

PRAMSGRAM

OKLAHOMA PREGNANCY RISK ASSESSMENT MONITORING SYSTEM VOL 12 NO 1 WINTER 2008

Preconception Care Among Oklahoma Women

Introduction:

Pregnancy health is dependent upon many factors, and a key factor is the health of the mother prior to conception. Her preconception health status can be evaluated and improved in a variety of ways by receiving individualized preconception care. Preconception care is defined as “interventions designed to lower preconception risks” and is grouped into four main categories: maternal assessment, vaccinations, screening for chronic health and genetic issues, and health behaviors counseling.¹

Preconception care (PCC) visits provide opportunities for women and men to gain awareness and understanding into how their health behaviors and family histories impact their future pregnancies.¹⁻³ Behaviors such as tobacco or alcohol use and the absence of folic acid consumption can adversely affect the health of the fetus even before a woman is aware of her pregnancy.⁴⁻⁶ Folic acid consumption before and during early pregnancy reduces the risks of neural tube defects.⁶ Abstinence from alcohol and tobacco before and during pregnancy has been shown to improve health outcomes by eliminating the risk of Fetal Alcohol Syndrome and Effects and lowering the risk of low birth weight, respectively.^{1,4,5} While the benefits of preconception care are well documented, little is known about who receives preconception care in Oklahoma and, more importantly, who does not.

This PRAMSGRAM describes the population of mothers in Oklahoma not receiving preconception care and discusses some selected risk factors. It also includes the Centers for Disease Control and

In Oklahoma:

- Only 13.5% of new mothers received any type of counseling or advice to prepare for becoming pregnant.
- Those most likely to receive preconception counseling were 25-29 years of age, had some college education, had health insurance, had an intended pregnancy, and/or were married.
- Women who did not receive any type of preconception counseling were more likely to smoke and less likely to take a multivitamin in the months prior to pregnancy.

Prevention’s recommendations on how to improve the receipt of PCC for all women.

Methods:

This study used data from the Pregnancy Risk Assessment Monitoring System (PRAMS) for the survey years 2004 to 2005. For this period, 5,054 Oklahoma mothers were sent the PRAMS survey shortly after the birth of their child. Of these mothers, 3,793 completed the questionnaire, yielding an unweighted overall response rate of 75.1 percent. A detailed explanation of PRAMS methodology has been well-documented elsewhere.⁷

To determine preconception health advice or counseling receipt, respondents were asked to respond by checking “No” or “Yes” if certain things happened before they became pregnant with the most recent baby. A total of 3,749 valid responses were received for the specific item, “I received advice or counseling from a health care provider to prepare for becoming pregnant”. For the purposes of this study preconception care includes only preconception counseling, not assessments, screenings or vaccinations.

Maternal demographic variables included in the analyses were age (<20, 20-24, 25-29, 30-34, ≥35); race (White, African American, Native American, Other); education (<High School, High School graduate, >High School); marital status (Married, Unmarried); ethnicity (Hispanic, Non-Hispanic); parity (Primiparous, Multiparous); and insurance before pregnancy (Yes/No). Attitude and behavior questions included pregnancy intention (Intended, Unintended) and trying to get pregnant (Yes/No). Women could choose four options describing their feelings (prior to conception) about pregnancy intention: wanted sooner, wanted then, wanted later or not wanted then or at any time in the future. Those marked sooner or then are classified as “intended” and those marked as one of the latter two responses are classified as “unintended.”

Alcohol and tobacco consumption were included for the three months prior to pregnancy. Multivitamin use four or more times per week is regarded as regular consumption of a multivitamin

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.

