

African American Perinatal Health Disparities

Introduction:

Healthy People 2010 Objective 16-6b calls for 90% of all pregnant women to receive early and adequate prenatal care.¹ The receipt of early and adequate prenatal care is considered essential in identifying and moderating potential risks that contribute to poor perinatal outcomes, such as pre-term labor, low birth weight and infant or maternal mortality. Early screening, diagnosis and treatment for potential obstetric complications, such as diabetes and high blood pressure, have the potential to improve birth outcomes.

Early prenatal care is defined as a woman having her first prenatal care visit within the first trimester, or the first three months of pregnancy. Adequate prenatal care encompasses both first trimester care and having received the appropriate amount of prenatal care visits.²

In 2005, national vital statistics data showed that 83.9% of pregnant women received early prenatal care within the first trimester.³ Conversely, 3.5% of all pregnant women received late or no prenatal care.³ These overall rates, however, conceal the racial disparities in early prenatal care utilization and other perinatal risk factors. In the United States during 2005, only 76.5% of African American women received early prenatal care within the first trimester of pregnancy compared to 88.9% of white women.³ In addition, 5.6% of African American pregnant women received late or no prenatal care, compared to 2.2% of white pregnant women.³

Access to and early use of prenatal care are not the only factors in pregnancy health where racial disparities exist. African American women are less likely to use tobacco or alcohol before or during pregnancy when compared to white and Native American women, however they are more likely to have unintended pregnancies and to experience high levels of stress before and during pregnancy.⁴ Women who are African American are more likely to be obese before pregnancy and more likely to be diagnosed with pre-pregnancy diabetes and hypertension, highlighting the importance of early and adequate prenatal care.^{4,5} Although the underlying causes are sometimes unknown, infants born to African American women are twice as likely to be born low birth weight when compared to white women in the United States. They are also 3.9 times more likely to die from

In Oklahoma:

- African American women were less likely to smoke during pregnancy than white women, although the number of African American pregnant smokers is on the rise.
- African American mothers were less likely to drink during the three months prior to pregnancy compared to white women (41.8% vs. 50.6%).
- African American women were as likely to receive adequate levels of prenatal care as white women.
- African American women were less likely to receive prenatal care as early in their pregnancy as they desired when compared to white women (69.3% vs. 79.7%).
- The most commonly cited barrier to obtaining prenatal care as early as desired among African American women was not being able to get an appointment when desired.

complications of being born low birth weight compared to those infants born to white women.⁶

In 2004, the national infant mortality rate was 6.8 deaths per 1,000 live births; for African Americans the rate was double, 13.6 per 1,000 live births, and for white women the rate was 5.7 per 1,000 live births.⁶ In Oklahoma, the infant mortality rate of African American babies over a three-year span from 2004-2006 was 15.1 per 1,000 live births compared to 6.5 per 1,000 live births for white babies.⁷ The overall rate in Oklahoma for the same time period was 8.0 per 1,000 live births.⁷

This PRAMSGRAM will examine perinatal health care and risk behaviors before and during pregnancy for Oklahoma's African American maternal population, as compared to the white maternal population. This report will serve as an introduction to a series of reports on health disparities between African American and white women before, during and after pregnancy. In this report, entry into prenatal care is based upon the mother's recall of care as reported in PRAMS, rather than birth certificate information.

Methods:

Data used in this report were collected from the Oklahoma Pregnancy Risk Assessment Monitoring System (PRAMS) for the years 1996 through 2006. PRAMS respondents who reported their race on the birth certificate as either African American or white were included in the study. Due to revisions in the PRAMS survey instrument, analysis of most variables was restricted to PRAMS data for years 2004 through 2006. A more detailed methodology of PRAMS has been well-documented elsewhere.⁸

