Project DINE: Addressing Maternal Mortality and Nutrition Disparities through Father Engagement

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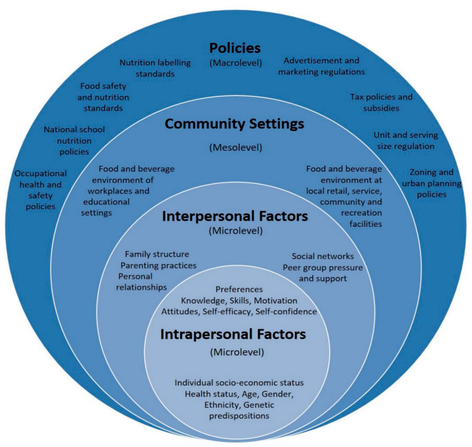
Background

Racial and ethnic disparities in maternal mortality rates represent one of the most significant disparities among all the conventional population perinatal health measures. The maternal mortality rate in the United States has more than doubled over the past three decades. In the United States, over 700 women die each year as a result of pregnancy or delivery complications. Georgia has one of the highest maternal mortality rates in the nation, with a 60% higher mortality for Black women compared to all racial/ethnic groups, far surpassing U.S. rates. Research suggests that these deaths could have been prevented and interventions that improve maternal nutrition before and/or during pregnancy can reduce the risk of poor health outcomes in mothers and their children. Additionally, building father's knowledge regarding maternal and child health may be beneficial in terms of care-seeking for pregnancy and birth. This study examines if modifications to existing evidence-informed interventions for maternal mortality and morbidity and nutrition significantly improve health outcomes for pregnant Black mothers in Georgia.

Theoretical Framework

Interventions aimed at reducing health disparities for minority and/or economically or environmentally disadvantaged populations must consider, at a minimum, the risk factors that contribute to these disparities. The ecological model views health status and behavior as determined by public policy, community, interpersonal, and intrapersonal factors. We use the ecological framework to underscore the importance of the complex interplay of multiple levels of a social system and interactions between individuals and the environment within this system. For example, intrapersonal and interpersonal factors are directly targeted through the proposed modified approach to understanding how the factors associated with maternal mortality and morbidity and nutrition are essential for improving maternal health outcomes.

Figure 1. Ecological Model for Nutrition



Source: Hartmann-Boyce, J.; Bianchi, F.; Piernas, C.; Payne Riches, S.; Frie, K.; Nourse, R.; Jebb, S.A. Grocery store interventions to change food purchasing behaviors: A systematic review of randomized controlled trials. Am. J. Clin. Nutr. 2018, 107, 1004–1016.

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Methods

Participants

The population of focus are Black Healthy Start pregnant mothers specifically in Brooks, Echols, Bleckley, Dodge, Johnson, Laurens, Montgomery, Pulaski, Telfair, Treutlen, Wilcox, and Wheeler, Lowndes, Clayton, Fulton, Muscogee, Cobb, and Douglas counties. These counties are all sites of Health Resources & Service Administration (HRSA) Healthy Start Programs. These counties were awarded Healthy Start (HS) funding in 2019 due to the elevated disease burden evidenced by infant mortality rates that are at least 1.5 times higher than the nation, and significant disparities in maternal health. Healthy Start grantees report serving a population with a high-risk profile characterized by chronic medical conditions or risk behaviors. The population of HS participants is primarily comprised of underserved racial/ethnic minorities, and a large proportion do not have a high school education, have incomes less than the federal poverty level, and are not married.

Study Design

Figure 2. Components of Community Based Participatory Research

Source: The Detroit Community-Academic Urban Research Center

This study is conducted through community-based participatory research (CBPR). A key aspect of CBPR in introducing successful programs and interventions to address disparities in maternal mortality and morbidity rates is engaging the affected community (i.e., mothers, fathers, community, and clinical providers) from the outset and continuing engagement throughout the planning, development, and implementation of selected interventions.

This CBPR is conducted by a group of state, academic, and community partners including:

Healthy Start. Healthy Start grantees provide a core set of services to participants and refer participants to community providers for services that are deemed appropriate during individual risk assessments. Grantees are required to implement an evidence-based curriculum for fathers and engage at least 100 fathers annually across all perinatal phases– preconception, prenatal, postpartum, and parenting.

The University of Georgia (UGA) Cooperative Extension. The University of Georgia aims to provide research-based information to help individuals and their families maintain a nutritious and active lifestyle. UGA delivers a series of interactive educational sessions where participants learn how to improve nutrition practices, stretch their food dollars, and prevent food-borne illness.

Georgia Special Supplemental Nutrition Program (WIC). Georgia WIC works with multiple partners to improve breastfeeding rates among low-income women in Georgia by promoting policies that increase the initiation and duration of breastfeeding, particularly exclusive breastfeeding, as well as greater acceptance of breastfeeding as the cultural norm.

Figure 3. Per Site Distribution of Randomized Groups

Healthy Start Program	Father Involvement	
	Yes (Randomized to Arms 1 & 2)	**No** (Randomized to Arms 3 & 4)
Intensive (Intervention) 3 HS sites	(Arm 1) **Mothers with father's involvement**	(Arm 3) **Mothers without father's involvement**
Standard (Control) 3 HS sites	(Arm 2) **Mothers with father's involvement**	(Arm 4) **Mothers without father's involvement**

This study uses a cluster randomization design. The unit of cluster randomization is each of the HS program sites, whereas the investigated factors are 1) father's involvement (yes/no) and 2) intensity of breastfeeding and nutrition education programs (control/intervention). Participants from three of six HS programs receive nutrition and breastfeeding education and participants from the remaining three receive the standard HS programming. To test the intervention modification, participant outcomes assessed through survey data are compared to the outcomes of HS mothers and fathers at three other HS sites who will participate in standard, regular HS programming.

Conclusions

The goal of this research is to decrease maternal mortality and morbidity by improving nutritional outcomes, increasing rates of breastfeeding initiation, and increasing father involvement in these efforts. Previous research provides support for the benefits of father involvement in improving maternal health. This study strengthens the literature on father involvement and offers strategies that empower fathers to be involved in pregnancy and childbirth by equipping them with knowledge about nutrition, breastfeeding, and the benefits of their involvement.

Findings from this study will help researchers create culturally-appropriate interventions related to maternal mortality in the Black community. For this study, researchers developed research activities in accordance with the National Culturally and Linguistically Appropriate Services (CLAS) Standards to consider the demographic characteristics of Healthy Start participants who are primarily underserved racial/ethnic minorities, with less than a high school education, and incomes less than the federal poverty level. Data collected and maintained through this project will be used to monitor and evaluate the impact of National CLAS on health equity and outcomes and to inform future research and practice. Health practitioners should be cautious in the one-size fits all approach to health interventions, but this study can be replicated and adapted to meet the needs of similar cultural groups in different environments and serve as a blueprint for interventions with different cultural groups that face similar health outcome challenges.