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## **The Public Health Nursing Role in Improving Outcomes for Mississippi Families: Recent Findings on Mississippi Infant Mortality**

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### **Abstract**

**Background:** The infant mortality rate (IMR) is the single most significant measure of the health of a population. Historically, Mississippi has led the nation with the highest rate of infant mortality. In 2007, there were 10.1 infant deaths per 1,000 live births.

**Literature review:** Through a combination of statistical analytical strategies and community-based research approaches, a body of evidence has begun to take shape revealing factors contributing to high rates of low birth weight, premature birth and Sudden Infant Death Syndrome, the leading causes of Mississippi infant mortality.

**Discussion:** The findings demonstrate that Mississippi infant mortality is, in fact, a broad problem with multiple contributing factors. No one solution can be designed to untangle the complexities and intermingling of phenomenon that contribute to poor birth outcomes among Mississippi infants, but many opportunities exist where public health nursing can intervene to improve public health practice and infant outcomes.

**Conclusion:** Public health nursing is situated in a formidable position to improve access, assure cultural sensitivity, eliminate disparities, educate, investigate, and document evidence-based public health practice. By intervening at multiple opportunities, the public health nurse presents as a key player in improving outcomes for Mississippi families.

**Keywords:** public health, infant mortality, premature birth, low birthweight, SIDS

# **The Public Health Nursing Role in Improving Outcomes for Mississippi Families: Recent Findings on Mississippi Infant Mortality**

## **Background**

The infant mortality rate (IMR) is the single most significant measure of the health of a population. Theoretically, healthier families living in healthier environments with adequate access to resources produce healthier infants. Likewise, less healthy families living in less healthy environments with inadequate access to resources produce less healthy infants. Historically, Mississippi has led the nation with the highest rate of infant mortality. In 2007, there were 10.1 infant deaths per 1,000 live births.<sup>1</sup> For more than a decade, about one of every 100 live born Mississippi infants have not survived to celebrate the first birthday (see Figure 1). The purpose of this study was to assess current findings on Mississippi infant mortality and discuss the role of the public health nurse in improving birth outcomes.

Mississippi has high rates of adult health problems including the highest rate of obesity and high prevalence of chronic illnesses such as diabetes, hypertension, cardiovascular disease, cancer, and renal failure.<sup>2</sup> Mississippi is also burdened with some of the most challenging social determinants of health such as poverty, lower education levels, poor health literacy, unemployment, and single parent households.<sup>3</sup> All of Mississippi's 82 counties contain areas federally designated as medically underserved with startling numbers of healthcare professional shortages.

Public health nursing has a long tradition of improving outcomes for Mississippi infants and their families. Public health nursing is a broad, population-based practice that serves in a variety of health promotion and health protection activities including health surveillance, disease prevention and maintenance, patient advocacy, and health policy development. The role of the public health nurse has become increasingly complex in recent years as global health hazards and pandemic risks become reality. This concept has been well-demonstrated with extensive media coverage of the ongoing 2009 Pandemic H1N1 flu, nationwide product recalls, a growing public concern over immunization safety, and rising rates of very premature and very low weight births. Public health issues such as these bring to light the role of public health nursing as a valued contributor to global health surveillance and epidemiological capacity. As major contributors to surveillance, epidemiology, and public health science, public health nurses present as key leaders in healthcare advocacy towards increasing equity in access to health services and resources, assuring cultural competence and sensitivity across health programs, eliminating health disparities, educating policy makers and populations, and conducting research to support evidence based public health practice.

## **Literature review**

A search of Pub Med Medline and CINAHL databases demonstrates that little research documented specific findings on Mississippi birth outcomes and infant mortality prior to the year 2007. This constitutes a disturbing absence of evidence to assist in program planning, decisions for funding allocations, and justification of funding proposals for new or innovative strategies to improve these outcomes. As funding opportunities dwindle and become more competitive, it becomes essential that research findings are documented and disseminated to reduce duplication of efforts, avoid unnecessary expense, and provide evidence base for decision making processes.

Since 2007, this public health nurse has collaborated with multiple investigators seeking to document the prevalence and contributing factors resulting in Mississippi's high rates of infant death. Infant mortality is a multi-faceted problem influenced by a spectrum of contributing factors. Through a combination of statistical analytical strategies and community-based research approaches, a body of evidence has begun to take shape revealing factors contributing to high rates of low birth weight, premature birth and Sudden Infant Death Syndrome, the leading causes of Mississippi infant mortality.