Maternal characteristics included in the analysis were education (<12y, 12y, 13-15y, ≥16y), age (<20, 20-24, 25-29, 30-34, ≥35), age at first birth (<18, 18-19, ≥20), and marital status (unmarried, married). The mother's intention of pregnancy (intended, unintended) was included in the analysis, as was maternal smoking behavior during the pregnancy (no/yes) and alcohol consumption during the three months prior to pregnancy (no/yes). Factors related to prenatal care were also included. These were adequacy of prenatal care based on the Kotelchuck Index, Medicaid payment of prenatal care (yes/no), and barriers to prenatal care (not wanting others to know about the pregnancy, being too busy, not having child care, not having a Medicaid/SoonerCare card, the doctor or health plan would not start care earlier in the pregnancy, couldn't take time off from work, no transportation, not having enough money or insurance to pay for care, and not being able to get an appointment when desired). Respondents were also asked whether they received prenatal care as early as it was wanted (no/yes). Maternal body mass index (BMI) was calculated using the Institute for Medicine's (IOM) standards for pre-pregnant women.

The Pregnancy Risk Assessment Monitoring System (PRAMS) is an ongoing, population-based study designed to collect information about maternal behaviors and experiences before, during and after pregnancy. On a monthly basis, PRAMS samples between 200 and 250 recent mothers from the Oklahoma live birth registry. Mothers are sent as many as three mail questionnaires seeking their participation, with follow-up phone interviews for non-respondents. A systematic stratified sampling design is used to yield sample sizes sufficient to generate population estimates for groups considered at risk for adverse pregnancy outcomes. Information included in the birth registry is used to develop analysis weights that adjust for probability of selection and non-response.

Due to the complex sample design of the PRAMS study, SAS-Callable SUDAAN 9.0.1 was used to run the statistical analysis. Study variables were examined using percentages and confidence intervals. Statistical significance was established at the conventional $p < 0.05$.

Results:

Table 1 shows the maternal demographic characteristics for the study sample. The majority of women in both groups were between the ages of 20-29 (61.9% were white and 61.1% were African American). However African American mothers were significantly more likely to have been an adolescent compared to white women (21.1% vs. 11.5%).

Table 1: Maternal Demographic Characteristics of the Study Sample; PRAMS 2004-2006

CHARACTERISTIC	WHITE		AFRICAN AMERICAN		CHI-SQUARE TEST P-VALUE
	%	95% CI	%	95% CI	
AGE					
<20	11.5	(10.0, 13.2)	21.1	(15.7, 27.8)	.0072
20-24	30.6	(28.5, 32.8)	30.4	(24.0, 37.6)	
25-29	31.3	(29.2, 33.5)	30.7	(24.2, 38.0)	
30-34	18.7	(17.0, 20.5)	11.4	(7.5, 17.0)	
35+	7.9	(6.8, 9.2)	6.5	(3.7, 11.1)	
EDUCATION					
<12*	17.8	(15.9, 19.8)	11.3	(7.4, 17.0)	.0082
12*	37.2	(34.9, 39.5)	48.2	(40.7, 55.9)	
13+*	45.1	(42.7, 47.4)	40.4	(33.2, 48.1)	
16+**	26.8	(24.7, 29.1)	16.0	(10.7, 23.4)	.0021
MARITAL STATUS***					
MARRIED	64.6	(62.3, 66.9)	28.1	(22.0, 35.2)	<.0001
UNMARRIED	35.4	(33.1, 37.7)	71.9	(64.8, 78.0)	
AGE AT 1ST BIRTH					
<18	12.8	(11.3, 14.5)	22.9	(17.2, 29.7)	<.0001
18-19	17.6	(15.8, 19.5)	27.7	(21.6, 34.8)	
20+	69.6	(67.4, 71.8)	49.4	(42.1, 56.8)	
MEDICAID					
YES	52.3	49.9, 54.6	77.2	70.3, 82.9	<.0001
NO	47.7	45.4, 50.1	22.8	17.1, 29.7	

