

# Race-related Stress and its Correlations with Preterm Births, Rapid Births, and Low Birth Weights

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The purpose of this project was to determine the factors that cause African Americans to have the highest rates of infant mortality and pregnancy complications. It was hypothesized that the presence of significant race-related stress during or before an African American woman's pregnancy will result in an African American woman's higher susceptibility to preterm births, rapid births, and low birth weights. The respondents of the study, nine in total, were women of the Moms2B program, a program aimed to reduce infant mortality by providing educational services in regards to healthy childbearing. All of the women had African American heritage and resided in Weinland Park, Ohio. The survey utilized for the project consisted of 14 questions, including two questions with two parts. Over the duration of two weeks, nine surveys were collected. Two women out of the nine, claimed to have experienced preterm labor during their pregnancy. In the survey, the women were asked to list the most significant stressors during their pregnancy. Stressors with the highest amount of selections,  $n=5$ , were 'lack of support'. Following in second were: 'Employment', 'Family matters', 'The Future', and 'Romantic relationships' all with four selections. The hypothesis was unable to be accepted or rejected due to the lack of surveys completed. For this reason, data received was considered statistically insignificant. The data received did not assist in coming to a conclusion for the experiment. The future of the project will be dependent on the submittal of the survey to the Institutional Review Board of The Ohio State University's School of Nursing.

## Introduction

For the State of Ohio, the infant mortality rate (the number of infants that died per 1,000 live births) is higher than the national average of 6.8, compared to the state's value of 7.8 (Center for Family and Demographic Research, 2004). More notably, the infant mortality rate is disproportionately higher in African Americans compared to all other racial backgrounds regardless of location in the country. This is seen with the statement that "neonatal death rate for white babies was 5.7 per 1,000 live

births in 2000 while the rate for black infants was 14.0" (Bryant, 2006). It should be considered that "socioeconomic status, occupational status, ethnicity, healthcare utilization, education level, and birth outcomes are all known to influence gestational age and infant mortality" (Wilson, Gance-Cleveland, & Locus, 2011).

The World Health Organization (WHO) set eight goals to be met by 2015 in order to improve the overall condition of world health. These millennium development goals include millennium development goal four,



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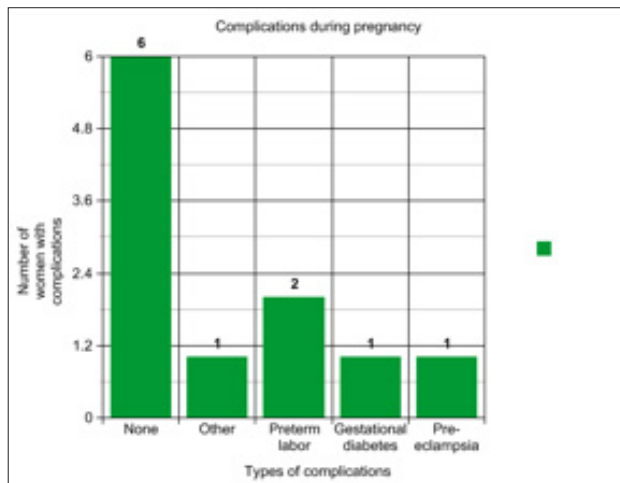


FIGURE 1 Responses to question 5b on the survey, “Did or do you have complications during your pregnancy?”

which is to reduce child mortality, and millennium development goal five, which is to improve maternal health. The quote, “Eliminating disparities that occur by race, ethnicity, education, income, and geographic location are a top priority in the current healthcare delivery system, where health disparities in minority childbearing women remain one of the most significant public health challenges” supports this cause (Wilson, Gance-Cleveland, & Locus, 2011). For this reason, African Americans are the target group for this project. Thus, contributions to infant mortality and reducing its influences are the focuses of the experiment.