The original literature search revealed only a few documents (n=8) that specifically discussed issues relevant to Mississippi birth outcomes and infant mortality. A few studies were generalized to the Mississippi River Delta region but included data for other states extending from Missouri down to Louisiana. All but one of the identified Mississippi studies were more than 15 years old. Thus, only one study less than 10 years old was retained for inclusion in this collection of recent findings.

In 2003, Zotti, Replogle, and Sappenfield examined the relationship between Mississippi prenatal smoking trends and birth outcomes. The study suggested that overall prenatal smoking was declining despite an increase in prenatal smoking among teenagers. The findings emphasized the importance of smoking cessation strategies as a component of prenatal care.<sup>4</sup>

A retrospective cohort analysis of infant birth certificates matched with infant death certificates was conducted to investigate the impact of selected maternal chronic medical conditions, race, and age on preterm birth, low birthweight, and infant mortality among Mississippi mothers. The analysis included 202,931 singleton infants born to African American and white Mississippi mothers during 1999-2003. The results of the analysis indicated that preterm birth, low birthweight, and infant mortality were more prevalent among African-American women, very young women ( $\leq 15$  years old), and women with certain chronic medical conditions including pregestational hypertension and diabetes. The study documented the need for primary and preconception health care as tools for reducing racial disparities in infant mortality.<sup>5</sup>

A study in 2007 proposed to document the impact of Hurricane Katrina on disaster-affected women's access to reproductive health services in Mississippi Gulf Coastal communities. The research design involved completion of a toolkit developed by the Centers for Disease Control and Prevention, Division of Reproductive Health. Women (n=108) were approached randomly while visiting a clinic. Among those utilizing a family planning method at the time of the storm, nearly 90% indicated that no interruption in method had occurred. An unexpected finding was that nearly 40% reported they usually receive their family planning method from the local emergency room or urgent care center. Several responses suggested that much education is still needed to achieve optimal utilization of family planning services in the Mississippi Gulf Coastal communities, a potentially valuable intervention towards improving birth outcomes and reducing infant mortality in the region. Further study is needed to assess the utilization of emergent care sources as a women's health medical home.<sup>6</sup>

Although medical and technological advances have greatly improved infant survival over the past 100 years, there are considerable geographical and racial disparities in infant outcomes. A formal infant death review process can reveal weaknesses within the healthcare and community systems that may contribute to infant death. A study described the use and findings of the PDSA (Plan, Do, Study, Act) Model for Improvement as a tool for improving infant outcomes and confirmed the need to conduct systematic, structured queries into causal, contributory, and potentiating factors related to infant mortality. Such queries are useful in identifying opportunities to improve healthcare systems and protocols and thus improve infant outcomes.<sup>7</sup>

Considerable disparity exists between white and nonwhite birth outcomes as well as with the burden of chronic diseases and morbidities among Mississippians. Although infants of all demographic and socioeconomic backgrounds are at risk for SIDS, the African American population bears a disproportionate burden of SIDS, a phenomenon noted throughout the world and shared by Mississippi infants. SIDS is the third leading cause of Mississippi infant mortality with nonwhite infants dying of SIDS at two to three times the rate of white infants. A series of six focus groups were conducted in two Mississippi communities. The purpose of the study was to assess the knowledge of SIDS and associated risk factors among African American women. The study revealed weaknesses in the educational materials being utilized by educators. Materials often referenced and displayed unpleasant messages and images of death and dying. The study participants shared a cultural perspective that discussion of death and dying was considered unlucky and could result in death or unpleasant events. Participants recommended that more effective education materials would focus on bright, happy images with messages of "saving lives."<sup>8</sup>

According to §19-21-103 of the Mississippi Code of 1972, the only qualifications for the position of county coroner are age 21 years, high school diploma or equivalent, and valid voter registration in the county of election. An informal

survey was conducted to assess the consistency of Mississippi coroners' practices in accurately identifying SIDS cases. Findings were compared with published guidelines and Mississippi law. Among various discrepancies in protocol identified, one-third of coroners reported they sometimes or never perform investigations at the place of infant death. Although law requires that an autopsy be performed, there is no penalty for not completing an autopsy, making it an unpleasant task that can be easily avoided. Inadequate investigation of suspected SIDS cases could result in inaccurate rates of SIDS events compromising the reliability of Mississippi vital statistics data. This study suggests that failure to accurately diagnose the cause of death could have significant public health implications as public health decisions, practice, and funding allocations are often based on vital statistics data.<sup>9</sup>

