

Exploring the Rates and Determinants of Prenatal Care Among

Non-Hispanic Black Women

by

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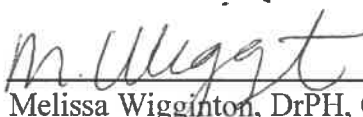
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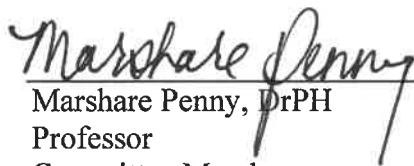
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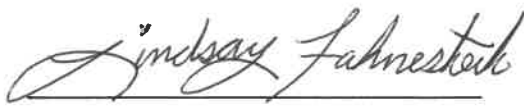
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Abstract

The rates in mortality among non-Hispanic black women have been on the rise across the United States. Overall, black women are up to four times more likely to succumb to a pregnancy-related death than non-Hispanic white women. The participants in this study were taken from the Pregnancy Risk Assessment Monitoring System (PRAMS) survey. This thesis sought to find the association of adequate prenatal care (nine or more prenatal care visits during pregnancy) among non-Hispanic black women by using an observational, cross-sectional study design. There were over 38,500 women within the PRAMS data, which is a representative sample of the make-up of the nation. Most non-Hispanic black women reported that they did not obtain adequate prenatal care, and it was found that there was a significant association of health determinants (education attainment, age range, income levels, and planned or not planned pregnancy) among this group which may have impacted their maternal health experiences. As research continues to unfold the layers of black women's maternal health, policies must be implemented and enforced to attain significant change that will enhance the lives of black women and future generations.

Key words: Prenatal care, Racial Disparities, Education, Age, Income, Planned Pregnancy, Chi-Square Test of Independence, PRAMS

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Review of Literature

Introduction

Current literature shows that non-Hispanic black women experience higher ethnic/racial disparities in prenatal care when compared to non-Hispanic white women (Center for Disease Control [CDC], 2018). While challenges with pregnancy may occur among any group, the majority of the obstacles, including pregnancy-related deaths, can be prevented by adequate prenatal care (Laditka, Laditka, Bennett, & Probst, 2005). Definitions of adequate prenatal care are determined by totals from the Adequacy of Prenatal Care Utilization Index (APNCU), which analyzes the usage of prenatal care on two levels (PeriStats, 2019). The first level, adequacy of initial prenatal care, analyzes the timing of the initial prenatal care month tracked on a birth certificate (PeriStats, 2019). The second level, adequacy of obtained services, analyzes the rate of the definite number of prenatal care visits tracked on a birth certificate to the predicted number of prenatal care visits (PeriStats, 2019). Adequate prenatal care should be initiated by the fourth month of pregnancy, and receiving over 80% of the suggested prenatal care visits is considered adequate (PeriStats, 2019).

There is a significant disparity in maternal mortality between non-Hispanic black women and their non-Hispanic white counterparts; non-Hispanic black women are three to four times more likely to die of pregnancy-related complications than their non-Hispanic white counterparts (CDC, 2018). Non-Hispanic black women have a maternal mortality rate of 40 per 100,000 live births compared to 12 per 100,000 live births among non-Hispanic white women (Creanga et al., 2015). The reasons for the pregnancy-related mortality remains uncertain as various factors impact

pregnancy-related health results (Creanga et al., 2015). However, the optimal healthy pregnancy entails regular prenatal care visits, which alerts expectant mothers and doctors of any risks and aides in managing obstacles when they arise (Creanga et al., 2015). Most studies show that other health disparities exist among minority women across the country, and thus birth outcomes can vary among these populations as well (Sparks, 2009).

Teenagers and non-Hispanic black women are less prone to receive prenatal care during the first trimester of pregnancy compared to non-Hispanic white women (Kuo, Gavin, Adams, & Avadi, 2008). Therefore, rates of unintended pregnancies are a significant factor contributing to health determinants in the United States (Bryant, Nakagawa, Gregorich, & Kuppermann, 2010). In 2001, over 65% of non-Hispanic black women and 42% of non-Hispanic white women had unplanned pregnancies (Bryant et al., 2010). When a woman knows her perinatal status, it is imperative for her to seek adequate prenatal care from health experts (Creanga et al., 2015).

One study analyzed the significance of a pregnant woman's ethnicity/race and adequate prenatal care visits through surveys to evaluate if there was a correlation to their drastic differences in their health outcomes (Sarnoff & Adams, 2001). This study showed that there is a conflict with minority women's perceptions of prenatal care when they become pregnant (Sarnoff & Adams, 2001). The accuracy of the timing of their perinatal status, i.e. how many weeks the woman may be pregnant, influences her prenatal care procedures (Sarnoff & Adams, 2001). Once a woman's perinatal status is confirmed, then the mother's perception of her prenatal care process will result in a significant outcome by a 50% improvement of adequate prenatal care

(Sarnoff & Adams, 2001). Creating intentional public health interventions to enhance the timeliness of prenatal care visits will demand a significant understanding of the racial differences for each pregnant woman's perceptions and prenatal care needs (Sarnoff & Adams, 2001). Once a pregnant woman is aware that she is pregnant, it is crucial for her to obtain proper prenatal care from her healthcare practitioner (Sarnoff & Adams, 2001).

Overall, most barriers to prenatal care need to be examined (Hessol, Vittinghoff, & Fuentes-Afflick, 2004). One of the primary cited barriers to initial proper prenatal care is the mother's viable access to healthcare, which is needed in order to obtain prenatal care (Hessol et al., 2004). Public, government-funded health insurance, such as Medicaid, is an insurance for those who cannot obtain private health insurance (Hessol et al., 2004). Medicaid has become the viable option for those who qualify, and overall maternal health outcomes have shown improvements for Medicaid recipients (Hessol et al., 2004).

