Oral Health Status and Access to Dental Care for Ohio Head Start Children

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Abstract

Purpose: The purpose of this survey were to assess the dental caries prevalence rate among children enrolled in Ohio's Head Start programs and assess factors relating to their dental care access.

Methods: Oral screenings were conducted on 2,555 children, ages 3 through 5 years, at 50 Ohio Head Start centers using probability-proportional-to-size sampling. In addition, parental responses to 6 access-oriented questions on the consent form were analyzed.

Results: Overall, 38% of 3- to 5-year-old Head Start children screened had experienced dental caries, and 28% had at least 1 untreated decayed tooth. Of the children with caries experience, 73% had decayed teeth, while the remaining 27% had restorations only. Among children, there were no statistically significant differences associated with race or payment method. With regard to dental care access, 11% of Head Start parents reported they could not get wanted dental care for their children during the previous 12 months, most often due to cost of care/lack of insurance. Nine percent of children had a toothache in the previous 6 months. Although 85% of Head Start children had visited a dentist in the previous 12 months, another 10% had never visited a dentist.

Conclusions: The significant prevalence rate of dental caries among Ohio Head Start children is consistent with other states' reports. Although almost 9 of 10 children visited a dentist during the year, three fourths of children with dental caries did not have their care completed by the time they were screened during the second half of the school year. Oral health disparities according to race and payment source were not found among Ohio Head Start children. (*Pediatr Dent.* 2004;26:519-525)

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The US Surgeon General's Report on Oral Health in America concluded that there are profound and consequential oral health disparities within the US population. The report noted that poor children suffer twice as many dental caries as their more affluent peers and their disease is more likely to be untreated.[1] The experience of Head Start programs, which serve predominantly poor children, illustrates the problem cited in the US Surgeon General's Report.

Today, Head Start and Early Head Start (HS/EHS) services extend to eligible 0- to 5-year-old children, pregnant women, and their families.[2] Although the primary target is low-income families below 100% of the federal poverty level (FPL) and/or those receiving specific types of public assistance, up to 10% of slots can be used for children whose families exceed the low-income guidelines (over income). Local Head Start programs determine eligibility priorities, including enrollment criteria for over-income enrollees. In addition, 10% of enrollment slots (regardless of income) are to be filled by children with disabilities.[3] During much of the 1990s, Head Start programs and parents of Head Start children nationwide reported dental care access as their number 1 health issue.[4]

There are a limited number of reports in the literature on the oral health status of Head Start children over the past 10 years.[5-9] Unfortunately, the reports are not all comparable and the findings vary considerably. Tang and colleagues[6] summarized the literature through 1996 using caries scores based on variations on a common index that counts decayed and filled primary teeth or tooth surfaces

(dft, dfs, dmft, and/or deft) and percent decayed. The range of scores reported was substantial. Furthermore, not even the ranking pattern of prevalence rates between whites, black, and Hispanics was consistent among studies. Several of the surveys focused on Native Americans, whose relatively high rate of dental caries in the preschool age group has been well documented, especially for Early Childhood Caries (ECC).[8,10] There was inconsistency as to the reporting of caries prevalence rates, with some reports defining "caries" as untreated decay while others considered caries experience (children with either untreated decay, filled or extracted teeth, or both).

Themes emerging from the literature include:

1. a significant percent of Head Start children have experienced caries;
2. approximately 80% to 90% of the caries remains untreated;[5,9]
3. children in rural areas have more disease than those in nonrural areas;[5,8]
4. dental caries is more prevalent in posterior teeth, mostly on surfaces with pits and fissures, as opposed to the anterior teeth's smooth surfaces;[5,7,9]
5. four-year-olds are more likely to have decayed teeth than three-year-olds.[5,6]

In 1999, under the leadership of the Ohio Department of Health, the Association of State and Territorial Dental Directors developed a set of training materials called Basic Screening Surveys.[11] Unlike the more rigorous caries indices used in traditional surveys, oral health was assessed in terms of individuals instead of teeth or tooth surfaces. Rather than research, the Basic Screening Surveys approach was intended to standardize a method to provide data suitable for use in policy development, advocacy, and education. Furthermore, this approach is consistent with the data format used in the Healthy People 2010 oral health objectives.

