Volume 4, Number 1 April 2007

South Carolina Pregnancy Risk Assessment Monitoring System

SC PRAMS Special Delivery

Oral Health during Pregnancy in South Carolina, 2004-2005

Introduction

Oral health status is a reflection of general health and well-being. Numerous studies suggest the possibility that maternal periodontal disease, a chronic infection of the gingiva and supporting tooth structures, is associated with preterm birth and delivery of a small for gestational age infant.

The exact physiopathology of this association remains uncertain, but there is increasing evidence that oral bacteria can invade the placental tissue and trigger inflammatory responses. In return, inflammatory mediators released into circulation may pose a potential risk for the fetus and the placenta, increasing the risk for preterm births.

About 9.2 percent of babies in South Carolina are low birth weight and 11.2 percent are born prematurely (<37 weeks). This puts a burden on our health system and on the society in general.

This report describes oral health behaviors and dental services usage among pregnant women in South Carolina for years 2004 and 2005.

What is SC PRAMS?

The South Carolina Pregnancy Risk Assessment Monitoring System (SC PRAMS) is an ongoing population-based surveillance system of maternal behaviors and experiences before, during and after pregnancy. About 2,300 mothers are randomly sampled from the state's live birth registry each year.

The data presented in this newsletter reflect live births to SC mothers occurring in SC during the years of 2004 and 2005. The overall response rate for these two years was 71.5 percent.

Methods

PRAMS data for years 2004 and 2005 were used to assess reported dental experiences during pregnancy among South Carolina women delivering a live born infant. Mothers were asked whether, during their pregnancy, they (a) needed to see a dentist for a problem, (b) went to a dentist or a dental clinic, or (c) discussed with a dental or other health care worker how to care for their teeth and gums.

We used SAS and SUDAAN software to calculate estimates, standard errors, risk ratios (RRs) and 95 percent confidence intervals (95%CIs). We focused our analyses on women with reported dental problems and examined the association between receipt of dental care and selected risk factors.

Multiple gestations were excluded from the analysis when assessing the correlation between lack of utilization of dental services and low birth weight and preterm babies. Other exclusions include races other than black or white, and mothers with missing information.

D H E C
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

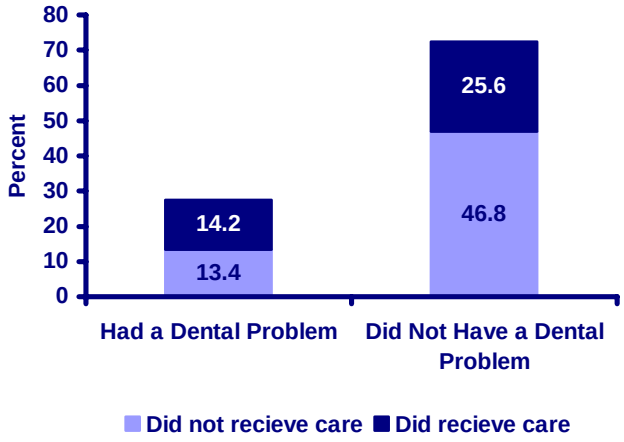
Results

There were 3,187 women who participated in the study, representing approximately 106,500 South Carolina women who delivered a live-born infant during 2004 and 2005 (after statistical weighting).

Overall, 60 percent of the pregnant women in South Carolina reported receiving no dental care; less than 40 percent had received prenatal oral health counseling; and about 28 percent reported having dental problems during their pregnancy.

Figure 1 depicts dental experiences during pregnancy. Almost 49 percent of women who reported having dental problems failed to seek care.

Figure1. Prevalence of reported dental experiences during pregnancy, South Carolina PRAMS 2004-2005



Women who received dental care counseling during their pregnancy were more likely to be black, and nonsmokers. They were also more likely to have private insurance, start prenatal care in the first trimester, and have a yearly family income of more than $35,000 (Table 1).

We examined whether the association between selected risk factors and receipt of dental care during pregnancy varied among the women who reported having dental problems during their pregnancy (Table 2). Being on Medicaid, having an unintended pregnancy and low family income were associated with not receiving dental care during pregnancy (RR = 1.22; 95%CI = 1.05, 1.42; RR = 1.32; 95%CI = 1.08, 1.62; and RR = 1.35; 95%CI = 1.07, 1.70). There was a slight increase in the risk of having a low birthweight baby (RR=1.19) or a preterm baby (RR = 1.42) for women who reported having a dental problem, but not seeking care; however the association was not statistically significant.

