DEPARTMENT OF HEALTH

Maternal Morbidity and Mortality

DISABILITY, POOR HEALTH OUTCOMES, OR LOSS OF LIFE THAT OCCUR DURING PREGNANCY, LABOR/DELIVERY, OR THE POSTPARTUM PERIOD

Why It's Important

Maternal morbidity (severe pregnancy and postpartum complications) and maternal mortality (death of a mother during pregnancy or within 1 year after giving birth or end of a pregnancy from any cause) are viewed internationally as indicators of the overall health status of a country, state, or community. While motherhood can be a positive and fulfilling experience, some women associate pregnancy with suffering, ill health, and death. The impact on individuals, children, families, communities, and future generations is significant. Preliminary data from Minnesota Vital Records shows that each year in Minnesota during pregnancy, labor/delivery, or the year postpartum approximately 20-35 women die and approximately 3,000 women experience morbidities. In the United States, maternal mortality doubled between 2000 and 2015 and disproportionally affects African American/black, American Indian, and Hispanic women.[1]

Centers for Disease Control estimates that more than half of the reported pregnancy-related maternal deaths in the U.S. would have been prevented by early diagnosis and treatment.[2]

The leading cause of preventable pregnancy-related deaths among mothers in the United States is hemorrhage followed by chronic medical conditions, preeclampsia, and infection, some of which can be prevented or mitigated with early diagnosis and appropriate intervention.[2] The Centers for Disease Control and Prevention (CDC) found that approximately sixty percent of pregnancy-related deaths from 13 states from 2011-2015 determined that preventability of maternal deaths did not vary by race/ethnicity or by timing of death.[2] By identifying contributing factors and implementing prevention strategies at the community, health facility, patient, provider, and system levels such as improving access to, coordination and delivery of care, can prevent future deaths.[2]

Preliminary data from Minnesota Vital Records shows the leading causes of maternal mortality, from 2011-2017 are obstetric complications, unintentional poisoning, violence, non-obstetric complications, motor vehicle crashes, and suicide. Obstetric complications include but are not limited to obstetric hemorrhage, unanticipated complications of obstetric management, hypertensive disorders in pregnancy, and pregnancy-related infections. Approximately a third of the preliminary determined maternal deaths in Minnesota resulted from suicide, unintentional poisoning (drug-overdose), or violence. In Minnesota most maternal deaths occurred between 43 days and 1 year post-delivery (43.6%), followed by during pregnancy (24.5%) and within 42 days of delivery (21.3%).

For every woman who dies of pregnancy-related causes, 20 or 30 others experience acute or chronic morbidity, often with permanent sequelae that undermine their normal functioning.[3]

Maternal morbidity, any health condition attributed to and/or aggravated by pregnancy and childbirth that has a negative impact on a woman's well-being, has increased by 75 percent in the United States in the past decade.[3,4] Maternal morbidity includes complications in pregnancy, childbirth or postpartum, and can range in severity from non-life threatening urinary incontinence to exacerbation of previously diagnosed medical condition, chronic pain, or potentially fatal strokes.[3] Health conditions related to

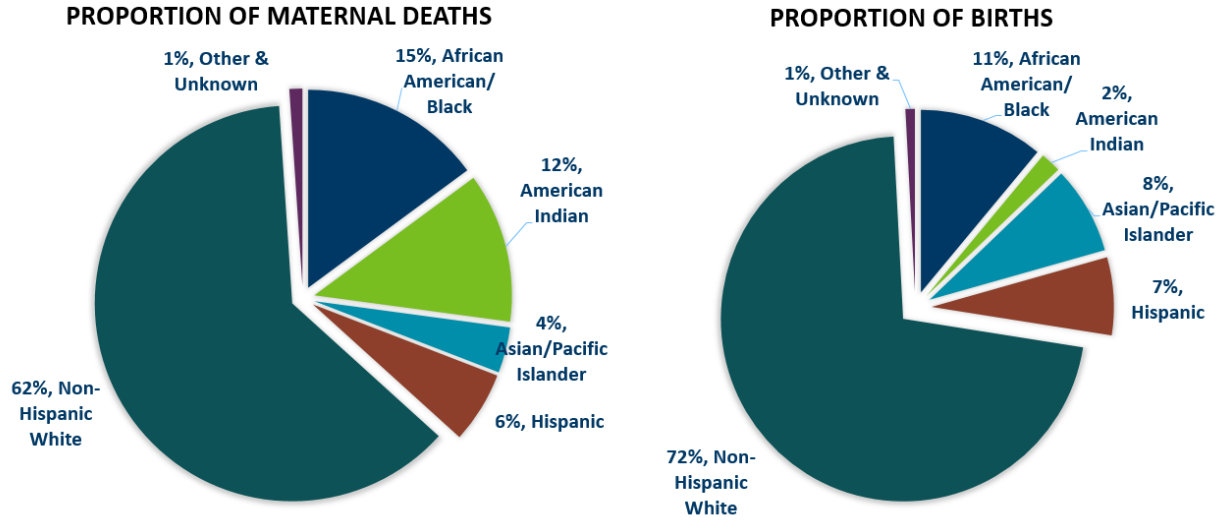
maternal morbidity can be temporary or can last for the rest a mother's life resulting in poor health outcomes or disability.