Data have been reported from the third National Health and Nutrition Examination Survey (NHANES III), both in terms that include some of the individual-centered measures identified in Basic Screening Surveys and the tooth-centered caries indices and ratios reported in most of the literature to date. NHANES III found that for 2- to 4-year-old children, 18% have caries experience (decay or fillings) and 16% have untreated decay,[12] with an average of 0.6 decayed or filled teeth per child.[13] Eighty percent of teeth that have experienced decay remain untreated.[13] Although these data represent estimates for all 2- to 4-year-old children (indicator age range for Healthy People 2010), NHANES III data also have been used to provide estimates for low-income and minority 2- to 5-year-old children.[14]

The percentage of 2- to 5-year-old children with untreated decayed teeth with any caries experience and percentage of once-decayed teeth that remain untreated all are inversely related to family income. Thirty percent of children below the poverty level, 29% below 150% of the poverty level, and 27% of those below 200% of the poverty level have decayed teeth. As with 2- to 4-year-olds, about 8 of 10 once-decayed teeth remain untreated.[14]

The purpose of the survey reported here were to assess the dental caries prevalence rate among children enrolled in Ohio's Head Start programs and assess factors relating to their dental care access. This survey was one of a series of data collection efforts that served as a basis for assessing the need for oral health services for Head Start children and developing a strategic plan to address those needs. Reports of surveys of Ohio dentists, Head Start health coordinators, and Head Start parents will be published elsewhere.

Methods

Fifty Head Start centers with an enrollment of at least 25 children were selected using probability-proportional-to-size (PPS) sampling, in which the probability of a facility being selected in the sample is proportional to the number of children enrolled. After contacting the selected sites, the 16 that either declined to participate or were no longer Head Start centers with enrollments of at least 25 children were replaced with sites selected using the same PPS method. All 2- through 5-year-old children received consent forms, and those with parental consent were screened by 1 of 8 screeners: 4 pediatric dentistry residents; 3 pediatric dentists; and 1 dental hygienist. Children generally are 3- to 4-years-old at the time of enrollment for Head Start (August 2002 for the cohort in this study). For data analysis purposes, however, age was recorded at the time of screening. It is assumed that most, if not all, 5-year-olds were 4 at the time of enrollment.

The screeners were not formally calibrated but were all trained on the Association of State and Territorial Dental Directors' Basic Screening Surveys model, according to the model's training recommendations, including replicate screenings on 20 Head Start children to assure interscreener consistency.[11] Screenings were conducted onsite using flashlights and mouth mirrors. Dental explorers were available, as deemed necessary by the screener. Radiographs were not taken. Screeners recorded prevalence of dental caries experience, untreated dental caries, ECC (children age 3 and under), and urgency for dental care.

In addition, parents were asked to respond to 6 dental-care-access-oriented questions included on the consent form (Table 1). The questions were based on the example included in the Basic Screening Surveys model.

For the question on the main reason a caregiver could not obtain dental care for their child, only responses from those who also indicated "there was a time in the past 12 months when your child needed dental care but could not get it at that time" were included in the analysis. With one exception, when respondents checked more than one reason on the questionnaire, their response was recorded as "multiple reasons" rather than the specific reasons indicated for not receiving care. The exception to this rule was when a response consisted of the combination of "could not afford care" and "no insurance." Such responses were