Prenatal Care

Prenatal care is defined as healthcare a woman receives when she becomes pregnant and begins her prenatal visits to a healthcare provider (CDC, 2018). Prenatal care includes assessments to monitor the overall health status of mother and growing fetus (CDC, 2018). Prenatal care is vital in order to have optimal birth outcomes for the mother and the newborn (CDC, 2018). Prenatal care is especially needed for women who may be at-risk for specific health conditions in order to provide proper follow-up care to reduce that risk (Kogan, Alexander, Kotelchuck, & Nagey, 1994a).

A woman's first prenatal care visits should usually occur during the first trimester (Stark & Riley, 2012).

The key elements of prenatal care include essential programs to advocate for health, evaluation of risk status, and timely intercession at any point in the woman's pregnancy if complications or risk factors are present (Gregory, Johnson, Johnson, & Entman, 2006). Prenatal care is most successful when a patient returns for scheduled follow-up visits, which can vary depending on the needs of the patient (Gregory et al., 2006). According to the Office of Women's Health ([OWH] 2019), prenatal care enhances the woman's and fetus' health. Newborns of mothers who do not obtain prenatal care are three times more likely to be born with low birth weights and five times more likely to die (OWH, 2019). Both inadequate prenatal care and delayed prenatal care (i.e., healthcare begun after the first trimester of pregnancy) link to poor infant health outcomes, such as low birth weight (Green, 2019).

Health experts can detect health concerns early when they see mothers consistently, and this then prevents lasting health issues during pregnancy (Prenatal Care, 2019). The rate of follow-up visits defines the specific needs of a woman and an evaluation of her risks (Stark & Riley, 2012). According to one study, there are significant disparities between non-Hispanic white and non-Hispanic black mothers with regards to the initiation of prenatal care in the first trimester (Green, 2019). During the first trimester, approximately 89% of non-Hispanic white mothers and 75% of non-Hispanic black mothers initiated prenatal care (Green, 2019). Mothers from these groups also experienced disparities in the quality of prenatal care they obtained (Green, 2019). About 79% of non-Hispanic white mothers and 69% of non-

Hispanic black mothers obtained quality prenatal care (Green, 2019). These findings highlight possible socioeconomic attributes that may explain the racial gaps in prenatal care quality (Green, 2019).

Prenatal care for healthy, pregnant women emphasizes health promotion for all pregnant women despite low psychosocial and medical risks (Gregory et al., 2006). However, continuous assessments at every prenatal care visit are vital because health risks can change throughout a pregnancy (Gregory et al., 2006). Prenatal care for unhealthy pregnant women is crucial due to the potential, increased health risks of the mother and her growing fetus that could result in detrimental perinatal complications during pregnancy and postpartum, such as preventable mortality (Gregory et al., 2006). Like most types of healthcare, there is a compelling racial disparity in access to and use of prenatal care (Green, 2019).

Prenatal care must continue to promote enhancing health behaviors for women and their families while also improving the woman's ability to access such care (Gregory et al., 2006). For example, booking prenatal care visits should be effortless with access at suitable times, offers of accommodations for transportation support, and offers of childcare as needed (Gregory et al., 2006). Most prenatal care facilities provide services that entail alcohol-avoidance counseling, smoking-cessation courses, illicit-drug-avoidance therapy, occupational and environmental evaluations, and management of chronic and acute psychological issues including stress, illness, anxiety, and violence (Gregory et al., 2006).

Occasionally, prenatal care will focus on comprehensive health promotion for nutrition, physical activity, and domestic violence screening, but it rarely incorporates

early intervention for mental health issues (Gennaro et al., 2017). When mental health demands become an oversight, then pregnant women are less likely to adhere to suggested prenatal healthy behavior advice (Gennaro et al., 2017). To decrease health disparities due to inadequate maternal healthcare, adequate prenatal care must provide the best results for both mother and child (CDC, 2018) and should therefore include holistic health measures that deal with the mother's physical and mental health.

Rates of Prenatal Care

Unfortunately, adverse birth outcomes are most common among minorities and socioeconomically deprived groups (Nguyen, Siahpush, Grimm, Singh, & Tibbits, 2019). A research study on racial gaps in prenatal care found that prenatal care visits were equal among all groups, yet prenatal care content is not the same for every population (Kogan, Kotelchuck, Alexander, & Johnson, 1994b). For example, the equality of prenatal care content has yet to be practiced, especially among non-Hispanic black women (Kogan et al., 1994b). Contrasting prenatal care leads to contrasting efficacy and tends to be a factor in the increased differential rates of birth outcomes (Kogan et al., 1994b). Additionally, the uniformity of prenatal care content has yet to be established, especially for all minority groups (Kogan et al., 1994b). Prenatal care tends to lead to gaps in adequate care and contribute to birth outcome disparities rates among non-Hispanic black women in the United States (Kogan et al., 1994b). According to the 2012-2014 Pregnancy Risk Assessment Monitoring System (PRAMS), 65% of non-Hispanic whites and 12% non-Hispanic blacks show significant health disparities in adequate prenatal care (Nguyen et al., 2019).

The American College of Obstetricians and Gynecologists ([ACOG] 2018) predicted that minorities will represent the majority of the United States population by 2050, yet notable minority disparities persist in maternal health. The ACOG (2018) is dedicated to the eradication of non-Hispanic black women's health disparities in women's healthcare and encourages obstetrician-gynecologists (ob-gyns) to immerse in prenatal care initiatives to ensure maternal health equity.

