PRAMSGRAM
OKLAHOMA PREGNANCY RISK ASSESSMENT MONITORING SYSTEM VOL 11 NO 3 FALL 2007

Native American Perinatal Health Disparities

Introduction:

In November 1994 the Maternal and Child Health Service published a PRAMSGRAM titled "A Comparison of Prenatal Characteristics Between Native American and White Women in Oklahoma," which reported on the similarities and differences of these population subgroups. This analysis re-examines that theme for selected maternal characteristics and behaviors, building on the work completed from that first set of PRAMS data.

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 prenatal care is defined as a woman having her first prenatal care visit within the first trimester, or the first three months of her pregnancy. Adequate prenatal care encompasses both first trimester care and having received the appropriate amount of prenatal care visits.[1] The importance of these factors is confirmed by Healthy People 2010 Objective 16-6b, which calls for 90% of all pregnant women to receive early and adequate care.

National PRAMS data show that 84% of women received early prenatal care in 2002, which is an improvement from the 76% of women receiving early prenatal care during the period 1980-1991.[2] These overall rates, however, conceal large racial disparities in early prenatal care utilization and other perinatal risk factors, such as smoking, unintended pregnancy, and body mass index (BMI), between Native American and white women. Only 70% of Native American women in the United States received first trimester care in the years 2002-2004, compared to 89% for whites.[3] This is the lowest percentage of first trimester care for all major race/ethnic groups.

Native American women are also more likely to smoke cigarettes (1.5 times higher) and consume alcohol (3 times higher) while pregnant than all other races.[4] Sixty-one percent (61%) of Native American women are overweight, and almost 30% of these women are obese.[5] They are also at increased risk of experiencing physical and sexual assault.[6] Due to these and other maternal characteristics, Native American women continue to have poorer birth outcomes compared to white women. For the year 2003, the infant mortality rate (infant deaths per 1,000 live births) was 8.73 for infants born to Native American mothers in the United States, compared to 5.72 for infants born to white mothers.[7]

This PRAMSGRAM will examine perinatal health care and risk behaviors before and during pregnancy for Oklahoma's Native American maternal population, as compared to the white maternal population. In this report, entry into prenatal care is based upon the mother's recall of care as reported

In Oklahoma:

- Native American women were as likely to confirm their pregnancy in the first trimester (95.7%) as white women (97.0%), an improvement from the 1994 report.
- Native American women were as likely as white women to receive first trimester prenatal care (76.7% vs.78.8%), an improvement from the 1994 report.
- More Native American women smoked before pregnancy (38.7% vs. 31.8%), however they were more likely to quit during pregnancy, when compared to white women (smoking status was not reported in the 1994 report).
- Native American women in Oklahoma were more likely to have their first baby before the age of 18 compared to white women (24.5% vs. 14.3%). This disparity has increased by 2.2% compared to the 1994 report.
- The number one barrier to obtaining prenatal care as early as desired for Native American mothers was "I didn't know I was pregnant".

in PRAMS, rather than birth certificate information. Data from 2000-2005 will be compared to that from 1988-1993 to determine if previously identified disparities have improved, worsened or remained the same over time.[8]

Methods:

The present analysis draws on data collected from the Oklahoma Pregnancy Risk Assessment Monitoring System (PRAMS) for the years 2000 through 2005. PRAMS respondents who reported their race as either Native American or white were included in the study. There were 1,544 Native American women and 11,029 white women sampled during the period, with 73.2% and 80.4% responding, respectively. Due to revisions in the PRAMS survey instrument, analysis of select variables were restricted to PRAMS data for years 2000 through 2003. Specifically, variables related to location and payment of prenatal care, barriers to prenatal care, and attitude towards entry into prenatal care services were limited to the smaller data set. For these years, there were 1,024 Native American women and 7,266 white women sampled; 75.9% and 81.1% returned a completed PRAMS questionnaire.

Maternal characteristics included in the analysis were completed years of 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 (wanted at the time of conception or sooner), unintended (wanted later or not at all)] and timing of pregnancy confirmation (1st trimester, 2nd/3rd trimester) were included in the analysis, as was maternal smoking behavior before and during the pregnancy (no/yes). Factors related to prenatal care were also included; timing of prenatal care entry (1st trimester, 2nd/3rd trimester/No care), location of prenatal care services (hospital, health department, private MD/HMO office, Indian Health Service), payment of prenatal care (personal income, insurance, Indian Health Service, Medicaid), and barriers to prenatal care. Respondents were also asked whether they received prenatal care as early as it was wanted (no/yes).

