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Implications of racial distinctions for body composition and its diagnostic assessment[1,2]

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In a truly just and equitable society, the welfare of all would be fulfilled. In a "colorblind" society, the health and nutritional needs of few would be satisfied. A conservative trend toward "colorblindness" in the public and political domain (eg, efforts to end affirmative action) emanates from tactics to hide the social stratification barriers that continue to preclude the full achievement of equity. Public health scientists and social epidemiologists entertain colorblindness as a defense against nonsensical ethnic comparisons that might, inadvertently, perpetuate rather than help to redress effects of racism (1). However, colorblindness denies the reality that people do come in different shades and that these shades have been a basis for much social stratification and discrimination—often with a premium on being lighter-skinned or white (2).

In their comprehensive review article in this issue, "Measures of body composition in blacks and whites: a comparative review," Wagner and Heyward (3) have done a service for the readership by highlighting differences in various measures of body composition between people designated as 'black' or 'white.' By reviewing, accepting, and publishing the treatise, the Journal has also served its readers well with respect to fostering a continued discourse on this troublesome issue of how 'race' influences the science and applications of nutrition. "Race is inconvenient for objectivity-seeking scientists, because it is an ill-defined, misused, and politically-charged concept (2)." Nevertheless, as we noted previously (4–6), being able to entertain—with eyes wide-open and with rigorous methods—scientific hypotheses about differences between people of European and African heritage has important, enduring public health implications. Avoiding the issue of race or approaching racial issues timidly might make for convenient politics, but it may result in bad science and even worse policy.

Wagner and Heyward (3) portray the ambiguities in the interplay among evolving body-composition techniques and different amounts and densities of fat, muscle, and skeleton across 'races' in black and white relief. On close reading, their point is not so much that blacks and whites are different, but that the way that body-composition techniques are used requires more attention to human diversity. They acknowledge that the monolithic classifications of whiteness and blackness obscure biological experiences and differentiation, and that the concept of distinct (ie, genetically homogenous) racial subgroups among humans has now been rejected in the field of anthropology.

It is worth commenting further on what these observed differences between blacks and whites might actually signify on a strictly biological level. For example, most of the studies reviewed by Wagner and Heyward contrast blacks and whites from North America, yet to generalize the findings from US black and white subpopulations to those of Europeans and Africans is too far a stretch of the scientific imagination. Cross-cultural studies within populations of African descent cited by Wagner and Heyward (3) show clearly that 'black' subjects in the United States are not identical to their contemporary Caribbean and West African brethren.

Migrations are seldom random processes. The Irish who immigrated to US shores during the potato famine of the 1840s were not a representative cross section of the Emerald Isle, but constituted predominantly the landless rural peasants. How much less representative of the West African peoples of the 17th and 18th century, then, were those who survived the slaving experience of capture, processing, and transport to finally arrive and reproduce in the New World? It is estimated that 2 out of 3 persons died during this passage! We do not understand the exact survival characteristics that responded to the selective pressure of enslavement, but they surely must have existed. Furthermore, we have the legendary practice by slaveholders of selective access to mating in an attempt to maximize the traits favoring efficiency in the field activities of plantation life. Strength and endurance, presumably rooted in components of lean body mass, were the premium features in this selection.

The US Census Bureau once attempted to capture the reality of admixture between people of African and European descent by including the designation mulatto (a person who was three-eighths to five-eighths black), quadroon (a person who was one-quarter black), and octoroon (a person who was one-eighth black) (7). However, throughout most of American history, the conventional "racial" semantics have favored a binary schema in which people with any identifiable proportion of African ancestry were classified as 'black' and in which a rather heterogeneous set of light-skinned people were classified as 'white' (7). Thus, what began as the stark polarization of "freeman" or "slave" in colonial America has remained in binary terms throughout postbellum history. This lumping of all people with any African ancestry

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together as 'blacks'—although not done universally, eg, in Brazil—has never been challenged successfully in the United States, perhaps because of a fundamental resistance to acknowledging that admixture has occurred between people of African and European descent from slavery onward. As a reminder, we have the recent controversy over whether Thomas Jefferson's descendants from his slave consort should be admitted to the Jefferson family burial grounds to eternally rest beside descendants of his Anglo, patrician wife. The Howard University sociologist E Franklin Frazier, a prominent dissenter of binary polarization, proposed the 3 classifications *black* proletariat, *brown* middle class, and *yellow* aristocracy (8). This classification system, while capturing a real stratification within the African-American population, was also a not-so-subtle commentary on the direct relation of admixture with European blood to social status. The binary classification may be salient for describing the effective social meaning of 'race' in US society—privilege associated with not having and disadvantage associated with having African ancestry.