* Among mothers > age 18

** Among mothers > age 22

*** Married at Delivery

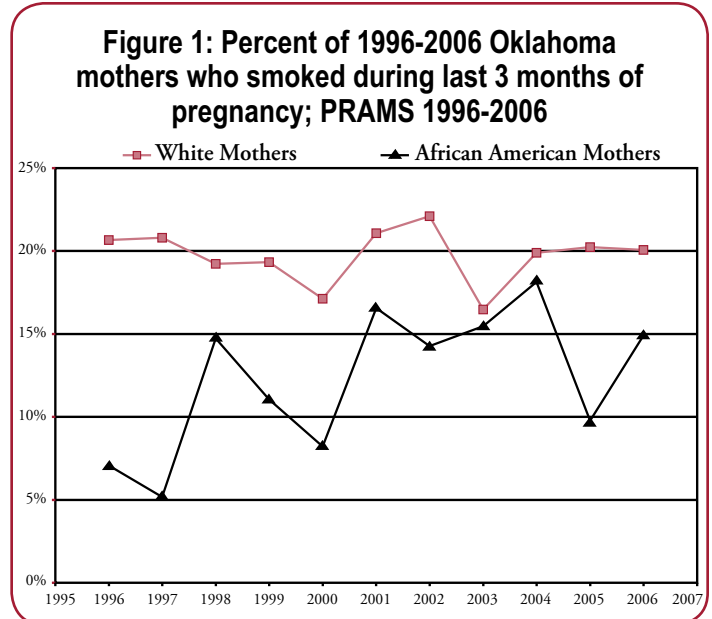
Education achievement showed statistically significant disparities between the two racial groups. Among women over 22 years of age, a significantly higher percentage of white women had graduated college than their African American counterparts (26.8% vs. 16.0%). For those women over 18 years of age, there were a correspondingly smaller percentage of white mothers with only a high school education or less compared with African Americans (55.0% vs. 59.5%).

Marital status also differs significantly between the two groups of women. Almost two-thirds of white women were married at the time of delivery compared to less than one-third of African American women (64.6% vs. 28.1%; See Table 1). A decline in marital status for both groups has been observed since 1996 in Oklahoma, however the gap between marital rates for white and African American women appears to be increasing (data not shown). African American women were more likely to report their age at first birth to be during adolescence (22.9% vs. 12.8%). White women were more likely to be 20 or older (69.6% vs. 49.4%). African American women were more likely to report PNC (Prenatal Care) paid for by Medicaid (77.2% vs. 52.3%).

Table 2 displays selected maternal health and behavioral characteristics as they relate to perinatal health. African American women were significantly more likely to report that their pregnancy was unintended at the time of conception compared to white women (71.9% vs. 47.0%), a disparity which has remained consistent in PRAMS survey data during the past ten years (data not shown). White women were more likely to consume a multivitamin prior to pregnancy, smoke during their last trimester and drink alcohol in the three months before pregnancy. The following behaviors and characteristics showed no statistically significant difference between African American and white women in Oklahoma: maternal obesity and domestic violence.

Table 2: Maternal Health and Behavioral Characteristics Among White and African American Women in Oklahoma; PRAMS 2004-2006					
CHARACTERISTIC	WHITE		AFRICAN AMERICAN		CHI-SQUARE TEST P-VALUE
	%	95% CI	%	95% CI	
PREGNANCY INTENTION					
YES	53.0	50.7, 55.4	28.1	21.9, 35.3	<.0001
NO	47.0	44.6, 49.3	71.9	64.8, 78.1	
OBESITY (BMI > 29)					
YES	21.5	19.7, 23.5	27.6	21.5, 34.7	.0849
NO	78.5	76.5, 80.3	72.4	65.3, 78.5	
REGULAR MULTIVITAMIN CONSUMPTION PRIOR TO PREGNANCY					
YES	29.6	27.5, 31.7	21.0	15.6, 27.7	.0101
NO	70.4	68.3, 72.5	79.0	72.3, 84.4	
SMOKING DURING LAST 3 MONTHS OF PREGNANCY					
YES	20.1	18.2, 22.1	14.4	10.0, 20.3	.0433
NO	79.9	77.9, 81.8	85.6	79.8, 90.0	
DRINKING DURING 3 MONTHS BEFORE PREGNANCY					
YES	50.6	48.2, 52.9	41.8	34.6, 49.4	.0294
NO	49.5	47.1, 51.8	58.2	50.6, 65.4	
DOMESTIC VIOLENCE					
YES	8.3	7.1, 9.8	11.4	7.5, 17.1	.2201
NO	91.7	90.2, 93.0	88.6	82.9, 92.5	

Although smoking before and during pregnancy has historically been less prevalent among African American women in Oklahoma, a statistically significant increase of smoking during the third trimester has been observed among this group of women during 1996-2006 ($p = .0153$); See Figure 1. There has not been a significant shift in the last ten years of the rates for white women.



