



Utilization of dental services and preventive oral health behaviors among preschool-aged children from Delaware

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Abstract

Purpose: This study evaluated factors associated with age-appropriate dental care utilization and preventive behaviors among preschool-aged children in Delaware.

Methods: In June 1994, child health questionnaires were mailed to a simple random sample of 1,005 Delaware caregivers whose children were ages 6 to 36 months.

Results: Only 12% of children >12 months old had been to the dentist. Child's race, maternal education, maternal age, dental insurance, having a regular place for medical care, receiving information on tooth care from medical personnel, and family income were not associated with having a dental visit.

Conclusions: Improving information provided to caregivers and health professionals on appropriate timing of dental services and preventive dentistry is recommended to enhance oral health for preschool-aged children. (*Pediatr Dent* 21:403-407, 1999)

Access to comprehensive health care for children in the United States remains an important health and policy concern.¹⁻⁸ Providing comprehensive health care for children has been the focus of much public debate and policy development. Most recently these efforts have resulted in development of the Children's Health Insurance Program (CHIP).⁹⁻¹⁰ Access to and use of oral health services is also limited for many children. Early access to dental services has been shown to be important in prevention and early detection of dental disease in infants.¹¹⁻¹² Research on oral health access in the pediatric population has focused on a number of factors: lack of dental insurance, maternal factors, low income, and lack of perceived need.¹³⁻¹⁸

The American Academy of Pediatric Dentistry (AAPD) recommends that all children be seen for an oral health assessment within six months of the eruption of the first tooth or no later than one year of age.¹⁹ There are a number of recommendations for time of first dental visit which differ from that of the AAPD. The Academy of General Dentistry recommends between 18 and 24 months unless "an area of concern is

noticed".²⁰ The American Academy of Pediatrics recommends that children be seen by age three for dental evaluation or sooner if there is a need.²¹

One important source of information for caregivers about oral health care is the child's medical health care provider. It has been noted that the preventive and educational aspects of oral health for children under three years of age have been the purview of the physician rather than the dentist.²² In a study of physicians in Alabama, 29% reported always giving parents information about oral health, 54% reported they did sometimes, and 17% indicated they rarely or never provided such information.²³ This study also found that 68% of the physicians studied thought that children should visit the dentist for the first time by three years of age. This finding likely reflects the recommendation of the American Academy of Pediatrics guideline that children should be referred for dental examination by three years of age. Since there is no unified recommendation by key pediatric academies, there is confusion as to when dental examinations should be completed.

In addition to professional oral health services, caregivers' knowledge and behaviors regarding prevention of dental disease play an important role in the future dental health of their children and may influence whether oral health care is appropriately sought. Providing direct oral hygiene and appropriate fluoride supplementation are critical for children's dentition. Recent studies reported on the role of parental behavior in oral health for infants. In a study of French-Canadian children ages nine months to 36 months, 63% of parents reported that they knew the fluoridation status of their drinking water but only 21% of those reporting the water to be fluoridated were correct; of those reporting that the water was not fluoridated, 97% were accurate. Around 30% of parents giving fluoride supplements did not know if their drinking water was fluoridated.²⁴ It is important that parents know the fluoridation status of the water their children are ingesting whether it be tap or bottled water, as well as other sources of fluoride such as fluoridated

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Table 1. Utilization of Dental Services by Selected Characteristics (N=495)

	Dental Visit	Frequency* and Row % No Visit	P**
Child's age			
<12 mo	2 (4%)	52 (96%)	<0.01
>12 & <24	6 (3%)	190 (97%)	
>24	47 (20%)	193 (80%)	
Child's race			
non-Hispanic black	6 (5%)	105 (95%)	0.08
non-Hispanic white	38 (12%)	269 (88%)	
Hispanic	4 (12%)	28 (88%)	
non-Hispanic other	4 (24%)	13 (76%)	
Maternal age			
< 21 years	13 (12%)	93 (88%)	0.70
> 21 years	42 (11%)	342 (89%)	
Maternal education			
< high school or equiv	7 (8%)	76 (92%)	0.38
> high school	48 (12%)	359 (88%)	
Family income			
<\$20,000	24 (11%)	198 (89%)	0.95
\$20,000 - 29,000	7 (12%)	50 (88%)	
>\$29,000	24 (11%)	187 (89%)	

*Categories that do not add to 495 are due to missing data.