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 $p<0.05$.

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.

Results:

Table 1 shows the maternal characteristics for the study sample. Educational achievement varied between the racial groups. Nearly one-fourth of Native American women (23.8%) had less than a high school education compared to 18.4% of white women. This disparity persists through higher education as Native women were half as likely as white women to graduate from college (9.9% vs. 23.0%).

Table 1. Maternal Characteristics of the Study Sample, PRAMS 2000-2005

Characteristic	Native American		White	
	%	95%CI	%	95%CI
Education[1]				
<12y	23.8	(19.8, 28.4)	18.4	(17.1, 19.8)
12y	47.3	(42.5, 52.2)	36.3	(34.7, 37.9)
13-15y	19.0	(15.6, 22.9)	22.3	(21.0, 23.7)
≥16y	9.9	(7.4, 13.0)	23.0	(21.7, 24.4)
Age				
<20	20.9	(17.2, 25.1)	12.7	(11.6, 13.9)
20-24	38.9	(34.4, 43.7)	30.5	(29.0, 32.1)
25-29	24.9	(21.1, 29.1)	29.6	(28.1, 31.1)
30-34	11.0	(8.5, 14.1)	18.9	(17.7, 20.2)
≥35	4.4	(2.8, 6.7)	8.3	(7.4, 9.2)
Age at 1st Birth[2]				
<18	24.5	(19.4, 30.4)	14.3	(12.9, 15.9)
18-19	27.1	(21.9, 29.1)	17.6	(16.0, 19.3)
≥20	48.4	(42.3, 54.6)	68.0	(66.0, 70.0)
Marital Status[3]				
Unmarried	52.6	(46.8, 58.4)	37.0	(35.1, 39.1)
Married	47.4	(41.6, 53.2)	63.0	(61.0, 64.9)

[1]Excludes ages <18.
[2]Women with at least one previous live birth.
[3]At the time of conception.

Native American mothers were more likely to be teens or young adults, while white mothers had a higher percentage in the age group 30-34 years. A full one in five of Native American mothers (20.9%) were less than 20 years of age compared to just 12.7% of white mothers. In other words, Native American mothers were 1.6 times more likely than white mothers to be less than 20 years old. Only 15.4% of Native American births

were to women aged 30 or older, while 27.2% of white births were to women in this age group.

Native American women were more likely to begin childbearing during the teen years. Nearly one-fourth (24.5%) of Native American women with previous births gave birth for the first time before the age of 18, while 14.3% of white women did so. Another 27.1% of Native American women and 17.6% of white women reported having their first birth between the ages of 18 and 19.

The two racial groups differed significantly by marital status. Native Americans were less likely to be married at the time of conception than were white women (47.4% vs. 63.0%). Table 2 shows a decline in the percent of births that occur to women who are married at the time of conception. This is true for both racial groups. Since the publication of the November 1994 PRAMSGRAM, which used PRAMS data for years 1988-1993, the percent of births to women who were married when they became pregnant has fallen 9.4 percentage points for Native American women and 9.8 percentage points for white women. These numbers represent a decrease of 16.5% and 13.5% for Native American and white women, respectively.

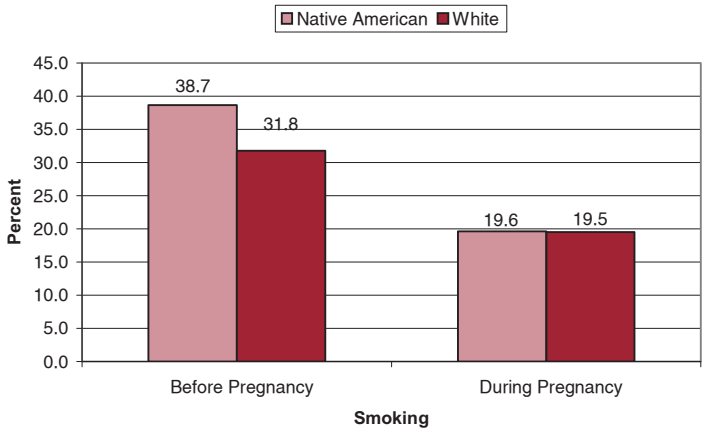
Table 2. Trends in Selected Characteristics, PRAMS 1988-1993 and 2000-2005

