

2014 Summary of the Oral Health Status of
Children in Indiana Aged 8-9 Years

Oral Health Program
Indiana State Department of Health
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Introduction

The United States Department of Health and Human Services (HHS) has established objectives for improving the oral health of the people in the United States and has included these objectives in Healthy People 2020 (HP 2020).¹ Oral health objectives include reducing the prevalence of dental decay among children. One strategy for reducing dental decay is through preventive interventions, such as applying dental sealants to permanent first molars. However, being able to determine whether any specific preventive activity is effective for any group of children, much less for a whole population of children, is challenging. Much of the work of the Oral Health Program (OHP) at the Indiana State Department of Health over the past few years has revolved around collecting data to determine the baseline oral health status of children aged 8-9 years in Indiana, which included measurements of the presence of dental restorations and untreated decay, as well as measurement of the presence of dental sealants on permanent molars. The last time statewide data were available on the oral health status of children was over 20 years ago.² This article will present the results from a recent statewide survey and several surveillance projects on the oral health of the children of Indiana.

Methods

In 2013, the OHP conducted a population-based survey (IN Survey) on the oral health status of 3rd grade children in public elementary schools in Indiana to estimate the percentage of children that had untreated and treated dental decay, as well as the percentage of children that had a dental sealant on one or more permanent first molar. This survey was conducted with the help of the Association of State and Territorial Dental Directors (ASTDD) and the Indiana Department of Education. Becky Kennedy Mumm Consulting coordinated the recruitment of schools that participated in this survey. The Marion County Public Health Department and Indiana University South Bend coordinated the dental hygienists that conducted the field screenings of the children that participated in the survey.

The OHP also sought other sources of data on the oral health status of children in Indiana. In 2013-2014, the OHP program obtained surveillance data on the oral health status of children from three pilot projects, with these data providing information on the oral health of sub-populations of children. The data from these projects came through the Indiana Family and Social Services Administration (FSSA) for children enrolled in Medicaid, through NCDR, LLC, for children in local communities served by Kool Smiles, and through the Indiana Society of Pediatric Dentistry (ISPD) for children in local communities served by selected pediatric dentists.

¹ Healthy People 2020 Topics and Objectives, Oral Health, Objectives. Washington, D.C.: U.S. Department of Health and Human Services. 2014. Available from: <http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=32>

² Indiana Oral Health Survey, 1992-1993. Indianapolis, IN: Indiana State Department of Health. 1994. Available from: http://www.in.gov/isdh/files/Indiana_Oral_Health_Survey_1992-1993.pdf

The ages of children from which data were collected for these surveillance projects included children aged 8-9 years, which closely matches the age range of most 3rd graders. Aggregate data on the oral health status of children enrolled in Medicaid throughout Indiana were provided by the FSSA. Aggregate data were also provided on the oral health status of children from selected local communities served by Kool Smiles, with these data being restricted to patients of record of Kool Smiles. Three members of the ISPD were recruited to provide surveillance data on the oral health status of children from local communities in and around Indianapolis, with these data being restricted to patients of record in the practices of these three dentists. The data from these pediatric dental practices (ISPD) included data on deciduous teeth and permanent teeth, and specific data on permanent 1st molars, while the data from Medicaid and Kool Smiles (FSSA and NCDR, LLC, respectively) included only data on permanent 1st molars.

The analysis of the data from the 2013 IN Survey was conducted by a consultant epidemiologist from the ASTDD and the OHP. The analysis of the ISPD data was conducted by the OHP and an epidemiologist from the Division of Maternal and Child Health at the ISDH. The percentages presented in this paper for the children enrolled in Medicaid or for the patients of record of Kool Smiles were provided by FSSA and NCDR, LLC, respectively.

Results

The major findings from the IN Survey have been presented in a data brief prepared by the ASTDD and the OHP.³ In that data brief, the findings from the IN Survey were compared to national data from the 1999-2004 National Health and Nutrition Examination Survey.⁴ However, in this paper the findings from the IN Survey are compared to findings from the 2005-2010 National Health and Nutrition Examination Survey (NHANES). About 17% of 3rd graders in the IN Survey had untreated decay in their deciduous and permanent teeth, while the national average was 23% (Table I). About 43% of 3rd graders had treated decay in their deciduous and permanent teeth, while the national average was 40% (Table I). About 51% of 3rd graders had decay experience (treated and untreated decay) in their deciduous and permanent teeth, which was about the same as the national average of 52% (Table I).

