Oral Health Program Preferences among Pregnant Women in a Managed Care Organization

Merry J. Thoele, MPH, RDH; Stephen E. Asche, MA; D. Brad Rindal, DDS; Kristine K. Fortman, PhD

Abstract

Objective: *The purpose of the study was to understand the oral health information preferences of pregnant women and new mothers.* ***Methods:*** *This study was conducted at a Minnesota managed care organization. A random sample of 250 women with public program insurance and 250 privately insured women was selected from the population of pregnant women in the claims systems. The study consisted of a mailed survey and phone contact to nonresponders. The analytic sample consisted of 123 public-pay and 127 private-pay respondents. Descriptive statistics summarize the preferences for oral health care topics.* ***Results:*** *Receiving information by mail was preferred by both groups. Women favored information concerning infant-specific oral health more than information on both mother and infant oral health. While public-pay respondents had more enthusiasm for many topics, the topic preference rankings within each sample were similar.* ***Conclusion:*** *Similarities in program preferences suggest that common interventions could be designed that would appeal to both groups without extensive tailoring.*

Key Words: oral health, pregnant women, infant's and children's oral health, program preferences, health services research

Introduction

Dental care is the most common unmet need in children in North America, and dental caries is the single most common chronic childhood disease – five times more common than asthma and seven times more common than hay fever – in the United States (1,2). The continuing decline in the prevalence and severity of dental caries in permanent teeth has not been similarly observed in primary teeth (3).

Pregnancy is a time when women tend not to go to the dentist but are especially receptive to messages that are related to the health of the infant. While it is appropriate to make oral health an integral part of prenatal care (2), recent studies suggest knowledge deficits concerning appropriate dental self-care practices among pregnant women and caregivers of infants and children and a significant lack of knowledge about their infants' oral health (4).

While some prevention programs initiated during pregnancy have successfully influenced the oral health of mothers and their children (5,6), the clinical perspective on interventions frequently is that motivating patients (and in the case of pediatric patients, their parents) is a difficult task and can be discouraging in the traditional dental office setting. Little is known about how to influence pregnant women's and new mothers' oral health behaviors. Oral health interventions for pregnant women are not widespread, and it is not clear how expectant parents, caregivers, and mothers access oral health information.

This study assesses the preferences of pregnant women forprograms concerning maternal and infant oral health by program topicand method of program delivery. Preferences are examined separately for individuals with public- versus private-pay insurance to acknowledge differences that could be caused by disparities in care. By providing information based on known preferences, we hope to capitalize on the likelihood that pregnant women will be receptive to gaining knowledge and improving oral health behaviors that may impact subsequent outcomes for infants and children. This can have practical applications for oral health practitioners and agencies in the development of evidence-based oral health information interventions.

Methods

This study was conducted at HealthPartners, a member-governed, not-for-profit, managed care organization (MCO) in Minneapolis, Minnesota with approximately 700,000 members. This project was approved by the HealthPartners Institutional Review Board.

Sample. A random sample of 250 women with public program insurance and 250 privately insured women was selected from all pregnant women aged 18 to 40 having prenatal diagnosis or procedure codes in the claims system in August to October 2004. Public- and private-pay status was based on product identifiers from the claims system. Each member was sent a six-page survey, cover letter, and stamped return envelope. A reminder

Send correspondence and reprint requests to Merry J. Thoele, P.O. Box 1524, MS 21111R, Minneapolis, MN 55440-1524. Tel.: 952-967-7404; Fax: 952-967-5022; e-mail: Merry.J.Thoele@healthpartners.com. Merry J. Thoele, Stephen E. Asche, and D. Brad Rindal are with the HealthPartners Research Foundation, Minneapolis, MN. Kristine K. Fortman is with the HealthPartners Research Foundation and the Medtronic Foundation, Minneapolis, MN. **Source of support:** Supported by research grant #04-041, HealthPartners Research Foundation. Manuscript received: 11/1/07; accepted for publication: 7/23/07.

DOI: 10.1111/j.1752-7325.2007.00070.x

Table 1
Sample Description

	Public pay % ($n = 123$)	Private pay % ($n = 127$)
Age*		
18-24	45.8	8.9
25-31	42.5	49.6
32-39	11.7	41.5
Education*		
High school or less	52.9	4.8
Some college or technical degree	34.7	24.8
College graduate	12.4	70.4
Marital status*		
Married	55.3	92.8
Separated/divorced	6.5	1.6
Never married	38.2	5.6
Race*		
White	42.6	89.6
Black	24.6	2.4
Asian	13.1	4.8
Hispanic	9.8	0.8
Other	9.8	2.4
First pregnancy	35.8	44.1
Number adults in household (including self)*		
1	18.8	0.8
2	59.0	91.6
3+	22.2	7.6
Number of other children aged 0-17 in household*		
0	20.3	36.0
1	30.9	34.4
2+	48.8	29.6
Frequency of dental care*		
Irregular	46.1	23.4
Once a year or more	53.9	76.6
Dietary risk score*		
Low (0-1)	39.0	59.8
High (2-5)	61.0	40.2
Current smoker*	24.6	5.6