The influence of certain factors can directly or indirectly cause pregnancy complications such as low birth weight, preterm delivery, and rapid births (births that occur before waiting 18-20 months after a woman’s preceding birth). Along with a disproportionately high infant mortality rates in African Americans, there is also a disproportionately high rate of low birth weights, preterm deliveries, and rapid births compared to other racial backgrounds. Babies with low birth weights are those born weighing less than 2500 grams, approximately five pounds and eight ounces, at delivery. Additionally, a preterm delivery is a delivery that typically occurs at least three weeks before a full gestational period of forty weeks. This causes the assumption that the complications have some influence in the infant mortality rate.

Prior to this study, a number of studies were conducted in order to determine the reasoning for the rate of infant mortality in African Americans and also to understand the general effects of stress on a pregnancy. In a particular study, Littleton, Bye, Buck, and Amacker conducted a meta-analytic review to determine if there was a correlation between psychosocial

stress during a pregnancy and harmful perinatal outcomes. They found that “psychosocial stress by the mother can lead to negative perinatal outcomes and that stress could contribute to neuroendocrine responses that elevate corticotrophin-releasing factors and catecholamine release” (Littleton, Bye, Buck & Amacker, 2010). Elevated levels of corticotrophin-releasing factors can trigger the act of childbirth before the full gestational period. Also the release of catecholamine can result in increased blood pressure, heart rate, and blood glucose. It should be considered that these elevated factors can contribute to the risk of preterm births and other complications.

In a study by Tovar-Murray and Munley, 196 African-Americans were given multiple standardized measures and scales to evaluate their individual quality of life (2007). It was stated by Tovar-Murray and Munley that African self-consciousness and health consciousness contributed to health-promoting behaviors (2007). It can be interpreted from this statement that if an individual has reduced self-consciousness and or health consciousness, he or she is more inclined to practice poor health promoting behaviors. This can ultimately lead to a poor birth outcome in pregnant women. Also, racism in the form of discrimination is negatively associated with African American well-being and psychological and physical consequences (Tovar-Murray & Munley, 2007). In the past, the effects of general stress and race-related stress have been observed in pregnancies among all racial backgrounds and in African Americans respectively. However, the effects of stress have not been observed in a group of women that receives educational services that actively attempt to reduce infant mortality directly. The Moms2B program in Columbus is the educational service in this project. The Moms2B program, also known as the Better Birth Outcome

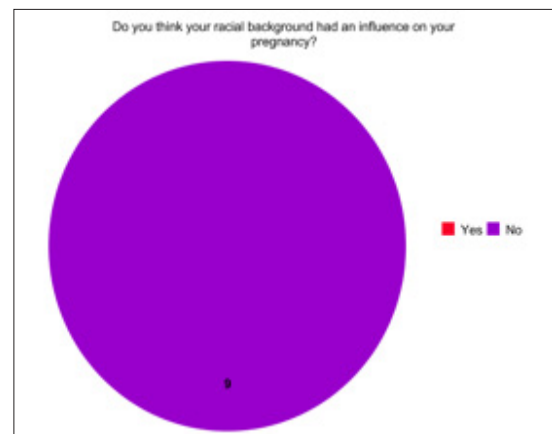


FIGURE 2 Responses to question 7a on the survey, “Do you think your racial background had an influence on your pregnancy?”

