

Margerison, C., Roberts, M., Gemmill, A., & Goldman-Mellor, S. (2022).

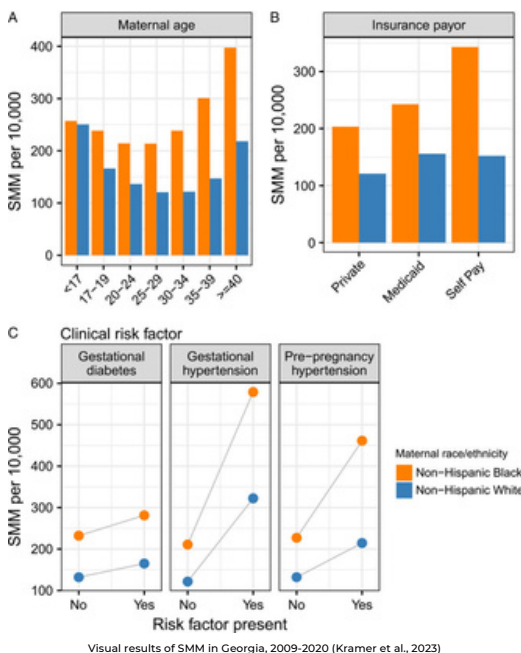
Mortality vs Morbidity

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The terms mortality and morbidity are often used interchangeably but have important differences in how they are defined.

Morbidity is used in reference to illness or disease while mortality refers to death. In this newsletter, we will discuss the most common illnesses or diseases (morbidity) that impact maternal health, as well as those factors that contribute to greater likelihood of maternal death (mortality).

According to the Center for Disease Control and Prevention (CDC), 80% of pregnancy related deaths are preventable and yet, the United States has one of the highest maternal mortality rates (CDC, 2023). Within the country, Georgia has one of the highest maternal mortality rates (Kramer et al., 2023). These alarming statistics describe the importance of prevention efforts that target common causes of maternal morbidity and mortality.



The Role of Maternal Substance Use in Maternal Mortality and Morbidity

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Substance use during pregnancy is associated with a number of risks related to morbidity and mortality. These include increased risk of inadequate prenatal care and risk during pregnancy and delivery due to medical factors. Additionally, women who use substances during pregnancy and the postpartum period are at increased risk of death due to overdose and suicide. One study found that previous or current substance use was present among 67 percent of pregnancy-related mental health deaths, showing the high need for prevention related services in this high-risk population.

Morbidity

Morbidity in pregnant women is found to vary by substance used. Pregnant women with opioid use disorder and stimulant use disorder (amphetamines, cocaine) have been found to have increased risk of severe maternal morbidity compared to those without these disorders (Marlenski et al., 2021). Cocaine use during pregnancy has specifically been found to increase risk of placental abruption, placental infarction, and preeclampsia, with risk of placental abruption most elevated (Mbah et al., 2012). Cigarette smoking also increases the risk of complications during pregnancy including placenta previa, placental abruption and premature rupture of membranes (CDC, 2013). Women with cannabis use disorders have not been found to have increased morbidity risk (Marlenski et al., 2021).

Mortality

Of the 6 most frequent underlying causes of pregnancy-related death, mental health conditions, including substance use disorders, account for 22.7%. See figures above (Trost et al., 2022). Significant discrepancies have also been found in risk of maternal death by race, which are reviewed in more depth in the following section. Similar to morbidity, differences in risk have also been found by the substance used.

The prevalence of pregnancy-associated deaths because of drug use has grown exponentially in recent years, with one study showing an increase of 190% from 2010 to 2019 (Margerison et al., 2022). In this sample, 11.4% of maternal deaths during pregnancy and the first year postpartum were a result of illicit or prescription drugs.