Table 1. Characteristics of South Carolina women, according to oral health counseling during pregnancy, PRAMS 2004-2005

Maternal Characteristic	Received Prenatal Dental Counseling	Did Not Receive Prenatal Dental Counseling
	Weighted Percent (Unweighted Number)	Weighted Percent (Unweighted Number)
Age (Years)		
Less than 20	44.4% (199)	55.6% (239)
20-29	37.9% (595)	62.1%
30 and older	42.7% (354)	57.3% (539)
Race		
Black	47.6% (544)	52.4% (798)
White	38.1% (575)	61.9% (956)
Education		
Less than high school	40.1% (280)	59.9% (441)
High school	36.1% (262)	63.9% (546)
More than high school	41.2% (622)	58.8% (919)
Marital Status		
Married	39.3% (590)	60.7%
Not married	40.5% (576)	59.5% (912)
Payment for Prenatal		
Insurance or HMO	42.7% (494)	57.3% (666)
Medicaid	39.0% (569)	61.0% (981)
Other	34.5% (113)	65.5% (237)
Prenatal Care Initiation		
1st trimester	41.1% (925)	58.9%
Later than 1st trimester	35.8% (181)	64.2% (350)
Infant's Birthweight*		
Low (<2500 grams)	37.1% (638)	62.9% (1120)
Normal (2500+ grams)	39.9% (400)	60.1% (582)
Gestational Age*		
Less than 37 weeks	43.0% (565)	57.0% (984)
37 weeks or more	39.2% (492)	60.8% (752)
Smoking‡		
Yes	36.3% (150)	63.7% (299)
No	40.4% (1007)	59.6% (1593)
Pregnancy Intendedness		
Intended	41.7% (619)	58.3% (938)
Unintended	37.8% (514)	62.2% (911)
Income ($)		
Less than 10,000	36.3% (312)	63.7% (593)
10,000-19,999	36.1% (195)	63.9% (372)
20,000-34,999	36.4% (183)	63.6% (363)
35,000+	45.4% (403)	54.6% (496)

* Multiple birth pregnancies were excluded from the analysis.
‡ Smoking during the last three months of pregnancy.

Table 2. Characteristics of South Carolina women who reported having dental problems during pregnancy, 2004-2005

Maternal Characteristic	Received Dental Care	Did Not Receive Dental Care	RR (95%CI)[§]
	Weighted Percent (Unweighted Number)	Weighted Percent (Unweighted Number)	
Age (Years)			
Less than 20	70% (74)	30% (49)	0.56 (0.31-1.04)
20-29	47.9% (224)	52.1% (305)	1.03 (0.89-1.20)
30 and older	50.8% (110)	49.2% (119)	Ref.
Race			
Black	57.3% (175)	42.7% (238)	0.89 (0.65-1.20)
White	52.5% (229)	47.5% (208)	Ref.
Education			
Less than high school	50.4% (102)	49.6% (149)	0.99 (0.72-1.37)
High school	55.2% (136)	44.8% (141)	0.89 (0.65-1.21)
More than high school	50.0% (176)	50.0% (185)	Ref.
Marital Status			
Married	47.7% (187)	52.3% (216)	Ref.
Not married	55.4% (228)	44.6% (261)	0.89 (0.68-1.08)
Payment for Prenatal Care			
Insurance or HMO	65.9% (149)	34.1% (80)	Ref.
Medicaid	48.9% (237)	51.1% (337)	1.22 (1.05-1.42)
Other[¶]	35.0% (40)	65.0% (57)	-------[‡]
Prenatal Care Initiation			
1st trimester	54.4% (323)	45.6% (328)	Ref.
Later than 1st trimester	44.3% (67)	55.7% (118)	1.35 (0.90-2.03)
Infant's Birthweight (grams)*			
Low (<2500)	47.0% (236)	53.0% (304)	1.19 (0.89-1.60)
Normal (2500+)	51.8% (140)	48.2% (124)	Ref.
Gestational Age (weeks)*			
Less than 37	42.5% (202)	57.5% (275)	1.42 (0.88-2.29)
37 or more	52.1% (181)	47.9% (164)	Ref.
Smoked Last 3 Months of Pregnancy			
Yes	51.1% (93)	48.9% (117)	1.00 (0.69-1.46)
No	51.3% (317)	48.7% (358)	Ref.
Intendedness of Pregnancy[#]			
Intended	61.0% (206)	39.0% (204)	Ref.
Unintended	45.3% (197)	54.7% (262)	1.32 (1.08-1.62)
Income ($)			
Less than 10,000	45.3% (126)	54.7% (218)	1.35 (1.07-1.70)
10,000-19,999	49.0% (80)	51.0% (107)	1.40 (0.99-1.99)
20,000-34,999	46.1% (76)	53.9% (83)	1.48 (1.05-2.11)
35,000+	65.7% (106)	34.3% (53)	Ref.