Conversely, the rates of drinking alcohol in the three months prior to pregnancy have increased for white women from 1996-2006 ($p = .0025$) but a similar trend was not found to be significant for African American women; See Figure 2.

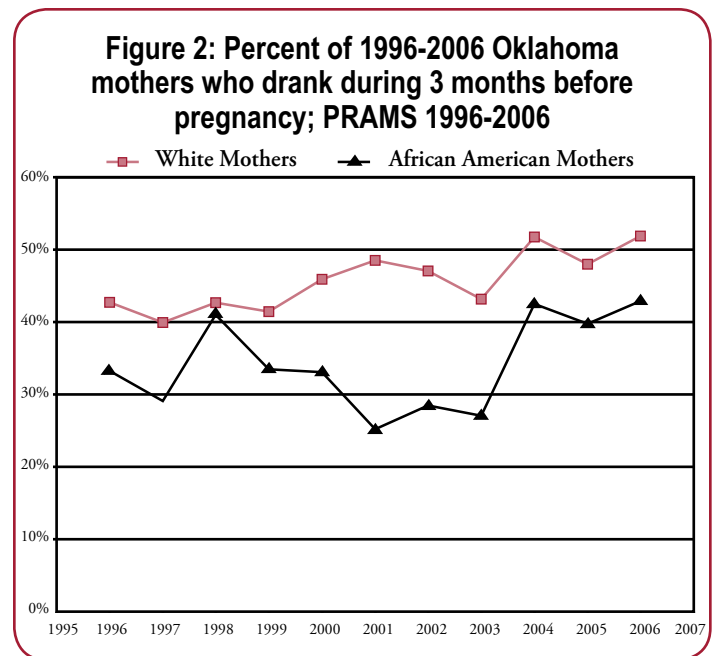
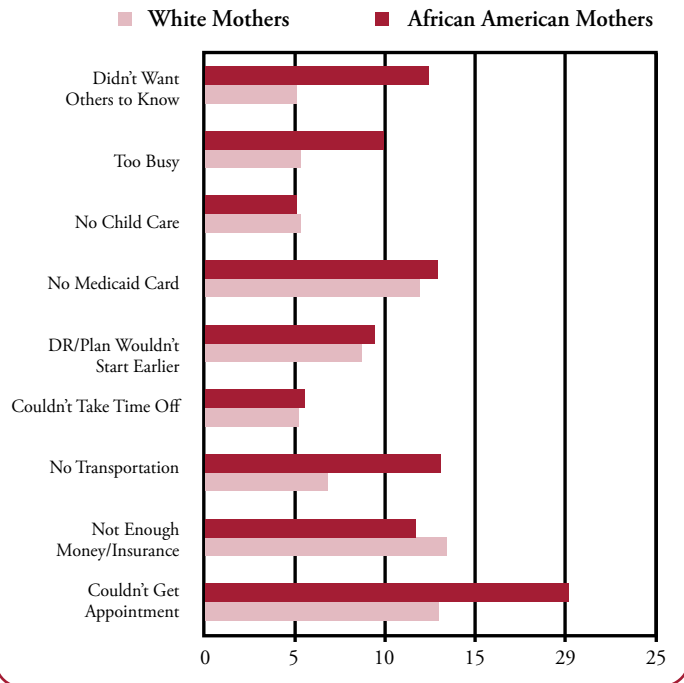