Data from the dental records of children in three pediatric dental practices located in communities in or around Indianapolis were also obtained during a pilot surveillance project, conducted through the Indiana Society of Pediatric Dentistry (ISPD), and indicate that 11% of children in these practices had untreated decay in their *deciduous and permanent teeth*, while 23% and 17% of children had untreated decay in NHANES and the IN Survey, respectively (Table I). Treated decay in deciduous and permanent teeth was not specifically measured in

³ The Oral Health of Indiana's Third Grade Children Compared to the General U.S. Third Grade Population. Indianapolis, IN: Indiana State Department of Health. 2014. Available from: <http://www.in.gov/isdh/files/ISDH-DB-2013.pdf>

⁴ Centers for Disease Control and Prevention (CDC). National Center for Health Statistics (NCHS). National Health and Nutrition Examination Survey Data. Hyattsville, MD: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 1999-2010, http://www.cdc.gov/nchs/nhanes/search/nhanes_continuous.aspx

this surveillance project. However, the percentage of children with restorations, which is the major component of treated decay, was 65%. (Note: The other component of treated decay is teeth extracted due to decay). Given that 65% of children in these pediatric dental practices had restorations in their deciduous and permanent teeth, the percentage of these children with treated decay undoubtedly exceeded the corresponding percentages of 40% and 43% for treated decay in NHANES and the IN Survey, respectively (Table I). No specific data on decay experience in the deciduous and permanent teeth of the children from the participating pediatric dental practices was obtained for this surveillance project. (Although, looking at the percentages for untreated decay and restorations among patients of records of the ISPD pediatric dental practices would lead one to conclude that decay experience in the deciduous and permanent teeth of the ISPD children was higher than in NHANES or the IN Survey.

Data were also obtained during the three surveillance projects on the oral health status of the *permanent 1st molars* of children aged 8-9 years. These data came from patients of record of the three participating pediatric dental practices affiliated with the ISPD, as well as from patients of record of selected practices affiliated with Kool Smiles in Indiana, and from children enrolled in Indiana Medicaid. About 4% of the children in the pediatric dental practices had untreated dental decay which was about the same as the 6% observed in the IN Survey (Table II). All three surveillance projects estimated the percentage of children that had a restoration in at least one permanent molar, and these values ranged from 24% to 28% (Table II). Again, restorations are the major component of treated decay and these percentages would have been incorporated into the respective percentages for treated decay, if this parameter had been measured in the surveillance projects. However, these restoration data indicate that the percentage of children with treated decay from each of these surveillance projects, had it been measured, would have been higher than the 12% of children with treated decay observed in the IN Survey (Table II). Finally, in these surveillance projects, the percentage of children with a dental sealant on at least one permanent 1st molar ranged from 61% to 75%, which were all higher than the 32% and 34% in NHANES and the IN Survey, respectively (Table II).

Discussion

The United States Department of Health and Human Services (HHS) has established national objectives in HP 2020 for improving the health of the population of the United States, including the oral health of the population. Various strategies and activities directed towards the prevention of disease are available. Strategies and activities for the prevention of dental decay include, community water fluoridation, the use of fluoride varnish on the primary dentition, and the placement of dental sealants on permanent molars. The Oral Health Program (OHP) at the Indiana State Department of Health encourages all of these activities. However, in order to ascertain the effectiveness of any particular activity, or combination of activities, one needs to have baseline data and follow-up data on the prevalence of a disease in a population. Furthermore, these data need to be valid, comparable, and be able to be obtained with reasonable effort and cost.

