

The Oral Health of 13-15 Year Old American Indian and Alaska Native (AI/AN) Dental Clinic Patients – A Follow-Up Report to the 2013 Survey

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Key Findings:

1. The oral health of AI/AN adolescents has improved substantially over the past two decades.
2. Despite these improvements, oral health disparities still exist in AI/AN adolescents when compared to the general United States (U.S.) population, but the gap is narrowing.
3. AI/AN adolescents access dental services within the IHS system at a rate much lower than either adolescents in the general U.S. population, including those with Medicaid.

What's New in this Report?

- This is the largest-ever sample of 13-15 year-old AI/AN adolescents. Over 5,200 were screened compared to 2,033 in 2013 and 1,264 during the 1999 survey.
- Improvements in this age group align with reductions in oral disease previously reported in data briefs of 1-5 and 6-9 year-old AI/AN children, and AI/AN adults.
- For the first time, this data brief evaluates changes in disparities between AI/AN adolescents and the general U.S. population, showing a narrowing of the gap in the prevalence of both decay experience and untreated decay.
- This data brief also evaluates the relationship between access to dental services in AI/AN adolescents compared to a Medicaid population and the general U.S. population, data that may help explain the continuing disparities in oral disease among AI/AN adolescents.

Introduction

By the time children reach 13 years of age, most will have 28 of their 32 permanent teeth. The last four teeth, often referred to as “wisdom teeth,” will emerge into the mouth at about 18-20 years of age. Maintaining a healthy mouth is vitally important for adolescents because their permanent teeth must last a lifetime. Oral diseases, such as dental caries (tooth decay), periodontal (gum) disease, and tooth loss, are major health problems for the American Indian and Alaska Native (AI/AN) population. Adolescents have unique issues that increase their risk of these diseases, including increased sugar intake, nicotine initiation, oral

piercings, orthodontic problems, and decreased use of the dental care delivery system.^{1,2}

Dental caries, a multi-factorial disease process, is initiated by bacteria that metabolize sugars to form acids. These acids demineralize the tooth surface and eventually form a cavity. Tooth decay is preventable by a combination of community, professional, and individual measures, including water fluoridation, dental sealants, professionally applied topical fluorides, use of fluoride toothpaste at home, and diet. Periodontal disease is also a multi-factorial disease process initiated by bacteria. If left untreated,



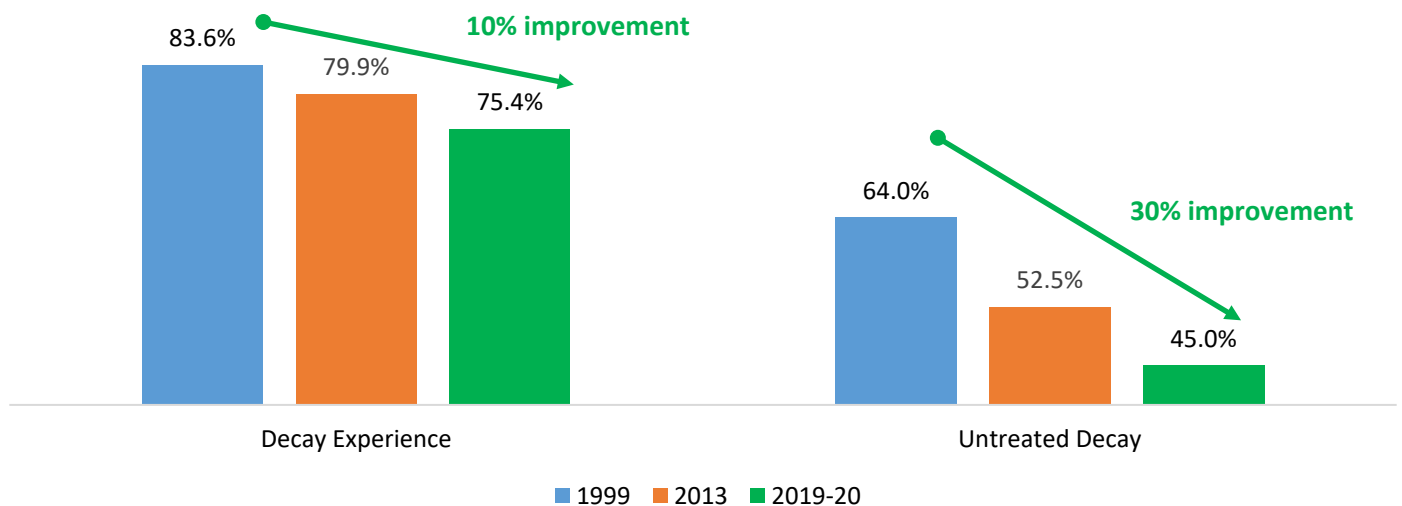
periodontal disease can result in the loss of bone that holds the teeth in the jaw. Over time, teeth can become loose, painful, and may be lost. Certain medical and lifestyle conditions increase an individual’s likelihood of having periodontal disease, including smoking and diabetes. The best ways to prevent periodontal disease are to avoid smoking, maintain control of diabetes, have regular dental cleanings, and practice good oral hygiene.