> *"After giving birth I stayed in the hospital recovery for a few days due to a C-section. I wish the nurses/doctors informed me about post-partum hypertension. I was induced over two days and I believe that was a side effect of the Pitocin. I ended up going to the ER afterwards to figure out why my blood pressure was so high. Scary! They gave me medications which helped my BP go down after a few days. I'm hoping that other women are made aware of this by providers as this is very dangerous and can be deadly." – Minnesota PRAMS Survey Respondent*

Focus on Health Equity

Tracking difference across populations in Minnesota for maternal mortality is difficult as there are few deaths each year. When we combine data from multiple years we are able to see significant disparities in maternal mortality rates across different race and ethnicity groups. Preliminary data from Minnesota Vital Records, 2011-2017, shows African American/black women are 1.5 times more likely and American Indian mothers are 7.8 times more likely to die during pregnancy, delivery, or the year post-delivery than non-Hispanic white women. When breaking down the African American/black population further the data shows U.S. born African American/black women are 2.8 times more likely to die during pregnancy, delivery, or the year post-delivery than non-Hispanic white women. Another way to look at the disparity data is to compare the proportion of births to the proportion of deaths (see Figure 1).

Figure 1. Comparing the Proportion of Minnesota Maternal Deaths to the Proportion of Minnesota Births by Race/Ethnicity, 2011-2017



Source: Minnesota Department of Health, Minnesota Resident Maternal Mortality File

In the United States severe maternal morbidity is 50 to 100 times more common than maternal death, and has increased disproportionately among ethnic/racial minority women.[5] However, specific knowledge about how the types and timing of severe maternal morbidities affect ethnic/racial minority women is poorly understood. In Minnesota, maternal morbidity data reported on the birth record shows disparities by race/ethnicity. From a study on Californian births from 1997-2014, the prevalence of severe maternal morbidity was highest in non-Hispanic black women and lowest in non-Hispanic white women but increased by approximately 170 percent in each racial/ethnic group.[5] Experiencing

conditions during pregnancy such as preeclampsia and gestational diabetes can place women at higher risk for experiencing maternal morbidity, including difficult deliveries and postpartum recovery.[3,6] Barriers to care differ by race and ethnicity and include health insurance coverage, cost, convenience, fear, and lack of information on how to address postpartum health issues can perpetuate maternal morbidity.

Additional Considerations

The reasons for the overall increase in pregnancy-related mortality are unclear. Some of the increases in maternal mortality can be attributed to improved identification, changes causes of death medical coding, and the addition of a pregnancy checkbox to the death certificate in many states. With an increasing number of pregnant women in the United States with chronic health conditions such as hypertension, diabetes, and chronic heart disease, pregnant woman are at higher risk of adverse outcomes.

It is also undetermined why severe maternal morbidity is increasing, but changes in the overall health of the population of women giving birth may be contributing to increases in complications.[3] For example, increases in maternal age, pre-pregnancy obesity, preexisting chronic medical conditions, and cesarean delivery have been documented. With increasing severe maternal morbidity prevalence, in addition to the change in overall health of women may contribute to increased medical costs and longer hospitalization stays. Maternal mortality and morbidity has not been studied as in depth on a population level therefore limiting the data collected to women who sought care and leaving out women who did not seek medical care.[3] As a result, very little data is collected on the ways that giving birth and recovering from pregnancy impacts women. Recently, maternal mortality has been the focus of a substantial amount of public funding and research efforts. Tracking and understanding patterns of severe maternal morbidity, along with developing and carrying out interventions to improve the quality of maternal care are essential to reducing severe maternal morbidity.

Data Limitations

Depending on the data source, estimates of the national maternal mortality rate may change. This can be due to differences in definitions used and/or data issues. In Minnesota we use the definitions utilized by both the American College of Obstetricians and Gynecologists (ACOG) and the CDC and examine all deaths that occur while pregnant or within 1 year of the termination of pregnancy including both pregnancy-associated and pregnancy-related deaths.

> *"Doubts about U.S. data on maternal deaths are so profound that some experts have questioned if the rise in U.S. rates over the last 25 years is a mirage, reflecting noise in the numbers rather than a real increase in fatalities."*[7]

Unfortunately because of inconsistent data quality and collection, maternal mortality data is often questioned and not trusted. In Texas a recent study, found after using an enhanced method for identifying maternal deaths approximately half (50.3%) of obstetric-coded deaths showed no evidence of pregnancy within 42 days, and a large majority of these incorrectly indicated pregnancy at the time of death utilizing the pregnancy checkbox.[8] In Minnesota, we have been working to improve case findings, timeliness, and accuracy of maternal mortality data, but still have more work to do. The CDC has taken the lead to provide and implement standardized collection of maternal mortality, to insure states collect and evaluate maternal mortality rates. With recent legislation, states are moving toward evaluating and providing recommendations to communities and health systems to address maternal mortality.

Important Note on Equity and Intersectionality

The Minnesota Department of Health's Title V Needs Assessment Team acknowledges that structural (social, economic, political and environmental) inequities can result in poor health outcomes across generations. They have a greater influence on health outcomes than individual choices or a person's ability to access health care, and not all communities are impacted in the same way.

All people living in Minnesota benefit when we reduce health disparities.

We also acknowledge that the topic addressed in this data story does not exist in isolation– which is important to remember as we do needs assessments and as we start thinking about how we approach solutions. In addition to the needs themselves being intersectional, there are also intersecting processes and systems through which power and inequity are produced, reproduced, and actively resisted.

Citations

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