A slightly newer sample (Bruzelius et al., 2022) of pregnant and postpartum persons examined between 2017 to 2020 found a cumulative overdose mortality rate of 8.35 per 100,000 and provided some insight into the substances contributing to increased mortality risk. Pregnancy-associated overdose deaths involving benzodiazepines, heroin, and prescription opioids were mostly stable from 2017 to 2020, whereas large increases in deaths involving fentanyl and other synthetics and psychostimulants (e.g., methamphetamine, cocaine) were observed. Increases in deaths due to fentanyl and other synthetics were especially marked in 2020, increasing from 5.73 per 100 000, suggesting impact of the pandemic and associated stressors on worsened substance use problems and associated risk (Bruzelius et al., 2022).

Women who use alcohol during pregnancy are also at increased risk of premature death, with deaths being found to result from mental health disorders, viral and bacterial disease, injury, and poisoning (Kahila et al., 2010).



The Role of Race in Maternal Mortality

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Recently, the social construct of race has been a key topic of conversation in healthcare. Racial disparities have a vast impact on health outcomes in the United States and continue to contribute to the increased risk of negative health outcomes. Maternal mortality is greatly impacted by racial disparities. In fact, the leading underlying causes of death often vary by race and ethnicity. Cardiac and coronary conditions have been found to be the leading cause of pregnancy-related deaths among Non-Hispanic Black persons; mental health conditions are the leading cause of death among Hispanic and Non-Hispanic White persons; hemorrhage is the leading underlying cause of death among non-Hispanic Asian persons (Trost et al., 2022); and pregnant and postpartum people identified as non-Hispanic American Indian or Alaska Native are at highest risk of drug-related and suicide death (Margerison et al., 2022). Black women are 3-4 times more likely to die from complications in pregnancy and are 2 times more likely than their White counterparts to encounter maternal morbidity (Canty, 2022).

“There are similar rates of perinatal substance use in both Black and White women, however Black and Indigenous women are more likely to be screened for maternal (illicit) substance use than their White counterparts.”



Maternal substance use is another area that is negatively affected by racial disparities and biases and is among the many causes of maternal mortality and morbidity. For example, while the opioid epidemic has disproportionately affected the White community, the reporting mandates and policies relating to substance use disorder are disproportionately affecting Black communities. There are similar rates of perinatal substance use in both Black and White women, however Black and Indigenous women are more likely to be screened for maternal (illicit) substance use than their White counterparts. Though these statistics are alarming, there are various methods used to reduce these rates and prevent racial inequities in maternal mortality. The CDC has outlined four key groups and their possible contribution to decreasing racial inequities in maternal health. These groups include healthcare providers, hospitals and healthcare systems, states and communities, and pregnant individuals and their families. The common steps recommended include identifying unconscious biases, being vocal, and understanding possible maternal concerns (CDC, 2023). Though these are seemingly simple suggestions, systemic changes will be necessary to reduce the negative impact on maternal health.

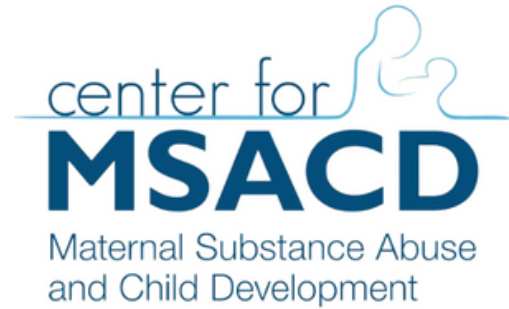


Possible Explanatory Models and Future Directions

Kallio Hunnicutt-Ferguson, PhD, ABPP

The reasons suggested for the increased risk of maternal mortality among women using substances have varied due to the timing of deaths. This suggests some causal directions, for example, as drug-related deaths tend to occur in the late postpartum period. Some have suggested as a result that the increased mortality risk may be due to lack of mental health and substance use services in this time period, along with the high stress related to caring for a newborn, and hormonal changes, among other causes (Margerison et al., 2022).