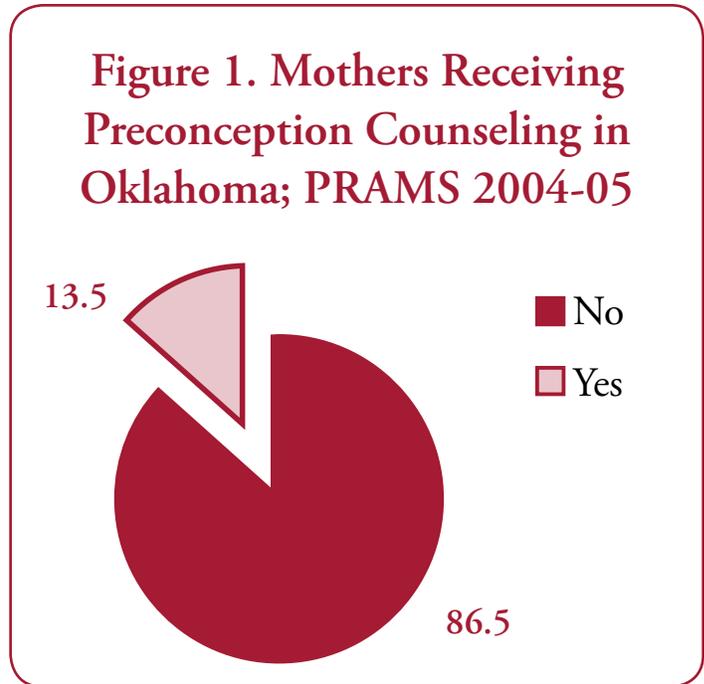
and was reported for “the month before” pregnancy. Awareness of folic acid benefits was measured by the following statement: “I heard or read that taking vitamins containing folic acid could help prevent some birth defects.”, to which they responded by checking “No” or “Yes”.

Due to the PRAMS stratified weighted sample, SUDAAN 9.0.1 was used to perform the statistical analysis. In the descriptive analysis, variables were examined using percentages and confidence intervals. Variables were considered statistically significant at $p < 0.05$.

Results:

Few women in Oklahoma received any kind of advice or counseling to prepare for becoming pregnant (13.5%).

The majority of women did not receive any preconception counseling (86.5%, See Figure 1).



Women who received preconception care (PCC) in Oklahoma were more likely to be 25-29 years of age, have some college education, or be married (See Table 1). They were also more

likely to have health insurance prior to pregnancy (66.3%), had an intended pregnancy (75.7%), and were trying to become pregnant at the time of conception (69.1%; See Table 2).

Table 1: Selected Demographic Characteristics of Oklahoma Women by Preconception Counseling Status; PRAMS 2004-2005				
CHARACTERISTIC	NO		YES	
	%	CI	%	CI
OVERALL	86.5	84.7, 88.2	13.5	11.8, 15.3
AGE**				
<20	12.6	10.9, 14.7	11.8	7.8, 17.5
20-24	32.6	30.1, 35.3	16.1	11.6, 21.8
25-29	30.6	28.1, 33.2	43.8	37.1, 50.8
30-34	16.9	15.0, 19.0	21.9	16.9, 27.9
35+	7.3	6.0, 8.7	6.4	4.0, 10.0
RACE*				
WHITE	80.2	77.9, 82.4	80.9	74.6, 85.9
AFRICAN AM.	8.0	6.6, 9.7	10.0	6.3, 15.4
AM. INDIAN	10.3	8.7, 12.1	9.0	5.7, 13.8
OTHER	1.5	1.0, 2.4	0.2	0.1, 0.5
EDUCATION*				
<HS	19.8	17.6, 22.1	13.2	9.0, 19.1
HS	40.3	37.6, 43.1	30.4	24.2, 37.2
>HS	39.9	37.3, 42.6	56.4	49.4, 63.2
MARITAL STATUS*				
MARRIED	59.0	56.2, 61.7	73.0	66.0, 79.0
UNMARRIED	41.0	38.3, 43.8	27.0	21.0, 34.0
ETHNICITY**				
NON-HISPANIC	86.8	84.8, 88.7	92.8	88.4, 95.6
HISPANIC	13.2	11.3, 15.2	7.2	4.4, 11.6

* Significant at the p<.0001 level

** Significant at the p<.005 level

In general, the population of women who did not receive preconception care did not differ greatly in demographic characteristics from the general maternal population for 2004-2005 statewide

(data not shown). This may be due to the fact that so few women in Oklahoma received PCC prior to pregnancy. However, when compared to women who did receive PCC, women not receiving PCC were more likely to be unmarried (41.0% vs. 27.0%), uninsured (55.1% vs. 33.7%), have unintended pregnancies (54.4% vs. 24.3%), were not trying to become pregnant (64.3% vs. 30.9%), and had more than one child (61.0% were multiparous versus 39.0% primiparous; See Table 2). All factors were found to be significantly associated with the receipt of preconception counseling.