Characteristic	Native American		White	
	%	95%CI	%	95%CI
Married at Conception				
1998-1993	56.8	(50.0, 63.8)	72.8	(70.8, 74.8)
2000-2005	47.4	(41.6, 53.2)	63.0	(61.0, 64.9)
Change	-9.4		-9.8	
Confirmation of Pregnancy During the 1st Trimester				
1998-1993	88.7	(84.3, 92.9)	94.3	(93.3, 95.3)
2000-2005	95.7	(93.4, 97.2)	97.0	(96.4, 97.5)
Change	+7.0		+2.7	
Unintended Pregnancy				
1998-1993	50.4	(44.1, 56.7)	41.5	(39.5, 43.5)
2000-2005	57.5	(51.4, 63.5)	46.8	(44.7, 49.0)
Change	+7.0		+5.3	
1st Trimester PNC				
1998-1993	74.2	(68.7, 79.5)	83.7	(82.2, 95.3)
2000-2005	76.7	(72.4, 80.5)	78.8	(77.4, 80.1)
Change	+2.5		-4.9	

No difference was observed in the rate at which women obtained medical confirmation of pregnancy during the first trimester (see Table 2). Respectively, 95.7% of Native American women and 97.0% of white women reported confirmation of pregnancy during the first 13 weeks of their pregnancy. While both racial groups have experienced an increase since the 1994 publication, this finding reflects a considerable rise in first trimester pregnancy confirmation among Native American women. Table 2 shows that in the November 1994 PRAMSGRAM 88.7% of Native American women had first trimester pregnancy confirmation, while 93.4% of white women confirmed pregnancy in the first trimester.

A significantly higher percentage of Native American mothers reported their pregnancy as unintended when compared to white mothers, 57.5% and 46.8%, respectively. Referring again to Table 2, one can see that both the racial groups have experienced increases in the rate of unintended pregnancy since the time of the earlier publication. For the period 1988-1993, Native American women reported that roughly half (50.4%) of their pregnancies were unintended, while just over two in five (41.5%) of white women reported their pregnancies as unintended during the same time period. Using data for 2000-2005, those rates have risen to 57.5% and 46.8%, respectively.

Figure 1. Smoking Before and During Pregnancy, PRAMS 2000-2005



Although Native American women were more likely to smoke prior to pregnancy, they are more likely to quit smoking during pregnancy resulting in virtually identical rates of third trimester smoking between the two races. More than 38% of Native American women report smoking in the three months before conception. This compares to 31.8% of white mothers that report doing so. Nearly one in five women in this study, irrespective of race, reported smoking during the last three months of pregnancy. (Figure 1).

Table 3 shows that 46.4% of Native American women receive prenatal services through the Indian Health Service (IHS). This compares to only 1.5% for white women. Another 39.0% of Native American women receive prenatal care from a private physician or

a health maintenance organization (HMO), while 71.2% of whites get their care from these sources.

Table 3. Characteristics of Prenatal Care, PRAMS, 2000-2005

Characteristic	Native American		White	
	%	95%CI	%	95%CI
Location of PNC[1]				
Hospital	8.7	(5.9, 12.6)	11.4	(10.2, 12.8)
Health Dept	0.6	(0.1, 2.8)	5.1	(4.2, 6.1)
Private MD or HMO	39.0	(33.5, 44.9)	71.2	(69.3, 73.0)
IHS	46.4	(40.6, 52.3)	1.5	(1.1, 2.1)
Payment for PNC[1]				
Personal Income	1.3	(0.5, 3.1)	6.3	(5.3, 7.5)
Insurance	14.9	(11.1, 19.6)	38.5	(36.4, 40.7)
IHS	50.1	(44.2, 56.1)	2.4	(1.9, 3.2)
Medicaid	33.2	(27.8, 39.1)	50.4	(48.1, 52.6)
PNC Entry				
1st Trimester	76.7	(72.4, 80.5)	78.8	(77.4, 80.1)
2nd/3rd Trimester or (No Care)	23.3	(19.5, 27.6)	21.2	(19.9, 22.6)