Pregnant and postpartum persons are known to face barriers to accessing drug treatment and harm reduction services, which when compounded by pandemic-associated stressors, health care shutdowns, and an increasingly unregulated drug supply, may also have increased fatal overdose risk (Bruzelius et al., 2022). Targeting some of these explanatory models and looking towards prevention, increasing access to prenatal care in general (Gosdin et al., 2022), along with increased collaboration with drug and alcohol treatment programs, integration of mental health services into clinical care (National counsel for mental well-being, 2010; Gosdin et al., 2022), and closer follow-up for drug- and alcohol-using women and their children (Wolfe et al., 2005) may improve maternal mortality outcomes.



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1. Bruzelius E, Martins SS. US Trends in Drug Overdose Mortality Among Pregnant and Postpartum Persons, 2017-2020. *JAMA*. 2022;328(21):2159-2161. doi:10.1001/jama.2022.17045. 2. Canty L. The lived experience of severe maternal morbidity among Black women. *Nurs Inq*. 2022;30(20):e26466. doi:10.1111/inq.12646. Epub 2021 Oct 11. PMID: 3463606. 3. CDC (2013) PRAMS and Smoking. www.cdc.gov/prams/TobaccoandPrarms.htm. 4. CDC (2023) Working Together to Reduce Black Maternal Mortality. 5. Jarlenski, M., Kranz, E., Chen, Q., Rothernberger, S., Cartus, A., Zwin, K., & Bodnar, L. (2021). Substance use disorders and risk of severe maternal morbidity in the United States. *Drug and Alcohol Dependence*, 216, 108256. <https://doi.org/10.1016/j.drugalcdep.2020.108256>. 6. Kahila, H., Gustaf, M., Sarkka, T., Autili-Ramio, I., & Halmesmaki, E. (2010). Maternal welfare, morbidity and mortality 6-15 years after a pregnancy complicated by alcohol and substance abuse: A register-based case-control follow-up study of 504 women. *Drug Alcohol Dependence*, 111 (3), 255-261. 7. Kramer MR, Laibold K, Zertuche AD, Runkle JD, Bryan M, Freymann GR, Austin D, Adams EK, Dunlop AL. Severe Maternal Morbidity in Georgia, 2009-2020. *Med Care*. 2023 May 15;61(5):e58-267. doi: 10.1097/MLR.0000000000001819. Epub 2023 Jan 11. PMID: 36838324; PMCID: PMC10793300. 8. Margerison, C., Roberts, M., Gernoni, A., & Goldman-Keller, S. (2022). Pregnancy associated deaths due to drugs, suicide and homicide in the United States, 2010-2019. *Obstetrics & Gynecology*, 139, 172-180. DOI: 10.1097/AOG.0000000000004649. 9. Mbah, et al. (2012) Association between cocaine abuse in pregnancy and placenta-associated syndromes using propensity score matching approach. *Early Hum Dev*, 333-337. 10. National Council for Mental Wellbeing. Substance use disorders and the person-centered healthcare home. Washington, DC, 2010. https://www.thenationalcouncil.org/wp-content/uploads/2020/10/National_Council_SU_Report.pdf?dfr=375a1e1b56. 11. Trost SL, Beauregard J, Njia F, et al. Pregnancy-Related Deaths Data from Maternal Mortality Review Committees in 36 US States, 2017-2019. Atlanta, GA: Centers for Disease Control and Prevention, US Department of Health and Human Services; 2022. 12. Tucker Edmonds B. Mandated Reporting of Perinatal Substance Use: The Root of Inequity. *JAMA Pediatr*. 2022;176(11):1073-1075. doi:10.1001/jamapediatrics.2022.3436. 13. Wolfe, E. L., Davis, T., Guydish, J., & Delucchi, K. L. (2005). Mortality risk associated with perinatal drug and alcohol use in California. *Journal of perinatology*, 25(2), 93-100. <https://doi.org/10.1038/sj.jp.721214>