Table 1. Access-related Questions on Survey Consent Form

1. During the past 6 months, did your child have a toothache more than once?
2. Has your child lost a tooth due to accident or injury?
3. About how long has it been since your child last visited a dentist? (Include all types of dentists, such as orthodontists, oral surgeons, and all other dental specialists, as well as dental hygienists.) Choose one:
a. 6 months or less;
b. More than 6 months, but not more than 1 year ago;
c. More than 1 year ago, but not more than 3 years ago;
d. More than 3 years ago;
e. Never has been;
f. Don't know/don't remember.
4. During the past 12 months was there a time when your child needed dental care but could not get it at that time?
5. (Only answer this question if you checked "yes" on question 4) What was the main reason you could not get dental care for your child? Choose one:
a. Could not afford it;
b. Not serious enough;
c. Don't like/trust/believe in dentists;
d. No way to get there;
e. Health of another family member;
f. No insurance;
g. Wait too long in clinic/office;
h. No dentist available;
i. Hours not convenient;
j. Dentist did not accept Medicaid/insurance;
k. Difficulty in getting appointment;
l. Didn't know where to go;
m. Speak a different language;
n. Other reason;
o. Don't know/don't remember.
6. How do you pay for the dentist? (Please check the one way that most of your child's dental care is paid for)
a. Family or self-pay;
b. Medicaid, medical card, Medicaid HMO, Healthy Start, CHIP;
c. Other dental insurance;
d. Don't know/don't remember.

recorded as the former, and the 2 reasons were combined in the analysis.

If multiple payment sources were indicated on the questionnaire, the following hierarchy was used in assigning the record to a single category: (1) Medicaid; (2) other dental insurance; (3) family/self-pay.

Basic Screening Surveys defines ECC as children age 3 or under with at least 1 maxillary anterior tooth either decayed, filled, or missing due to dental caries. In assessing ECC for children age 3 and under, missing maxillary anterior teeth were considered to be lost due to caries if the parent answered "no" to a questionnaire item on loss of teeth due to accident or injury.

The race, sex, and ethnicity of each child was assessed and recorded per screener observation, rather than identified by parents. Screeners received no special training or guidance in making these determinations. Because of very small numbers that yielded unstable estimates, 2-year-olds and Asians were dropped from the analysis. No children screened were identified as Native American or Hawaiian/Pacific Islander.

Data were weighted and analyzed using Stata software (release 7.0, StataCorp, College Station, Tex),[15] specialized analysis software designed to manage the requirements of complex sample survey data. In establishing statistical weights for the analysis, it was assumed that:

Table 2. Demographic Distribution of Sample of Ohio Head Start Children (N=2,615*)

Age (in years)		Race	
2	1%	White	61%
3	24%	Black	39%
4	49%	Asian	1%
5	26%	Native American	0%
		Hawaiian/Pacific Islander	0%
Sex		**Ethnicity**	
Male	51%	Hispanic	5%
Female	49%		

*Asians and 2-year-olds were eliminated in the analysis due to low numbers, resulting in N=2,555).

1. Facilities sampled in each stratum were selected by probability-proportional-to-size.
2. Facilities that refused to participate were no different from those that did participate.
3. Oral health of eligible students who were not screened in each facility was no different from those who were screened.
4. Total enrollment in each facility, as reported to the Ohio Department of Health, was correct.
5. Eligible children were ages 2 through 5.
6. All eligible children in each selected facility were to be sampled.

The svytab command was used to produce 2-way tabulations with tests of independence for complex survey data. Differences are reported as significant if $P<.05$. All results reported are population estimates generated by Stata using weighted survey data.

Data were analyzed by race and race/ethnicity. In the latter analysis, categories of non-Hispanic white, non-Hispanic Black, and Hispanic were compared. Because of the potential for ethnicity misclassification by screeners, only the dichotomous analysis on race (where Hispanics were included in either white or black categories) is reported here. An additional factor in this decision was that the introduction of ethnicity into the analysis did not result in any changes in statistical significance at the $P<.05$ level.