**chi-square.

toothpaste. This will assist dentists and physicians in determining the need for fluoride supplementation.²⁵⁻³⁰ In an analysis of the 1986 National Health Interview Survey, it was found that only half of children under two years of age used fluoride dentifrices or dietary fluoride supplements. When the use of one or both of these fluoride sources was examined, significant differences were found by age of the child, race, ethnicity, poverty, education of responsible family member, knowledge of the purpose of fluoridation, and thinking household water is fluoridated.³¹

The aims of this paper were to:

1. Determine compliance with the American Academy of Pediatric Dentistry recommendation that children be seen for dental evaluation by 12 months of age.
2. Evaluate factors that may impact dental utilization such as child's race, maternal age, maternal education, and family income.
3. Identify how having a place for regular health care, receiving information on tooth care from a doctor or nurse, or having dental insurance affects dental visits.
4. Describe caregivers' preventive behaviors for their children and describe the caregivers' knowledge of fluoridation and evaluate any association with having a dental visit.

Methods

Questionnaire Design

A comprehensive child health questionnaire was developed to administer to parents or guardians of a representative sample of Delaware children ages six months to 36 months. An analysis of National Center for Health Statistics questionnaires was conducted and questions were selected to provide a comprehensive reporting of health status, access/barriers to care, health beliefs, attitudes and behavior, and financial status in addition to the demographic information. Questions were modified to improve clarity and to adjust the reading level to that of fourth

grade. Questionnaires were pilot tested (N=100) and revised prior to administration.

Sample Selection and Survey Administration

The survey was administered to parents of a sample of 1,005 children born between January 1991 and September 1993. The sample was randomly selected through the Delaware electronic birth certificate registry. To ensure an adequate sample of respondents from children of mothers on Medicaid or who were uninsured at the time of delivery, these segments of the population were over-sampled by selecting two random samplings (one representative of the entire State and one for indigent children). The over-sample constituted 365 of the total sample of 1,005 children. Surveys were mailed in June of 1994 and nominal incentives were donated by community businesses to offer as an incentive to respond. Confirmation calls followed the mailing to confirm receipt and encourage compliance. In September, a second questionnaire was mailed to nonrespondents and additional confirmation calls were made as

well as home visits.

Data Analysis

Data were entered by the University of Delaware Center for Demographic and Statistical Research. These analyses investigate dental visits, access to oral health information utilization of dental services, preventive behaviors, and knowledge of water fluoridation. The following variables were included in the analysis:

1. child's age and race
2. maternal age and education
3. having a health insurance plan which pays for dental care
4. having a medical place for regular health check-ups (well child care)
5. indicating whether a doctor or nurse had ever given information about tooth care
6. reasons for going to dentist
7. method of cleaning child's teeth
8. fluoride supplements
9. type of water consumed
10. knowledge of tap water fluoridation
11. reported age at time of first dental visit.

Data were analyzed using SAS.³² Associations were examined using chi-square tests.

Results

By April 1995, 495 questionnaires of the 1,005 mailed were returned. After exclusion of 276 families who were determined to be unreachable after attempted home visits, interviews with neighborhood residents, and communication with the United States Post Office, the adjusted response proportion was 68%.