The data from the 2013 IN Survey were obtained using validated measurements recommended by the ASTDD.⁵ The results of the 2013 IN Survey are comparable to results obtained from recent NHANES data, which indicate that, in general, the oral health status of children aged 8-9 years in Indiana is about the same as the national average. The ASTDD measurements for determining the oral health status of a population used in the 2013 IN Survey were different from measurements used in previous surveys on the oral health status of children conducted in Indiana. This prevented a direct comparison of the 2013 IN Survey results to the results of previous surveys. However, the results of the 2013 IN Survey can provide baseline data for the comparison to data from any future surveys conducted using similar measurements and conducted in a similar manner.

A few lessons were learned from the 2013 IN Survey. When one selects a random sample of public schools with 3rd graders in Indiana, only a certain portion of these schools are going to participate. In this particular survey, replacement schools were readily found, but it leaves one with the question of how similar are these replacement schools to the schools they replaced. Within the participating schools, only a certain portion of the 3rd graders choose to participate. This may in part be due to the fact that in Indiana one needs to have written permission from a parent/guardian prior to screening a student for his/her oral health status in a school setting. Regardless, the fact is that the overall response rate for this survey was less than optimal. Other lessons learned include that doing such a survey is time-consuming, complex, and costly. These contribute to the fact that it is difficult to conduct surveys as frequently as needed to actually detect changes in oral health status of a population over time.

Thus, the OHP decided to conduct simpler and less costly surveillance pilot projects in 2013 to help determine if surveillance data might supply reasonably useful information in a more cost-effective manner. The OHP approached the previously mentioned organizations to obtain surveillance data that might supply information about the overall oral health of children in local communities and statewide (Medicaid). However, one needs to keep in mind that the data from the 2013 IN Survey and the data from the three surveillance projects are not directly comparable. The survey data was obtained in a manner that provided estimates of the oral health status of a representative sample of children 8-9 years in the state. This means that in this *survey* there were both *children that had a dentist of record and children that did not have a dentist of record*. While, in the *surveillance projects all participating children had a dentist of record*, whether through Medicaid, Kool Smiles, or pediatric dentists affiliated with the ISPD. The oral health status of the children in the survey would have been influenced by those children that did not have a dentist of record, which presumably would have resulted in the overall health status of the children in the survey being poorer than children in the surveillance projects, which seems to be supported by the results.

⁵ ASTDD Basic Screening Surveys. Reno, NV: Association of State and Territorial Dental Directors. 2014. Available from: <http://www.astdd.org/basic-screening-survey-tool/>

The question of whether surveillance data can be used in lieu of survey data still needs to be formally answered, but the data from the 2013 IN Survey and the three 2013 surveillance projects provides interesting evidence that surveillance data may be an alternative to survey data in the future.

Summary

The overall oral health of children aged 8-9 years in Indiana is about the same as the oral health of similarly aged children in the nation, with a somewhat smaller percentage of children in Indiana having untreated decay. Not surprisingly, data for the surveillance projects indicate that children who regularly obtain oral health care have better overall oral health than children who do not obtain regular oral health care. How to get more children in Indiana to regularly obtain oral health care seems to be the overriding question.

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Table I

Deciduous and Permanent Teeth Combined

	NHANES	IN Survey	ISPD
	Deciduous/Permanent (n=598)	Deciduous/Permanent (n = 1,482)	Deciduous/Permanent (n = 550)
Untreated Decay	23%	17%	11%
Treated Decay	40%	43%	-
Restoration	-	-	65%
Extraction	-	-	-
Decay Experience	52%	51%	-

Table II

Permanent First Molars

	NHANES	IN Survey	Medicaid	Kool Smiles	ISPD
	Permanent 1st (n=598)	Permanent 1st (n = 1,479*)	Permanent 1st (n = 71,161)	Permanent 1st (n = 15,676)	Permanent 1st (n = 550)
Untreated Decay	-	6%	-	-	4%
Treated Decay	-	12%	-	-	-
Restoration	-	-	28%	27%	24%
Extraction	-	-	<< 0.5% **	<< 0.5% **	-
Decay Experience	-	16%	-	-	-
Dental Sealant	32%	34%	61%	61%	75%

* Number of children with at least one permanent first molar

** A very slight number of children in the Medicaid and Kool Smiles groups had extractions due to decay