To assess trends in the oral health of 13-15 year old AI/AN adolescents, the Indian Health Service (IHS) coordinated three nationwide oral health surveys of AI/AN adolescent

dental clinic patients in 1999, 2013-2014, and 2019-2020.^{3, 4} For the 2019-2020 survey, the IHS collected data from 5,223 adolescents served by IHS, tribal, and urban (I/T/U) dental clinics. This data brief focuses on the oral health of adolescent AI/AN dental patients and their use of the dental care delivery system. It presents information on the prevalence of dental caries, protective dental sealants, and annual dental visits, assesses trends over time, and makes comparisons to the general U.S. population. The results of this 2019-2020 oral health survey are presented as three key findings.

Key Finding 1: The oral health of AI/AN adolescents has improved substantially over the past two decades.

Figure 1: Percentage of AI/AN Adolescent Dental Clinic Patients with Decay Experience & Untreated Dental Decay by Survey Year, 1999, 2013, and 2019-2020



With this survey, the IHS takes its third look at the oral health of AI/AN dental clinic patients aged 13-15 years. Previous surveys were completed in 1999 (n=1,264) and 2013-2014 (n=2,033).^{3, 4} In 1999, all I/T/U dental clinics were asked to participate, and data were collected by volunteer clinics. In both 2013-2014 and 2019-2020, a probability proportional to size sampling scheme stratified by geographic area was used to select a representative sample of I/T/U clinics. Although the 1999 survey used a non-probability convenience sampling technique, the consistent trends over two decades are encouraging with an ongoing decrease in the percentage of adolescents with decay experience and untreated decay.

These results mirror trends found in similar surveys of other AI/AN age groups (Figure 2, next page). Recent IHS oral health surveys found significant decreases in the prevalence of untreated decay among both children aged 1-5 years and 6-9 years, and adult dental clinic patients aged 65+ years.^{5, 6} Although cross-sectional surveys cannot provide information explaining why oral health is improving, the declines noted may be due to a combination of expanded preventive programs, increased access to dental care, and, for some communities, improvements in socioeconomic status.