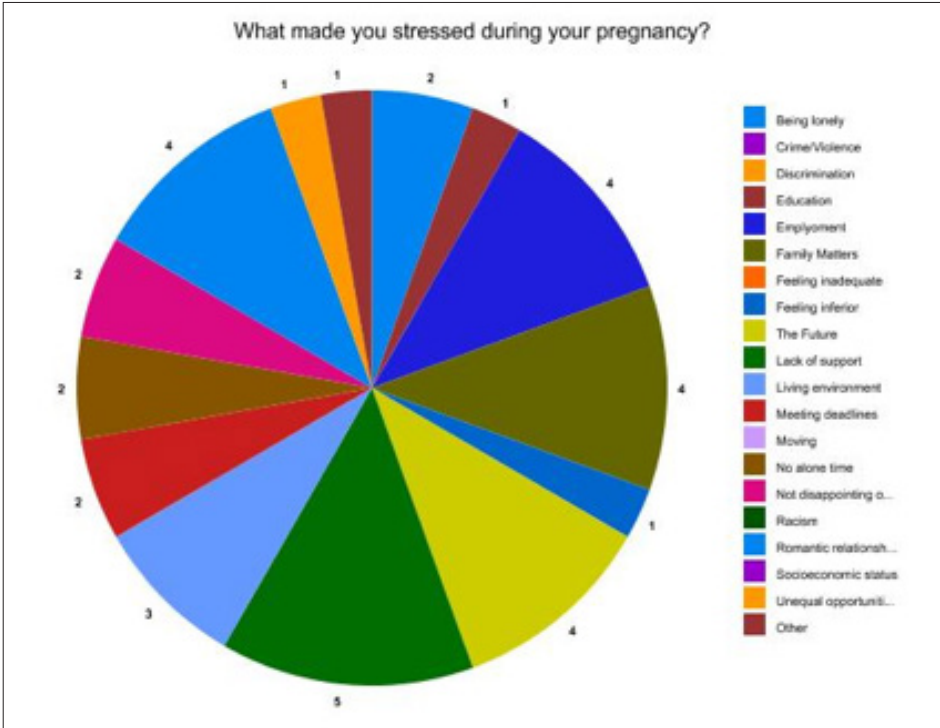


FIGURE 3 Responses to question 10 on the survey, “What made you stressed during your pregnancy?”

well-being of the community. While at the meetings, the women’s children are watched by a care-giver and also engage in health-promoting activities, such as exercising and educational lessons. Moms2B assists the mothers by providing some basic goods that are necessary to raise their children such as diapers, formula, cribs, etc. This gesture ensures the women have the necessary tools in order to combat the disproportionately high rate of infant mortality in Columbus. The program targets women of a minority racial background and those who have a low socioeconomic status.

This project will attempt to determine the factors that cause African Americans to have the highest rates of infant mortality and pregnancy complications. It is hypothesized that, the presence of significant race-related stress during or before an African American woman’s pregnancy will result in an African American woman’s higher susceptibility to preterm births, rapid births, and low birth weights.

This study aims to determine the effects of race-related stress, in the forms of unequal opportunities, discrimination, and racism in regards to African Americans’ high infant mortality rate, by looking at its predicted correlation to low birth weight, preterm delivery, and rapid births. The disproportional effects of infant mortality in the African American community, ultimately affects the world’s goal to improve maternal health and reduce child mortality.

Project, is aimed in reducing the infant mortality rate of Columbus, Ohio. This program is funded by the OSU International Poverty Solutions Collaborative. Moms2B offers the participating mothers lessons on how to cook healthy options for themselves and ultimately their children. Additionally, the women also engage in some form of a physical activity to promote the benefits and necessities of exercise. More importantly, the program provides the women with weekly lessons that are guided towards educating them about reducing infant mortality by establishing healthy habits, eliminating harmful acts, and ultimately promoting behaviors that increase the

Rapid birth indicator							
A	B	C	D	E	F	G	H
5 years	1 year	11.5 years	12 years	8 years	6 years	6 years	9 years
3 years	2 months	5 years	7 years	7 years	3 years	3 years	6 years
7 months		4 months	5 years	5 years	1 year		11 months
			2 years	3 years			
			6 months	2 years			
				1 year			

TABLE 1 Responses to questions 2 and 3 on the survey. “Do you currently have any children (Yes or No), if yes what are their ages?”. The letters correspond to the respondents that answered the questions. For example, the letter A represents respondent A.

## Methods

### Context

The main subjects of this study were women of the Moms2B program, a program aimed to reduce infant mortality by providing educational services in regards to healthy childbearing. This group was exclusively African American. The questions of the survey attempted to determine the common stressors during a woman's pregnancy. An objective of the survey was to find out if there was a correlation between the stressors and a woman's racial background. More specifically, it was being determined if race-related stress results in high rates of preterm births, rapid births, and low birth weights in African American women.

### Protocol

The surveys were administered through the Better Birth Outcomes, also known as the Moms2B program. The locations for this program are Weinland Park and Poindexter Community Center, both located in Columbus, Ohio. After receiving permission from Dr. Patricia Temple-Gabbe and Twinkle French Schottke to distribute the surveys to the Moms2B groups, information was collected. Surveys that were given to the target groups were constructed using a Microsoft Word program. Over the course of two weeks, nine surveys were collected. Located in Appendix A of the report is a copy of the survey that has been utilized.

