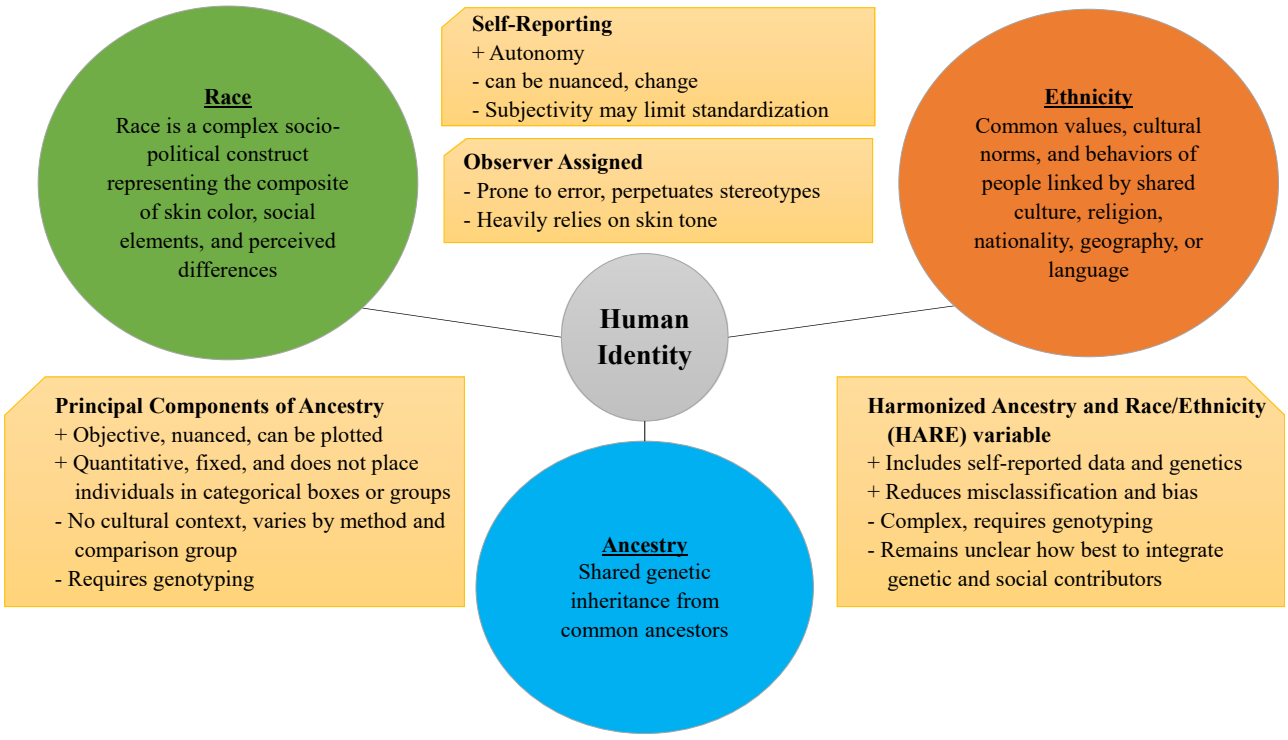

Figure 1. Definitions of race, ethnicity, and ancestry and methods for collection. Terms are defined within the circles and ascertainment methods are provided in boxes with pros and cons indicated by a "+" or "−", respectively.

included studies (36%) specifically examining the impact of race, ethnicity, or ancestry on a study outcome, only 2 studies defined race, and no studies defined ethnicity or ancestry (Supplementary Tables S2 and S3).

In the 50 trials included, 32% did not use any of the terms race, ethnicity, or ancestry in the text or Table. (Supplementary Table S3). There was a tendency for trials to use race (29 studies [58%]) or ethnicity (17 studies [34%]), and no trials used the term ancestry. None of the trials provided a definition or method of collection of the terms. In studies from the United States, race was more commonly used than ethnicity (64 [93%] vs. 43 [62%]); whereas in studies originating from outside the United States, a smaller proportion used race over ethnicity (27 [41%] vs. 23 [35%]).

Examining all publications, not just those using the terms "race," "ethnicity," or "ancestry", the terms were present in less than 10% of publications from nephrology journals, and their use has remained essentially unchanged from 2003 to 2023 (Supplementary Figure S2).