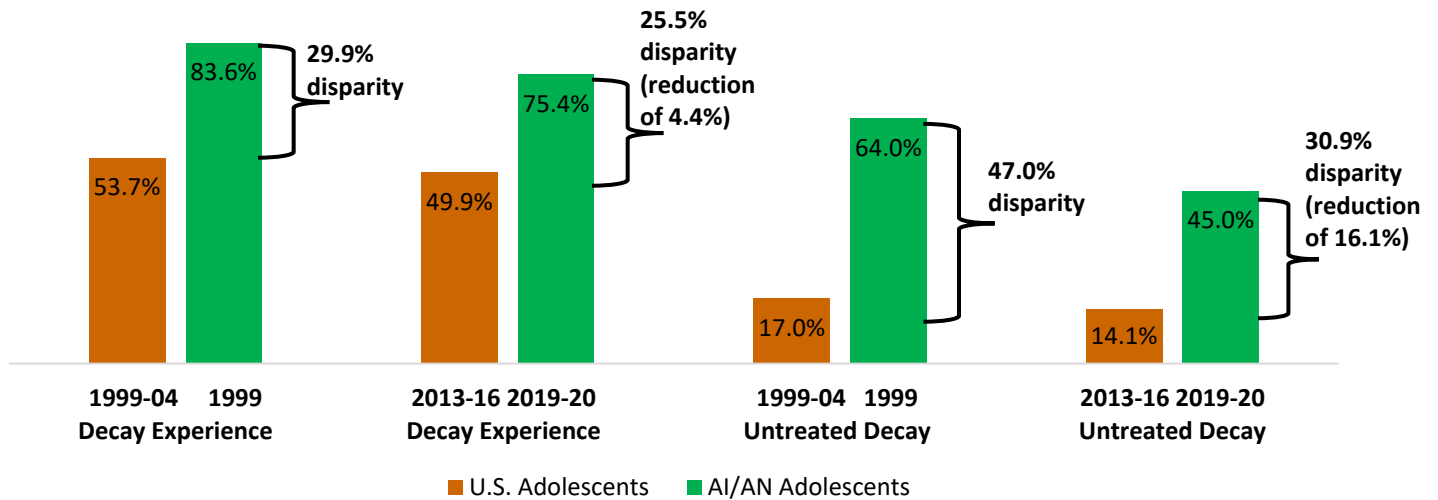
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Figure 2: Reductions in Prevalence of Dental Disease across AI/AN Age Groups
2015-2020 compared to the 1999 IHS Oral Health Survey

Age Group (Survey Year)	Decay Experience Prevalence Reduction	Untreated Decay Prevalence Reduction	Severe Periodontal Disease Prevalence Reduction
35-44 year-olds (2015)	Not evaluated	5%	10%
55+ year-olds (2015)	Not evaluated	12%	8%
6-9 year-olds (2016-2017)	5%	26%	Not evaluated
1-5 year-olds (2018-2019)	5%	14%	Not evaluated

Key Finding 2: Despite these improvements, oral health disparities still exist in AI/AN adolescents when compared to the general U.S. population, but the gap is narrowing.

Figure 3: Percentage of 13-15 Year Old AI/AN Adolescent Dental Clinic Patients with Decay Experience & Untreated Dental Decay Compared to the General U.S. Population, 1999 versus Current



Regardless of age, the AI/AN population has a higher prevalence of decay experience and untreated decay than the general U.S. population. When a health outcome, such as tooth decay, is seen to a greater or lesser extent between populations, there is disparity. Figure 3 displays the prevalence of oral disease among adolescents aged 13-15 years at two different points in time. For the general U.S. population, the points in time are 1999-2004 and 2013-2016, while the points in time for AI/AN adolescents are 1999 and 2019-2020. Although the time points are not identical, they are comparable. At both points in time, AI/AN adolescents have more disease, but the good news

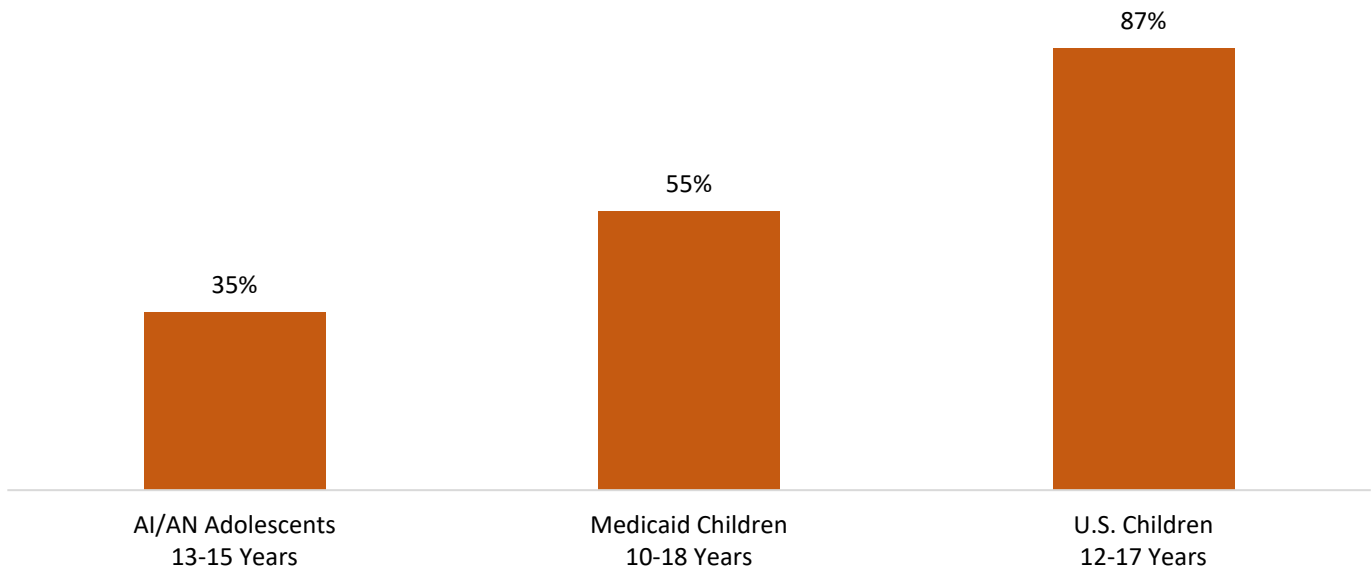
is that the difference is decreasing. In other words, while substantial disparities still exist, the disparity is narrowing.