Oral Health Services and Information

Table 1 reports the distribution of child's age, child's race, maternal age, and maternal education compared with dental visit. A comparison was performed of child's age at the submission of the questionnaire and whether or not a dental visit

was reported. Of children 12 months old or younger, 4% had been to the dentist; of children between 12 and 24 months old, 3% had been to the dentist; and of children 24 months or older, 20% had been to the dentist. For all children in the study, only 11% had ever been to the dentist and only 12% of those age 12 months or older had been to the dentist. Caregivers who reported that the child had been to the dentist were asked to indicate the age of the child at the time of first visit. Only 14% reported that the child's first visit occurred on or before the child reached one year of age and less than half (49%) by two years of age. Table 1 also shows that a higher percentage of non-Hispanic white children (12%) and Hispanic children (12%) were reported to have dental visits than non-Hispanic black children (5%); however, this difference was not statistically significant ($P=0.08$). Neither maternal age nor education were significantly associated with having had a dental visit. Family income did not have an association with whether or not the child had been to the dentist. Of those children who had been to the dentist, the reasons for going to the dentist were reported as preventive services or "happy visits" (73%), treatment (23%), or both preventive and treatment services (4%).

The impact of having a regular place for medical care and receiving information about tooth care from a medical care provider on dental visit was assessed. While 96% of respondents reported their children as having a place for regular health check-ups, only 11% had taken their children to the dentist. There was not a significant association between having a regular place for medical care and dental visit. Receiving information about tooth care from a doctor or nurse was not associated with having had a dental visit ($P=0.96$ for all children and $P=0.93$ for children age 12 months or older) (Table 2).

Approximately 50% of all caregivers indicated they had received information about tooth care from a doctor or nurse, which is similar to the percentage who reported receiving information about poisoning. In comparison, respondents reported that they received information on other topics at a higher percentage: child development (71%), safety and acci-

dent prevention (61%), feeding (74%), and breast-feeding (56%).

One significant barrier to accessing dental care is the cost. In this study, population reporting having a health plan that covers regular dental care was not significantly associated with the child having gone to the dentist ($P=0.35$ for all ages, $P=0.26$ for > 12 months). (Table 2)

A high percentage of caregivers (77%) reported having dental coverage for their children. In comparison, 84% indicated that the current health plan covered hospital expenses, 81% covered prescriptions, 78% reported check-ups at doctors office were covered, and 73% were covered for immunizations.

Preventive Behaviors

Preventive oral health behaviors are important for young children. The following four questions on preventive oral health behaviors were examined:

1. How do you take care of your child's teeth?
2. Does the your child receive fluoride drops?
3. What kind of water does your child drink or is used for infant formula?
4. Does your tap water have fluoride?

Oral Hygiene Care

Table 3 shows the reported methods of cleaning the child's teeth and use of fluoride supplements. Those who did not use a toothbrush were more likely not to have had a dental visit than those who did use a toothbrush.

Although there was a significant association between wash cloth use and having a dental visit, this estimate is probably due to the majority of caregivers reporting toothbrush use. There was no association between caregivers' reporting that teeth did not need cleaning and dental visits.

The most commonly reported method to take care of the child's teeth was the use of a toothbrush (79%), followed by the use of wash cloth (15%). Some caregivers reported that there was no need to clean the child's teeth (12%). Respondents were allowed to report more than one hygiene method in answering this question.

Table 2. Utilization of Dental Services for All Ages and >12 Months: Frequency* and Row % (n=495)

	All Ages		P-value**	Age 12 months or greater		P-value**
	Dental Visit	No Dental Visit		Dental Visit	No Dental Visit	
Place for regular health check-ups						
no	2 (10%)	18 (90%)	0.8	52 (11%)	16 (89%)	0.88
yes	53 (11%)	414 (89%)		51 (12%)	364 (88%)	
Doctor or nurse gave information about tooth care						
no	28 (11%)	216 (89%)	0.96	26 (12%)	187 (88%)	0.93
yes	27 (11%)	211 (89%)		27 (12%)	189 (88%)	
Insurance plan covers dental						
no	13 (15%)	71 (85%)	0.35	13 (18%)	61 (82%)	0.26
yes	32 (12%)	244 (88%)		31 (12%)	218 (88%)	

*Categories that do not add to 495 are due to missing data.