The lack of research about the determinants of prenatal health education can be credited to the scarcity of standardized health topics that should be addressed during each prenatal care visit (Nguyen et al., 2019). Currently, public health literature states that non-Hispanic black women's health is influenced by the existence of racial, explicit, and implicit bias (ACOG, 2018). Racial bias is a concern that affects every patient, whether through indirect divisive behavior, an unhealthy and stressful environment, or directly exposing a patient to biased treatment (ACOG, 2018). In less clear ways, implicit bias tends to affect the way ob-gyns advise patients about treatment plans during pregnancy (ACOG, 2018). Implicit biases are subconscious perceptions everyone makes about the environment around them (ACOG, 2018). Implicit biases are impacted by one's upbringing, which generates how one identifies with self and others, and this then influences how one perceives and treats others as inferior or superior (ACOG, 2018). For example, a dismissive health practitioner who does not provide all the perinatal options during a patient's prenatal care visit, who has a language barrier and therefore demonstrates bias, and/or who assumes his or her patient is okay with the visit without asking demonstrates implicit bias (ACOG, 2018).

Research shows implicit bias impacts the patient-physician dynamic as well as outcomes and treatments (ACOG, 2018). The ACOG (2018) acknowledges that implicit bias is real and affects how medical providers care for all women; therefore, healthcare practitioners should be intentional in how they treat their patients. One recommendation to decrease minority health disparities is to encourage awareness among health experts about prevalent health disparities and their impact on health outcomes (ACOG, 2018). For instance, in one study prenatal care advice on cessation of illegal drug use was significantly recurrent for single, younger, poorer, and meagerly educated women, and public health centers gave more guidance on this issue than privileged sources of care (Kogan et al., 1994b). This study suggested that despite one's sociodemographic status, such as race, it is imperative to identify these elements for adequate prenatal care (Kogan et al., 1994b).

Initial prenatal care advice about drug and smoking use was solely geared towards poorer women, while advice about breastfeeding and alcohol use was geared towards affluent non-Hispanic white women only (Kogan et al., 1994b). Studies suggested that delivery of prenatal health education, like birth outcomes, are culturally patterned (Nguyen et al., 2019). Prenatal care visits are crucial, and advice on illegal drug use was customary for patients from publicly-funded hospitals and clinics rather than for private-office patients (Kogan et al., 1994b). Mothers who received prenatal care from Health Maintenance Organizations (HMOs) and publicly-funded locations showed more risk of not obtaining breastfeeding advice in contrast to private-office patients (Kogan et al., 1994b).

Predictors of Prenatal Care

Socioeconomic status. Racial disparities tend to show negative impacts when examining types of insurance, sites of prenatal care locations, environments, age of the mother, and her number of previous pregnancies (Green, 2019). A general indication of socioeconomic status includes data on income, housing, work, education, marital status, nutritional resources, and other factors (Gregory et al., 2006). Outcomes of non-Hispanic black women's disparities can present themselves through infant deaths and connect to disparities in social determinants of health (Maternal, Infant, and Child Health, 2014).

A national study conducted from 1981 to 1998 found the inequalities of low birthweight and preterm births increased between non-Hispanic black and non-Hispanic white infants not due to rising trends but due to increases in low birthweight and preterm births among non-Hispanic black infants (Liu, Phan, Yasui, & Doan, 2018). Literature suggested that persistent and abundant socioeconomic disparities are initial contributors to racial gaps in the quality and timing of prenatal care (Green, 2019). Additional research is essential to realize the realities behind non-Hispanic black women and socioeconomic variations in terms of prenatal health education and opposing birth outcomes (Liu et al., 2018).

Providers. One study suggested that, with appropriate intervention and follow-up, the focus during the first-trimester prenatal care visits should be to perform a psychosocial risk evaluation (Kogan et al., 1994a). Psychosocial risk evaluations discuss aspects like social and financial support, stress, drug and alcohol abuse, nutrition, smoking, and domestic violence (Kogan et al., 1994a). Many

psychosocial interventions, include substance abuse counseling, home visits, nutritional education, and referrals for other resources tend not to be performed by leading healthcare practitioners (Kogan et al., 1994a).

A crucial factor of quality care is the foundation of a positive relationship between the prenatal care provider and the patient (Gregory et al., 2006). Providers caring for a woman's psychosocial risk requires a core system of resources accessible within their fields (Gregory et al., 2006). These services must promote initial entry to prenatal care with preconception and early pregnancy evaluation and offer programs for the family and home status (Gregory et al., 2006). Prenatal care providers must organize communication platforms, engaging every agency to offer optimum prenatal care due to the current lack of a standard system across healthcare providers (Gregory et al., 2006).

Shared or group prenatal care. During shared or group prenatal care, providers administer prenatal health programs and information to patients in a group setting similar to an individual prenatal care visit (Stark & Riley, 2012). Psychosocial risk assessment and psychosocial counseling problems are non-biomedical components that impact physical and mental well-being (Stark & Riley, 2012). These assessments should be done during shared prenatal care so referrals can be made to get women the care they need (Stark & Riley, 2012). Physicians must remain aware of their patients' personalized health statuses and provide access to community agencies for additional guidance (Stark & Riley, 2012).

According to Green (2019), policymakers need to explore helping disadvantaged groups enhance their access to healthcare, for example, growth in

Medicaid programs due to the 2010 Affordable Care Act began a hopeful intervention that needs to be further expanded among communities (Green, 2019). Due to the program's increase, women who get coverage before pregnancy may end up enlisting sooner in prenatal care, and they may continue to obtain chronic health management, which may enhance their newborns' outcomes (Green, 2019). Shared or group prenatal care is a start in the right direction to enhance a pregnant woman's prenatal experience (Stark & Riley, 2012).