Table 3: Characteristics of Prenatal Care Among White and African American Women in Oklahoma; PRAMS 2004-2006					
CHARACTERISTIC	WHITE		AFRICAN AMERICAN		CHI-SQUARE TEST P-VALUE
	%	95% CI	%	95% CI	
ADEQUATE LEVEL OF PRENATAL CARE (KOTELCHUCK INDEX)					
YES	80.2	78.3, 82.0	74.3	67.2, 80.3	.0929
NO	19.8	18.0, 21.7	25.7	19.7, 32.8	
RECEIVED PRENATAL CARE AS EARLY AS MOTHER WANTED					
YES	79.7	77.7, 81.6	69.3	62.0, 75.7	.0162
NO	19.8	18.0, 21.8	29.3	23.0, 36.5	
DID NOT WANT	0.4	0.2, 0.9	1.4	0.4, 4.9	
IF PNC RECEIVED AS EARLY AS WANTED, WHICH TRIMESTER RECEIVED 1ST PRENATAL CARE VISIT					
1ST TRIMESTER	93.2	91.7, 94.4	92.0	86.0, 95.5	.1756
2ND TRIMESTER	6.2	5.0, 7.6	7.8	4.3, 13.8	
3RD TRIMESTER OR NO PNC	0.7	0.3, 1.4	0.2	0.1, 0.6	
IF PNC NOT RECEIVED AS EARLY AS WANTED, WHICH TRIMESTER RECEIVED 1ST PNC					
1ST TRIMESTER	60.6	55.2, 65.9	50.8	37.2, 64.3	.3960
2ND TRIMESTER	34.2	29.1, 39.6	40.4	27.8, 54.4	
3RD TRIMESTER OR NO PNC	5.2	3.3, 8.2	8.8	3.5, 20.5	

African American mothers in Oklahoma were significantly less likely to receive PNC as early in their pregnancy as they wanted (69.3% vs. 79.7%). No significant differences existed in the trimester that care began for women in both groups, regardless of whether they received care as early as they wanted or not (See Table 3).

Although timing of care was not disparate between these two groups of women, several significant differences were found in problems women had getting prenatal care. For African American women, not being able to get an appointment when wanted was the most commonly cited problem faced when obtaining PNC. White women reported that not having enough money or insurance to pay for their visits was their most common barrier. Transportation problems, not wanting others to know about the pregnancy, having too many other things to do and not being able to get an appointment when wanted disproportionately affected African American women; roughly twice as many African American women indicated these were problems for them compared to white women (See Figure 3). Women were able to mark more than one option.

Figure 3: Barriers to Prenatal Care Among African American and White Women in Oklahoma; PRAMS 2004-2006



Discussion:

The most alarming trend in this study is the increased use of cigarettes during pregnancy among African American women from 1996 to 2006. Since 1996, African American women in Oklahoma have had significantly lower rates of use when compared to white women, although the gap between the two groups of women is narrowing. Smoking is a risk factor for low birth weight, among other chronic health problems, and African American women are at a higher risk for LBW infants than the general population. As smoking rates go up, this risk can only increase. The upward trend in smoking among African American mothers must be addressed not only during pregnancy, but before women become pregnant. Health providers should continue to address abstinence of tobacco post-pregnancy as well. Rates for all women of childbearing age (ages 15-44) according to the Tobacco Use Prevention Office at the Oklahoma State Department of Health show as many as 18.3% of African American women use tobacco every day, compared to 23.4% of white women for 2002-2006.

Another perinatal risk factor, increased pre-pregnancy use of alcohol among African American women, was not statistically significant, although an upward trend was noted. Fetal Alcohol Syndrome (FAS), which can cause physical and mental health conditions, is one hundred

percent preventable if a woman abstains from drinking during pregnancy.⁹ Women intending to become pregnant and those not using a contraceptive method should avoid alcohol, since a pregnancy may not be detected until after the first month of gestation.

The overall rates of first trimester PNC were not different between the two groups of women. However, the barriers and problems in obtaining PNC were overwhelmingly disparate between the two groups of women. African American women were more likely to report that their care did not begin when they wanted it to begin. One of the most stated problems in receiving PNC for African American women was not being able to get an appointment when wanted. More work needs to be done to understand why one in five African American women in Oklahoma face this barrier to PNC. What policies, practices and behaviors contribute to this issue? The other significantly disparate barrier, not wanting others to know about the pregnancy, may be a reflection of the relatively young age of the African American women studied, as this is a commonly selected barrier for adolescent mothers in Oklahoma (data not shown).