Table 2: Selected Characteristics of Women by Preconception Counseling Status in Oklahoma; PRAMS 2004-2005				
CHARACTERISTIC	PRECONCEPTION COUNSELING			
	NO		YES	
	%	CI	%	CI
INSURANCE BEFORE PREGNANCY*				
NO	55.1	52.4, 57.8	33.7	27.3, 40.8
YES	44.9	42.2, 47.7	66.3	59.2, 72.7
PREGNANCY INTENDEDNESS*				
INTENDED	45.6	42.8, 48.3	75.7	68.9, 81.4
UNINTENDED	54.4	51.7, 57.2	24.3	18.6, 31.1
TRYING TO GET PREGNANT*				
NO	64.3	61.6, 66.9	30.9	24.7, 37.9
YES	35.7	33.1, 38.4	69.1	62.1, 75.3
PARITY*				
PRIMIPAROUS	39.0	36.3, 41.8	51.7	44.8, 58.5
MULTIPAROUS	61.0	58.2, 63.7	48.3	41.5, 55.2

* Significant at the p<.0001 level

Comparing the prevalence of selected risk factors among women who received preconception counseling or advice to those who did not reveals a strong association between decreased risk and preconception counseling. Strikingly, the percent

of women who reported regular multivitamin use before pregnancy was more than double (54.7% vs. 25.2%) among women who received preconception counseling compared to those who had not received preconception counseling (Table 3). Marked decreases in smoking and drinking prevalence were also seen among women who received PCC.

Table 3: Selected Prevalence of Risk Factors Among Oklahoma Women by Preconception Counseling Status; PRAMS 2004-2005

	PRECONCEPTION COUNSELING			
	NO		YES	
RISK FACTOR	%	CI	%	CI
FOLIC ACID AWARENESS BEFORE PREGNANCY*				
NO	34.9	32.2, 37.6	10.9	7.2, 16.3
YES	65.1	62.4, 67.8	89.1	83.8, 92.8
REGULAR MULTIVITAMIN USE BEFORE PREGNANCY*				
NO	74.8	72.3, 77.1	45.3	38.5, 52.2
YES	25.2	22.9, 27.7	54.7	47.8, 61.5
SMOKING PRIOR TO PREGNANCY*				
NO	66.3	63.7, 68.9	79.7	73.5, 84.8
YES	33.7	31.1, 36.4	20.3	15.2, 26.5
DRINKING PRIOR TO PREGNANCY				
NO	49.9	47.1, 52.7	57.1	50.3, 63.8
YES	50.1	47.3, 52.9	42.9	36.2, 49.8

*Significant at the $p < .0001$ level

The degree of association between PCC and the risk factors are highly significant ($p < .0001$) for folic acid awareness, regular multivitamin use, and smoking, and marginally significant ($p = .0547$) for drinking.

Discussion:

Preconception care needs to be a priority in Oklahoma. Overall, the majority of women in OK (86.5%) did not receive preconception counseling or advice before becoming pregnant. This has not changed significantly

from a 2000-2003 report that found 84.8% of Oklahoma women did not receive PCC.⁸ Although many factors may influence the rate of PCC in Oklahoma, including insurance status prior to pregnancy, it is generally believed that awareness of the importance and value of preconception care is low, not only in Oklahoma, but nationwide.

Women in Oklahoma have low levels of regular, pre-pregnancy vitamin consumption, even in those maternal groups with high levels of folic acid benefit awareness and among mothers who received PCC. More research and focus groups on the issue of vitamin consumption and pre-pregnancy health need to be conducted to determine why there is such a disconnect between behavior and knowledge.

Tobacco and alcohol use among pre-pregnant women in Oklahoma was high for mothers receiving PCC as well as those who did not receive PCC. Almost 1/3 to 1/2 of women consumed one or both of these three months before conception. Although women who received preconception visits had lower rates of tobacco use prior to pregnancy, this study found that one in five still smoked preconceptionally.