Barriers to Prenatal Care

Pregnant women who have high-risk pregnancies experience risks that are commonly due to medical and/or psychosocial diagnoses, and these related risks tend to be explored in non-pregnant women whose symptoms may be similar (Gregory et al., 2006). Despite the reality that a woman may see a different practitioner for a specific psychosocial or medical risk, her primary prenatal care practitioner must be knowledgeable and responsible for her complete prenatal care regimen (Gregory et al., 2006). Possible pregnancy risks detected by medical history, physical observations, and/or laboratory results occur in varying degrees of severity or may be detected at different moments throughout the pregnancy (Gregory et al., 2006). When a pregnant woman shows no apparent pregnancy risk, she may develop new medical risks amid the pregnancy (Gregory et al., 2006).

Common elements that may become barriers to prenatal care include women having less than a high school education, a low income, inadequate housing, single status, and working in a physically arduous or chemically toxic environment (Gregory et al., 2006). Other elements that cause potential health risk are if the expectant

mother is an adolescent (under 18 years of age) or advanced in age (35 years plus), communication barriers, and lack of adequate nutritional resources (Gregory et al., 2006). Among the psychological elements that potentially put a pregnant woman at risk are deficient personal support networks and coping skills, high stress and anxiety, excessive doubt about pregnancy, psychiatric circumstances, and living in an abusive environment (Gregory et al., 2006). A focus on mental wellness promotion may diminish some of the disparities in birth results that are assessed between minority and majority women since non-Hispanic black women endure increased levels of stress, anxiety, and depression (Gennaro et al., 2017). Conflicting health behaviors of pregnant women at-risk interfere with their fulfillment of prenatal care objectives, including illicit drug use, alcohol abuse, smoking, excessive exercise, and few nutritional choices (Gregory et al., 2006).

Risk Factors. Risk factors include, but are not limited to, socioeconomic status, access to transportation, healthcare access, and education (Gregory et al., 2006). Awareness of medical or psychosocial risk does not determine raised occurrences of visits, but the crucial factors of prenatal visits contain the content, the available resources, and the accuracy of resources for a woman and her family (Gregory et al., 2006). Lack of quality transportation is the critical reason why many low socioeconomic women do not access prenatal care visits (Gregory et al., 2006). If one factors in women with children and a long commute on public transportation, accessing care can be difficult and costly (Gregory et al., 2006). Most studies find that pregnant women who are of a lower socioeconomic status and have low levels of primary education tend to lack access to the resources and ability to initiate early

prenatal care (Green, 2019). However, attendance in the Women Infant and Children (WIC) programs has made an impact on pregnant mothers, indicating that this public organization helps the economic disparities that exist as a barrier to quality and timely prenatal care (Green, 2019). Giving support to pregnant women and implementing insight and skills through prenatal care will improve non-Hispanic black women's overall well-being (Gennaro et al., 2017).

Pregnancy and teens. Typically, minors have legal rights preserving their privacy regarding the diagnosis and treatment of pregnancy (Gregory et al., 2006). Once the gestational age is known, the minor should be made aware of a balanced procedure about all possible alternatives and the decision made should be respected; possible decisions include continuing her pregnancy with the intent of raising the baby, continuing the pregnancy with the intent of placing the infant up for adoption, or terminating the pregnancy (Gregory et al., 2006). The doctor must assess the minor's ability to comprehend the implications of the diagnosis of pregnancy and her available choices (Gregory et al., 2006). Each patient should be reassured to return for every prenatal visit to help to grasp the importance of a favorable outcome, and she should be inspired to include her partner, parents, or guardians (Gregory et al., 2006). Most states have laws adhering to a minor's rights, and the doctor should uphold the given laws and if the pregnancy is maintained, include a referral for psychosocial support (Gregory et al., 2006). Pregnant teenagers are in a fragile psychosocial state and to become pregnant with a non-existent support system creates a significant barrier for their overall pregnancy (Gregory et al., 2006).

Pregnant women in the workforce. Women with an uncomplicated pregnancy tend to continue working until the onset of labor (Gregory et al., 2006). Women with obstetric or medical issues with their pregnancy may need a tailored prenatal care session based on their lifestyles, occupations, activities, and unique complications (Gregory et al., 2006). Research showed that pregnant women whose employment requires repetitive motions or standing, strenuous activities, and/or physical lifting usually go into labor sooner and have smaller newborns before their due date (Gregory et al., 2006). The undue stress mothers endure while working can cause more harm than good (Laditka et al., 2005). Advocacy and support systems must consider these realities as an unfortunate social norm (Laditka et al., 2005). Without a standard workforce system that caters to pregnant working women, regardless of occupation, the overall maternal health equity will remain invalidated and become an increasing barrier for every woman (Laditka et al., 2005).

Unplanned pregnancies. Current efforts to address ongoing disparities in infant, maternal, and child health have led to the implementation a "life course" outlook on health prevention and promotion (Maternal, Infant, and Child Health, 2014). The "life course" outlook encourages the assessment of the quality of life of mothers, including fertility (Maternal, Infant, and Child Health, 2014). Over the last decade, approximately almost half of pregnancies were unintentional, and there are no studies that focused solely on unintended pregnancies (Maternal, Infant, and Child Health, 2014). Unplanned pregnancies are linked with a host of public health issues, like postponed initiation of prenatal care, preterm birth, and poor maternal health (Maternal, Infant, and Child Health, 2014). Perinatal health initiatives target to

enhance infant and women's health before and during pregnancy through an array of evidence-based interventions and focus on growing public health issues, meaning that the consequences of unintended pregnancies need to be studied in more depth (Maternal, Infant, and Child Health, 2014).