Although African American mothers were as likely to receive prenatal care in their first trimester as white mothers in Oklahoma, distinct disparities were found in other aspects of perinatal health and care between these two groups of women. These disparities may influence to some degree the differences in health observed between groups of women, although several factors equally as important, such as maternal infections, maternal stress, racism, family health history, and neighborhood and environment were not evaluated in this study. Research shows these missing variables impact pregnancy outcomes and individual health, and more information is needed to understand how they contribute to healthy mothers and infants in Oklahoma.¹⁰⁻¹²

Limitations for this study include the absence of those factors mentioned in the previous paragraph. Some of those issues will be explored in later PRAMSGRAMS. Additionally, all responses are self-reported and are subject to recall bias and social desirability bias.

Recommendations:

1. Continue research into health disparities in Oklahoma focusing on the impact of stressors, those social determinants of healthcare, poverty and social support on outcomes in maternal and child health and access to quality prenatal care for African American women.
2. Target smoking cessation activities toward African American women and refer all pregnant smokers to the free Tobacco Helpline 1-800-QUIT NOW. Pregnant smokers should be offered effective smoking cessation interventions that exceed the minimal advice to quit by their health care provider.
3. Increase efforts of health care providers to identify underlying factors that contribute to tobacco use before, during and after pregnancy in African American women.
4. Develop culturally sensitive and appropriate evidenced-based preconception care tools, media messages and practices for African American women before and between pregnancies.
5. Examine clinic or office guidelines and customer service practices to eliminate any potential barriers to early and adequate prenatal care for patients.
6. Identify and leverage evidence-based adolescent pregnancy prevention programs that are culturally sensitive and appropriate for African American youth.
7. Fully fund programs like Children First and Healthy Start to ensure first time mothers in Oklahoma get the information they need for healthy pregnancies and learn necessary communication skills to develop relationships with health care providers.

References:

1. Healthy People 2010. Washington, DC: US Department of Health and Human Services; 2001. Available at: <http://www.healthypeople.gov/document/>. Accessed July 1, 2008.
2. US Department of Health and Human Services. Healthy People 2010. 2nd ed. With Understanding and Improving Health and Objectives for Improving Health (2 vols). Washington, DC: US Department of Health and Human Services; 2000.
3. Martin JA, Hamilton BE, Sutton PD, Ventura SJ, Menacker F, Kirmeyer S, Munson ML. Births: Final data for 2005. *Nat Vital Stat Rep.* 2007; 56(6).
4. D'Angelo D, Williams L, Morrow B, Cox S, Harris N, Harrison L, Posner SF, Hood JR, Zapata L; Centers for Disease Control and Prevention (CDC). Preconception and Interconception health status of women who recently gave birth to a live-born infant—Pregnancy Risk Assessment Monitoring System (PRAMS), United States, 26 reporting areas, 2004. *MMWR Surveill Summ.* 2007 Dec 14;56(10):1-35
5. Assiamira F. Increasing Prevalence of Gestational Diabetes Mellitus: A public health perspective. *Diabetes Care.* 2007 July; 30:S141-S146.
6. Matthews TJ, MacDorman MF. Infant mortality statistics from the 2004 period linked birth/infant death data set. *Nat Vital Stat Rep.* 2007; 55(14).
7. Oklahoma Vital Statistics. Oklahoma City, OK: Oklahoma State Department of Health; 2008. Available upon request.
8. Shulman H, Colley Gilbert B, Lansky A. The Pregnancy Risk Assessment Monitoring System (PRAMS): current methods and evaluations of 2001 response rates. *Public Health Rep* 2006;121:74-83.
9. March of Dimes. Drinking alcohol during pregnancy. Available at http://www.marchofdimes.com/professionals/14332_1170.asp Accessed on August 18, 2008.
10. Lu MC, Halfon N. Racial and Ethnic Disparities in birth outcomes: A Life-Course perspective. *Matern Child Health J* 2003; 7(1):13-30.
11. Copper RL, Goldenberg RL, Das A, et al. The preterm prediction study: maternal stress is associated with spontaneous preterm birth at less than thirty-five weeks' gestation. National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network. *Am J Obstet Gynecol.* 1996 Nov;175(5):1286-92
12. Osypuk TL, Acevedo-Garcia D. Are racial disparities in preterm birth larger in hyper-segregated areas? *Am J Epidemiol* 2008 Jun; 167(11): 1295-1304.

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