Maternal and Infant Mortality in North Carolina

Belinda Pettiford

Infant mortality is considered a key indicator of the overall health of the population, and both infant and maternal mortality are multifaceted problems impacted by factors such as access to care, poverty, systemic racism, and housing. This article outlines state efforts to address maternal and infant mortality, improve birth outcomes, and address inequity.

Introduction

The death of an infant in the first year of life (infant mortality) is considered a sentinel public health event and a key indicator of the overall health of the population [1]. In 2019, the infant mortality rate for North Carolina was 6.8 deaths per 1000 live births, which tied with the all-time low from 2018 but was plagued with persistent racial disparities [2, 3]. In 2019, the Black, non-Hispanic infant mortality rate was 12.5 per 1,000 live births, and with smaller overall numbers the American Indian, non-Hispanic rate was 12 per 1,000 live births [3]. The disparity ratio is greater than two-fold when compared to the white, non-Hispanic rate of 4.7 and the 5.0 rate for Hispanic births (Figure 1) [3]. In 2019, North Carolina ranked 38th in infant mortality in the United States with only 12 states having a higher rate [4].

Infant mortality is a multifaceted problem impacted by both health and societal issues, such as access to care, poverty, systemic racism, and housing. The leading causes of infant deaths include low birth weight (babies weighing less than 5.5 pounds) and prematurity (babies born after a gestation period of less than 37 weeks), followed by birth defects and maternal factors [5].

State Efforts to Improve Birth Outcomes

During the last several decades, numerous efforts have been implemented to improve birth outcomes. In 1974, the North Carolina Perinatal Health Strategic Plan and Statewide Perinatal Advisory Council were established, and in 1975 six Perinatal Care Regions were designated. Multidisciplinary, high-risk maternal care clinics were established and funded in 18 areas around the state. Also beginning in 1975, the Perinatal and Neonatal Outreach and Education Coordinators (POETS and NOETS) were created to provide professional education to hospitals, health departments, and other health care providers on current clinical maternal health and newborn practices. The Neonatal Bed Locator was established to provide a way for clinicians and providers to locate an available neonatal intensive care bed in the state. These programs were designed to strengthen clinical services for pregnant and postpartum individuals and their infants.

Beginning in the 1980s, Medicaid for Pregnant Women (MPW) made incremental changes to cover prenatal care and delivery for low-income individuals and their infants up to 60 days after delivery. In 1987, the Baby Love Program began and included income eligibility at 185% of the federal poverty level for MPW. Other services included maternity care coordination, childbirth education, health behavior intervention, home visits for postnatal assessment and follow-up care, and maternal skilled nurse home visits. The Maternal Outreach Worker Program, utilizing community health workers, was later added as part of the Baby Love Program to reach families with closer connections to their communities.

In 1990, through executive order, the Governor's Commission on the Reduction of Infant Mortality was created to determine ways to reduce infant mortality rates. As a result, the Rural Obstetrical Care Incentive and the Certified Nurse Midwifery Programs were funded to support physicians and/or certified nurse midwives to provide prenatal and postpartum care in rural communities. The commission also focused on increasing community education and public information by establishing the NC Healthy Start Foundation and First Step Campaign. The 1-800-FOR-BABY line was developed for individuals to connect to prenatal care and child health services. During this time, the commission focused on prioritizing communities with additional support through Healthy Beginnings, eight targeted infant mortality reduction projects, and 15 minority infant mortality reduction projects. The governor's commission ended in 1995, and due to state budget challenges, many of these programs were eliminated.

The Child Fatality Task Force (CFTF), a legislative study commission, was established in 1991 by the General Assembly to examine all child deaths in the state and make recommendations for improvement. With two-thirds of the deaths occurring in the first year of life, the Perinatal Health

