



# ARKANSAS PRAMS UPDATE

PREGNANCY RISK ASSESSMENT MONITORING SYSTEM

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## Unintended Pregnancy and the Risk of Preterm Delivery in Arkansas

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**Background:** Studies have found that unintended pregnancies, especially unwanted pregnancies, are related to preterm delivery. Compared to women whose pregnancies are intended, women with unintended pregnancies are more likely to receive inadequate prenatal care and to smoke during pregnancy. These are behaviors that contribute to poor pregnancy outcomes such as preterm delivery. In Arkansas, black women are much more likely than white women to have an unintended pregnancy.

**Objective:** To look at the characteristics of black and white women who have had intended and unintended pregnancies and to analyze the effect of unintended pregnancy on the risk for preterm delivery.

**Study Design:** Cross-sectional study using Arkansas Pregnancy Risk Assessment Monitoring System (PRAMS) and linked birth certificate data, 1998-2005.

**Measurement:** Pregnancy intention was assessed by the PRAMS question "Thinking back to just before you got pregnant with your new baby, how did you feel about becoming pregnant?" Women who responded "I wanted to be pregnant sooner" or "I wanted to be pregnant then" were categorized as having an intended pregnancy. Women who responded "I wanted to be pregnant later" were categorized as having a mistimed pregnancy. Women who responded "I didn't want to be pregnant then or at any time in the future" were categorized as having an unwanted pregnancy.

**Outcome Variable:** Preterm delivery was obtained from the birth certificate and dichotomized as preterm delivery (<37 weeks of gestation) and term delivery ( $\geq 37$  weeks of gestation). The reference outcome was term delivery.

**Independent Variables:** Maternal age, maternal race, maternal education, marital status, parity, and presence of medical risk factors (e.g. diabetes, chronic hypertension, etc.).

### Key Findings:

- From 1998 to 2005, 52.0% of Arkansas women had unintended pregnancies and 9.4% had preterm deliveries.
- No significant association was found between unintended pregnancy and preterm delivery.
- Factors associated with preterm delivery included low pre-pregnancy BMI, smoking during pregnancy, medical risk factors, and no receipt of prenatal care.

**Limitations:** The main limitation of this study is recall bias. A woman may recall her pregnancy intention differently based on the outcome of her pregnancy.

**Conclusions:** Pregnancy intent may just be a risk marker for other variables that influence pregnancy outcomes, such as no receipt of prenatal care or smoking during pregnancy. These results are useful for development of preconception care programs to assure Arkansas women are healthy for pregnancy.

## Introduction

Preterm delivery is the birth of an infant prior to 37 completed weeks of gestation and is one of the leading causes of illness and death among infants.<sup>1</sup> Significant disparities exist for preterm delivery in Arkansas. According to data from the Arkansas Pregnancy Risk Assessment Monitoring System (PRAMS) survey for 1998-2005, the proportion of preterm deliveries for black women (12.6%) is about 50% higher than that for white

women (8.6%). One of the goals of *Healthy People 2010* is to eliminate health disparities, and one of the *Healthy People 2010* objectives (16-11a) is to reduce the proportion of preterm deliveries to 7.6%.<sup>2</sup> Eliminating or reducing these disparities requires an understanding of the differences and similarities in factors related to preterm delivery for white and black women. One of these factors may be unintended pregnancy.

An unintended pregnancy is commonly defined as a pregnancy that is mistimed (e.g. earlier than desired) or unwanted (e.g. not wanting to be pregnant at any time).<sup>3</sup> Previous studies have found that unintended pregnancies, especially unwanted pregnancies, are related to preterm delivery.<sup>4</sup> Compared to women whose pregnancies are intended, women with unintended pregnancies are more likely to receive inadequate prenatal care and smoke during pregnancy.<sup>5,6</sup> These are behaviors that contribute to poor pregnancy outcomes such as preterm delivery. In Arkansas, black women are much more likely than white women to have an unintended pregnancy.

This study looks at the characteristics of black and white women who have had intended and unintended pregnancies and analyzes the effect of unintended pregnancy on the risk for preterm delivery.