Purpose of the Study

Every pregnant woman, despite her ethnic/racial background, deserves optimal and unbiased prenatal care (Gregory et al., 2006). Pregnant minority women are most vulnerable to increased pregnancy barriers with poor outcomes that demand additional attention compared to pregnant non-Hispanic white women (Gregory et al., 2006). Adequate prenatal care is crucial for the future of society (Nguyen et al., 2019). Existing literature has established conflicting results about what constitutes adequate prenatal care in order to address recurring health disparities among minorities (Nguyen et al., 2019). The perception of prenatal care as important among minority and disadvantaged women is not a common thread in society, and many women do not even know what prenatal care entails (Sarnoff & Adams, 2001). To access it is a barrier within itself, regardless of race and or socioeconomic status (Sarnoff & Adams, 2001).

Further research should elicit a change in the public healthcare system (Nguyen et al., 2019). Healthcare providers must administer the upmost adequate prenatal care for every woman despite her race and or social status (Nguyen et al., 2019). The emphasis on decreasing bias and socioeconomic inequality in maternal health begins with closing the non-Hispanic black women's health disparities in prenatal care (Green, 2019). The purpose of this study was to explore the predictors in

prenatal care differences among non-Hispanic black women versus non-Hispanic white women by analyzing data collected for the Pregnancy Risk Assessment Monitoring System (PRAMS) (CDC, 2019).

Research Questions

This research study attempted to answer the following two questions:

1. Are there differences among non-Hispanic black women's and non-Hispanic white women's attainment of adequate prenatal care?
2. What are the significant differences among social determinants (age differences, educational attainment, income level, planned or unplanned pregnancy) of prenatal care among non-Hispanic black women?

Hypothesis

H₁: There is a significant difference among non-Hispanic black women's and non-Hispanic white women's attainment of adequate prenatal care.

H₂: There are significant differences among predictors of prenatal care in regards to different social determinants (age differences, educational attainment, income level, planned or unplanned pregnancy) among non-Hispanic black women.

Methods

Design

The current study utilized an observational, cross-sectional study design. The target population included non-Hispanic black women and non-Hispanic white women from the Pregnancy Risk Assessment Monitoring System (PRAMS) dataset (CDC, 2019). Predictors in prenatal care and ethnic/racial disparities were analyzed using the Statistical Package for the Social Sciences statistical software (SPSS), version 26 (IBM SPSS Statistics, 2019).

Procedures

The PRAMS dataset was utilized for this study. PRAMS consists of 472 questions, and over 38,500 participants took the survey (Shulman et al., 2018). PRAMS is a population-based, state-level surveillance system that assesses specified maternal experiences and behaviors that happen before, during, and shortly after birth (Shulman et al., 2018). PRAMS surveillance actively covers over 80% of all US births and gathers demographics, birth status, and more from birth certificate files from local counties (Shulman et al., 2018). Each participating state adheres to a standard data collection procedure with rooted flexibility to cater programs to each state's desires (Shulman et al., 2018).

The PRAMS system is a combined-mode (telephone and mail) surveillance structure, which holds each participating state accountable for their data collection methods (Shulman et al., 2018). The approach used varies by state, but typically includes specific mailings of materials, use of rewards, and ongoing but different encounters to reach participants (Shulman et al., 2018). The standard mode of data

collection is by physical mail. If no response is received within a month, up to five phone calls are made to get in touch with the mother about the status of the survey (Shulman et al., 2018).

The majority of the states within the U.S. use health department employees to manage the mailed evaluations and contract the telephone portion of the survey out to expert survey research agencies (Shulman et al., 2018). The PRAMS methodology and procedures have been analyzed and approved by the CDC's institutional review board (IRB) (Shulman et al., 2018). Any alterations from the PRAMS procedure has to be approved by both the CDC and a local IRB before implementation (Shulman et al., 2018).

To obtain the dataset from PRAMS, the researcher completed the required submission forms, which includes the PRAMS Application Form, a Project Abstract of no more than 350 words, and the Data Sharing Agreement form. The current application was submitted on April 1, 2019. The CDC PRAMS committee then reviewed the application and approved access to the dataset on April 30, 2019 (see Appendix B).

Participants

The entire PRAMS dataset consisted of 38,549 participants. The number of participants chosen for the subset of this study consisted of 28,829 participants to answer the first research question. The numbers of participants to answer the different determinants of the second research question were varied: 7,042 participants for education, 7,095 participants for age, 5,930 participants for income, and 6,960 participants for planned pregnancy. The participants consisted of non-Hispanic black

women and non-Hispanic white women from the PRAMS dataset. The chosen participants for PRAMS were women who live in a participating state who had given birth to a baby (alive or deceased) and were between two to six months postpartum (Shulman et al., 2018). The state's birth certificate forms provided a sampling template for identifying new mothers (Shulman et al., 2018). To capture the mothers with multiple births at one time, only one newborn was randomly chosen to be included in the data (Shulman et al., 2018).

Independent Variable and Dependent Variable

The independent variables (IV) included the mother's education, age, income, and whether the pregnancy was planned. The dependent variable (DV) was whether or not the mother obtained adequate prenatal care (i.e., the mother had nine or more prenatal visits during her pregnancy).

Data Analysis

A Chi-Square Test of Independence was used to analyze both research questions using SPSS statistical software, version 26. Upon analyzing the data, the following variables within the dataset were collapsed in order to run the Chi-Square Test of Independent and calculate the odds ratios. The IV titled "Maternal Race (MAT_RACE)" consisted of twelve codes identifying race: "U = unknown," "1 = other Asian," "2 = white," "3 = black," "4 = American Indian," "5 = Chinese," "6 = Japanese," "7 = Filipino," "8 = Hawaiian," "9 = other nonwhite," "10 = Alaskan Native," and "11 = mixed race." Because the current study compared non-Hispanic black women to non-Hispanic white women, "MAT_RACE" was recoded to

RACE_RECODED with “2 = white,” “3 = black,” and the remaining ten races were recoded as “System Missing.”