Taking a multivitamin and abstaining from tobacco and alcohol preconceptionally are important for the optimal health of a pregnancy. Certain birth defects can be prevented if folic acid is taken very early in the pregnancy, before pregnancy is detectable. Refraining from the use of alcohol and tobacco in the three months prior to pregnancy ensures that the fetus is not exposed to these substances, reducing the risks of miscarriage, low birth weight and Fetal Alcohol Syndrome (FAS).^{1,3,4,5}

Several limitations for this study exist. Data are self-reported on PRAMS. Multivitamin use does not indicate consumption of folic acid. Multivitamin use can include a multitude of vitamins so some women who are taking only a folic acid supplement may be excluded from this question. The relationships identified in this paper are associative in nature. Therefore, healthier behaviors reported by PRAMS respondents may be partially attributable to healthier lifestyles in addition to preconception counseling. PRAMS only asked about the occurrence of a visit, not components of a visit, so some women who received aspects of PCC prior to pregnancy in a different setting may not be counted.

Recommendations:

(From the Centers for Disease Control and Prevention's Recommendations to Improve Preconception Health and Health Care²)

- 1. Individual Responsibility Across the Lifespan.** Each woman, man, and couple should be encouraged to have a reproductive life plan.
- 2. Consumer Awareness.** Increase public awareness of the importance of preconception health behaviors and preconception care services by using information and tools appropriate across various ages; literacy, including health literacy; and cultural/linguistic contexts.
- 3. Preventive Visits.** As a part of primary care visits, provide risk assessment and educational and health promotion counseling to all women of childbearing age to reduce reproductive risks and improve pregnancy outcomes.
- 4. Interventions for Identified Risks.** Increase the proportion of women who receive interventions as follow-up to preconception risk screening, focusing on high priority interventions (i.e., those with evidence of effectiveness and greatest potential impact).
- 5. Interconception Care.** Use the interconception period to provide additional intensive interventions to women who have had a previous pregnancy that ended in an adverse outcome (i.e., infant death, fetal loss, birth defects, low birthweight, or preterm birth).
- 6. Prepregnancy Checkup.** Offer, as a component of maternity care, one prepregnancy visit for couples and persons planning pregnancy.
- 7. Health Insurance Coverage for Women with Low Incomes.** Increase public and private health insurance coverage for women with low incomes to improve access to preventive women's health and preconception and interconception care.
- 8. Public Health Programs and Strategies.** Integrate components of preconception health into existing local public health and related programs, including emphasis on interconception interventions for women with previous adverse outcomes.
- 9. Research.** Increase the evidence base and promote the use of the evidence to improve preconception health.
- 10. Monitoring Improvements.** Maximize public health surveillance and related research mechanisms to monitor preconception health.

References:

1. Atrash HK, Johnson K, Adams M, Cordero JF, Howse J. Preconception care for improving perinatal outcomes: The time to act. *Matern Child Health J*. September 2006; 10(5):S3-12.
2. Centers for Disease Control and Prevention. Recommendations to improve preconception health and health care- United States: A report of the CDC/ATSDR Preconception Care Work Group and the Select Panel on Preconception Care, *MMWR*. 2006; 55(No. RR-6).
3. Shapira SK, Dolan, S. Genetic risks to the mother and the infant: Assessment, counseling and management. *Matern Child Health J* (2006) 10(5):S143-146.
4. FadenVB, Graubard BI, Dufour M. The relationship of drinking and birth outcome in a US national sample of expectant mothers. *Paediatr Perinat Epidemiol*. 1997 Apr;11(2):167-80.
5. American Academy of Pediatrics. Fetal alcohol syndrome and alcohol-related neuro-developmental disorders. *Pediatrics* 2000; 106:358-61.
6. Chacko MR, Anding R, Kozinetz CA, Grover JL, Smith PB. Neural tube defects: Knowledge and preconceptional prevention practices in minority young women. *Pediatrics*. 2003; 112(3): 536-542.
7. 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.
8. Centers for Disease Control and Prevention. Surveillance of Preconception Health Indicators Among Women Delivering Live-Born Infants- Oklahoma, 2000-2003. *MMWR*. June 29, 2007;56(25):631-34.

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