PRAMSGRAM
OKLAHOMA PREGNANCY RISK ASSESSMENT MONITORING SYSTEM

Initiation of Prenatal Care Among Women Having a Live Birth in Oklahoma

There is substantial evidence to indicate that women who receive insufficient, late or no prenatal care have increased risks of poor pregnancy outcome.[1,2] Risk-appropriate prenatal care contributes to a healthy outcome not only for the child, but for the mother as well. Improved outcomes are achieved in part by prenatal care providers' identifying high risk behaviors such as smoking, drinking, inadequate weight gain, and offering appropriate interventions. Interventions that are provided early in pregnancy can promote the greatest opportunity for improving birth outcome.

One of the *Healthy People Year 2000 Objectives for Maternal and Infant Health* is to increase the percent of women who obtain prenatal care beginning in the first trimester (first three months or 13 weeks). In Oklahoma, the goal is that 90% of pregnant women will begin their care in the first trimester by the year 2000. According to birth certificates issued for live births occurring in 1993, 74.8% of Oklahoma women began care in the first trimester.

Studies have found that maternal demographic characteristics such as age, race, parity, education, family income, and marital status are related to inadequate prenatal care.[1,3,4] Other factors found include psychosocial variables such as intention of pregnancy, timing of recognition of pregnancy, family support, and "external barriers" such as financial restraints, transportation problems, absence of child care, and inconvenient clinic hours.[1,5,6]

Assessing adequacy of prenatal care requires two components: timing of prenatal care entry and receipt of services thereafter. In our study, we focus on the timing of the first prenatal care visit. PRAMS data were used to identify factors associated with late initiation of prenatal care and barriers preventing women from getting early care.

Materials and Methods

Mothers were asked, "How many weeks or months pregnant were you when you had your first visit for prenatal care?" Women were divided into two groups according to the timing of the first visit: those beginning care within three months or 13 weeks (first trimester) and those who enrolled late (second or third trimester) or who received no care at all. Barriers to care were assessed with two questions. First, all mothers were asked, "Did you get prenatal care as early in your pregnancy as you wanted?" Those whose response was negative were further asked if several listed barriers kept them from getting care as early as they wanted.

Prenatal care information in this study is based on the self-reports of the women surveyed several months after their deliveries. The extent to which pregnancy outcome or elapsed time affects their recall and response about their prenatal care experiences is unknown. Compared to statistics obtained from birth files, PRAMS estimates of the overall percent of first trimester prenatal care entry was about five percent higher.

Data were analyzed using the Chi-square test, followed by logistic regression to identify factors associated with late or no prenatal care.

General Characteristics

Overall, 81.3% of women said they started their prenatal care in the first trimester, 15.6% in the second trimester and 3.1% in the third trimester or never entered care (Figure 1).

Age is a major predictor of not beginning prenatal care in the first trimester. Only 58.1% of teens under 18 and 67.2% of teens between 18 and 19 initiated care in the

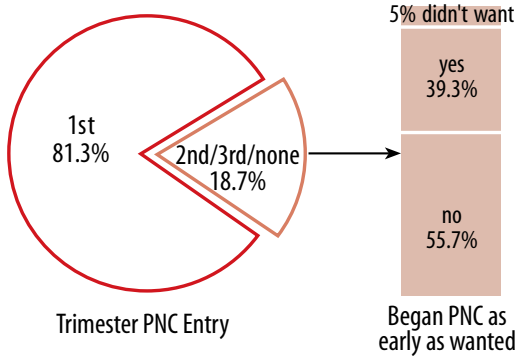
In Oklahoma:

- 81.3% of mothers say they entered prenatal care in the first three months of pregnancy; 18.7% either enrolled in care late, or received no care at all.
- Women who did not recognize they were pregnant until at least nine weeks had an 11-fold risk of late or no prenatal care relative to women who recognized their pregnancy within five weeks.
- Women with unwanted pregnancies are more than twice as likely to not receive first trimester care relative to women having intended pregnancies.
- Close to half (44.3%) of all women who enrolled in late care said they received care as early as they wanted.
- For women whose prenatal care was paid by Medicaid, almost one-third (32.9%) reported that they did not get care as early as they wanted.

first trimester, compared to 90.2% of women aged 30-34 (Table 1).