One of the goals of “Healthy People 2020,” the federal government’s prevention agenda for building a healthier nation, is to eliminate, not just reduce, health disparities. If we are to eliminate oral health disparities, I/T/U programs must expand evidence-based oral disease prevention programs, increase use of the dental care delivery system, work with tribal communities to improve oral health literacy, and mitigate to the extent possible of social determinants that negatively impact the health of the AI/AN population, including poverty, geographic isolation, and historical trauma.



Key Finding 3: AI/AN adolescents access dental services within the IHS system at a rate much lower than adolescents in the general U.S. population, including those with Medicaid.

Figure 4: Percentage of Children with a Dental Visit in the Past Year by Population Group



To keep good oral health throughout life, children, adolescents, and adults need to have regular dental visits at a frequency based on individual need. Because adolescents have unique issues that increase their risk of oral disease, such as increased sugar intake and nicotine initiation compared to both children and adults, they should have a dental visit at least once per year. Access to dental care is one of the Government Performance and Results Act (GPRA) measures monitored by the IHS based on information from the Integrated Data Collection System Data Mart. In federal fiscal year (FY) 2019, only 35 percent of AI/AN adolescents served by I/T/U programs had a dental visit, compared to 55 percent of children aged 10-18 years enrolled in Medicaid in the U.S. in FY 2018, all races (Figure 4)⁷

Annual dental visit for the overall U.S. child population is monitored through the National Survey of Children's Health (NSCH), a mail and web-based survey conducted by the U.S.

Census Bureau on behalf of the Health Resources and Services Administration's Maternal and Child Health Bureau. In 2017-2018, parents reported that 87 percent of their children aged 12-17 years (a somewhat different age range from that studied in this report) had a dental visit within the past year.² Because NSCH data is based on parent self-report while GPRA and Medicaid data are based on actual use, the percentages may not be directly comparable.

Over the past decade, I/T/U programs have successfully increased the percentage of younger children with a dental visit by implementing oral health programs in preschools and elementary schools. To increase dental visits among AI/AN adolescents, I/T/U dental clinics need to expand school-based programs into middle and high schools providing a range of services, including screening, referral, case management, and preventive services.



Data Source and Methods

In 2010, the IHS implemented an oral health surveillance system that to date has collected oral health status data for preschool children, elementary school children, adolescents, and adults. This data brief is based on data from the 2019-2020 IHS oral health survey of AI/AN dental clinic patients aged 13-15 years. The sampling frame for the survey consisted of all IHS service units. The sampling frame was stratified by IHS Area, and service units were sorted within each Area based on operational status (Tribal or IHS) and/or state. A systematic probability proportional to size sampling scheme was used to select 57 service units. The selected service units were asked to screen all adolescents aged 13-15 years presenting at a fixed or school-based dental clinic between July 1, 2019, and February 28, 2020. For a variety of reasons, not all service units participated. Dental clinic patients were screened at 49 of the originally selected service units, plus an additional 8 service units volunteered to participate, resulting in a total of 57 participating service units.