## Methods

This study used data from Arkansas PRAMS for the years 1998 to 2005. PRAMS is an ongoing population-based surveillance system designed to identify and monitor selected self-reported maternal characteristics, behaviors, and experiences that occur before, during, and after pregnancy among women who had a live birth.<sup>3</sup> Each month, a sample of 200 to 300 women is selected from the birth certificate file. The sample is stratified by infant birthweight and population density. A mail or follow-up telephone survey is administered to sampled women 2 to 6 months after delivery. The results are weighted to adjust for sample design, noncoverage, and non-response.

During 1998 to 2005, 15,857 of the 20,985 PRAMS surveys mailed to new mothers were completed for an unweighted response rate of 75.5%. Respondents from races other than white and black, multiple births, and responses missing observations for the pregnancy intent question were excluded. The final sample size was 13,446.

Pregnancy intention was assessed by the PRAMS question “Thinking back to just before you got pregnant with your new baby, how did you feel about becoming pregnant?” Women who responded “I wanted to be pregnant sooner” or “I wanted to be pregnant then” were categorized as having an intended pregnancy. Women who responded “I

wanted to be pregnant later” were categorized as having a mistimed pregnancy. Women who responded “I didn’t want to be pregnant then or at any time in the future” were categorized as having an unwanted pregnancy. Other independent variables assessed from PRAMS included Medicaid status, prepregnancy body mass index (BMI, defined as kg/m<sup>2</sup>), smoking in the 3rd trimester, receipt of prenatal care, and physical abuse. A woman was defined as receiving Medicaid if she reported that she had received Medicaid benefits just before her pregnancy or that Medicaid had paid for her prenatal care or delivery.

Prepregnancy BMI was calculated based on self-report of prepregnancy height and weight. Centers for Disease Control and Prevention (CDC) definitions were used to categorize prepregnancy BMI as underweight (BMI <18.5), normal weight (18.5-24.9), overweight (25.0-29.9), or obese ( $\geq 30.0$ ). Smoking during the 3<sup>rd</sup> trimester was defined as any cigarette smoking during that time period. Delayed or no prenatal care was defined as beginning prenatal care after the 1st trimester or not receiving any prenatal care. Physical abuse was defined as being pushed, hit, slapped, kicked, or otherwise physically hurt by a husband or partner at any time before or during pregnancy.

Independent variables maternal age, maternal race, maternal education, marital status, parity, and presence of medical risk factors (e.g. diabetes, chronic hypertension, etc.) were obtained from the birth certificate.

The outcome variable, preterm delivery was obtained from the birth certificate and dichotomized as preterm delivery (<37 weeks of gestation) and term delivery ( $\geq 37$  weeks of gestation). The reference outcome was term delivery.

For the descriptive analysis, variables were examined using weighted percentages and 95% confidence intervals (CIs). Chi-square tests of significance were used to determine differences among the pregnancy intent groups. Backward stepwise logistic regression modeling with SAS PROC SURVEYLOGISTIC and a finite population correction was performed to produce adjusted odds ratios (AORs) as measures of association between pregnancy intent, selected independent variables, and preterm delivery. In the first stage of analysis,

all selected variables, including maternal race were entered into a logistic regression model for preterm delivery. Variables that were significant at  $p < 0.15$  were then used in separate second stage models for white and black women. Relationships between model variables and preterm delivery were considered significant at  $p < 0.05$ .

## Results

Overall, 52.0% of women reported unintended pregnancies; 37.8% had mistimed pregnancies and 14.2% had unwanted pregnancies. Among white women, 35.5% reported mistimed pregnancies and 10.8% reported unwanted pregnancies. Among black women, 46.4% reported mistimed pregnancies and 27.5% reported unwanted pregnancies. Table 1 presents maternal characteristics and behaviors by race and pregnancy intention. Both black and white women who had unintended pregnancies were more likely to be young, have 12 years of education or less, to be unmarried, have had more than one previous birth, and have received delayed or no prenatal care compared to women who had intended pregnancies. White women who had unintended pregnancies were more likely to smoke during the 3<sup>rd</sup> trimester compared to women who had intended pregnancies. This association was not found for black women. The prevalence of preterm delivery does not appear to be different across the pregnancy intent groups for either white or black women.