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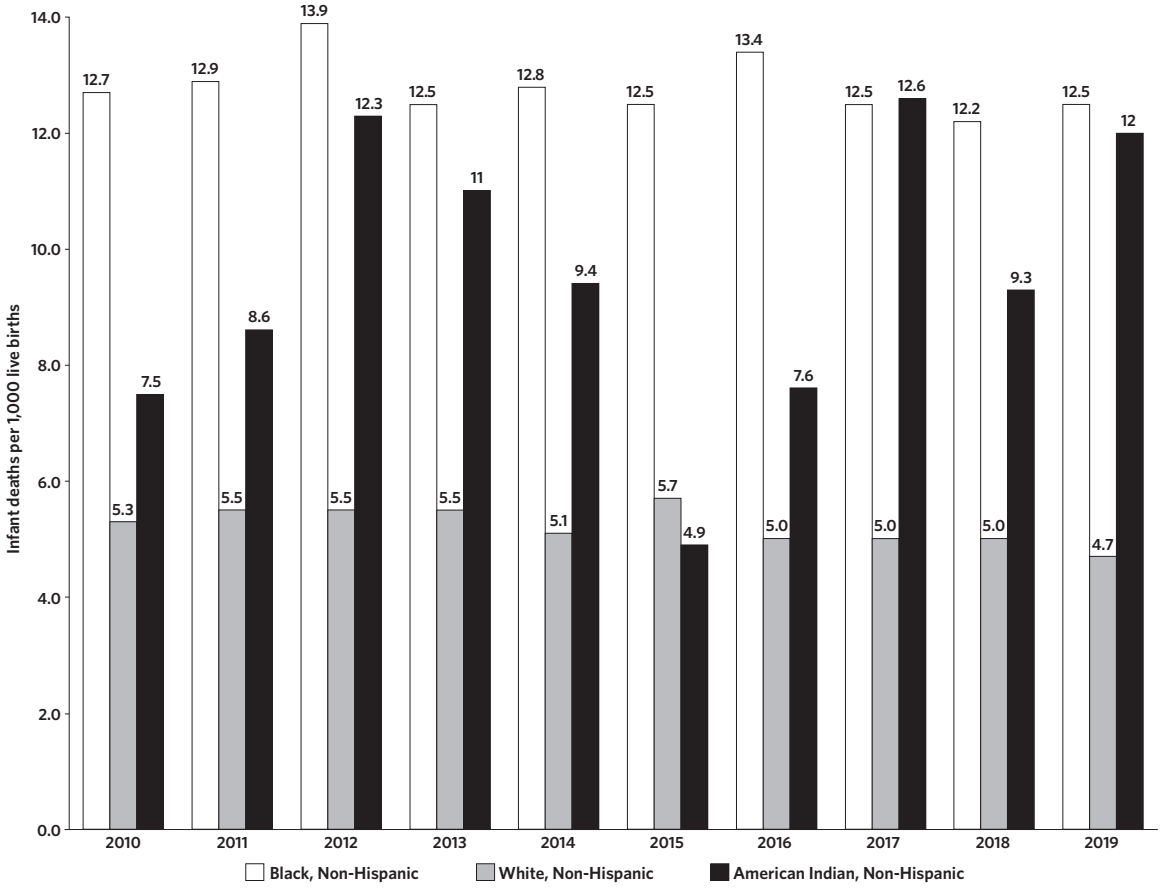
FIGURE 1.
North Carolina Resident Black, White, and American Indian Infant Mortality Rates 2010–2019



Source. Sarah McCracken, coordinator, NC State Systems Development Initiative Project. Data from NC State Center for Health Statistics.

Committee of the CFTF focuses on infant deaths. Since the inception of the CFTF, infant deaths in the state have decreased by 37.6% [2].

In 1997, North Carolina received its first two federally funded Healthy Start programs, Eastern Baby Love Plus and Healthy Start Corps. Triad Baby Love Plus and Northeastern Baby Love Plus were funded in 1999 and 2000, respectively. These programs focused on perinatal health disparities with a robust effort on community engagement, education, and outreach. More recently, the Baby Love Program has continued as the Maternal Support Services program. The care management arm transitioned in 2011 by moving from the Maternity Care Coordination program to the Pregnancy Care Management program as part of the Pregnancy Medical Home (PMH). The Division of Health Benefits/Medicaid, in partnership with the Division of Public Health (DPH) and Community Care of North Carolina, developed a PMH program inclusive of pregnancy care management services. The goal of the PMH model is to improve the quality of maternity care, improve birth outcomes, and provide continuity of care, engaging medical practices as PMH providers and local health departments as providers of pregnancy care management.

To ensure access to prenatal and postpartum care, local health departments are required to provide or ensure prenatal care services in their communities. This includes care provided on a sliding fee scale to increase access for low-income individuals who are under- or uninsured. This fee structure also applies to child health and family planning services. Local health departments accept Medicaid and other insurance reimbursement when available but continue to see many individuals without a payor source for services. The state-federal partnership, the Title V Maternal and Child Health Block Grant (MCHBG), supports local health departments with this effort along with Title X, the only federal program focused on family planning services. As these funds tend to remain static, the cost of inflation has not been addressed.