Education also plays a significant role in predicting early utilization of prenatal care. Only 73.8% of women with less than 12 years of education entered the care in the first trimester, compared to 95.0% of highly educated women (women with 16 years of education or more) (Table 1).

Figure 1. **Trimester Prenatal Care Entry and Attitude Towards Prenatal Care**



The relationship between family income and initiation of prenatal care in the first trimester also demonstrated a linear tendency similar to education. As shown in Table 1, 64.9% of women whose family income was less than 50% of the Federal Poverty Level (FPL) received first trimester care compared with 94.1% of those whose family income was greater than 250% FPL. Among women whose family income included welfare as part or whole source of family income, only two-thirds (66.7%) initiated care in the first trimester (Table 1).

Table 1 shows only 64.3% of women with four or more previous live births entered care in the first trimester compared to 80% of women with none or one previous live birth.

Table 1 also presents other maternal characteristics examined in the study, including race, marital status at conception, geographic location, and birth interval.

Prenatal Characteristics

Failure to recognize the pregnancy early was a major risk factor for delayed enrollment in care. Less than half (46.4%) of women who failed to recognize that they were pregnant within the first eight weeks of pregnancy obtained care in the first trimester (Table 2).

Women receiving services at hospitals, health department clinics and Indian Health Service (IHS) facilities were less likely to report entry into prenatal care in the first trimester than women receiving care from private doctors or HMOs. Also, women receiving Medicaid or IHS financed care were less likely to report early entry than women who were covered by private or group insurance (Table 2).

Table 1. **Percent Receiving Prenatal Care in First Trimester by Selected Maternal Characteristics**

Maternal Characteristics	Percent	Confidence Interval 95%	p-value
Age			<0.001
<18	58.1	(49.9-66.3)	
18-19	67.2	(61.9-72.5)	
20-24	79.5	(77.0-82.0)	
25-29	86.4	(84.3-88.5)	
30-34	90.2	(88.0-92.4)	
35+	85.2	(80.8-89.6)	
Race			<0.001
White	83.6	(82.2-85.0)	
African American	69.9	(63.9-75.9)	
Native American	75.8	(70.9-80.7)	
Education[a]			<0.001
<12 years	73.8	(69.5-78.1)	
12 years	81.4	(79.3-83.5)	
13-15 years	85.3	(82.7-87.9)	
16+ years	95.0	(93.5-96.5)	
Marital Status[b]			<0.001
Married	88.2	(86.9-89.5)	
Unmarried	68.4	(65.5-71.3)	
Family Income			<0.001
<50% FPL[c]	64.9	(59.8-70.0)	
50-99% FPL	73.5	(69.8-77.2)	
100-149% FPL	83.1	(79.9-86.3)	
150-184% FPL	87.7	(83.8-91.6)	
185-249% FPL	89.3	(86.0-92.6)	
250% + FPL	94.1	(92.6-95.6)	
Source of Family Income			<0.001
Job/Business	86.3	(85.0-87.6)	
Welfare	66.7	(63.1-70.3)	
Other	71.6	(59.7-83.5)	
Geographic Area			0.002
Urban [≥20,000]	83.1	(81.4-84.8)	
Rural [<20,000]	78.8	(76.7-80.9)	
Previous Live Births			<0.001
None	80.4	(78.2-82.6)	
One	85.8	(83.7-87.9)	
Two	79.1	(75.7-82.5)	
Three	72.9	(66.3-79.5)	
Four or more	64.3	(54.4-74.2)	
Birth Interval			<0.001
<2 years	73.5	(69.3-77.7)	
2-3 years	82.9	(80.1-85.7)	
4+ years	86.7	(84.1-89.3)	

[a] Included only women aged 19 and older [b] Marital status at conception [c] Federal Poverty Level

PRAMS is a population-based survey of Oklahoma women with a recent delivery. Analysis weights were applied to adjust for selection probability and non-response. By using weighted analysis, researchers can make strong statements about the preconception and perinatal periods for the entire population of women in Oklahoma delivering a live birth. Thus, state-specific decisions on policy and program development can be made. A stratified systematic sampling approach is used to select approximately 200 new mothers each month from the state's live birth registry. Up to three mailed questionnaires are used to solicit a response. Telephone interviews are attempted for non-respondents. Data for this report reflect live births occurring between April 1988 and March 1994. The response rate was 70%. The analysis includes information collected from 9,906 mothers. All data represent state estimates.