The following information was collected for each adolescent: age, sex, tooth-specific caries, sealant status, plus treatment urgency. We used the *Basic Screening Survey* clinical indicator definitions and data collection protocols.⁸ Race was recorded as AI/AN, not AI/AN, or unknown. Only adolescents classified as AI/AN were included in the analyses.

Examiners included dentists, dental hygienists, and dental therapists employed by I/T/U programs. Examiners were required to view an examiner training webinar; no formal calibration was undertaken, and examiner reliability was not assessed. Examiners collected data using paper forms that were mailed or e-mailed to a central location. All statistical analyses were performed with SAS software (Version 9.4; SAS Institute Inc., Cary, NC). Sample weights were used to produce population estimates based on Area- and age-specific selection probabilities.

Limitations

This was a survey of AI/AN adolescents presenting at I/T/U dental clinics, including fixed, mobile, and school-based clinics, and as such, may not be representative of the general population of American Indians and Alaska Natives. Because some American Indians and Alaska Natives seek dental care only when there is a problem, this survey may overestimate the prevalence of dental disease.

Definitions and Acronyms

AI/AN: American Indian/Alaska Native

Decay experience: Refers to having untreated decay, or a dental filling, crown, or other type of restorative dental material. Also includes teeth that were extracted because of tooth decay.

Dental sealants: Plastic-like coatings applied to the chewing surfaces of back teeth. The applied sealant resin bonds into the grooves of teeth to form a protective physical barrier.

FY: Federal Fiscal Year, October 1 – September 30

I/T/U: IHS, tribal, and urban

NHANES: National Health and Nutrition Examination Survey

NSCH: National Survey of Children’s Health

Untreated decay: Describes dental cavities or tooth decay that have not received appropriate treatment.

U.S.: United States

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Data Tables

Table 1. Number of AI/AN dental clinic patients aged 13-15 years screened by selected characteristics, 2019-2020

Characteristic	Unweighted Number	Unweighted Percent	Weighted Percent
Age			
13 years	1,976	37.8	33.3
14 years	1,700	32.6	33.4
15 years	1,547	29.6	33.3
Sex			
Female	2,668	51.1	50.6
Male	2,488	47.6	48.3
Unknown	67	1.3	1.1

Table 2. Prevalence of decay experience and untreated tooth decay in the permanent teeth and prevalence of dental sealants on permanent molars among AI/AN dental clinic patients aged 13-15 years, 2019-2020

Variable	Percent	95% Confidence Interval	
Decay experience (%)	75.4	70.8	80.0
Untreated decay (%)	45.0	40.1	49.8
Dental sealants on permanent molars (%)	64.5	58.7	70.3

Table 3. Oral health of AI/AN dental clinic patients aged 13-15 years – 1999, 2013, and 2019-2020

Variable	1999 N 1,264	2013 N 2,033	2019 2020 N 5,223
Percentage (SE) with ...			
decay experience	83.6 (1.9)	79.9 (1.9)	75.4 (2.3)
untreated decay	64.0 (2.5)	52.5 (3.1)	45.0 (2.4)
dental sealants on any tooth	72.0 (2.3)	76.8 (2.4)	74.4 (2.9)
Mean (SE) number of ...			
decayed teeth*	2.57 (0.17)	2.08 (0.21)	1.79 (0.15)
missing teeth*	0.16 (0.03)	0.12 (0.03)	0.08 (0.01)
filled teeth*	2.18 (0.18)	2.37 (0.08)	2.27 (0.17)
Decayed, Missing due to caries, and Filled Teeth (DMFT)*	4.92 (0.30)	4.57 (0.25)	4.14 (0.25)
Mean (SE) number of sealed <i>molars</i> in ...			
all adolescents	2.81 (0.16)	2.59 (0.11)	2.68 (0.16)
adolescents with sealants on molars	3.91 (0.16)	3.96 (0.10)	4.15 (0.12)
Percentage (SE) needing urgent care	NC	6.5 (0.87)	5.2 (0.62)

* Includes all children screened, including those with DMFT=0
SE = Standard Error, NC = Not Collected

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