### Design

The survey utilized for the project consisted of 14 questions, including two questions with two parts. Four questions consisted of an open structure, eight questions consisted of a fixed structure, and six questions consisted of a partial structure. More specifically, three questions were used that gave the respondent a table of possible answer choices. The answers selected were then ranked on a scale. Additionally, the rest of the questions on the survey were structured as "Yes or No", extended response, free response, and rating. No time limit was set when the surveys were given to the women. After data was received it was analyzed descriptively and organized into three graphs and one table. Data was analyzed descriptively by noting any general trends that existed in the information. The data of importance is the information pertaining to preterm births, rapid births, and low birth weights. Any extra data will be located in the Appendix.

## Results

For the experiment, nine surveys were collected. Be-

ing that only nine surveys were collected, the data is statistically insignificant. From Fig. 1 it is shown that from the responses collected, six of the women responded to not having any complications associated with their pregnancy. Two women out of the nine, claimed to have preterm labor as a complication they experienced.

It can be assumed that the demographics of the women influenced how they answered the survey. In regards to health insurance, the all of the respondents are either uninsured or have a Medicaid managed care plan (Molina or CareSource). Additionally, the women live in Ohio's zip code of 43201. This community is characterized by low income, high crime rates, and high unemployment rates. For 2009, 48% of the Weinland Park community fell below the poverty line (Urban Mapping, Inc., 2011). This is significantly different from Columbus's proper, which is 14.8%. Additionally, Urban Mapping states that the median household income for Weinland Park in 2009 was \$17,558 compared to Columbus's value of \$41,370 (2011). The median age for inhabitants for this area is 21.7 years for males and 23.1 years for females (Urban Mapping, Inc., 2011).

## Conclusion

This study aimed to determine the effects of race-related stress, in the forms of unequal opportunities, discrimination, and racism in regards to African Americans' high infant mortality rate by looking at its predicted correlation to low birth weight, preterm delivery, and rapid births. For this experiment it was hypothesized that the presence of significant race-related stress during or before an African American woman's pregnancy will result in an African American woman's higher susceptibility to preterm births, rapid births, and low birth weights. After considering the data received from the surveys, it has been concluded that the data is unable to determine if the results supported or rejected the hypothesis. This is because the data was considered statistically insignificant due to the low survey count.

The data received did not assist in coming to a conclusion for the experiment. The hypothesis was unable to be accepted or rejected due to the lack of surveys completed. However, if the insignificance of the data is ignored, Fig. 2 shows the respondents did not think their racial background played a role in the outcome of their pregnancy at all. Additionally, in Fig. 1 it was illustrated that the majority of the women did not even experience pregnancy complications. Shown on the graph are a total of six women who did not have complications. It should be noted if the data was considered statistical-



ly significant, respondents B and E experienced rapid births.

During the experiment, there were limitations. A major limitation for the experiment was the lack of correctly completed surveys. Of the nine surveys collected, none were completed entirely correct. The surveys were completed incorrectly because the directions for answering the questions were not followed. Also, the survey was distributed when the women were tired of completing paperwork, due to a previous engagement. In retrospect, the surveys were too long and complicated for the women to complete given the environment they were in. The data and ultimately the conclusion for the experiment may not be accurate due to these errors because there was not a control for the surveys completed. Being that the data must be interpreted relative to each other, it is difficult to analyze the results.

My implications for the project are to have the next survey to be distributed shorter and simpler, to make completion easier and more accurate. Additionally, the survey needs to be completed by more participants to get an adequate amount of data. By making these changes, accurate information can be received and analyzed properly. The future of the project will be dependent on the submittal of the survey to the Institutional Review Board of The Ohio State University's School of Nursing. Data received from the experiment will become significant once twenty-one more completed surveys are completed. Once the survey completes the IRB, it will be utilized by the Moms2B program for gaining information about the women in the program once they enter. Until then, all data presented in the project should be viewed with the intentions of additions coming.

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