

# SOCIAL DETERMINANTS OF HEALTH AND IMPLEMENTATION RESEARCH: THREE DECADES OF PROGRESS AND A NEED FOR CONVERGENCE

George A. Mensah, MD<sup>1</sup>;  
William T. Riley, PhD<sup>2</sup>

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<sup>1</sup> National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, MD, USA

<sup>2</sup> Office of Behavioral and Social Science Research, National Institutes of Health, Bethesda, MD, USA

Address correspondence to George A. Mensah, MD, FACC, Center for Translation Research and Implementation Science, National Heart, Lung, and Blood Institute, National Institutes of Health, 6705 Rockledge Drive, Suite 6070, Bethesda, MD 20892; George.Mensah@nih.gov

## INTRODUCTION

In 2020, *Ethnicity & Disease* celebrated 30 years of continuous publishing on the scientific quest to understand racial and ethnic variations in health and disease and the implications of those differences for population health and health equity.<sup>1</sup> During that period, recognition of the importance of social determinants of health (SDOH) increased significantly, especially after release of the final report of the World Health Organization's Commission on Social Determinants of Health in 2008.<sup>2</sup> A central theme

of that report was the attainment of health equity through action on the SDOH.<sup>2</sup> More recently, efforts have been made to leverage community-engaged implementation research to advance health equity.<sup>3,4</sup> In this issue of *Ethnicity & Disease*, we focus on these two broad areas of science – SDOH and implementation research – and the need for their convergence in the pursuit of health equity.

A call for papers issued in January 2019, attracted 83 manuscripts from which 13 are published in this issue of the journal. Recognizing the pervasive global impact of the COVID-19 pandemic, we begin with some of the lessons learned from the pandemic and how it has underscored the value of understanding SDOH and their influence on health disparities in the implementation of clinical and public health efforts.<sup>5</sup> In an accompanying invited perspective, Emmons and Chambers assert that we must go beyond clinical and public health practice to also explore the implications for policy implementation.<sup>6</sup> They argue that, by building and enacting a more cohesive policy implementation research agenda, we can realize benefits to both acute challenges and build a longer-term focus on SDOH and implementation research.<sup>6</sup>

We share themes from these 13 articles in three subsections. Although all articles are relevant to the integration of SDOH, health disparities, and implementation science, five articles address SDOH broadly using examples from cardiovascular diseases and risk factors,<sup>7-9</sup> cancer care,<sup>10</sup> and guideline adherence in infant feeding<sup>11</sup>; five articles highlight the importance of stigma, discrimination, and health disparities<sup>12-16</sup>; and the three remaining articles address crosscutting themes at the interface of health equity and implementation research.<sup>17,18</sup>

## INFLUENCE OF SOCIAL DETERMINANTS IN HEALTH CARE SETTINGS

In a pragmatic, cluster-randomized trial involving 888 patients receiving a collaborative care intervention to reduce disparities in hypertension control, Ibe et al<sup>7</sup> examined which social determinants of health were associated with a patient's likelihood of engaging with the collaborative care team and subsequent care team's appraisal of patient needs for supplementary support. They demonstrated that patient-reported social determinants of health influenced the extent

of a patient's engagement in the collaborative care intervention and the nurse care managers' appraisals of the need for supplementary support provided by community health workers.<sup>7</sup>

Baptiste et al<sup>8</sup> examined race, employment status, poverty, insurance status, marital status, and educational status in patients with a diagnosis of coronary heart disease or stroke to explore the association with frequency of emergency department visits in the preceding 12 months. In this cross-sectional analysis of the 2010-2018 National Health Interview Survey, they demonstrated that these SDOH factors were associated with a higher likelihood of having one or more emergency department visits in the prior 12 months and that SDOH should be considered when developing systematic interventions to prevent costly ED visits.<sup>8</sup>

In adults with CVD (1804 with acute coronary syndrome and 1059 with heart failure), Kostelanetz and colleagues<sup>9</sup> compared the relationship between patient-reported SDOH and community-level SDOH assessed as the Brokamp area deprivation index (ADI) using neighborhood-level variables. They then examined the association of the two measures with long-term mortality following hospitalization.<sup>9</sup> They showed a close association between the two SDOH measures and also demonstrated that the Brokamp ADI was associated with mortality and could be implemented in the electronic health record as a reasonable surrogate for risk stratification of patients with CVD when patient-reported SDOH is not available.