Results

Of the 5,359 eligible children enrolled at the 50 Head Start centers, 2,615 participated, yielding an overall participation rate of 49%. The participation rate, however, was significantly affected by one large Head Start center with low participation (15%). The median participation rate for all 50 sites, which limits the effect of an outlier, was 59%. In addition, 602 children (11% of all those eligible) returned questionnaire/consent forms but were not screened, either because a parent refused permission or the child was absent or uncooperative on the screening day. Because of the outlier Head Start center with low participation, the median rate of form return per site was notably greater than the mean, 73% vs 61%. After 2-year-olds and Asian children were removed due to small numbers, 2,555 records remained for analysis.

Table 2 shows the demographic profile of the Head Start children screened, including the groups that were excluded from the analysis due to low numbers. Table 3 shows that 38% of the 3- to 5-year-old Head Start children screened had experienced dental caries (1 or more decayed or filled teeth) and that 28% had at least 1 untreated decayed tooth. Of the children with caries experience, 73% had decayed teeth (untreated). Twelve percent of 3-year-old children had evidence of ECC. Only 9% of parents reported that their child had a toothache more than once during the previous 6 months. None of the differences among children, based on race or method of payment for dental care (proxy for income) reached significance. Caries experience, untreated caries, and toothache within the past 6 months increased with age ($P<.05$).

Table 4 shows that:

1. Eleven percent of Head Start parents reported that there was a time during the previous 12 months when they could not get wanted dental care for their children.
2. There was a significant association with payment method for care (uninsured were most likely and insured were least likely to not receive wanted care) and with race (whites were more likely to not get wanted care than blacks).

When asked why they could not get care, 34% of those parents indicated that cost of care/lack of insurance was the main reason, and 20% cited factors relating to the dental office, for example: (1) inconvenient hours (4%); (2) long wait (2%); (3) no dentist available (3%); and (4) difficulty getting an appointment (12%).

The most common family-related factors were: (1) lack of transportation (2%); and (2) "didn't know where to go" (3%). These numbers are likely to be underestimates because, although respondents were instructed to indicate a single "main" reason, 30% offered a variety of combinations of reasons that were not detailed in the analysis—except as described in the survey methods. Of the Medicaid consumers who could not get wanted care, 8% indicated the main reason to be that they could not find a dentist who accepted Medicaid. Approximately three fourths (74%) of the children screened were Medicaid recipients. Although 85% of Head Start children had visited a dentist within the previous 12-month period, 10% had never visited a dentist, the likelihood of which decreased with increasing age.

Discussion

Increased interest in the oral health of young children was evidenced by the inclusion of a 2- to 4-year-old indicator group in the Healthy People 2010 objectives.[12] There were no such oral health status indicators in previous Healthy

Table 3. Percent (95% Confidence Intervals) of Children According to Oral Health Status Indicators and Payment Method for Dental Care, Race, and Age (N=2,555)

	All Head Start	Payment method				Race			Age			
		Medicaid	Insured	Self	*P*	White	Black	*P*	3 years old	4 years old	5 years old	*P*
Caries experience	38% (36, 41)	38% (29, 47)	33% (27, 40)	38% (29, 47)	NS*	40% (37, 44)	35% (31, 40)	NS	26% (22, 30)	37% (34, 40)	51% (46, 57)	<.01
Decayed teeth	28% (25, 31)	29% (26, 33)	24% (18, 31)	28% (20, 38)	NS	29% (25, 32)	27% (23, 32)	NS	20% (16, 24)	28% (25, 31)	36% (31, 42)	<.01
% of children with caries experience who have decayed teeth	73% (69, 77)	73% (68, 78)	72% (59, 82)	74% (59, 84)	NS	71% (64, 77)	77% (70, 83)	NS	75% (63, 83)	74% (69, 79)	70% (64, 76)	NS
ECC (3 years old only)	12% (10, 16)	14% (10, 18)	12% (5, 25)	7% (3, 18)	NS	14% (11, 19)	10% (7, 13)	NS	—	—	—	—
Toothache >once in 6 mos	9% (8, 11)	9% (8, 11)	7% (5, 11)	7% (4, 12)	NS	9% (7, 11)	10% (7, 13)	NS	6% (4, 9)	9% (7, 12)	1 (9, 15)	2% .01

*NS=not significant.

