

# Social and Structural Determinants of Maternal Morbidity and Mortality: An Evidence Map

## Executive Summary



### Main Points

- Included study exposures broadly covered social-structural determinants of health for pregnant and birthing people; however, the identified determinants still represent only a subset of potential social-structural determinants of interest and did not address interdependence of risk factors, including biological/medical risk factors.
- Limited depth and quality of available research within each risk factor domain—including racism and other forms of discrimination—impeded our ability to understand pathways connecting social-structural determinants of health and maternal health outcomes.
- We found an unexpectedly large volume of research on violence and trauma relative to other potential social determinants of health for pregnant people.
- For outcome domains, depression/other mental health outcomes represented a large proportion of the health outcomes captured.
- We found one study investigating patterns of intersecting social-structural determinants of health that is an exemplar of new approaches to risk factor research.
- Rarely did studies report the excess risk attributable to a specific exposure. Of note, very recent studies, mostly limited geographically, reported:
  - Income inequality was associated with a 14 percent increase in excess risk of death for Black pregnant women relative to White women in Virginia; prolonged 5-year income inequality was associated with a 20 percent increase.

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- Hispanic birthing women were more likely to deliver at hospitals with higher risk-adjusted severe maternal morbidity; delivery location may contribute up to 37 percent of ethnic disparity in severe maternal morbidity in New York City.
- Combined race and income segregation was associated with increased severe maternal morbidity in birthing women in New York City; delivery hospitals accounted for 35 percent of the attributable risk, and 50 percent of comorbidities.
- Nationally, if rural Indigenous birthing women experienced severe maternal morbidity and mortality at the same rate as urban white women, they would see a 49 percent reduction in cases.



## Background and Purpose

Despite spending more on maternity care than any other country, the United States has seen maternal deaths rise since 2000, and risk of death from complications related to pregnancy and childbirth in the United States exceeds that of any other high-income country.<sup>1</sup> This becomes more alarming considering that maternal morbidity and mortality serve as key indicators of the health and well-being of a country. Furthermore, risk of maternal morbidity and mortality is unevenly distributed among populations in the United States, with Black and Indigenous women three to four times more affected than their white counterparts.<sup>2</sup> Efforts to explain such high rates of maternal morbidity and mortality along with pronounced inequities in maternal outcomes have largely fallen short, in part because research has focused mainly on birth and infant outcomes, with limited consideration of the multiple factors that broadly affect maternal health.

To better understand racism and the social and structural determinants of health (hereafter referred to as social-structural determinants of health) that underlie maternal morbidity and mortality in the United States, the Office of Disease Prevention requested this systematic review to inform the November 29 – December 1, 2022 Pathways to Prevention workshop cosponsored by the National Institutes of Health’s Office of Research on Women’s Health, the National Heart Lung and Blood Institute, the National Institute of Minority Health and Health Disparities, and the Eunice Kennedy Shriver National Institute of Child Health and Human Development. The Office of Disease Prevention anticipated that the risk of postpartum maternal morbidity and mortality would be influenced by the complex interplay between individual, family, community, and social-structural factors that drive health. Therefore, we focused mainly on research that specifically examined factors to which pregnant and birthing people have been exposed and that may underlie poor perinatal health outcomes.



## Methods

The methods for this systematic review follow the Agency for Healthcare Research and Quality Methods Guide for Effectiveness and Comparative Effectiveness Reviews.

See the review protocol (<https://effectivehealthcare.ahrq.gov/products/maternal-morbidity-mortality/protocol>) and the full report of the review for additional details. Briefly, we searched MEDLINE<sup>®</sup>, CINAHL<sup>®</sup>, and Social Sciences Citation Index through November 2022 for observational studies examining exposures related to social determinants of health and at least one health or healthcare-related outcome. Our focus was studies that attempted to examine pathways underlying risks.