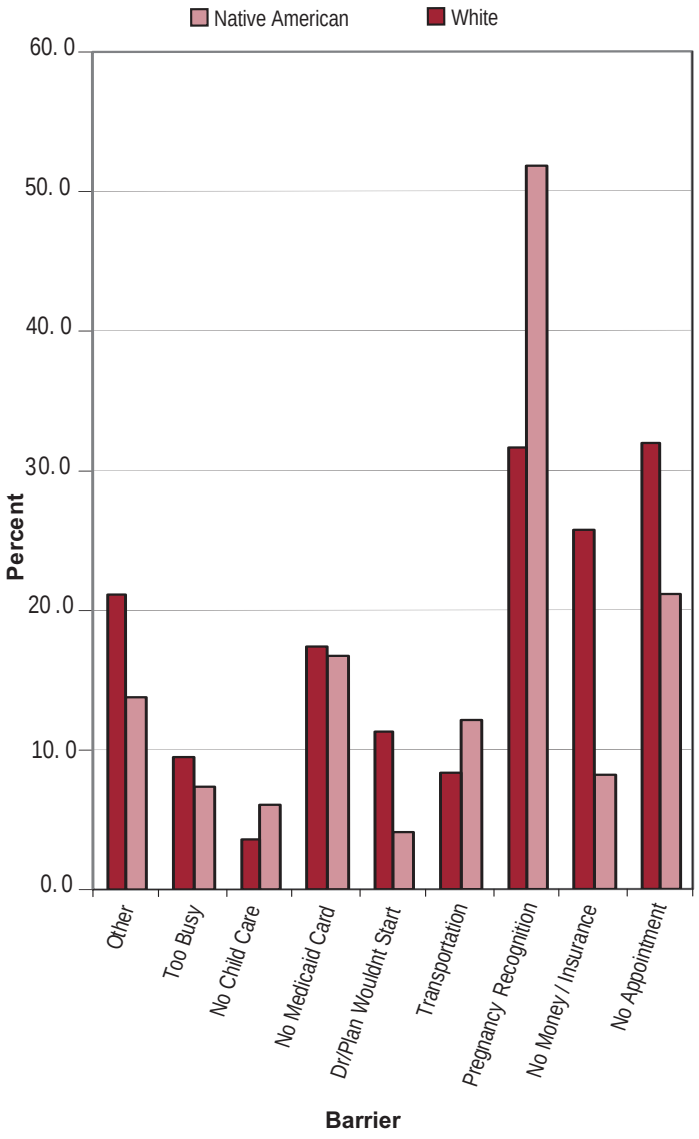
[1]Includes data for 2000-2003.

For Native American women, half (50.1%) report payment of their prenatal services was achieved through the IHS, with another 33.2% being funded through the Medicaid program. White women reported that the number one source of funding for prenatal services was Medicaid (50.4%). Another 38.5% of white women reported using private insurance to pay for maternity services.

Roughly three-fourths of both racial groups received prenatal care (PNC) beginning during the first trimester. For Native American women, 76.7% received care in a timely fashion. For white women, the comparable rate was 78.8%. This represents no significant difference between the groups, however, it does represent a closing of the disparity gap that was evident in the 1994 PRAMSGRAM report. This decline in the disparity is a result of a simultaneous increase in the rate of first trimester prenatal care for Native American women (up 2.5 percentage points) and a decrease in the rate for white women (down 4.9 percentage points).

Native American and white women reported no differences in the receipt of prenatal care services as early as they wanted. Nearly three-fourths of women in this study reported initiation of prenatal care at a time that agreed with their expectations about when prenatal care should begin (Native American 73.6%, White 76.2%). Nevertheless, this finding still leaves a sizable proportion of women in both racial groups that did not receive prenatal care as early as they desired.

Figure 2. Barriers to Entering Prenatal Care As Early As Wanted Among Native American and White Women*. PRAMS 2000-2003



*Includes only those not entering care as early as wanted

Figure 2 shows the barriers to prenatal care for these women for the years 2000 through 2003. For Native American women the leading barriers to receiving prenatal care as early as desired were delayed recognition of pregnancy (51.8%), the inability to get an earlier appointment (21.2%), and not having a Medicaid card (16.7%). For white women, the leading

barriers were the inability to get an earlier appointment (32.0%), delayed recognition of pregnancy (31.6%), and not having enough money or insurance to pay for a visit (25.7%).