People objectives. At the national level, preschool oral health data came from NHANES.[13,14] States, however, have been challenged to assess their preschool population's oral health because young children are not a captive audience, typically spending their days at home, child care centers, Head Start or other preschool programs, or with babysitters. When oral health status and access to dental care data are collected for preschool children, Head Start enrollees often serve as a proxy for their entire age cohort.

Although Head Start children, who disproportionately come from low-income families, are not representative of all preschool children, they often are of interest to public policymakers because they are a particularly vulnerable group. In a survey of children at Head Start, Women Infants and Children (WIC), child care centers, and health fairs in Arizona, Tang and colleagues found:

1. Children in child care centers had approximately half the caries prevalence rates of those in the other settings.
2. Caregivers of children in child care centers were more educated, affluent, and less likely to be minorities.[6]

The Ohio survey appears to be the first published study using the Basic Screening Surveys model,[10] which was designed to foster standardization and simplicity to promote data collection in public health programs for the purposes of advocacy, education, policy development, and program planning. This was accomplished at the expense of the level of detail required for research (ie, tooth- and surface-specific data). Essentially all other reports in the literature sought to describe caries patterns using tooth- and surface-specific data.[5-10,13,14,16]

The availability of Head Start Program Information Reports (PIR) presents an opportunity for comparison with the data from the current Ohio survey. The PIR is a mandatory self-report of data completed annually by local Head Start and Early Head Start programs across the country. The PIR provides data on key program indicators, including oral health services, that relate to mandatory Head Start performance standards.

Like many data sources, PIR data must be considered along with their limitations. Since PIR data are self-reported by a large number of different entities, reliability, validity, and uniformity of the data may vary. According to Ohio PIR data for 2002-2003:

1. 62% of Ohio Head Start children were covered by Medicaid (which, in Ohio, includes those eligible through the State Children's Health Insurance Program, known as SCHIP) by the end of the school year;
2. 71% had a professional dental exam within 12 months;
3. 21% of children who had a dental exam required follow-up care, the implication being that they had untreated dental caries.[17]

All these numbers are approximately 10 percentage points lower than the comparable estimates reported.

Table 4. Percent (95% Confidence Intervals) of Children According to Dental Care Access Indicators and Payment Method for Dental Care, Race, and Age (N=2,555)

	All	Head Start	Payment method				Race			Age			
			Medicaid	Insured	Self	*P*	White	Black	*P*	3 years old	4 years old	5 years old	*P*
Couldn't get wanted care in past 12 mos	11% (9, 12)		10% (8, 13)	6% (4, 9)	17% (11, 24)	<.01	12% (10, 14)	9% (7, 11)	.04	8% (5, 11)	12% (10, 15)	10% (8, 14)	NS
Last dental visit						NS*			NS				<.01
<12 mos	85% (82, 88)		86% (81, 89)	88% (81, 92)	81% (72, 87)		86% (81, 89)	85% (80, 88)		83% (78, 87)	84% (80, 88)	88% (85, 91)	
>12mos <never	5% (4, 7)		5% (4, 7)	6% (3, 10)	7% (4, 13)		5% (4, 7)	6% (4, 8)		2% (1, 4)	7% (5, 9)	7% (5, 9)	
Never	10% (7, 13)		10% (7, 13)	7% (4, 12)	12% (6, 21)		10% (7, 14)	10% (7, 13)		15% (11, 19)	9% (6, 13)	5% (3, 8)	
Payment method									NS				NS
Medicaid		74% (70, 77)					73% (68, 78)	74% (70, 78)		76% (70, 81)	74% (70, 77)	72% (67, 76)	
Insured		17% (15, 20)					17% (14, 21)	18% (15, 21)		16% (12, 22)	17% (15, 20)	18% (15, 22)	
Uninsured/ self-pay		9% (8, 11)					10% (8, 12)	8% (6, 11)		8% (6, 10)	9% (7, 11)	10% (8, 13)	

*NS=not significant.