* $P < 0.01$.

postcard was sent 1 week later. If noresponse was received within 3 weeks, up to 10 phone calls were made to nonrespondents in an attempt to complete the survey by phone. Because of bad addresses and disconnected phones in the public-pay sample, an additional 100 women were randomly selected for survey by phone, with no initial mailing. The first surveys were mailed in November 2004, and all phoning was completed in January 2005. A $100 store gift certificate was sent to one respondent who was randomly selected from women who returned a survey or completed the survey by telephone.

Surveys were completed by 123 public-pay and 127 private-pay respondents. After removing surveys sent to undeliverable addresses ($n = 16$), faulty phone numbers ($n = 145$), those who did not access translation services ($n = 24$), and those for whom a contact was not attempted ($n = 19$), the adjusted response rate was 58.6 percent for the public-pay sample and 68.3 percent for the private-pay sample.

Measures. The 70-item survey consisted of items from existing inventories as well as items written for this study. Items from Lang et al. (7,8) assessed oral hygiene behaviors, while items from the National Health and Nutrition Examination Survey (9) assessed oral health status. Dietary practices were assessed using the Diet History Questionnaire (10). Items to assess preferences for program topics concerning self and infant oral care (e.g., sealants and cavity prevention programs, how a mother's dental health affects her child's dental health) and the method of delivery preferred (e.g., mail, face-to-face) were written by the study team, which included a dental hygienist and dentist. These items were presented as a checklist, allowing the respondent to select any that were of interest. Sociodemographic information was also collected. Three oral health behavioral risk factors (current smoking, dietary risk score, irregular dental care) were measured. The dietary risk score summarized frequency of fruit drink, soda, and candy consumption and ranged from 0 (low risk) to 6 (high risk), with one point accrued for each of the three items consumed more than twice a day, and another point added for between-meal consumption. Because utilization of care is used as a surrogate measure of an individual's capacity to maintain or improve health status (1), regularity of routine dental care was assessed and coded as one or more dental visits (any type) per year versus less-frequent visits.

Analysis. The analysis examines program preferences by presenting the proportions of pregnant women interested in a particular topic. Contingency tables and Chi-square statistics were used to compare program preferences by insurance status. Analyses were conducted using SAS/STAT software, version 8 (SAS Institute, Inc., Cary, NC, USA).

Results

Because the public- and private-pay samples show substantial differences on sociodemographic variables, they are described separately (Table 1). Public-pay respondents were significantly more likely than private-pay respondents to be younger (median age 25 versus 30), have less education, to be never married or separated/divorced, to be non-White, to be the only adult in the household or to be in a household with three or more adults, and

Table 2
Method of Delivery and Topic Preferences among Pregnant Women, by Insurance Status

	All % ($n = 250$)	Public pay % ($n = 123$)	Private pay % ($n = 127$)
Program method of delivery			
Dental health information by mail	68.0	70.7	65.4
Face-to-face, individual session with dental health educator	34.4	40.7*	28.4*
Dental information sent by e-mail	31.2	18.7**	43.3**
Interactive Web-based/Internet program	26.4	20.3*	32.3*
Face-to-face, group sessions with other moms and a dental educator	20.0	26.8**	13.4**
Phone sessions with a dental health educator	19.6	23.6	15.8
Program topic			
Care of infant's mouth	65.6	61.8	69.3
Cavity prevention program for you and your infant	55.6	66.4**	45.1**
Development of baby teeth	55.2	52.9	57.5
How a mother's dental health affects her child's dental health	49.2	50.4	48.0
Information on dental sealants and how they work	47.6	52.9	42.5
Choosing and preparing healthy snacks	41.2	41.5	40.9
Choosing healthy foods	39.2	49.6**	29.1**
Information on how cavities develop	35.6	45.5**	26.0**
Self-care techniques	33.6	43.1**	24.4**
Drinking less soda pop	19.6	30.9**	8.7**

* $P < 0.05$; ** $P < 0.01$.

were more likely to have other children in the household. The three behavioral risk factors – current smoking, irregular dental care, and higher dietary risk score – were more likely among the public-pay sample.

Receiving dental information by mail was the most preferred option in both groups, with no other method receiving approval from even a majority of respondents (Table 2). Preferences for program delivery varied significantly by public-/private-pay status. Public-pay respondents preferred face-to-face methods and phone sessions over technology-based methods (e-mail and Internet). However, technology-based methods were favored by private-pay respondents over face-to-face and phone delivery methods.