The second research question was reflected by the IVs below. “Maternal Education (MAT_ED),” originally coded as “U = unknown,” “1 = 0-8 years,” “2 = 9-11 years,” “3 = 12 years,” “4 = 13-15 years,” and “5 = greater than or equal to 16 years.” These values were recoded to collapse the education options into two categories with “1 = less than high school education” (collapsing options 1-3) and “2 = more than high school education” (collapsing options 4 and 5), and all other values were recoded as “System Missing.”

“Maternal Age Grouped (MAT_AGE_NAPHSIS)” was recoded to “Age_Recoded” in which “U = unknown,” “1 = ≤ 17 ,” “2 = 18-19,” “3 = 20-24,” “4 = 25-29,” “5 = 30-34,” “6 = 35-39,” and “7 = ≥ 40 .” These values were collapsed to “1 = females under 29 years old” (collapsing options 1-4) and “2 = females over 30 years old” (collapsing options 5-7), and all other values were coded as “System Missing.”

“Income – from 12 months before, total income (INCOME8)” was recoded to “Income_Recoded” in which “B = do not know or blank,” “1 = \$0 to \$16,000,” “2 = \$16,001 to \$20,000,” “3 = \$20,001 to \$24,000,” “4 = \$24,001 to \$28,000,” “5 = \$28,001 to \$32,000,” “6 = \$32,001 to \$40,000,” “7 = \$40,001 to \$48,000,” “8 = \$48,001 to \$57,000,” “9 = \$57,001 to \$60,000,” “10 = \$60,001 to \$73,000,” “11 = \$73,001 to \$85,000,” and “12 = \$85,001 or more.” These values were collapsed to “1 = income under \$40,000” (combining options 1-6) and “2 = income over \$40,000” (combining options 7-12), and all other values were coded as “System Missing.”

Most pregnant women participating in the survey made a total income of less than \$40,000 per year and qualified for public health insurance such as Medicaid.

“Pregnancy Intention (PGINTENT)” was recoded to “PlannedPG_Recoded” in which “B = blank or no response,” “1 = mother wanted to be pregnant later,” “2 = mother wanted to be pregnant sooner,” “3 = mother wanted to be pregnant then,” “4 = mother did not want to be pregnant then or at any time in the future,” and “5 = mother was not sure what she wanted.” These values were collapsed to “1 = the pregnancy was planned” (combining options 2-3) and “2 = the pregnancy was not planned” (collapsing options 1, 4-5), and all other values were coded as “System Missing.”

The DV was measured by “Number of Prenatal Care Visits Grouped (PNC_VST_NAPHSIS/NP_PNCVS),” which consisted of the frequency of prenatal care visits during the participants pregnancy. Responses included “U = unknown,” “1 = less than or equal to eight prenatal care visits,” “2 = between nine to eleven prenatal care visits,” and “3 = twelve or more prenatal care visits.” “PNC_VST_NAPHSIS” was recoded to “Prenatal_Visits_Recoded” with “1 = less than or equal to eight prenatal care visits” and “2 = nine or more prenatal care visits” (collapsing options 2-3).

Results

Participant Demographics

The sample consisted of 75.2% non-Hispanic white women (n = 22,281) and 24.8% non-Hispanic black women (n = 7,347), totaling 29,628 participants (see Table 1). When looking at income, the majority of participants either earned \$16,000 or less (21%) or more than \$85,000 (22%). Participants who attained more than 13 years of education made up more than 50% of the respondents with 29% reporting 13-15 years of education and 33.4% reporting 16 years of more education. In comparison, 24.6% reported less than 12 years of education. Lastly, the majority of participants were between the ages of 25-29 years (29.7%) and 30-34 years (28.7%) (see Table 1).

Major Findings

The first research question examined if there were racial disparities between non-Hispanic black women and non-Hispanic white women in the attainment of adequate prenatal care defined as nine or more prenatal care visits over the course of the pregnancy. The findings showed that significant disparities exist between non-Hispanic white women and non-Hispanic black women when it comes to adequate prenatal care. A Chi-Square Test of Independence was performed to examine the relationship between prenatal care visits and race. The relationship between these variables was found to be significant ($\chi^2(1) = 166.018, p < .001$). Non-Hispanic white women were 34% more likely to obtain adequate prenatal care (nine or more prenatal visits) compared to non-Hispanic black women. The results show 82% of non-Hispanic white women received nine or more prenatal care visits compared to only 75.5% of non-Hispanic black women. Conversely, 17.6% of non-Hispanic white

women received inadequate prenatal care (eight or less prenatal care visits) whereas 25% of non-Hispanic black women received inadequate prenatal care (eight or fewer prenatal care visits).

The second research question examined the relationship between education, age, income, and whether the pregnancy was planned and the attainment of adequate prenatal care among non-Hispanic black women (see Table 3). Because four different analyses were run to answer this research question, a Bonferroni correction was applied. The adjusted p value threshold would need to be less than 0.0125 to determine significance after rerunning the data with a 10% subsample. All results were still found to be significant even with the correction.

A Chi-Square Test of Independence was performed to examine the relation between education level and the attainment of adequate prenatal care. The relation between these variables was significant ($\chi^2(2) = 75.144, p < .001$). The results demonstrated that non-Hispanic black women who had achieved less than twelve years of education were 1.62 times more likely to have obtained inadequate prenatal care (OR = 1.62).

When examining the relationship between age and adequate prenatal care among non-Hispanic black women, a Chi-Square Test of Independence was performed. Results indicated that there was a significant relationship between these variables ($\chi^2(2, N = 7,095) = 15.417, p < .001$). Women who were 29 years of age or younger were 1.25 times more likely to have obtained inadequate prenatal care (8 or fewer prenatal care visits) compared to women over the age of 30 (OR = 1.251).

