



Social Determinants of Health and Structural Inequities—Root Causes of Diabetes Disparities

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Diabetes is the seventh leading cause of death in the U.S. and remains a significant cause of disability and decreased quality of life (1,2). In 2018, over 34 million people in the U.S. had diabetes (1). Historically marginalized groups such as racial and ethnic minorities, as well as those with lower socioeconomic status, bear a disproportionate burden of diabetes and its associated complications: blindness, neuropathy, limb amputations, chronic kidney disease, cardiovascular disease, and death (1,3). Additionally, the economic burden of diabetes amounts to approximately \$237 billion in direct medical costs and \$90 billion in lost productivity (4). Diabetes is a public health crisis that must be addressed by acknowledging and intervening on contextual factors outside of traditional medical care if we are to truly make an impact on improving outcomes, particularly for our most marginalized communities.

While contributors to diabetes outcomes are unequivocally multifactorial, cumulative evidence suggests that certain factors play a larger role than others (5). For example, medical care plays a relatively small part (approximately 10–15%) in shaping individual and population-level health outcomes (5,6). In contrast, social and environmental factors, collectively known as the social determinants of

health (SDOH), combined account for 50% to 60% of health outcomes and are a key contributor to health and health care disparities (5,6). The World Health Organization's definition of SDOH also notes that these social and environmental factors are "shaped by the distribution of money, power and resources at global, national and local levels" and are largely responsible for inequities in health outcomes (7). To achieve health equity, we must address SDOH, and do so at the structural and systems level where they originate. Importantly, since SDOH by their nature are not directly related to medical care, the charge to address SDOH may place health care providers outside their medical comfort zone. The coronavirus disease 2019 pandemic, however, has shone a bright light on the stark health and health care inequities, disproportionately impacting our African American, Hispanic/Latinx, and Native American communities in the U.S.—the same populations also disproportionately impacted by diabetes. This reality, against the backdrop of the current climate of racial and social injustice, forces us as health care providers to urgently step out of our comfort zones and address the social factors that are contributing to these two pandemics. Endorsement of the importance of SDOH by leading health care

organizations and thoughtful evaluation and critique of progress and stagnation in advancing an SDOH agenda are necessary.

Compelled by this charge to address SDOH, the American Diabetes Association convened an SDOH and Diabetes Writing Group led by Dr. Felicia Hill-Briggs, a Past President of Health Care & Education. The group reviewed the SDOH literature and drafted a scientific review as an update and expansion of the 2013 statement on socioecological determinants of prediabetes and type 2 diabetes (8). In this new report, the writing group summarized literature on SDOH and diabetes and organized the results around two aims: 1) to evaluate associations between SDOH and diabetes risk and outcomes and 2) to evaluate interventions aimed at addressing SDOH and diabetes outcomes (9).

Because there are several classifications and definitions of SDOH in the literature, the writing group came to a consensus based on review of several frameworks. The following five domains of SDOH domains are included: 1) socioeconomic status, 2) neighborhood and physical environment, 3) food environment, 4) health care, and 5) social context. Under each domain are three subdomains that further expand the topic—an overview summary of each SDOH; the associations

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of each SDOH with diabetes incidence, prevalence, and outcomes; and the impact of interventions to address each SDOH on diabetes outcomes. Across each of the five domains, SDOH arising from structural or systems-level root inequities are related to worsened diabetes prevalence, diabetes disease control, and diabetes-related deaths. For example, the SDOH domain neighborhood and physical environment is influenced by racial residential segregation. Residential segregation is a structural or systems-level inequity that persists because of historically racist and exclusionary housing policies as well as discrimination in federal housing loans that did not end until the Civil Rights Act of 1968 (10). Residential segregation is a powerful predictor of community investment and resource distribution in neighborhoods. Poorly resourced neighborhoods with lack of green spaces for physical activity, inadequate access to affordable and healthy food, and exposure to environmental chemicals tend to be associated with poorer diabetes-related outcomes.

A common message espoused by the authors of the report is that policy-level interventions targeting structural and systems-level inequities are the most challenging to operationalize but are also the most likely to have a substantial impact on improving disease outcomes and advancing health equity. An example of this is the Moving to Opportunity for Fair Housing demonstration project (11). Vouchers that allowed families to move out of high-poverty into low-poverty census tracts resulted in improvements in glycemic control and obesity as well as other SDOH, including higher housing quality, education, and employment. Other interventions addressing neighborhood and physical environment, food environment, and the health care environment have been proposed; however, there is a dearth of literature on interventions to target socioeconomic status and social context-related SDOH. The report does with a discussion of research limitations and a summary of the gaps in research on SDOH and diabetes.