The Ohio survey of the oral health status of Head Start children, reported here, found that the caries prevalence rates (38%) at the child level compared favorably with a 1986 Ohio survey that found 57%.[16] In addition, the findings were consistent with some recent survey reports (34% in northern Manhattan, 38% in Hartford, Conn) but lower than some others (55% in Maryland and 42% to 55% in Arizona). Consistent with other surveys, the large majority of Ohio Head Start children (three fourths) who have had dental caries still have untreated disease. Although the questions were not worded identically, the Ohio findings were consistent with recent Maryland findings that approximately 10% of Head Start children complain of dental pain.[5] Lack of follow-up care may relate to dentist factors or family issues. General dentists may be willing to provide examinations for young children but not be comfortable providing treatment for this age group. Families may not follow through with needed care for their children because of barriers such as cost, transportation, or having a low priority for dental care.

Ohio Head Start programs may be expected to have slightly lower disease levels than other states because there are likely to be more over-income children. Ohio dedicates significant state funding for Head Start, which results in more resources to fund children between 100% of the FPL and Ohio ceiling of 185%. Nationally, the prevalence rate of 2- to 5-year-olds (not limited to Head Start) through 100% FPL with decayed primary teeth is greater than that of children from 101% to 200% FPL (30% vs 24%).[14]

The lack of difference between the dental caries prevalence rate of Medicaid-recipient children compared to those with insurance and uninsured/self-pay suggests that the:

1. measurement at the child level, rather than the tooth or tooth-surface level, masked differences by not accounting for the extent of disease; or
2. effect of low-income status overwhelms insurance status in relation to dental caries prevalence.

The limitations of open-mouth oral health surveys (also known as visual-tactile surveys) as a system for tracking oral diseases and conditions that relate to young children include:

1. consumption of large amounts of resources;
2. potential for nonresponse bias;
3. questionable necessity of collecting tooth and surface specific data rather than individual-specific data;
4. assessing past caries experience (filled and missing teeth) may be questionable and invalid;
5. delay in reporting of data.[18]

The current survey will be used to create a system to address most of these concerns. As the Ohio Department of Health has done with data from open-mouth surveys of schoolchildren since 1998-1999,[19] a subset of 15 Sentinel Head Start centers has been selected from among the 50 surveyed. The aggregate findings from these centers were highly representative of the whole sample. As a matter of practicality, this smaller number of sites can be

visited annually and data reported within a few months of collection to identify trends over time.

As with similar surveys, the findings are likely to underestimate disease prevalence. Caries is likely to be underestimated because radiographs were not used. The impact of this limitation on the survey's findings is limited by reporting caries prevalence at the individual level rather than at the tooth or tooth-surface level. In addition, reporting at the individual level provides no insight into disease intensity.

In accordance with recent Ohio Department of Health data standards, future oral health surveys will ascertain race and ethnicity via the questionnaire rather than screener observation.

Conclusions

1. Estimates of the prevalence rates of dental caries experience and untreated caries among Ohio Head Start children are consistent with recent reports from other states and are likely to be underestimates.
2. Although approximately 85% of parents reported that their child had at least 1 dental visit in the past 12 months, almost 40% of Ohio Head Start children have experienced dental caries and nearly three fourths of those children still have untreated disease.
3. The prevalence rates of children with caries experience and untreated caries increased with age.
4. In this population of young children from low-income families, disparities according to race and source of payment for dental care were not found.

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