Disparate Cardiovascular Disease Rates in African Americans: The Role of Stress Related to Self-Reported Racial Discrimination

Of all the forms of inequality, injustice in health is the most shocking and inhuman.
Dr. Martin Luther King, Jr., at the second annual convention of the Medical Committee for Human Rights, Chicago, Illinois, March 25, 1966

More than half a century since the US 1964 Civil Rights Act, African Americans continue to experience disparate health outcomes, including those associated with cardiovascular disease (CVD). These outcome differentials correlate with (1) the quality of care African Americans are provided and (2) the treatment options they are offered. Such disparities are disturbing because they are meaningfully influenced by societal elements and are therefore largely preventable. The societal influences may take many forms, one of which is addressed by the original research of Dunlay et al in this issue of Mayo Clinic Proceedings. The authors report data from 5085 African Americans, free of clinical CVD at baseline, who were enrolled in the Jackson Heart Study (JHS). Dunlay et al discovered no adverse association between self-reported (ie, perceived) everyday or lifetime discrimination and CVD, determined from both self-reported and non-self-reported sources. Instead, there was lower all-cause mortality associated with greater perceived everyday discrimination. Recognizing these unexpected relationships, the authors suggest that further work is needed to understand the mechanistic pathway for discrimination to impact cardiovascular risk factors, as previously reported, without worsening long-term outcomes.

In this editorial, we examine the disproportionate CVD burden in African Americans and critically consider factors impacting the unexpected JHS results.

Burden of Cardiovascular Disparities in African Americans
The persistent and unacceptable racial/ethnic and socioeconomic disparities in CVD and longevity were confirmed in the highly cited Eight Americas study, dividing race-county combinations into 8 distinct groups. Overall, compared with whites, African Americans experience more prevalent and severe hypertension and more CVD (including myocardial infarction and stroke). African Americans also have the highest risk for development of heart failure and have the highest proportion of incident heart failure not preceded by clinical myocardial infarction (75%). The 2014 coronary heart disease death rates per 100,000 were 137.5 for white males, 150.6 for African American males, 72.1 for white females, and 89.4 for African American females. Furthermore, within 5 years after a first myocardial infarction, at 45 to 64 years of age, death occurred in 11% of white males, 16% of African American males, 17% of white females, and a distressing 28% of African American females. Recently, a 2017 federal report on health care disparities revealed ongoing significant gaps in CVD prevalence and risks,
with 30% higher mortality for African Americans than for the overall US population and nearly double the stroke mortality.2

Although race and ethnicity are often included in health-related data, these categories are primarily social constructs that are not codified by differences in biology. Further, individuals and groups of individuals defined by race may have social environments and stressors that differ from other populations or the general population. One such social stress emanates from exposure to racism. Racism is a system of structuring opportunity and assigning value based on phenotype (race) that (1) unfairly disadvantages some while advantaging other individuals and communities and (2) undermines the full potential of the whole society through the waste of human resources.6 In several US cross-sectional studies, psychosocial stress, related to perceived discrimination and residence in a stress-prone neighborhood, strongly correlated with hypertension.7 Nevertheless, the effects of racism and psychosocial stress are difficult to measure, despite a potential prominent role in disproportionate CVD and hypertension in African Americans.

There are well-documented examples of African Americans having less access to and receiving lower quality of CVD care than whites, including less coronary revascularization (30% less).2 Increased marginalization and discrimination for certain racial and ethnic minority groups may have negative health repercussions.7

The Jackson Heart Study and Perceived Discrimination

The present JHS article appears to rebut the concept that perceived discrimination and social stress significantly impact CVD in African Americans.3 The data from this highly respected cohort of African American adult residents of the Jackson, Mississippi, metropolitan area revealed no independent associations of self-reported exposure to discrimination with incident CVD or heart failure hospitalization. Paradoxically, there was an observed inverse association of everyday discrimination and all-cause mortality. Important when interpreting the data, self-report of greater lifetime discrimination was more common in participants who (1) were younger, (2) were male, (3) had higher education and income, (4) had lower perceived community standing, (5) had less health care access, and (6) had fewer comorbidities.

Nevertheless, despite these puzzling findings, there are several precautions in generalizing the JHS results to African Americans nationally. To begin, Mississippi has the highest US level of CVD mortality overall.4 The well-educated JHS African American cohort, with 81.7% high school graduates and 39.6% with a college or graduate degree, may not be representative of other African American communities throughout the United States or the remainder of Mississippi.

The true impact of discrimination on an individual’s or group’s health remains difficult to quantify, but it is possible that the JHS’s ascertainment tools were less than ideal to accurately assess the effects of racism. Although the JHS discrimination instrument was importantly the first psychometrically sound multidimensional measure of perceived discrimination for use in health studies, the developers noted limitations in generalizability beyond the southeastern United States and that the instrument did not include measures of institutional and internalized discrimination.8 The CVD end points were obtained by annual telephone follow-up, interviews, surveillance of hospitalizations with adjudicated medical abstraction review, and death certificate review. Perhaps participants with lower socioeconomic status provided lower responses to perceived discrimination than those who were more highly educated or affluent. Similarly, younger persons who are better educated may have greater perceptions of unfair treatment and disrespect, while older and/or less socioeconomically advantaged participants may be more accepting of discrimination. Subsequently, the cumulative incidence of all-cause mortality, incident coronary heart disease, stroke, and heart failure hospitalization were higher in older participants with lower perceived discrimination.

Contrary to the present study, prior JHS data indicated that everyday discrimination, lifetime discrimination, burden of discrimination, and stress from discrimination may all affect blood pressure. After adjustment for age, sex, and socioeconomic status, lifetime discrimination and burden of discrimination were associated
with greater hypertension prevalence. The true impact of discrimination and stress as a fundamental determinant of health disparities is perhaps underestimated by the present report because institutional or structural racism may contribute to substantial impacts beyond individual perceptions of discrimination. Conversely, in the Multi-Ethnic Study of Atherosclerosis, which evaluated participants who represented multiple races and ethnicities, there was a modest increase (11%) in the risk of incident cardiovascular events with greater lifetime discrimination. Unfortunately, the present JHS analysis of perceived discrimination may not measure additional social stressors, including social segregation and limited intergenerational transfer of assets.

**Ripple Effects of Racism: Persistent Racial Inequality in Contemporary America**

Although discrimination’s effects are ill-defined, continued work is essential to address its relationship to health care delivery and health disparities. In critically analyzing racism, one widely used model describes 3 levels of racism: institutionalized racism, personally mediated racism, and internalized racism. Younger JHS participants with higher education and income than older participants may live and work in environments of greater racial and ethnic diversity, which may influence exposure to discrimination.

Overt or explicit racism has declined in the United States since the 1960s. However, some minority persons, particularly African Americans, may still endure social slights and offenses that undermine health. The 2015 “Social Determinants of Risk and Outcomes for Cardiovascular Disease: A Scientific Statement From the American Heart Association” linked self-reported racism to both blood pressure and cardiovascular reactivity. The strongest evidence of the effects of self-reported racism or discrimination was seen with ambulatory blood pressure monitoring (particularly at night), even after demographic adjustments.

Although all health care professionals may play a role in racial/ethnic health disparities. Moreover, patients’ perceptions of bias and discrimination while receiving health care may affect health-seeking behavior and adherence. Hence, biased treatment may be a factor in adverse health, lower levels of self-care or adherence, interruptions in care, mistrust of clinicians, and underuse of available services. We are far from a race-blind health care system, and fundamental factors that may perpetuate racial disparities cannot be easily dismissed.

Despite the uncomfortable nature of the term racism, we must study racism in our work, writing, research, and interactions with patients and colleagues to better understand its impact and refine efforts to combat its pernicious effects. Eliminating discrimination is required to overcome health care disparities that intersect a complex system (health care) and a complex problem (racism). Pervasive, systemic problems, like health care disparities, are larger than individual perceived discrimination and are rooted in institutions. These structural factors are important to consider when addressing organizational, institutional, or community change. Racism’s effects are a complex gumbo-like mixture of psychosocial factors, poverty, disadvantaged socioeconomic status, and suboptimal education. Given the history of US race relations and the lack of definitive genetic underpinnings, environmental, behavioral, and psychosocial factors play a more important role than genetics in the higher prevalence of hypertension in African Americans. The present report from Dunlay et al adds to the literature, but the real impact of racism on CVD in African Americans, especially persistent system-related disadvantages, requires further research.

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