SCIENCE-IN-BRIEF
August 2022

TURNING SCIENCE INTO ACTION

Social Determinants of Suboptimal Cardiovascular Health Among Pregnant Women in the United States

The following is a synopsis of "Social Determinants of Suboptimal Cardiovascular Health Among Pregnant Women in the United States" published in January 2022 in the *Journal of the American Heart Association*.

What is already known on this topic?

Cardiovascular disease is the leading cause of death during pregnancy, amounting to one-third of all pregnancy-related deaths.[1] There are well-recognized racial and ethnic disparities in maternal outcomes, with non-Hispanic Black women being 4 times more likely to die from pregnancy-related causes as compared with White women.[5] Nationally, the pregnancy-related mortality among non-Hispanic Black women is 42.8 deaths per 100,000 live births and is higher in rural areas as compared with urban areas.[2] Sociodemographic disadvantage—measured collectively as social determinants of health (SDOH) burden—is strongly associated with poor maternal health and is a major driver of disparities in maternal outcomes.[3] Social determinants of health encompass income, education, occupational status, neighborhood environment, food insecurity, and a variety of health system factors that are tied to poor maternal outcomes.[4] Disparities in cardiovascular health have been studied extensively in the general United States' population. However, few studies have examined the link between social determinants of health and cardiovascular health during pregnancy. Even fewer studies have examined the association of the cumulative burden of multiple social determinants of health on cardiovascular health in pregnant women.

What is added by this article?

This study examines the association between social determinants of health, traditional cardiovascular risk factors, and cardiovascular health in a nationally representative sample of pregnant women in the United States. The research team's cross-sectional analysis pooled data from the National Health Interview Survey (NHIS) between 2013 and 2017 and included women aged 18-49 years who self-reported as pregnant. The study presents a comprehensive measure of social determinants of health based upon six domains and 38 subcomponents. The six domains include economic stability, neighborhood and physical environment, community and social context, English language proficiency and health literacy, food security, and healthcare.

Participants were evaluated on a scale of 0 to 38 based upon an aggregate score of unfavorable social determinants of health. Scores were then divided into quartiles: first (score 3 to 6); second (score 7 to 9); third (score 10 to 13); and fourth (score ≥14). The first quartile was defined as the most favorable social determinants of health profile, whereas the fourth quartile was defined as the most unfavorable SDOH profile. Participants' cardiovascular health was determined through self-reported

risk factors including diabetes, hypertension, hypercholesterolemia, physical activity, obesity, and smoking status. Obesity was determined based on participants possessing a body mass index greater than or equal to 30 kg/m2 during pregnancy. Insufficient physical activity during pregnancy was qualified as >75 min/week of vigorous activity or >150 min/week of moderate-intensity activity or a combination of both. Individuals were classified into two groups. Participants were placed in group one and were classified as having optimal cardiovascular health if they possessed one or fewer cardiovascular risk factors. In contrast, participants were placed in group two and classified as having suboptimal cardiovascular health if they had two or more cardiovascular risk factors.

The study found that >50% of pregnant women with the highest social determinants of health burden had suboptimal cardiovascular health. Overall, the unadjusted prevalence of insufficient physical activity (59.8% versus 46.7%) and obesity (38.4% versus 31%) was higher in pregnant versus nonpregnant women. In contrast, the prevalence of hypertension (12.9% versus 8.7%), diabetes (3.5% versus 1.6%), high cholesterol (10.7% versus 4.4%), and smoking (15.4% versus 8.6%) were higher in nonpregnant women versus pregnant women. It was also observed, based upon the social determinants of health responses obtained, that pregnant women were more likely to be unemployed, have low family income, and believe that people within their community were not trustworthy.

What are the implications of these findings?

Findings indicate an increasing prevalence of cardiovascular risk factors and suboptimal cardiovascular health with unfavorable social determinants of health factors in pregnant women. Given the rise in maternal morbidity and mortality in the United States, these findings are relevant, underscoring the burden of adverse risk factor profiles during pregnancy and the impact of social determinants of health on overall cardiovascular health. The authors suggest addressing these inequities and mitigating the impact of social determinants of health on maternal health requires a multipronged approach that crossects multiple domains. Specifically, the authors call for consideration of broad pillars of interventions at the patient, provider, health system, and public health policy levels. An example includes state policy interventions to improve access to preventive services in the postpartum period, so all women, and especially those with unfavorable social determinants of health, continue to have a follow-up for interpregnancy care. Other examples include interventions that expand prepregnancy assessments of cardiovascular risk factors as well as educate clinicians on the impact social determinants of health have on maternal outcomes. Prioritizing improving healthcare access and quality, education, and adverse social and community contexts such as discrimination and economic stability could mitigate cardiovascular disease risk factors and improve health outcomes among pregnant women with the highest SDOH burden.

Resources

Centers for Disease Control and Prevention – Reproductive Health

Reproductive Health | CDC

Centers for Disease Control and Prevention – High Blood Pressure During Pregnancy

High Blood Pressure During Pregnancy | CDC

References

1. Petersen EE, Davis NL, Goodman D, Cox S, Mayes N, Johnston E, Syverson C, Seed K, Shapiro-Mendoza CK, Callaghan WM, et al. Vital Signs: pregnancy-related deaths, United States, 2011–2015, and strategies for prevention, 13 States, 2013–2017. MMWR Morb Mortal Wkly Rep. 2019;68:423–429. Crossref. PubMed.

2. Shahul, S., Tung, A., Minhaj, M., Nizamuddin, J., Wenger, J., Mahmood, E., ... & Rana, S. (2015). Racial disparities in comorbidities, complications, and maternal and fetal outcomes in women with preeclampsia/eclampsia. Hypertension in pregnancy, 34(4), 506-515.

3. Howell, E. A. (2018). Reducing disparities in severe maternal morbidity and mortality. Clinical obstetrics and gynecology, 61(2), 387.

4. Gadson, A., Akpovi, E., & Mehta, P. K. (2017, August). Exploring the social determinants of racial/ethnic disparities in prenatal care utilization and maternal outcome. In Seminars in perinatology (Vol. 41, No. 5, pp. 308-317). WB Saunders.

5. Creanga, A. A., Berg, C. J., Syverson, C., Seed, K., Bruce, F. C., & Callaghan, W. M. (2012). Race, ethnicity, and nativity differentials in pregnancy-related mortality in the United States: 1993–2006. Obstetrics & Gynecology, 120(2 Part 1), 261-268.

Citation

Sharma G, Grandhi GR, Acquah I, Mszar R, Mahajan S, Khan SU, Javed Z, Mehta LS, Gulati M, Cainzos-Achirica M, Blumenthal RS, Nasir K. Social Determinants of Suboptimal Cardiovascular Health Among Pregnant Women in the United States. J Am Heart Assoc. 2022 Jan 18;11(2):e022837. doi: 10.1161/JAHA.121.022837. Epub 2022 Jan 11. PMID: 35014862; PMCID: PMC9238529.

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention