



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

S. Michelle Ogunwole<sup>1</sup> and Sherita H. Golden<sup>2,3,4</sup>

*Diabetes Care* 2021;44:11–13 | <https://doi.org/10.2337/dci20-0060>

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

<sup>1</sup>Division of General Internal Medicine, Department of Medicine, Johns Hopkins University School of Medicine, Baltimore, MD

<sup>2</sup>Division of Endocrinology, Diabetes, and Metabolism, Department of Medicine, Johns Hopkins University School of Medicine, Baltimore, MD

<sup>3</sup>Department of Epidemiology, Johns Hopkins University Bloomberg School of Public Health, Baltimore, MD

<sup>4</sup>Office of Diversity, Inclusion, and Health Equity, Johns Hopkins Medicine, Baltimore, MD

Corresponding author: Sherita H. Golden, [sahill@jhmi.edu](mailto:sahill@jhmi.edu)

© 2020 by the American Diabetes Association. Readers may use this article as long as the work is properly cited, the use is educational and not for profit, and the work is not altered. More information is available at <https://www.diabetesjournals.org/content/license>.

See accompanying articles, pp. 1, 8, 188, and 258.

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 closes 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

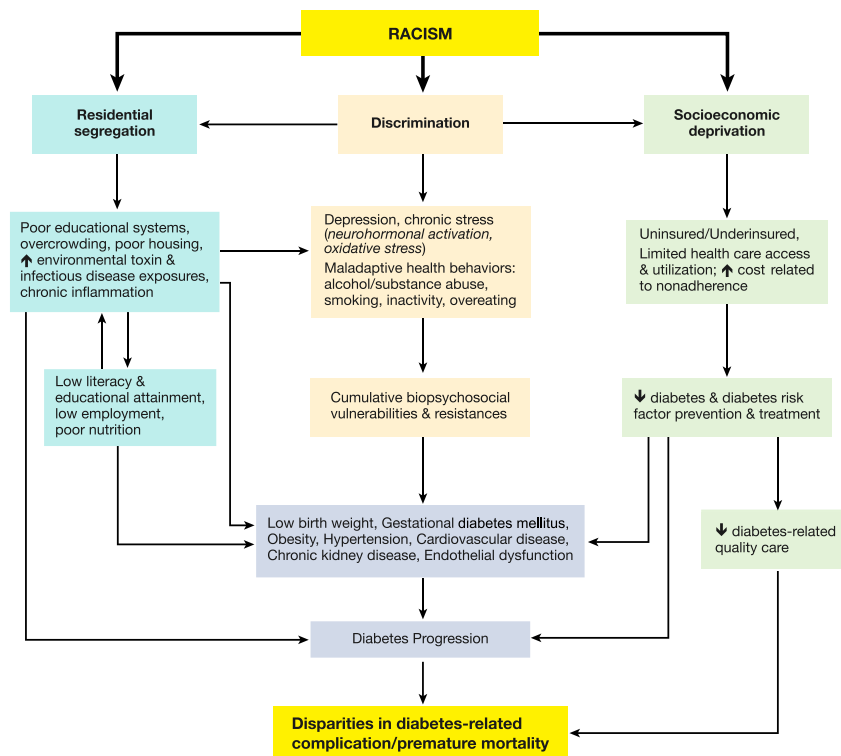


Figure 1—Conceptual model: racism as a root cause of disparities in diabetes.

and achieve health equity for all individuals with diabetes.

**Duality of Information.** No potential conflicts of interest relevant to this article were reported.

## References

- Centers for Disease Control and Prevention. *National Diabetes Statistics Report, 2020*. Atlanta, GA, Centers for Disease Control and Prevention, U.S. Department of Health and Human Services, 2020
- Heron M. Deaths: leading causes for 2017. *Natl Vital Stat Rep* 2019;68:1–77
- Virani SS, Alonso A, Benjamin EJ, et al.; American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics—2020 update: a report from the American Heart Association. *Circulation* 2020;141:e139–e596
- American Diabetes Association. Economic costs of diabetes in the U.S. in 2017. *Diabetes Care* 2018;41:917–928
- Braveman P, Gottlieb L. The social determinants of health: it's time to consider the causes of the causes. *Public Health Rep* 2014;129(Suppl. 2):19–31
- McGinnis JM, Williams-Russo P, Knickman JR. The case for more active policy attention to health promotion. *Health Aff (Millwood)* 2002; 21:78–93
- World Health Organization. Social determinants of health. Accessed 10 October 2020. Available from <https://www.who.int/gender-equity-rights/understanding/sdh-definition/en/>
- Hill JO, Galloway JM, Goley A, et al. Scientific statement: socioecological determinants of pre-diabetes and type 2 diabetes. *Diabetes Care* 2013;36:2430–2439
- Hill-Briggs F, Adler NE, Berkowitz SA, et al. Social determinants of health and diabetes: a scientific review. *Diabetes Care* 2021;44:258–279
- Massey DS. The legacy of the 1968 Fair Housing Act. *Sociol Forum (Randolph N J)* 2015; 30(Suppl. 1):571–588
- Ludwig J, Sanbonmatsu L, Gennetian L, et al. Neighborhoods, obesity, and diabetes—a randomized social experiment. *N Engl J Med* 2011; 365:1509–1519
- Nicholas SB, Kalantar-Zadeh K, Norris KC. Socioeconomic disparities in chronic kidney disease. *Adv Chronic Kidney Dis* 2015;22:6–15
- Phelan JC, Link BG. Is racism a fundamental cause of inequalities in health? *Annu Rev Sociol* 2015;41:311–330
- National Academies of Sciences, Engineering, and Medicine. *Integrating Social Care Into the Delivery of Health Care: Moving Upstream to Improve the Nation's Health*. Washington, DC, The National Academies Press, 2019
- Byhoff E, Kangovi S, Berkowitz SA, et al.; Society of General Internal Medicine. A Society of General Internal Medicine position statement on the internists' role in social determinants of health. *J Gen Intern Med* 2020;35:2721–2727
- Duffee JH, Kuo AA, Gitterman BA; Council on Community Pediatrics. Poverty and child health in the United States. *Pediatrics* 2016;137:e20160339
- Daniel H, Bornstein SS, Kane GC; Health and Public Policy Committee of the American College of Physicians. Addressing social determinants to improve patient care and promote health equity: an American College of Physicians position paper. *Ann Intern Med* 2018;168:577–578
- Institute of Medicine. *Capturing Social and Behavioral Domains and Measures in Electronic Health Records: Phase 2*. Washington, DC, The National Academies Press, 2014
- National Academies of Sciences, Engineering, and Medicine. *A Framework for Educating Health Professionals to Address the Social Determinants of Health*. Washington, DC, The National Academies Press, 2016