**chi-square.

Table 3. Preventive Behaviors and Dental Visit: Frequency* and Row % (N=495)

	Dental Visit	No Dental Visit	P value**
Toothbrush†			
no	2 (2%)	99 (98%)	<0.01
yes	53 (14%)	334 (86%)	
Washcloth†			
no	52 (12%)	365 (88%)	0.04
yes	3 (4%)	68 (96%)	
Teeth don't need cleaning †			
no	52 (12%)	379 (88%)	0.13
yes	3 (5%)	54 (95%)	
Fluoride supplements ‡			
no	41 (10%)	365 (90%)	0.07
yes	13 (17%)	62 (83%)	

*Categories that do not add to 495 are due to missing data.

**chi-square.

† 6 months of age or older.

‡ All ages.

Fluoride

Fluoride supplementation was not significantly associated with having a dental visit ($P=0.07$) (Table 3). Seventeen percent of those receiving fluoride supplements had been to the dentist, whereas only 10% of those not receiving fluoride supplements had been to the dentist. Overall, 16% of caregivers reported that the child was receiving fluoride supplements.

Sixty-five percent of respondents reported that their children drink tap water or that tap water is used in formula. Twenty-one percent reported bottled water use and 14% reported using well water. Of those responding to the question about whether tap water is fluoridated or not, 42% responded that it was not fluoridated and 58% reported that it was fluoridated. At the time of the survey, the CDC fluoridation census indicated that 50-74% of people on public water systems in Delaware were served by fluoridation.³³ It must be noted that 63% of the respondents did not complete this question, even though questions immediately before and after this question had high completion rates (>98%). The low frequency of responses to this question may indicate a lack of knowledge and reluctance to answer.

Discussion

Young children should receive oral evaluations and be provided with the appropriate preventive measures by their caregivers. The AAPD recommendation that children be seen for an oral examination by age 12 months or within six months of the eruption of the first tooth is unmet in this study population with only 11% of the children age 12 months or older having had a dental visit. This failure was unexplained by having a place for regular health check-ups, receiving dental information from a medical care provider, having dental insurance coverage, or having a high/low family income. Physicians should be a source of oral health information for caregivers, particularly in this age group since the very young are likely to have been seen by a medical provider for immunizations or

health screening. There is a significant need for clear, accurate messages about the need for oral health care. Although no difference in dental visits was found based on reporting that the doctor or nurse had provided information on tooth care, it is not known what information on tooth care was provided. The missed opportunity to inform and motivate caregivers to seek oral health services and provide good oral preventive measures to their children is not unlike that of missed vaccination opportunities in that most dental caries and oral abnormalities can be prevented or eliminated by early evaluation, and treatment, and diagnosis.

An important consideration in access to oral health care, especially for children covered by medical assistance plans, is structural or physical access to a dentist. Structural access includes finding an office with an accessible location and office hours that also accepts the child's type of reimbursement. Caregivers may know from past experience in seeking care for themselves or other children that locating a dentist that accepts medical assistance is difficult. How this experience impacts the reporting of whether

there is insurance or a health plan that covers dental care is unknown, but caregivers could think that there is no dental coverage.

In order for children to appropriately utilize oral health services, their caregivers must be knowledgeable about the oral health needs of children, perceive that their children need these services, and find a qualified provider of care that is structurally accessible. Finally, caregivers must ensure that the children are provided preventive measures such as oral hygiene and proper fluoride supplementation in order for them to achieve optimal oral health.

Study Limitations

There are limitations to this study that must be considered. The questionnaire was designed to provide a comprehensive assessment of children's health and not specifically to investigate oral health, therefore, the number of questions on dental topics was limited. The low number of respondents reporting dental visits also limits the generalization of the findings. Regardless of these limitations, there are few studies that examine oral health services in this manner.

Conclusion

1. Additional studies should explore in more depth why oral health services are not being sought and why preventive oral health practices are not optimal.
2. Further investigation into how to effectively deliver messages about oral health care that motivates care-seeking behaviors should be undertaken.
3. Developing a consensus among major pediatric and dental organizations on when a child should first visit the dentist may lead to more age-appropriate utilization of oral health services. The lack of a uniform recommendation from pediatric health care provider organizations may be hampering appropriate use of oral health services.

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