A Chi-Square Test of Independence was performed to examine the relation between income and prenatal care among non-Hispanic black women. The relation between these variables found to be significant ($\chi^2(2) = 46.983, p < .001$). The results indicated that women with a total income of less than \$40,000 annually were 1.7 times more likely to have obtained inadequate prenatal care compared to participants who had reported an annual income more than \$41,000.

Lastly, a Chi-Square Test of Independence was performed to examine the relation between whether the pregnancy was planned and whether adequate prenatal care was received. The relation between these variables was found to be significant ($\chi^2(2) = 22.486, p < .001$). The results found that non-Hispanic black women who planned to be pregnant were 25% less likely to obtain adequate prenatal care compared to women who did not plan to be pregnant.

Discussion

Summary of Major Findings

This thesis sought to analyze if there are differences among non-Hispanic black women and non-Hispanic white women in prenatal care as well as examine the social determinants (age, education, income, planned pregnancy) of prenatal care among non-Hispanic black women. Previous studies have found that a significant disparity in maternal mortality exists among non-Hispanic black women, which has been linked to inadequate prenatal care (CDC, 2019). The results from the current study are consistent with previous research in that there was a lack of adequate prenatal care among non-Hispanic black women when compared to non-Hispanic white women. When examining the potential social determinants of prenatal care (age, education level, income, and intention to become pregnant), all were significantly associated with the number of prenatal care visits obtained by non-Hispanic black women.

Racial Disparities and Adequate Prenatal Care

The findings show that there is a significant relationship between adequate prenatal care and maternal race. Specifically, non-Hispanic white women are more likely to obtain adequate prenatal care, while nearly 25% of the participants who identified as non-Hispanic black did not obtain adequate prenatal care. This is important because it demonstrates that non-Hispanic black women are still at-risk of obtaining adequate prenatal care compared to non-Hispanic white women. The literature stated that inadequate prenatal care leads to gaps in prenatal services which can contribute to the disparities in birth outcomes among non-Hispanic black women

(Kogan et al., 1994b). Green (2019) also found significant disparities between the same racial groups examined in the current study. In Green's study, 89% of non-Hispanic white women sought initial prenatal care compared to only 75% of non-Hispanic black women who sought initial prenatal care during their pregnancy, which set the tone for adequate prenatal care throughout the pregnancy. Studies also show that non-Hispanic black women have a higher maternal mortality rate compared to non-Hispanic white women with 40 deaths per 100,000 live births compared to 12 deaths per 100,000 live births among non-Hispanic white and non-Hispanic black women, respectively (Creanga et al., 2015).

Determinants of Adequate Prenatal Care

Because of the disparity found among non-Hispanic black women with regard to obtaining adequate prenatal care, the current study also sought to examine the possible social determinants of adequate prenatal (age, education, income, planned pregnancy). The results of the study found that there is a relationship between the social determinants of prenatal care and adequate prenatal care among non-Hispanic black women.

Women making less than \$40,000 total income were 79% more likely to have inadequate prenatal care, while those making more than \$41,000 annually were 22% more likely to obtain adequate prenatal care. This shows even if a black woman is making less money, she still runs the risk of inadequate prenatal care. Age was also significantly associated with an alarming difference between those who have more life experience and awareness (women over the age of 30) compared to those who are

younger than 29 years of age and who may not be socioeconomically stable and educated about adequate prenatal care (Green, 2019).

All determinants were found to be significantly associated with inadequate prenatal care, and the disparities across age, income, and planned or intended pregnancy have drastic results. For example, when looking at education, results show that despite a pregnant mother's educational attainment, adequate prenatal care is still lower among non-Hispanic black women. Those with more than 13 years of education (79.7%) were only 9% more inclined to have adequate prenatal care than those with 12 years of education or less (70.9%).

Public Health Implications

Policymakers should focus on a standard prenatal care procedures for every woman regardless of racial and ethnic makeup (Shulman et al., 2018). Based on the results from the current study, non-Hispanic black women are less likely to obtain adequate prenatal care. Healthcare professionals, policymakers, and communities across the nation can enhance non-Hispanic black women's adequate attainment of prenatal care by increasing access to healthcare coverage, providing intentional patient-centered care, investing in adequate prenatal care initiatives, and much more (National Partnership for Women's and Families [NPWF], 2018).

Non-Hispanic black women tend to fall into the insurance gap where they earn too much income to qualify for Medicaid but not enough to obtain coverage on the Affordable Care Act, which creates a lack of access to health insurance (NPWF, 2018). Therefore, policies to enhance Medicaid coverage will boost overall maternal outcomes by providing adequate prenatal care access and limiting financial

vulnerability (NPWF, 2018). Policies must focus on eradicating discrimination and cultural biases in medical methods by enhancing diversity among healthcare providers in maternal care and holding them accountable if they do not provide high-quality, unbiased, and evidence-based care (NPWF, 2018). Currently, there is more research being conducted on non-Hispanic black women, which is needed; however, public health professionals need to ensure that the results are being translated into policies that can address the current disparity (NPWF, 2018).

There are many organizations, such as Black Mama Matters, National Partnership for Women's and Families, American College of Obstetricians and Gynecologists, Black Women Birthing justice, Ancient Song Doula Services, Black Women Health Imperative, Black Women Justice Mission, SisterSong, Commonsense Childbirth, Jamaa Birth Village, Mamatoto Village, National Birth Equity Collaborative, and many more that are addressing maternal health inequities among all black women. Although most of these organizations have been around for years, there are still thousands of women of color who are not aware of these movements; therefore, the push to engage every community across the nation through continuous evidence-based research, media, social movements, town hall meetings, and health education and promotion programs will increase public awareness and address the public health disparities in maternal healthcare.

