

Infant Mortality in Ohio

Infant mortality is the rate at which babies die within their first year of life. Infant mortality is a measure that can be used to gauge the trends in women and child health, the quality and availability of medical care, public health practices and the economy overall. Infant mortality rates in the United States are at 6.4 deaths per 1,000 live births. In the state of Ohio, infant mortality rates are equal to 7.71 deaths per 1,000 live births in 2009. According to the Center for Disease Control and Prevention (CDC), Ohio ranks 10th among states and the District of Columbia with the highest rates of infant mortality.¹

Within the state of Ohio there are health disparities in infant mortality rates. Black infants are twice as likely to die in Ohio during their first year of life compared to white infants with rates of infant mortality being 15.2 per 1,000 live births among Black infants and 6.0 per 1,000 live births among white infants.² In more recent data, Ohio ranks 49th in Black Infant mortality, having the second worst birth outcomes for Black infant in the nation. Health disparities have also been observed among adolescents who give birth between the ages of 15 and 17 years among all races and ethnicities and also among those who reside in Ohio's Appalachian counties.³

Socio-Ecological Model and Infant Mortality

The health of an individual is determined by more than their genetic makeup and the lifestyle choices that they make. While both play a role in health outcomes, there are also structural and social forces in a person's life, which they may have little control over, that impact health outcomes. Infant mortality rates are impacted by each level of society. Each of these levels is described in the Socio-Ecological Model and include public policy, community, organizational, interpersonal and individual. This model helps to provide a framework to understand how disparities impact infant mortality rates in Ohio.



Individual Level: The Infant and the Mother

Characteristics of the Infant

According to the CDC, preterm birth affects 1 in every 9 infants born in the U.S. and is the leading cause of infant death, representing 35% of causes of infant deaths in 2008.⁴ In 2010, Ohio ranked 15th among states with the highest rate of preterm deliveries at a rate of 12.7%, a rate higher than the goal of 11.4 set by the Healthy People 2020 objective.⁵

Low Birth Weight is defined as weighing less than 2,500 grams at birth. Some of the risk factors for low birth weight include birth defects, maternal chronic health issues, alcohol or tobacco use, socioeconomic status and being of African American race. In Ohio, 8.6% of all births in 2011 were low birth weight and there are racial disparities among these rates. In Ohio, 13.6% of births among non-Hispanic blacks are low birth rate compared to 7.3% among non-Hispanic whites and 7.4% among Hispanics.⁵

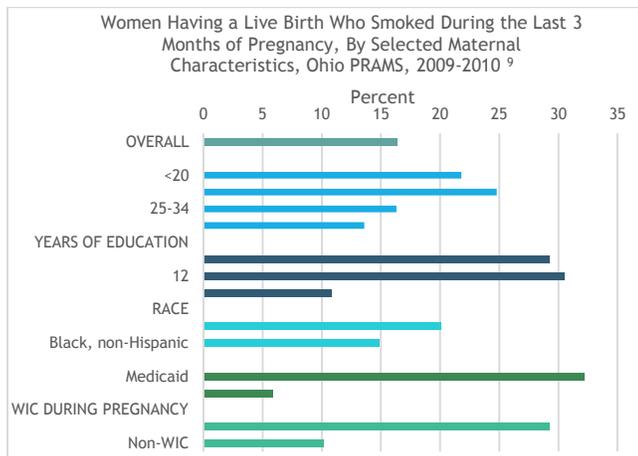
Sudden Infant Death Syndrome (SIDS) is defined as the sudden death that cannot be explained after a thorough investigation is conducted which includes a complete autopsy, examination of the death scene and review of the clinical history of the infant. In 2009, the largest number of infant deaths was attributed to SIDS. The risk factors for SIDS include smoking, lack of breastfeeding and lack of safe sleeping environment.³

Characteristics of the Mother

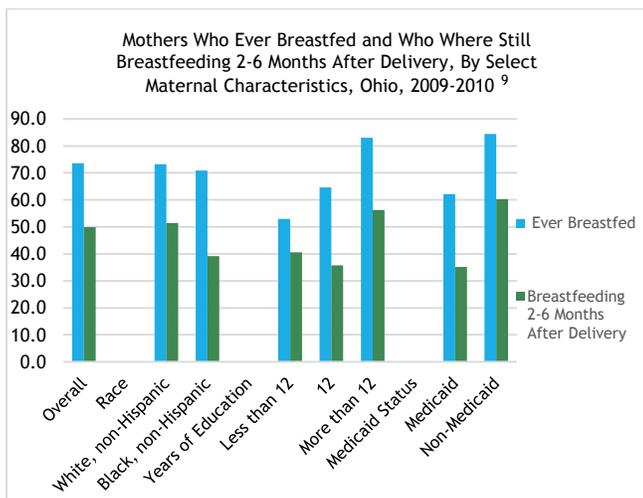
Infants born to teens and older women have an increased risk of death within their first year of life and one study has linked the risk for SIDS to lower maternal age.⁶