## Results

We identified 8,378 unique references, with 118 included studies reporting observational risk factors associated with maternal health outcomes. An overwhelmingly large number of studies used correlational study designs, and the studies that used quasi-experimental techniques showed high risk of bias. Therefore, we approached results from the perspective of supporting future researchers in generating hypotheses for risk factors to test with potential interventions. Overall, we found the study exposures or risk factors of interest for both pregnant and birthing people broadly covered social-structural determinants of health; however, these exposures represent only a subset of social-structural determinants of health that may affect maternal morbidity and mortality. Limited depth and quality of available research within each social determinant of health impeded our ability to understand the mechanisms by which these social determinants of health affect maternal health. We found an unexpectedly high volume of research on violence and trauma relative to other social-structural factors of interest for pregnant people. This likely stemmed from the fact that a number of states have added violence-related questions to the Center for Disease Control and Prevention's Pregnancy Risk Assessment Monitoring System questionnaire. Depression and other mental health outcomes were very common for both pregnant and birthing people, even compared with mortality and other severe maternal morbidity outcomes. We found one study investigating patterns of intersecting social-structural determinants of health that is an exemplar of new approaches to risk factor research.<sup>3</sup>

Very few studies reported the excess risk attributable to a specific social-structural determinant of health. One study reported that for pregnant women, income inequality was associated with a 14 percent increase in excess risk of death for Black women relative to white women in Virginia; prolonged income inequality was associated with a 20 percent increase.<sup>4</sup> In one study, Hispanic birthing women were more likely to deliver at hospitals with higher risk-adjusted severe maternal morbidity, contributing up to 37 percent of ethnic disparity in severe maternal morbidity in New York City.<sup>5</sup> Another found an association between combined race and income segregation and increased severe maternal morbidity in birthing women in New York City; of the attributable risk, 35 percent was accounted for by delivery hospitals, and 50 percent by comorbidities (including prepregnancy body mass index, diabetes, hypertension, cardiac disease, renal disease, pulmonary disease, musculoskeletal disease, blood disorders, mental disorders,

central nervous system disorders, rheumatic heart disease, anemia, and asthma).<sup>6</sup> Finally, if rural Indigenous birthing women experienced severe maternal morbidity and mortality at the same rate as urban white women, they would see a 49 percent reduction in cases.<sup>7</sup>

## Strengths and Limitations

The methods we selected for this review provided a detailed map of the research connecting racism and other social-structural determinants of health to maternal health and morbidity for observed pregnancies. We purposefully focused on studies that examined risk factors that operated interpersonally. Such high-level mapping seeks to help researchers—who are often still siloed in particular areas of expertise or interest—gain a wider perspective on the breadth of literature within which their specific practice and advocacy resides. Our inclusion criteria required studies to examine the impact of a social determinant of health. As such, many studies that examined only comorbidities or other medical risk factors were ultimately excluded. Most of these excluded studies used patient demographics as control or confounder variables and lacked description of exposures indicative of social or structural determinants of health.

## Implications and Conclusions

Identifying the risk factors pregnant and birthing people face in relation to postpartum health is vitally important. Limited depth and quality of available research within each risk factor impeded our ability to outline specific pathways underlying the impact of social-structural determinants of health on maternal health. Literature published within the last three years did show a definite trend toward improved rigor and analysis of risk attributed to social-structural drivers of maternal health for pregnant and birthing people. However, future research can emphasize techniques that improve the ability to estimate causal impacts. Improved study reporting, along with organized and curated catalogues of maternal health exposures and their mechanisms, could make it easier to examine exposures in the future, including the interdependence of social-structural and biologic/medical risk factors. Longer term, the maternal health field would benefit from datasets designed to more fully capture the data needed to robustly examine racism, other social-structural determinants of health, biological/medical risk factors, and the ways they interact to impact maternal health and well-being outcomes.

## References

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## Full Report

Slaughter-Acey J, Behrens K, Claussen AM, Usset T, Neerland C, Bilal-Roby S, Bashir H, Westby A, Wagner B, McAlpine D, Dixon M, Xiao M, Butler M. Social and Structural Determinants of Maternal Morbidity and Mortality: An Evidence Map. Comparative Effectiveness Review No. 264. (Prepared by the Minnesota Evidence-based Practice Center under Contract No. 75Q80120D00008.) AHRQ Publication No. 23(24)-EHC014. Rockville, MD: Agency for Healthcare Research and Quality; December 2023. DOI: <https://doi.org/10.32970/AHRQEPCCER264>. Posted final reports are located on the Effective Health Care Program [search page](#).