This is the most comprehensive report to date that provides a thorough evaluation of the current state of evidence on SDOH and diabetes outcomes. A major strength of the report is the synthesis of multiple theoretical frameworks used to describe SDOH and the creation of an

organizational schema that allows for systematic comparisons across studies. Another notable strength of the report is the consistent messaging and reiteration of the need to identify structural and systems-level interventions for diabetes-related outcomes and disparities. However, this theme, which was apparent throughout the report, would have been strengthened further with an orienting framework that specifically considered racism as a root cause of health inequities and SDOH, rather than being discussed primarily in relationship to social capital. In a 2015 exploration of socioeconomic disparities in chronic kidney disease, Nicholas et al. (12) showed how risk factors for chronic kidney disease are related to root causes of socioeconomic deprivation. The authors suggest that discrimination and racial segregation are extensions of socioeconomic deprivation. However, some theoretical models emphasize that racism is often a fundamental or root cause of inequities in health outcomes and that socioeconomic deprivation is a downstream consequence (13). Using the ladder framework, we adapted the model by Nicholas et al. for diabetes care and place socioeconomic disparities and the other SDOH downstream from

racism—which we posit is a root cause for disparities in diabetes outcomes in marginalized and minoritized populations (Fig. 1).

This report (9) is an exceptional contribution to the literature and joins others from major societies (14–17) in recognizing the important role of SDOH in informing diabetes development and outcomes. The report eloquently highlights important gaps in the field. As recommended by Hill-Briggs et al. and the National Academies of Science, Engineering, and Medicine, rigorous data collection using standardized definitions will be required to measure SDOH and the impact of interventions (9,18). The next generation of health care professionals needs to be trained to address SDOH in clinical care to improve clinical outcomes in diabetes (9,19). Addressing several key SDOH will require policy-level interventions that compel us to lift our voices as health care professionals to advocate for local, state, and federal legislation to undo the effects of structural and institutional racism and inequities in housing, neighborhood structure and resources, employment, education, and health care access so that we can center social and environmental justice

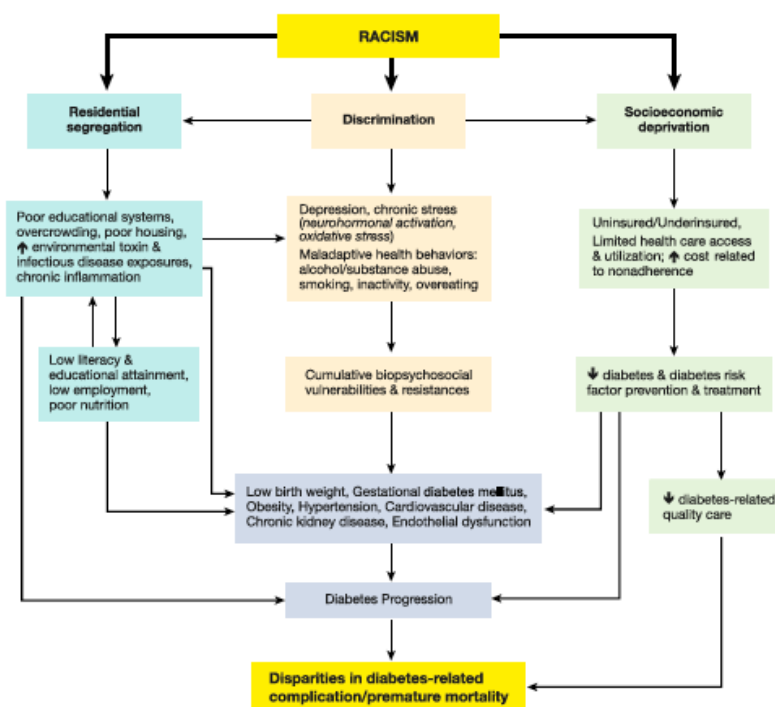


Figure 1—Conceptual model: racism as a root cause of disparities in diabetes.

and achieve health equity for all individuals with diabetes.

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