Table 6. Attitude Regarding Prenatal Care Entry Among Women Entering Prenatal Care After the First Trimester, PRAMS, 2000-2003

	Native American		White	
	%	95%CI	%	95%CI
Began PNC As Early As Wanted				
No	53.9	(43.7, 63.8)	59.3	(55.5, 63.0)
Yes	46.1	(36.2, 56.3)	40.7	(37.1, 44.5)

Table 6 shows attitudes about entry into prenatal care for women that did not begin receiving services in the first trimester of pregnancy. A large proportion of women in both racial groups reported receiving care as early as they wanted despite not entering prenatal care until the second or third trimester of pregnancy. Forty-six percent of Native American women began prenatal care when they wanted, but actually received care beginning late in pregnancy. Likewise, 40.7% of white women reported receiving prenatal care as early as they wanted, yet began care in the second or third trimester.

Discussion:

The findings presented in this follow-up report from the 1994 PRAMSGRAM indicate that, although improvements in prenatal care have occurred over the years, much work is left to accomplish in order to improve care for Native American women in Oklahoma and reduce the health disparities that persist. These data suggest that, even though the disparity of entry into prenatal care between Native American and white women in Oklahoma is now nearly nonexistent, there continues to be a large number of Native American women who are not entering into prenatal care in the first trimester.

The improvement in the entry into prenatal care can be greatly attributed to the significant improvement in access to care through the construction of new and the expansion of existing Indian Health Service, Tribal and Urban Indian Health (I/T/U) facilities in Oklahoma over the last ten years. There are currently 53 I/T/U facilities (47 ambulatory, 6 hospitals) in the state of Oklahoma. Although the patient workloads are often enormous, all I/T/U facilities make Maternal and Child Health, which includes prenatal care, a high priority. The major barriers to early prenatal care entry noted in this report (delayed recognition of pregnancy, inability to get an appointment) should continue to be addressed when planning health care delivery for the Native American population.

Native American mothers were more likely to report their pregnancy as unintended when compared to white mothers, increasingly so from the 1994 report. Reasons for this spike in unintended pregnancies are unknown and should be explored.

Native American women were less likely to be married at the time of conception than were white women. There has, however, been a general decline in the percentage of births to women who were married when they became pregnant since the previous report in 1994. This is an increasing trend in the United States overall and seems to be more socially acceptable in today's society.

Native American women were more likely to smoke prior to pregnancy, but were also more likely to quit smoking during their last three months of pregnancy. This still left a large number of women smoking during their entire pregnancy, nearly one in five (19.6%). Oklahoma has documented high smoking rates in Native American women (32.8% for Native Americans vs. 24.0% for whites, BFRSS, 2000-2005). To address these alarmingly high rates, there have been a total of sixteen ongoing tobacco cessation programs implemented at the I/T/U facilities in recent years[9].

Social and economic barriers continue to exist for prenatal health care delivery to Native American women. For some of these issues it may be possible to address them at the facility level with a mixture of educational programs and policy initiation and change. The prenatal characteristics of Native American women remain unique and provide for challenging program development.

Several limitations for this study exist. The analysis examined variables independently and did not control for covariates. Adjusting for covariates may moderate these relationships. In addition, the PRAMS survey was modified 3 times from 1988 to 2005; therefore some questions were significantly altered and the data were not available for use. PRAMS data are self-reported and recall bias may influence some responses. Women may also be misclassified racially on the birth certificate; more research is needed to determine how often this occurs.

Recommendations:

- Explore alternative options of prenatal health care delivery so that those needing care can get an appointment immediately.
- Identify and evaluate opportunities to educate Native American women regarding family planning options and address policies at I/T/U facilities that will allow easier access to birth control prescriptions to impact the rate of unintended pregnancy.
- Develop culturally sensitive educational programs on the importance of early signs of pregnancy and the need for obtaining early and continuous prenatal care for Native American women.
- Conduct research into the increased trend in unintended pregnancies in Native American women.
- Continue to support and enhance smoking cessation programs for Native Americans and provide more education regarding the dangers of smoking in pregnant women.

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