Wagner and Heyward's (3) comments about Chaldeans as a Middle Eastern population classified as white but with body-composition variables similar to those of blacks, and about the variable results from comparisons of leptin concentrations within and across ethnic groups, point to the fallacy of assuming that 'blacks' and 'whites' are genetically homogeneous. They note that they cannot account for the "dilution factor," ie, that the conventional classification is really a proxy for 'European white' and 'other' ('nonwhite') and that socioeconomic and lifestyle factors also influence many body-composition variables. Not mentioned is the additional need to consider deviations among US blacks from the relevant African gene pools through slaving pressures and selective breeding. One can only guess about in which direction the deviations go, but it is reasonable to suspect that selection in the coming to—and living in—America *accentuated* body-composition differences between the races. Any process of comparing and contrasting blacks and whites from North American literature must be couched with appropriate caveats.

Not to miss the forest for the trees, there are some clear take-home messages in the review by Wagner and Heyward (3). Some of their broad observations about differences in body composition between those of African and European heritage and about differences occurring in the admixture of the 2 populations, as in the American experience, are both valid and essential. These observations have application to similar comparisons regarding native Americans, east Asians, and south Asians as well. Fears that paying attention to such "racial" differences will somehow lock in negative stereotypes, open the door to discrimination or other disadvantages, or reveal our own unconscious acceptance of the legitimacy of the bichromatic society are understandable. Such fears are probably even healthy, as a constant source of warning about how tricky this entire area really is. Nevertheless, not noticing that people are different can be methodologically problematic. We must be prepared to recognize when one set of instructions for measurements (eg, placement of electrodes for bioelectrical impedance) or one set of assumptions for derivative calculations [eg, the Siri constant of lean body density (9)] does *not* fit all groups. In fact, it may not fit many groups (eg, certain subgroups of 'whites'), but it has been imposed on all.

As the authors point out, weight standards are critical in sports medicine and in qualifying persons for certain occupations, such as the military. It is important to understand the limits of anthropometric measurements and their interpretation in matters of public health policy as well, especially as formulated in multiethnic societies such as the United States. For example, a debate often sparked by discussions of ethnic differences in body composition or body proportions is whether there is a need for ethnicity-specific obesity classifications. There is a disproportionately high prevalence of obesity and obesity-related diseases in several ethnic minority populations in the United States as well as interpopulation differences in the level of health risks associated with a given body mass index (BMI; in kg/m^2) (10). The current US approach (10) is to set rather general (but universal) boundaries for the classification of preobesity (eg, BMIs from 25.0 to 29.9) and obesity (eg, BMIs $\geq$ 30) in individuals. The potential danger of this approach is that it does not account very well either for interethnic differences in the degree of fatness at a given BMI or for any differential risk of chronic disease that might derive from a given increase in adiposity across population groups.

The use of a universal set of criteria is also helpful in making international comparisons of obesity prevalence (11). The dangers of being "a bit off of the mark" in heavier populations are probably minimal. Even in areas where obesity is not associated with marked excess mortality, BMIs > 30 or 35 are clearly associated with type 2 diabetes and its sequelae in all populations. A good example of this comes in populations, such as those of Asian descent, which have relatively low average BMIs. The aforementioned BMI classification scheme underestimates obesity-related risks in such a population (10, 11) and this misclassification is highly relevant to public policy, eg, concerning the health of residents of the United States who are of Indian or Pakistani descent.

The potential importance of these findings for understanding ethnic differences in susceptibility to obesity should also be underscored. Over and above the general limitations of black-white comparisons as proxies for genetically mediated variations in energy metabolism and energy expenditure, the validity of such comparisons also depends on having the best possible estimation of fat-free mass and its components to equate those being compared by metabolic size (12). The review by Wagner and Heyward (3) argues for considering 'race'—whatever it actually reflects—in modeling body-composition differences.

In summary, the American experience has obscured and distorted many contrasts between archetypal African and European genotypic determinations of body composition. The black-white differences indicated by Wagner and Heyward may be more contextual than biological, but, whatever their source, they can have important implications when assessed selectively. We admire their endeavor and join them in their final exhortation to body-composition researchers to ". . . collect and report socioeconomic, ethnic, and environmental background data in future studies. This information, combined with the emerging advances in genetic research, could lead to a better understanding of the difference in body composition between racial or ethnic groups and the prevalence of obesity-related diseases" (3).

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