Maternal stress during pregnancy has been associated with increased rates of preterm delivery and it is suggested that it is a cause for the racial and ethnic disparities in preterm deliveries.⁷ This is because stress may affect Black women at a higher rate given the stress caused by chronic racism, poverty and discrimination that many Black women face.⁸

Smoking during pregnancy and smoke in the infant's environment after birth has been shown to be a major risk factor for SIDS and other adverse birth outcomes. Smokers have consistently been shown to have worse birth outcomes when compared with non-smokers. However, Black women who did not smoke during pregnancy had worse birth outcomes than white pregnant women who did smoke.⁸



Research has shown that breastfed infants have a 20% lower risk of dying between 28 days and one year after their birth compared to infants who are not breastfed.¹⁰ In the CDC's Breastfeeding Report Card 2012, Ohio ranked 6th in the lower rates of mothers who reported ever breastfeeding their infants. 62.3% of Ohio mothers reported breastfeeding their infants in comparison to 76.9% nationally.¹¹ In Ohio, black mothers, those with less education and women receiving WIC benefits have been shown to be less likely to continue breastfeeding 2-6 months after giving birth.⁹



Sleep-related infant deaths are those that occur unexpectedly and suddenly in a sleep environment and represent one of the leading causes of infant death. In Ohio, more than 3 infant deaths each week are sleep related. It is recommended by the American Academy of Pediatrics that infants sleep on their backs.¹² However, at least one third of infants sleep in the non-recommended prone position most of the time. According to the Ohio Department of Health, 72% of mothers report placing their infants on their backs when they sleep.³ There are racial disparities among infants whom sleep on their backs in Ohio. In 2009-2010, only 53.2% of black women having a live birth reported putting their infant on their backs when they sleep compared to 76.4% of white non-Hispanic mothers.⁹

Interpersonal Level

Family Structure

Women with the fathers' names or demographics partially or completely missing from the birth certificate have an increased risk for preterm birth, low birth weight and infant mortality. This missing data is an indicator that suggests little paternal involvement.¹³ Infants born to single mothers have more adverse outcomes than infants born to married mothers across races.⁸ This may be due to lack of a supportive male partner which can equate to a lack of a buffer against stress. This disparity may also be due to the fact that single woman households tend to be impoverished more often and for longer periods of time than married or coupled households. Black single mothers have the highest crude mortality rates.⁸

Women who are victims of intimate partner violence have a higher risk for giving birth prematurely, having a low birth weight baby and infant mortality compared to women who have not experience intimate partner violence.⁸

Experiences of Discrimination and Inequity

Internalized racism is the acceptance of stigma and negative messages about self-worth which translates to embracing self-devaluation and helplessness. Internalized racism has been shown to have an impact on infant mortality. Black women who had poorer birth outcomes reported racism at a higher level than those who did not report racism from the same providers.⁸ Internalized racism can impact the stress level of the mothers which can increase the likelihood of a preterm birth.

Organizational Level

Health Care

Lower risk of SIDS has been linked in many epidemiological studies with obtaining regular prenatal care.⁹ Prenatal care has also been linked to better birth outcomes. However, in 2007, 17% of mothers in the state of Ohio did not receive prenatal care within their first trimester.³

Obtaining early prenatal care seems to be beneficial for all women in terms of better birth outcomes but receiving prenatal care or not does not explain the racial disparities between Blacks and White.⁸ According to one study, even after controlling for demographics and complications, racial disparities still existed between Blacks and Whites in infant mortality rates even when both are given access to early prenatal care.⁸

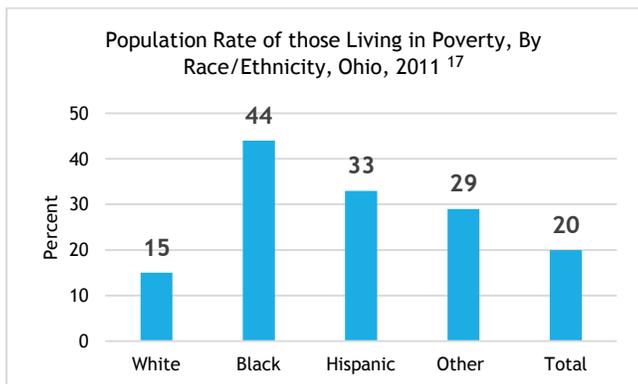
Though policies such as the State Children's Health Insurance Program have improved access for Black mothers and their infants, the quality of care that they receive has not improved nor has it improved the gap in the racial health disparities.⁸

Education

In the US, the states with a greater proportion of women who have attended college have lower rates of infant mortality.¹⁴ The racial disparity between non-Hispanic Blacks and Whites in infant mortality rates increases with maternal education—the high-education population has a larger racial difference both in absolute difference in the death rates and in the relative risk.¹⁵ In Ohio, an infant born to a black mother who has five or more years of college education will still have a greater chance of dying when compared to an infant born to a white mother with a high school education or less.³

Poverty

Research has shown that states in the U.S. with a smaller proportion of women living in poverty have a lower rate of infant mortality.¹³ Poverty places a population at risk for many factors that can contribute to infant mortality rates. These factors include the economic and psychosocial factors related to place of residence, and the environmental, social, and behavioral correlates of poverty.¹⁶



In Ohio, minority populations are more likely to live to in poverty, with non-Hispanic Blacks at a rate that is almost 2.5 times the rate of non-Hispanic Whites.¹⁷ Given the rates that are seen among non-Hispanic Whites and non-Hispanic Blacks for those living in poverty, this disparity can be one of the many causes of the health disparities in infant mortality that are seen today.