Table 2. **Percent Receiving Prenatal Care in First Trimester by Selected Prenatal Characteristics**

Maternal Characteristics	Percent	Confidence Interval 95%	p-value
Recognition of Pregnancy			<0.001
<5 weeks	92.8	(91.2-94.4)	
5-8 weeks	88.9	(87.3-90.5)	
9+ weeks	46.4	(42.5-50.3)	
Smoking 3 Months Before Pregnancy			<0.001
Yes	76.0	(73.3-78.7)	
No	84.2	(82.7-85.7)	
Location of PNC			<0.001
Hospital	69.6	(65.2-74.0)	
Health Dept	67.5	(61.8-73.2)	
Private MD/HMO	88.4	(87.0-89.8)	
IHS	74.8	(69.4-80.2)	
Payment of PNC			<0.001
Income Only	84.3	(80.3-88.3)	
Private/Group Ins.	92.2	(91.0-93.4)	
IHS	75.6	(70.5-80.7)	
Medicaid	69.8	(66.9-72.7)	
Pregnancy Intention			<0.001
Intended	89.5	(88.0-91.0)	
Mistimed	75.9	(73.2-78.6)	
Unwanted	64.4	(60.0-68.8)	

Women whose pregnancies were unwanted were at much higher risk for not receiving prenatal care in the first trimester than women whose pregnancies were intended (Table 2).

Regression Analysis

Logistic regression analysis shows that women under age 20, with less than 16 years of education, unmarried, with welfare as part or whole source of family income, with three or more previous live births, with a mistimed or unwanted pregnancy, or with late recognition of pregnancy (nine weeks or more), had significantly increased risk of late or no care (Table 3). Women who did not recognize they were pregnant until at least nine weeks had an 11-fold risk of late or no prenatal care relative to women who recognized their pregnancy within the first five weeks. Women with unwanted pregnancies were more than twice as likely not to initiate prenatal care in the first trimester relative to women having intended pregnancies. For race and geographic area, differences in early initiation were not found when multiple factors were examined simultaneously (Table 3).

Barriers to Early Access

Statewide, 21.7% of women reported that they did not get prenatal care as early as they wanted. For women whose prenatal care was paid by Medicaid, almost one-third (32.9%) reported that they did not get prenatal care as early as they wanted (Table 4). For women who did not obtain prenatal care as early as they wanted,

Table 3. **Logistic Regression: Variables Affecting Initiation of Prenatal Care**

Variables	Crude OR	95% CI	Adjusted OR	95% CI
Age				
<20	5.2	(3.8-7.1)	2.1	(1.3-3.5)
20-24	2.4	(1.8-3.2)	1.5	(0.97-2.2)
25-29	1.5	(1.1-2.0)	1.5	(1.01-2.3)
30-34	1.0		1.0	
35+	1.6	(1.0-2.5)	1.1	(0.6-1.9)
Education				
<12	8.2	(5.6-11.9)	2.0	(1.2-3.4)
12-15	4.0	(2.9-5.6)	1.8	(1.2-2.8)
16+	1.0		1.0	
Race				
African American	2.2	(1.6-2.9)	0.9	(0.6-1.4)
Native American	1.6	(1.2-2.1)	1.1	(0.8-1.6)
White/Other	1.0		1.0	
Marital Status				
Unmarried	3.5	(2.9-4.1)	1.7	(1.3-2.3)
Married	1.0		1.0	
Source of Family Income				
Welfare	3.1	(2.5-3.7)	1.5	(1.1-2.0)
Job/Business/Other	1.0		1.0	
Geographic Area				
Rural	1.3	(1.1-1.6)	1.0	(0.8-1.3)
Urban	1.0		1.0	
Previous Live Births				
<Three	1.0		1.0	
Three	1.7	(1.2-2.4)	2.2	(1.4-3.7)
Four or more	2.6	(1.6-4.0)	2.6	(1.4-4.8)
Pregnancy Intention				
Intended	1.0		1.0	
Mistimed	2.7	(2.2-3.3)	1.4	(1.1-1.8)
Unwanted	4.7	(3.7-6.1)	2.1	(1.5-3.0)
Smoking 3 Months Before Pregnancy				
Yes	1.7	(1.4-2.0)	1.3	(0.98-1.6)
No	1.0		1.0	
Recognition of Pregnancy				
<5 weeks	1.0		1.0	
5-8 weeks	1.6	(1.2-2.1)	1.5	(1.04-2.0)
9+ weeks	14.9	(11.1-20.0)	11.0	(7.9-15.4)