Study Limitations

Some of the limitations of the current study included the timeframe in which the PRAMS data was collected. The data was collected in 2016, and due to the cross-sectional nature of the study design, it is not continuous. This cross-sectional study

was taken in a snapshot of time and does not promise to be representative in the future, and potentially may not be used to assess behavior during a period of time. With the sample being pulled from a large quantity, there is a possibility of overpowered issue results. The data was also collected via self-reported questionnaires, whether it was phone calls or mail-in surveys. When participants reported their personal experiences for research, they may also have inadvertently been biased in some of their responses. For example, a social desirability bias occurs when a respondent provides a response that he or she feels is socially acceptable.

Validity of the participants' responses can be in question. The overall questionnaire had more than 472 questions, which may cause the participant to "no-saying and yes-saying" just to get through the survey. With regard to the demographic information, the ethnicity or race variable was limited.

Conclusion

In conclusion, all black women merit the right to have access to adequate prenatal care and a safe and healthy childbirth experience (NPWF, 2018). To intentionally enhance maternal health outcomes for black women, systemic change within the healthcare system is needed, which will then advance the lives of those within its reach (NPWF, 2018). By taking these steps, black women will be able to obtain their optimal well-being and health during their lifetimes, especially those who desire to become mothers. Black women's lives must matter, not just within the social constructs who identify with them, but for everyone who exists in this nation.

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Appendix A: Tables

Table 1

Demographics of 2017 PRAMS Respondents (n = 29,628)

Variables	<i>n</i>	%
Age		
> = 17	139	1.3%
18-19	363	3.7%
20-24	1,698	18.9%
25-29	2,220	29.7%
30-34	1,722	28.7%
35-39	954	14.5%
40+	250	3.3%
 Education		
0 - 8 years	105	3.1%
9 - 11 years	838	9.9%
12 years	2,464	24.6%
13 - 15 years	2,567	29.0%
> = 16 years	1,307	33.4%
 Income		
\$0 - \$16,000	2,357	21.4%
\$16,001 - \$20,000	807	8.5%
\$20,001 - \$24,000	478	5.7%
\$24,001 - \$28,000	341	4.3%
\$28,001 - \$32,000	383	4.7%
\$32,001 - \$40,000	404	6.1%
\$40,001 - \$48,000	279	4.5%
\$48,001 - \$57,000	215	4.8%
\$57,001 - \$60,000	124	3.1%
\$60,001 - \$73,000	196	5.2%
\$73,001 - \$85,000	157	5.0%
\$85,001 +	399	21.0%

Table 2

Crosstabulation of Race and Prenatal Care Visits

	Prenatal Care Visits		X ²	df	Adjusted OR (95% CI)	p value
	8 < Visits	9 > Visits				
Race			166.018	1	.656 (.615, .700)	<.001
Non-Hispanic White	3,816 (17.6%)	17,917 (82.4%)				
Non-Hispanic Black	1,739 (24.5%)	5,357 (75.5%)				

Note: The sample size was n = 28,628

Table 3

Crosstabulation of Adequate Prenatal Care and Predictors

Prenatal Care In 1st Trimester						
	8 or less visits	9 or more visits	X ²	df	Adjusted OR (95% CI)	p value
Non-Hispanic Black						
Education			75.144	1	1.62 (1.452, 1.807)	<.001
12 years or less	960 (29.1%)	2334 (70.9%)				
13 years or more	759 (20.3%)	2989 (79.7%)				
Age			15.417	1	1.251 (1.119, 1.400)	<.001
Less than 29 years	1112 (26.1%)	3143 (73.9%)				
30 + years	626 (22.0%)	2214 (78.0%)				
Income			46.983	1	1.79 (1.483, 2.040)	<.001
Less than \$40k year	1179 (25.6%)	3430 (74.4%)				
More than \$41k year	218 (16.5%)	1103 (83.5%)				
Planned Pregnancy			22.486	1	.758 (.676, .850)	<.001
Not planned	570 (21.4%)	2099 (78.6%)				
Planned	1132 (26.4%)	3159 (73.6%)				

Note: The sample sizes for each variable may differ due to the number of survey responses.

Appendix B: CDC Approval to Use PRAMS Dataset

Bianca Reid PRAMS Application

From: Stuart, Gary (CDC/DDNID/NCCDPHP/DRH) <gxs4@cdc.gov> on behalf of PRAMSProposals (CDC) <PRAMSProposals@cdc.gov>
Sent: Tuesday, April 30, 2019 4:15 AM
To: Bianca L'erin Reid <BiancaLerin.Reid@calbaptist.edu>
Cc: PRAMSProposals (CDC) <PRAMSProposals@cdc.gov>
Subject: RE: REID PRAMS Application

Greetings,

Thank you for the submission of your proposal for the use of the PRAMS Analytic Research File for multi-state PRAMS data analysis. Your proposal has been reviewed and approved by CDC.

The proposal will now be sent out for to the PRAMS sites for comment. You may receive questions from PRAMS sites regarding your proposal. Please respond promptly and directly to the sites, should they contact you.

CDC will send your dataset by email in approximately 4-6 weeks.

Please recall, as a condition of the data sharing agreement that you signed, all written and oral presentations, abstracts and manuscripts must be sent to CDC for distribution to PRAMS sites at least 2 weeks prior to submission to conferences or journals. They must include an acknowledgement of the PRAMS Working Group and the Centers for Disease Control and Prevention. In addition, data must be destroyed when it is no longer needed for the approved analysis and confirmed in writing to CDC PRAMS at this mailbox (PRAMSProposals@cdc.gov).

We look forward to learning the results of your analysis, and thank you for your interest in PRAMS.

Regards,

CDC PRAMS team