A pilot program in two Mississippi communities utilized community health outreach workers to connect high risk minority women with the healthcare system as a strategy for reducing African American disparities in infant mortality. The program evaluation indicated that success was derived through the use of culturally sensitive peer educators with whom the women could closely relate. Interviews with the community health workers affirmed that participants were more likely to comply with recommended interventions with peer support.<sup>10</sup>

An additional study of linked birth and death data for the period 1996 to 2007, sought to describe Mississippi infant mortality, teen pregnancy trends, and strategies for improving maternal and infant health in Mississippi. The analysis underscored the need for extensive action, including redefining the way Mississippi delivers care to women of child-bearing age. The study cited economics and ethics as guiding principles for redesigning primary care for high-risk women stating that keeping families healthy was not only the best economical strategy, but was also simply the "right thing to do". The study recommended assisting women to set and achieve personal goals for reproductive health as a priority consideration for Mississippi physicians.<sup>1</sup>

A retrospective cohort study utilizing 1996-2003 Mississippi linked birth and infant death files aimed to identify factors contributing to high rates of preterm birth, low birthweight and infant mortality while considering both traditional risk factors and maternal medical conditions. The study confirmed that certain maternal medical conditions may be contributing factors and identified preconception and prenatal healthcare as possible strategies for reducing unfavorable outcomes. The study further suggested that maternal race may influence different risk profiles highlighting the need to consider racial groups separately when investigating sociodemographics and health-related contributing factors.<sup>11</sup>

An additional retrospective cohort study of 1996-2003 linked birth and death files assessed prenatal care utilization classified by the Kotelchuck Adequacy of Prenatal Care Utilization Index along with other maternal factors. The study found that about one in five Mississippi women received less than adequate

prenatal care and identified racial disparities in utilization of prenatal care. Black women delayed entry into care, received too few visits, and were more likely to have either “inadequate care” or “no care” compared to white women. Among women with medical conditions, black women were twice as likely to receive inadequate care compared to white women. The study highlighted the need for public health interventions that promote utilization of prenatal and preconception healthcare practices.<sup>12</sup>

## **Discussion**

The preceding findings demonstrate that Mississippi infant mortality is, in fact, a broad problem with multiple contributing factors. Mississippi infant health seems to be the product of less healthy families, living in less healthy environments, with limited access to needed resources. No one solution can be designed to untangle the complexities and intermingling of phenomenon that contribute to poor birth outcomes among Mississippi infants, but many opportunities exist where public health nursing can intervene to improve public health practice and infant outcomes.

*Access:* The high prevalence of chronic and acute illnesses among Mississippians cannot be reduced without adequate access to healthcare for all who need it. The growing numbers of uninsured or underinsured Mississippians and inappropriate utilization of emergency care for non-emergent healthcare services represent only portions of the problem. In many areas of Mississippi, even those possessing an adequate payer source have difficulty obtaining needed medical appointments and establishing medical homes. Public health nursing efforts should be focused on establishing programs and policies that promote access to medical homes, resources for the uninsured, focused case management for chronic disease, and enabling services such as transportation.

*Cultural sensitivity:* Successful public health programs are those which meet the unique needs of diverse populations. Management of chronic disease, obesity, and other morbidities require compliance with medication, physical activity, and nutritional recommendations. This often requires significant life style changes and personal responsibility on the part of the individual. Success demands changes that are culturally appropriate and sensitive to ethnic and cultural variations in choices of food, activities, and perceptions on healthcare and medicinal interventions. The public health nurse should assure cultural sensitivity of services and respect the cultural influences on health-seeking behaviors. Culturally sensitive outreach and case management should be provided to optimize outcomes among high risk and vulnerable populations.

*Elimination of disparities:* Because Mississippi has traditionally led the nation in SIDS deaths and overall infant mortality, public health policies should be planned and structured to reduce African American infant deaths and disparities in birth outcomes. Particular emphasis should be placed on policies that facilitate access

to primary health care services for high risk, non-pregnant women of child-bearing age to improve overall health and well-being prior to pregnancy.

*Education:* Education is a core function of public health nursing as both a tool for enhancing the skills and knowledge base for the nurse as well as a mechanism for promoting and protecting health of populations. The *Public Health Nursing: Scope & Standards of Practice* states that the “public health nurse attains knowledge and competency that reflects current nursing and public health practice.”<sup>13</sup> Obviously, effective advocacy among public health nursing is dependent upon knowledge of public health issues and the need for policy development and revision. A diverse and broad knowledge of public health services and activities is required to be effective in developing policies that improve outcomes among large populations. In effecting change in policy, public health nurse leaders must act as educators for policy developers and healthcare decision makers. Most legislators and policy makers do not have a background in public health and healthcare. Thus, in order for these policy makers to produce informed decisions, the public health nurse should act as educator and informer, providing evidence base and data to support positions and issues.