A study of the impact of income and income inequality in the US on infant health outcomes found that as median family income decreased, rates of pre-term birth rate, low birth weight rate, very low birth weight rate and infant mortality rate increased.¹⁸ The study also found that as the income inequalities increased in the population, so did the rate of the infant health outcomes.¹⁶ Though this data shows that disparities in income impact infant health, the data shows that infant health outcomes are more impacted by absolute wealth rather than relative wealth.

Community Level

Quality of Housing

Historically, in the US, blacks have resided in neighborhoods that are generally poorer than those inhabited by other racial/ethnic groups. As of 2000, blacks were still over 3

times as likely to reside in extremely poor neighborhood compared to whites.¹⁹ After controlling for economic and other factors, minority neighborhoods continue to maintain higher rates of adult morbidity and mortality than White neighborhoods. Residential segregation leads to differential experiences of community stress, exposure to pollutants, and access to community resources.⁸ The differences in these experiences and exposures may be a part of why the health disparities exist.

Access to Healthy Foods

Optimal birth outcomes are dependent upon the intake of sufficient nutrients for both mother and child. Inadequate intake of energy, protein and micronutrients can lead to poor fetal growth which can lead to adverse health outcomes.²⁰ A study of middle and low-income women in their third trimester of pregnancy found that the women had lower than required intakes of vitamin D, phosphorus, folate, calcium and iron while having higher than required intakes of fat and sodium. This sort of diet predisposes these women to various adverse birth outcomes including preterm birth and birth injuries for the neonates.²¹

Public Policy Level

Research examining public health spending found that 10% increase in a state's budget dedicated to public can lead to a 6.9% decrease in the rates of infant mortality.²² While Ohio has increased public health spending per resident since 2009, Ohio still lags behind other states, ranking 7th among the states that spend the least per capita.²³ Those states that spent more on public health tended to have infant mortality rates that were lower than those states that spent less, which again illustrates the connection between public health spending and infant mortality rates.

Along with an increase in funding, a reform in the models used in public health initiatives/interventions could improve infant mortality rates. The "Life Course" perspective is a new model for thinking about maternal health that incorporates social determinant factors and focuses on life course factors throughout a mother's lifespan which will influence infant health rather than just prenatal and postnatal health.²⁴ This model interprets poor infant health outcomes as not only the result of events during pregnancy, but also the result of a life time of experiences and exposures which impact health. The "Life Course" model seeks to lower infant mortality through increasing health care access, improving health care quality, addressing wellness and improving family and community conditions.²⁵

The Northern Manhattan Perinatal Partnership (often referred to as the Harlem Better Baby Zone) applies aspects of the Life Course model, focusing comprehensive community strategies in Central Harlem to support maternal and infant health. The initiative involves a multi-sector collaborative approach of aligning programming and investments to improve access to care while also improving the built environment to support community health.²⁶ These community improvement strategies have included air quality improvements through better transit planning, job development initiatives for young women and mothers, \$300

million in community revitalization efforts to improve housing, access to fresh food and economic development. The initiative also organizes stakeholder to advocate for policy reform such as regionalization of perinatal care and new hospital investments. Since the program's inception, infant mortality rates in Central Harlem have dropped from 27.7 infant deaths per 1,000 live births to less than 10 infant deaths per 1,000 live births.²⁵ Similar programs modeled after the Northern Manhattan Perinatal Partnership are being established in Milwaukee, WI and Oakland, CA. Implementing such a program in Ohio has the potential to strengthen efforts to decrease infant mortality rates across the state.

Recommendations

Infant mortality rates are impacted at various levels of society and by factors that impact the mother prior to her

pregnancy. In order to effectively address infant mortality, there is a need to address these factors at these various levels. Efforts to address infant mortality should not only include pregnant women and new mothers, but also children and youth as well. This strategy will seek to alter negative "life course" factors influencing health prior to pregnancy. A statewide sustained commitment to address social determinants of health to improve health equity is essential to reducing infant mortality. These are efforts that have to come from more than just the public health and medicine sectors. The issue of infant mortality requires actions from national, state, community, family and individual levels and should include both public and private partnerships. By maximizing the potential for partnerships and collaboration across disciplines and organizations, innovation, technology, expertise, community assets and other resources can be shared to help eliminate disparities and reduce infant mortality.

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