To understand the SDOH barriers to early cancer detection and treat-

ment, Jou and colleagues interviewed 112 stakeholders from four neighborhoods of Brooklyn, NY.<sup>10</sup> Via a nominal group technique for these interviews, they identified economic stability, education and community and social context as the top barriers to cancer detection and treatment. Their research illustrates an approach in which health care systems and the communities can work together to identify specific barriers to care and develop strategies to reduce those barriers.<sup>10</sup>

Hannan et al<sup>11</sup> examined the socio-cultural and psychosocial factors that may influence adherence to guidelines for infant feeding. In this cross-sectional, multi-country survey of a convenience sample of 690 Black mothers living with HIV in Nigeria, Canada, and the United States, the authors noted that mothers who had cultural beliefs inconsistent with infant feeding guidelines and those with low incomes were substantially less likely to be adherent (OR = 2.620) with their country's guidelines.<sup>11</sup> Their study highlights the importance of using SDOH, cultural expectations of motherhood, and other psychosocial determinants to inform targeted interventions to promote adherence to infant feeding.

## STIGMA, DISCRIMINATION, AND HEALTH DISPARITIES

Five articles address the importance of SDOH in stigma, discrimination, and health disparities in a range of settings including diabetes care,<sup>12</sup> air pollution and asthma in children,<sup>13</sup> ADHD diagnosis and treatment in youth,<sup>14</sup> homelessness,<sup>15</sup> and perceived stress and everyday discrimination.<sup>16</sup>

For example, Botchway et al<sup>12</sup> examined whether three types of diabetes-related stigma moderated associations between social network characteristics and social support, or between social support and glycemic control among type 2 diabetes patients in an academic teaching hospital setting in Kumasi, Ghana. They showed that self-reported high self-stigma was associated with lower social support, which can reduce the capacity for disease management; they also found that larger social networks may be beneficial for type 2 diabetes patients in countries like Ghana.<sup>12</sup>

Using Medicaid claims data from 2017, Davis and colleagues examined the predictors of diagnosis and treatment type for attention-deficit/hyperactivity disorder (ADHD) in Kentucky, the US state with the highest rate of ADHD and stimulant use.<sup>14</sup> In a sample of more than 300,000 children, of which 43,597 were diagnosed with ADHD, their predictive models showed that non-Hispanic White children were more likely to receive an ADHD diagnosis than non-Hispanic Black (29% less), Hispanic (73% less) or Asian (95% less) children. Among those diagnosed with ADHD, non-Hispanic White children were more likely to receive stimulant medications but less likely to receive psychosocial therapy than Black and Hispanic children. Their results show clear disparities in diagnosis and treatment of ADHD and point to further research to understand contributing causes.<sup>14</sup>

Puerto Rican children have the highest asthma morbidity and mortality of any US population but also display poor bronchodilator response (BDR). Contreras and colleagues investigated potential gene-environment

interactions that may contribute to the asthma morbidity and BDR.<sup>13</sup> Among the 658 Puerto Rican children with asthma in their study, the investigators identified a non-linear interaction between Native American ancestry and air pollution exposure associated with BDR such that decreased Native American ancestry and increased air pollution exposure was associated with increased BDR response while other combinations were associated with decreased BDR response. These findings were not replicated in Mexican American children, indicating the need for further replication and the possibility that this gene-environment interaction may be population specific. This study illustrates the heterogeneity of drug response based on race/ethnicity, ancestry, and environmental exposures, and the importance of diverse samples in biomedical research.<sup>13</sup>

Homelessness or lack of access to housing is an important social determinant of health and wellbeing<sup>17,18</sup> and a key contributor to health care costs.<sup>19</sup> To examine Medicaid churn, defined as the frequency of interrupted periods of Medicaid eligibility, Dapkins et al explored the frequency of use and pattern of New York State Medicaid claims for Medicaid beneficiaries with and without a homelessness code.<sup>15</sup> They reported a steady increase in the use of the homelessness or lack of housing diagnostic code over the decade of 2006-2017. For 2017, patients with the homelessness code experienced more Medicaid churn compared with patients without the code; and among patients who had ever experienced a gap in Medicaid coverage, patients without a homelessness code tended to have fewer months of eligibility.<sup>15</sup>