*Research:* Strong health policy should find its foundation in evidence-based practice and population-based research. The public health nurse should participate in scholarly inquiry and compose documentation to disseminate research findings. Peer-reviewed publication of scholarly work assists not only in contributing to the evidence base for public health practice, but also provides justification for allocation of resources such as funding and staffing and development of strong health policy.

*Advocacy:* The goal of advocacy is to positively influence the decision-making process among funders, program planners, and health policy developers. Advocacy may be directed towards development of new programs or policy to address emerging issues or towards strengthening or eliminating ineffective or obsolete programs and policies. Additionally, advocacy may be directed towards supporting a good program or policy that needs to be implemented, that needs to be funded, or perhaps just better enforced such as the need to strengthen laws guiding protocols for Mississippi coroners.

## **Conclusion**

In conclusion, public health nursing is a broad, population-based practice that serves a leadership role in meeting the needs of large and diverse populations. Because of the diversity of the practice, public health nursing is extremely valuable in planning, documenting, and advocating for programs and policies that improve Mississippi health outcomes. Public health nursing is situated in a formidable position to improve access, assure cultural sensitivity, eliminate disparities, educate, investigate, and document evidence-based public health

practice. By intervening at multiple opportunities, the public health nurse presents as a key player in improving outcomes for Mississippi infants and their families.

## References

1. Langston, L., Graham, J., & Zhang, L. (2009). Identifying strategies for reducing Mississippi infant mortality utilizing an analysis of trends and racial disparities. *Journal of the Mississippi State Medical Association*, *L(3)*, pp. 71-78.
2. Centers for Disease Control and Prevention [CDC]. (2009). NCHS State Profiles 2009: Data from the National Center for Health Statistics. Available online at [http://www.cdc.gov/nchs/pressroom/data/2009\\_state\\_profiles.htm](http://www.cdc.gov/nchs/pressroom/data/2009_state_profiles.htm).
3. Kaiser Family Foundation [KFF]. (2009). Statehealthfacts.org. Available online at <http://www.statehealthfacts.org/profileglance.jsp?rgn=26>.
4. Zotti, M., Replogle, W., & Sappenfield, W. (2003). Prenatal smoking and birth outcomes among Mississippi residents. *Journal of the Mississippi State Medical Association*, *44(1)*, 3-9.
5. Graham, J., Zhang, L., & Schwalberg, R. (2007). Association between maternal chronic conditions and birth outcomes in a non-Hispanic black-white Mississippi birth cohort. *Public Health Nursing* *24(4)*, pp 311-317.
6. Graham, J. & Haynie, L. (2008). A pilot survey of disaster affected women's access to family planning services in Mississippi Gulf Coastal communities. *In revisions for publication*.
7. Rachel, M., Tucker, L., & Graham, J. (2008). A translational intervention for reducing infant mortality in Mississippi: A move to eliminate health disparities. *Online Journal of Health Ethics*, *1(2)*.
8. Northington, L., Graham, J., Winters, K., & Fletcher, A. (2009a). Assessing knowledge of Sudden Infant Death Syndrome among African American women in two Mississippi communities. *Submitted for publication, Journal of Transcultural Nursing*.
9. Graham, J., Hendrix, S. & Schwalberg, R. (2008). Evaluating the SIDS diagnosis process by coroners in Mississippi. *Journal of Forensic Nursing*, *5(2)*, pp. 59-63.
10. Northington, L., Graham, J., Winters, K., & Fletcher, A. (2009b). Evaluating use of community health workers in two Mississippi pilot communities. *Accepted for publication, Journal of Cultural Diversity*.
11. Zhang, L., Cox, R., Graham, J., & Johnson, D. (2010). Association of maternal medical conditions and unfavorable birth outcomes: Findings from the 1996-2003 Mississippi linked birth and death data. *Accepted for publication, Journal of Maternal Child Health*, doi: 10.1007/s10995-009-0516-8.
12. Zhang, L., Cox, R., Zotti, M., & Graham, J. (2010). Prenatal Care Utilization in Mississippi: Racial Disparities and Implications for Unfavorable Birth Outcomes. *Accepted for publication, Journal of Maternal Child Health*, doi: 10.1007/s10995-009-0542-6.

13. American Nurses Association [ANA]. (2007). *Public Health Nursing: Scope & Standards of Practice*. Nursesbooks.org: Silver Spring MD.

Figure 1