Note: The adjusted odds ratios for each variable were calculated based on the contribution of all other variables in this table.

the inability to find a physician or get an earlier appointment was reported as the single largest barrier to obtaining early care. Over half (51.2%) of those with private or group insurance reported a delay in prenatal care entry because they could not get an earlier appointment or could not find a provider, compared to 36.2% of women who were assisted by Medicaid and 38.7% of those receiving IHS financial support.

The second most significant barrier to care was not having enough money or insurance (25.8%). Women whose prenatal care was supported by Medicaid were 2.5 times as likely to report not enough money or insurance than women who used private or group insurance to pay for their prenatal care.

Table 4. **Percent Not Receiving Prenatal Care as Early as Wanted and Major Barriers**

	State Total	Pvt/Grp Insurance	Medicaid	IHS
Did not receive PNC as early as wanted	21.7	13.8	32.9	21.7
Reasons why no PNC as early as wanted[a]:				
No provider/appt.	39.7	51.2	36.2	38.7
No money/insurance	25.8	12.6	31.0	8.2
Did not know of pregnancy	23.7	26.0	21.5	27.6
No transportation	11.9	2.2	15.8	20.5
Did not know where to go	8.0	2.9	9.5	4.6

[a] Among women who did not enter prenatal care as early as wanted

Failure to recognize pregnancy was one of the major barriers, regardless of payor source (23.7%). Lack of transportation was cited by 11.9% of all women, 15.6% of Medicaid women and 20.5% of women receiving IHS financed services.

Improving the rate of women receiving first trimester prenatal care may also be affected by additional factors not listed in Table 4. Nearly half (44.3%) of the women who did not receive first trimester prenatal care said they got into care as early as they wanted (39.3% said they received care early enough and 5.0% said they did not want care - Figure 1).

Comments/Recommendations

This study found that women's age, education, marital status, source of family income, parity, intention of pregnancy, and timing of pregnancy recognition are associated with late or no care. The results indicate that more timely initiation occurred among older women and women with intended pregnancies. This provides additional evidence that policies and programs should place a high priority on reducing teen births and preventing unintended (mistimed or unwanted) pregnancy.

Obstetric care providers should be aware that a major reason for lack of earlier prenatal care is that pregnant women may not be able to get an earlier appointment. Although system problems such as delays in eligibility processing may, in part, be blamed for women receiving Medicaid or IHS prenatal support, questions still remain as to why such a large proportion (51.7%) of those with private or group insurance were not able to access care as early as they wanted.

Almost one-third (31.0%) of Medicaid enrollees who did not enter prenatal care as early as they wanted reported "no money/insurance" as a barrier to early access. This strongly suggests that presumptive eligibility should routinely be available and application procedures streamlined. Piper (1994) demonstrated that once barriers to prenatal care, including bureaucratic ones, are removed, low-income women will seek care earlier and more frequently.[7]

Almost one-fourth (23.7%) of women who did not get care as early as they wanted reported they did not know they were pregnant. This demonstrates the need for educational programs to teach women how to recognize the signs and symptoms of pregnancy and the importance of early and regular prenatal care. Increased outreach efforts need to be initiated to identify women in need of prenatal care and refer them to appropriate services. Particular emphasis should be placed on developing community capacity to link women with needed services. Specific attention should be given to the uninsured population as well as providing information to Medicaid eligibles on how to enroll in health plans and how to access needed services.

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