In 2012, North Carolina was one of the first states to participate in the national Collaborative Improvement and Innovation Network to Reduce Infant Mortality (CoIIN). Our state was selected, in part, due to decades of high infant mortality rates in comparison to other states. During this work, North Carolina team members reflected on the efforts that had been implemented to improve our infant mortality rate and the need for North Carolina to utilize a statewide

infant mortality reduction plan. The collaboration continued to grow while working on the five original areas of CoIIN: safe sleep, early elective delivery, tobacco cessation during pregnancy, interconception care, and perinatal regionalization. In 2014, the original CoIIN group expanded and convened to develop a statewide Perinatal Health Strategic Plan (PHSP) to guide the work [6]. With leadership from the DPH, collaboration expanded quickly. This group selected a framework grounded in equity and included a strong focus on social determinants of health. Over 120 thought leaders accepted the invitation to provide input, feedback, and guidance for the plan. The three overarching goals included improving health care for individuals of reproductive age, strengthening families and communities, and addressing social and economic inequities [6].

In 2015, the North Carolina General Assembly appropriated $2.5 million in recurring state funds to address infant mortality and improve birth outcomes and the health status of children aged 0–5 [7]. Using a request for applications (RFA) process, local health departments can apply every two years for funds to address all three areas while implementing evidence-based strategies (EBS). During the current fiscal year, five local health departments are serving 13 counties. Strategies that are being implemented include reproductive life planning inclusive of increasing access to long active reversible contraceptives; breastfeeding; smoking cessation and prevention; the Positive Parenting Program; and Family Connects. The Improving Community Outcomes for Maternal & Child Health Program includes a collaboration with the University of North Carolina at Chapel Hill to support evaluation efforts.

The General Assembly directed the Department of Health and Human Services (DHHS) in 2015 to utilize $1.575 million of MCHBG funding to address infant mortality in counties with the highest rates [7]. Funds were allocated through partnerships with local health departments to the 25 communities with the highest recent five-year infant mortality rate to implement EBS to improve birth outcomes. This effort allowed local communities to select the areas of focus that fit their needs.

The PHSP was formally released in March 2016 to cover the 2016–2020 timeframe [6]. The PHSP team is finalizing a data brief to share data from the plan's implementation phase. This same team is also preparing for the release of a continuation plan focused on 2021 through 2025. To strengthen the focus on early childhood, the Early Childhood Action Plan was released in 2019 through an executive order, with an emphasis on children aged 0–8. One of the 10 goals in the Early Childhood Action Plan is the Healthy Babies initiative, with the goal that "babies across North Carolina from all backgrounds will have a healthy start in their first year of life" [8].

With the focus on broader perinatal health, it continues to be evident that healthier women tend to have healthier birth outcomes, and intended pregnancies are inclined to be healthier. Access to women's wellness, preconception, and interconception services is necessary in our work. As many individuals do not have access to insurance, this impacts their ability to have a health visit prior to and between pregnancies. Expanding Medicaid in our state would have a positive impact on healthier women and healthier birth outcomes.

The North Carolina Chapter of the March of Dimes leads the Preconception Health Campaign utilizing MCHBG funding. Limited funds are also used to collaborate with the National Office of Minority Health to implement Preconception Peer Education Programs in partnership with mainly historically Black colleges and universities in the state. These students are trained on health issues that impact young adults so they can share information with their peers and adjoining communities. This program has expanded to community colleges and other universities in recent years.

Focus on Maternal Mortality

NCDPH has reviewed maternal deaths since 1945. In 1988, the DPH's State Center for Health Statistics enhanced its review process by gathering data from all birth certificates that included pregnancy as an underlying or contributing cause of death along with a focus on International Classification of Diseases (ICD) codes related to pregnancy. With the leadership of Dr. Margaret Harper, a maternal-fetal medicine Physician at Wake Forest Baptist Medical Center, maternal deaths were determined to be pregnancy related or associated. In December 2015, the General Assembly established the Maternal Mortality Review Committee (MMRC) to review all North Carolina maternal deaths and make recommendations for improvements. In November 2020, the MMRC completed reviews of death through 2016, and a new report is forthcoming. To support the work of the MMRC, North Carolina was awarded a Centers for Disease Control and Prevention grant focused on enhancing reviews and surveillance to eliminate maternal mortality.

Realizing the connection between maternal and behavioral health, the North Carolina Maternal Mental Health MATTERS (Making Access to Treatment, Evaluation, Resources & Screening Better) Program, was developed to strengthen systems for pregnant and postpartum women with maternal depression and related behavioral health disorders. In 2019, the North Carolina Institute of Medicine Perinatal Systems of Care Task Force was convened. Based on the task force's early recommendations, North Carolina applied and was awarded another federal grant, Maternal Health Innovations, using an equity lens to focus on reducing maternal deaths and improving overall maternal health. This program includes implicit bias training for providers as well as other efforts to strengthen our perinatal system of care.

Due to the dedicated and collaborative work of many stakeholders, we have seen improvements in some areas. As North Carolina continues to address infant mortality and maternal health, we must strengthen our focus on reducing

the gap. We cannot celebrate success until *all* individuals are experiencing positive outcomes. NCMJ

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