After adjustment for selected independent variables, mistimed and unwanted pregnancies were not associated with preterm delivery for either race group. Table 2 presents the regression model, which includes those variables found by backward stepwise logistic regression to be significantly related to preterm delivery. Maternal age, maternal education, marital status, Medicaid coverage, parity, and physical abuse were not significantly related to preterm delivery when maternal race was included in the first stage analysis model; therefore these variables were not included in separate second stage models.

Characteristics significantly associated with preterm delivery for white women included having medical risk factors and no receipt of prenatal care. Women with medical risk factors were 2.7 times

more likely to deliver preterm compared to women who did not have medical risk factors. Women who did not receive prenatal care were 2.2 times more likely to deliver preterm compared to women who received prenatal care.

Factors found to increase the risk of preterm delivery for black women included being underweight before pregnancy, smoking during pregnancy, having medical risk factors, and not receiving any prenatal care. Those who were underweight before pregnancy were 1.9 times more likely to deliver preterm compared to women who were of normal weight before pregnancy. Those who had medical risk factors were 2.7 times more likely to deliver preterm compared to women who had no medical risk factors. Women who smoked during the 3<sup>rd</sup> trimester of pregnancy were twice as likely to deliver preterm compared to women who did not smoke. Finally, women who did not receive prenatal care were 3.1 times more likely to deliver preterm compared to women who received prenatal care.

## Discussion

Our results do not indicate that unintended pregnancy is an independent risk factor for delivering a preterm infant and therefore does not explain the disparity in proportion of preterm infants born to black and white women. Pregnancy intent may just be a risk marker for other variables that influence pregnancy outcomes, such as no receipt of prenatal care or smoking during pregnancy.<sup>6</sup>

There were, however, both differences and similarities in the factors associated with preterm deliveries for black and white women. Medical risk factors and no prenatal care were significantly related to preterm delivery for both populations of women. The influence of medical risk factors was about the same (AOR=2.7) for both women; however, lack of prenatal care was a stronger indicator for preterm births for black women (AOR=3.1) than for white women (AOR=2.2). Additionally, smoking in the 3<sup>rd</sup> trimester and being underweight before becoming pregnant were found to be significant for black women.

This information has programmatic implications. Emphasis needs to be placed on

creating community-based programs that promote women's health before pregnancy or preconception health. Providers of preconception health care can encourage women to quit smoking, maintain a healthy weight, and have proper nutrition to prepare for pregnancy and to decrease morbidity and mortality of adverse pregnancy or infant outcomes.

The main limitation of this study is recall bias. A woman may recall her pregnancy intention differently based on the outcome of her pregnancy. Pregnancy intent remains an important concept in maternal and child health and should be evaluated to assess trends over time and differences among population subgroups, yet it is not the most important indicator to evaluate birth outcomes.<sup>7</sup>

## References

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### What is PRAMS?

The Pregnancy Risk Assessment Monitoring System (PRAMS) is an on-going, population-based surveillance system sponsored by the Centers for Disease Control and Prevention (CDC). The PRAMS survey is designed to capture information on maternal behaviors and experiences that occur before, during, and after pregnancy among women who had a live birth. PRAMS provides information that is not available from the birth certificate or other sources.

The goal of PRAMS is to provide state-specific information that can be used to improve the health of mothers and infants by reducing adverse outcomes such as low birth weight, infant mortality and morbidity, and maternal morbidity. Data from the PRAMS survey can be used to identify women who are at high risk for health problems, to monitor changes in maternal health indicators, and to measure progress in improving the health of mothers and their infants.

In Arkansas, over 200 recent mothers are sampled from Arkansas birth certificates each month and stratified by birth weight and population density. Mothers are mailed as many as three questionnaires about such issues as prenatal care, birth control, breastfeeding, insurance coverage, well-child care, and pregnancy intention. Responses are weighted to adjust for sample design, non-coverage, and non-response.

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