DISCUSSION

We found race, ethnicity, and ancestry to be inadequately reported in kidney research. Race was the most frequently used term, whereas some studies adopted a combined "race/ethnicity" category. Among studies that reported their approach for collecting race or ethnicity data, self-reporting was the most common ascertainment method. Previous reviews highlighted the misuse and confusion surrounding the conflation of race and ethnicity in medical literature.[5] Omission of the method of participant race, ethnicity, or ancestry ascertainment was highlighted in a 2006 review, and our work indicates little improvement over the years.[6] In general, the reporting of race, ethnicity, and ancestry has been insufficient for decades, and despite recent attention to the topic and guidelines for reporting race, ethnicity, and ancestry in high-impact journals (Supplementary Table S4), our work suggests that a significant need for improvement remains.

Differences between populations arose from societal and historical factors, and different populations are much more alike than they are different, because any 2 people are approximately 99.9% the same genetically.[1] However, quantitative traits and disease predisposition are influenced by inherited ancestral genetics. In genomic and biomarker studies, it is standard practice to adjust analyses for principal components of ancestry.[2,3,7] The National Academies of Science, Engineering, and Medicine generated a detailed and insightful framework for the integration of population descriptors into genetics and genomics research.[7] Harmonized ancestry and race/ethnicity variables amalgamate genetically inferred ancestry with self-reported race and ethnicity.[8] Harmonized

ancestry and race/ethnicity could help reduce misclassification by incorporating social and socioeconomic contributors to race and ethnicity while also including genetic ancestry, resolving potential discrepancies.[1,7,8] Genetic ancestry is a continuum, and individuals and the human population cannot be divided into discrete biologically meaningful groups or categories.[7] Race, ethnicity, or skin color should not be used as a proxy for genetic susceptibility to disease. As demonstrated in population scale biobanks, quantitative assessment of ancestry and biomarkers is feasible at scale.[9]

Beyond nephrology, the need to improve ancestral diversity in genetics and genomics research is recognized. The $2 billion "All of US" research program was developed with the specific goal of improving the representation of diverse populations in genomic studies.[9] Despite laudable goals, publication of its flagship paper in Nature raised controversy that its Uniform Manifold Approximation and Projection representation of the genetic information of participants supported genetic essentialism the incorrect belief that racial or ethnic groups represent distinct categories. Alternatively, ignoring differences between individuals reduces precision and can exacerbate disparities. The collection of self-reported ethnicity is essential to identify and support disadvantaged communities. In contrast, despite proposals for change, French and German researchers are currently prohibited from collecting a person's racial or ethnic origin.

Given the attention to removing the race adjustment factor from the estimated glomerular filtration rate equation in 2021, the importance of an ancestry-specific genetic risk factor in apolipoprotein L1, and the rise of NephroGenetics, nephrology should be a leader in adopting adherence to race, ethnicity, and ancestry recommendations. There have been significant efforts to improve the reporting of sex and gender variables in nephrology research. An interesting parallel can be drawn between self-reported gender and genetically determined biological sex and self-reported ethnicity and genetically determined ancestry. As barriers to measuring genetic ancestry continue to reduce, perhaps the future of kidney research should be the inclusion of harmonized ancestry and race/ethnicity variables through a mix of self-reported ethnicity and genetically quantified ancestry in all studies.

Our findings highlight the need for standardized definitions and improved reporting practices for race, ethnicity, and ancestry in nephrology research. Appropriate use of race, ethnicity, and ancestry in kidney research is essential for avoiding systemic racism and the identification of accurate and robust findings.

DISCLOSURE

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SUPPLEMENTARY MATERIAL

Supplementary File (PDF)

Supplementary Methods. Search strategy

Figure S1. PRISMA diagram.

Figure S2. Evolution of the use of the terms race, ethnicity, and ancestry has not changed from 2003 to 2023.

Table S1. Characteristics of included studies.

Table S2. Race, ethnicity, and ancestry in the included studies.

Table S3. Nomenclature separated by study type and region.

Table S4. Guidelines on reporting race, ethnicity, and ancestry in high impact nephrology journals as of June 10, 2024.

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