For both public- and private-pay respondents, a preference for information by mail or face-to-face individual sessions accounted for 91 percent of the respondents. The remaining 9 percent who chose neither of these two methods had no clear favorite among the remaining delivery methods.

Preferences for program topics generally favored infant-specific topics (e.g., care of infant's mouth and development of baby teeth) over programs that concerned both the mother and infant. Five program topics were of interest to at least a majority of public-pay respondents (see Table 2), while two (care of infant's mouth, development of baby teeth) captured the interest of a majority of private-pay respondents. When statistically significant differences in interest levels were found between public- and private-pay respondents, program interest was higher among the public-pay respondents. In spite of the higher level of interest for some topics in the public-pay sample, relative program topic interest within each sample was very similar – the top five topics chosen by the public- and private-pay groups were identical.

Discussion

Similarities in oral health program preferences in the public- and private-pay samples of pregnant women suggest that oral health information interventions can be designed that appeal to both groups without extensive tailoring. The preference for infant-specific topics suggests that one way to interest pregnant women in a program that would address their own self-care would be to incorporate self-care information into a program that primarily concerns and is marketed as an infant oral care program.

The strong preference for mail delivery of dental health information over other choices, coupled with the relatively low cost, makes this an appealing option when considering the development of evidence-based oral health programs in pregnant women. However, by also offering face-to-face individual sessions, the ability to exchange oral health information is increased and captures the interest of 9 out of 10 respondents. This suggests that offering options for accessing information beyond these two methods would result in little additional appeal to respondents. Given the current popularity of e-mail and Web-based programs, it is particularly important to note the low interest in these delivery methods among public-pay respondents. This is not unexpected if technology is not available in the home. However, if designing a program for private-pay individuals, these delivery options would fare somewhat better. The popularity of a phone-based method of delivery was among the lowest, particularly among the private-pay respondents.

Limitations of this study include the low response rate among public-pay respondents and that respondents were sampled through medical claims data rather than dental insurance status, which could affect the

representativeness in terms of dental utilization. This sample of pregnant women who receive care from a midwestern MCO may limit the generalizability of the results. It is difficult to know if the preferences stated in the survey accurately reflect the choices that would be made if oral health information and programs were actually offered to the respondents. Study strengths are that it examined the preferences of both private- and public-pay respondents and yielded practical information that could be used to plan interventions.

Acknowledgment

The authors are grateful to the HealthPartners Research Foundation for support of this project.

References

1. US Department of Health and Human Services. Oral health in America: a report of the surgeon general. Rockville (MD): US Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health; 2000. p. 308.
2. Samelson R. Grand rounds with Dr. Renee Samelson. Grand Rounds in Oral-Systemic Med. 2006;1(4):10-3.
3. Beltran-Aguilar ED, Barker LK, Canto MT, Dye BA, Gooch BF, Griffin SO, Hyman J, Jaramillo F, Kingman A, Nowjack Raymer R, Selwitz RH, Wu T. Surveillance for dental caries, dental sealants, tooth retention, edentulism, and enamel fluorosis-United States, 1998-1994 and 1999-2002. MMWR CDC Surveill Summ. 2005;54(SS-3):1-38.
4. Alsada LH, Sigal MJ, Limeback H, Fiege J, Kulkarni GV. Development and testing of an audio-visual aid for improving infant oral health through primary caregiver education. J Can Dent Assoc. 2005;71(4): 241, 41a-41h.
5. Brambilla E, Felloni A, Gagliani M, Malerba A, Garcia-Godoy F, Strohmenger L. Caries prevention during pregnancy: results of a 30-month study. J Am Dent Assoc. 1998;129(7):871-7.
6. Gunay H, Dmoch-Bockhorn K, Gunay Y, Geurtsen W. Effect on caries experience of a long-term preventive program for mothers and children starting during pregnancy. Clin Oral Investig. 1998; 2(3):137-42.
7. Lang WP, Farghaly MM, Ronis DL. The relation of preventive dental behaviors to periodontal health status. J Clin Periodontol. 1994;21(3):194-8.
8. Lang WP, Ronis DL, Farghaly MM. Preventive behaviors as correlates of periodontal health status. J Public Health Dent. 1995;55(1):10-7.
9. National Center for Health Statistics. National Health and Nutrition Examination Survey (NHANES 2003-4). [cited 2006 Oct 27]. Available from: http://www.cdc.gov/nchs/about/major/nhanes/nhanes2003-2004/nhanes03_04.htm
10. Diet History Questionnaire, Version 1.0. National Institutes of Health, Applied Research Program, National Cancer Institute; 2002.