Using a SDOH framework, Alvarez et al<sup>16</sup> explored potential associations between stress, everyday discrimination and medication adherence among adult non-Hispanic Blacks, Whites, and Hispanics with uncontrolled hypertension. Their goal was to determine which social determinants – patient experiences with health care access or community and social stressors – explained medication adherence independent of health status and other social determinants. Their analyses showed that, compared with Whites, Blacks and Latinos were less likely to report medication adherence (adjusted odds ratio .47; 95% CIs: .37-.60,  $P < .001$  and .48; 95% CIs: .32-.73,  $P < .001$ , respectively).<sup>16</sup> Importantly, part-time workers, those who reported greater perceived stress, and everyday discrimination had lower odds of medication adherence. They also noted that, among Blacks, greater perceived stress and everyday discrimination were negatively associated with medication adherence while among Latinos, a greater number of reports of everyday discrimination was associated with lower odds of medication adherence.

## IMPLEMENTATION RESEARCH

The high prevalence of trauma among those living with HIV highlights the need for trauma-informed care (TIC). To understand the factors that influence adoption of TIC, Piper and colleagues interviewed 23 providers, staff and administrators from a large urban HIV care center.<sup>20</sup> Using the Consolidated Framework for Implementation Research (CFIR),

the investigators identified key inner and outer setting factors perceived to influence TIC adoption. Although considered a priority, interviewees indicated that there was insufficient training in TIC, insufficient time, resources, and partnerships with outside organizations to deliver TIC. Interviewees also noted stigma, health literacy, transportation challenges, and inadequate insurance coverage as important patient barriers to TIC.<sup>20</sup>

As the guidelines for breast and cervical cancer screenings have changed, prevention programs need to be able to adapt to these changes, including de-implementation of practices no longer recommended. Shelton and colleagues conducted a mixed methods evaluation of adaptation to these guidelines in the National Witness Project (NWP), a lay health advisor program for breast/cervical cancer screening among African American women.<sup>21</sup> Despite general support for adapting to changing guidelines, important barriers to adapting to new guidelines were identified, including mistrust of guidelines based on studies that may not adequately reflect the experiences of African American women, and that this mistrust may contribute to the health disparities in breast and cervical cancers.

## CONCLUSIONS

The social determinants of health exert influence throughout the health continuum, including its impact on preventive health behaviors, access to health care, ability to navigate and participate in health care decisions, and the diagnosis and type of care re-

ceived. These influences are complex and involve the interaction of genetic and environmental factors. This complexity, however, does not need to be an obstacle to incorporating SDOH in health care decisions. In fact, when targeted for specific domains and circumstances, several simple strategies are emerging (eg, including ADI into EHRs) that could encourage health care providers to address SDOH more consistently. Health care systems also could increase outreach to their communities, with SDOH in mind, to ensure that their health care systems effectively serve the communities' needs.

Additionally, understanding that stigma associated with specific conditions and inequitable treatment experienced by racial/ethnic groups continues, health care providers and systems will be equipped more successfully to combat these negative impacts on health care access and treatment decisions. Implementation research holds promise for better addressing SDOH and health disparities, but as noted by Emmons and Chambers, the field must expand its focus from predominantly health care implementation to community-based and policy-based implementation.<sup>6</sup> Identifying implementation barriers and facilitators are important areas of research, but a greater focus on evaluating strategies and policies to address these barriers as a scientific priority is clearly warranted.<sup>22</sup> The nation's current path in researching the intersection of implementation science, social determinants of health and health inequities must continue to expand to provide this all-encompassing foundation for understanding and effectively tackling the health disparities that persist today.

CONFLICTS OF INTEREST DISCLOSURES  
None

DISCLAIMER

The perspectives in this article are those of the authors and do not necessarily reflect the official position of the National Institutes of Health or the United States Government.

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