* Multiple birth pregnancies were excluded from the analysis.
§ The risk of not getting dental care when compared to the reference group was considered statistically significant if the 95%CI did not include "1".
# A pregnancy that is unintended is a pregnancy that is not wanted or wanted later, and an intended pregnancy is wanted then or sooner.
¶ "Other" sources of payment for prenatal care included personal income (27.5 percent), TRICARE (4.8 percent), military (1.8 percent) and other (2.2 percent).
‡ RR not calculated because cell size smaller than 50.

Conclusion

The objective of this newsletter was to describe the use of dental care services during pregnancy and the characteristics of mothers who report having dental problems.

The factors that are correlated with failing to use dental services when a dental problem is perceived do not differ significantly by race or age groups. The findings from this study show that low income women and women on Medicaid are at increased risk of not getting dental care preventive services and treatment. Women with reported dental problems who did not get treatment were at a slightly higher risk of having a preterm or low birthweight baby, though the risk was not statistically significant.

There are several limitations in our study. The PRAMS survey asks "Did you need to see a dentist for a problem?" without distinguishing the type of dental problem or the type of treatment the woman received. Data on the type of dental services received is important because women who received preventive dental services are less likely to develop periodontal disease, which has been shown to be related to adverse birth outcomes such as preterm delivery. The self reported nature of the PRAMS data and the lack of information on dental insurance coverage are additional limitations of this study.

Recommendations

Provision of counseling on oral health by obstetricians and family care providers is a simple, low-cost intervention, with potentially great impact on the health of mothers and babies. Public policies that support comprehensive dental services for vulnerable women of childbearing age could favorably impact pregnancy outcomes.

References

1. Gaffield ML, Gilbert BJ, Malvitz DM, Romaguera R. Oral health during pregnancy: an analysis of information collected by the Pregnancy Risk Assessment Monitoring System. *J Am Dent Assoc*. 2001; 132(7):1009-16.

2. Lydon-Rochelle MT, Krakowiak P, Hujoel PP, Peters RM. Dental care use and self-reported dental problems in relation to pregnancy. *Am J Public Health.* 2004; 94(5): 765-771.

3. Ressler-Maerlender J, Krishna R, Robison V. Oral health during pregnancy: current research. *J Womens Health (Larchmt)*. 2005; 14(10):880-2.

4. Boggess KA, Edelstein BL. Oral health in women during preconception and pregnancy: implications for birth outcomes and infant oral health. *Matern Child Health J*. 2006; 10(5 Suppl):169-74.

5. Timothe P, Eke PI, Presson SM, Malvitz DM. Dental care use among pregnant women in the United States reported in 1999 and 2002. *Prev Chronic Dis.* 2005; 2(1):A10.

Acknowledgements

Authors:
Mirela Dobre, MD, MPH, PRAMS Coordinator
Michael Smith, MSPH, PRAMS Operations Manager
James Ferguson, Dr.PH, Surveillance Branch Director

South Carolina PRAMS Program
Division of Biostatistics, Office of Public Health Statistics and Information Services, Department of Health and Environmental Control
2600 Bull Street, Columbia, SC 29201

Earl C. Hunter, Commissioner
Guang Zhao, PhD, Director, Public Health Statistics and Information Services
Shae Sutton, PhD, Director, Division of Biostatistics
Christine Veschusio, Director, Division of Oral Health

We would like to express special thanks to the members of the PRAMS Steering Committee for their guidance in this endeavor.

Funding for the PRAMS Program is provided by the Center for Disease Control and Prevention, Atlanta, GA
(Grant No. 5UR6 DP000502-02)