ORAL HEALTH AMONG INDIAN HEALTH SERVICE OKLAHOMA CITY AREA POPULATION

NATIVE ORAL HEALTH NETWORK

A REVIEW OF THE CURRENT DATA 2020-2021

Julie Seward, RDH, MEd, Southern Plains Tribal Health Board
Amanda J. Llaneza, MPH, Department of Biostatistics & Epidemiology
The University of Oklahoma Health Sciences Center
Alexandrea Holt, Southern Plains Tribal Health Board

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EXECUTIVE SUMMARY

The Southern Plains Tribal Health Board (SPTHB), established in 1972, is a 501(c)3 non-profit organization based in Oklahoma City, Oklahoma. The SPTHB provides a unified voice for federally recognized Indian tribes in the Oklahoma City Indian Health Service Area, hereafter IHS OKC Area, and it has a mission to improve the health and quality of life for Native American people through cultural advocacy, education, outreach, and collaboration. The SPTHB is focused on building tribal relationships and working closely with the tribes in the area. In 45 years of serving Tribal Nations, SPTHB has given over $80 million grant dollars back to our tribal communities through community health profiles, emergency management plans, data collection, education, substance abuse and suicide prevention, as well as supporting tribal public health initiatives across the United States.

The Native Oral Health Network (NOHN), established in 2017 by partners from the SPTHB and the Absentee Shawnee Tribe in Oklahoma, is a program administered through the SPTHB. NOHN is represented by tribes, tribal organizations, state departments, professional organizations, academic institutions, among many others across several states. With momentum and capacity building since 2017, NOHN now consists of over 120 members who bring over 31 unique areas of expertise. NOHN has collaboratively developed resources and partnerships that have strengthened efforts to improve the oral health of American Indians and Alaska Natives (AI/ANs).

The members of NOHN present this comprehensive review of the most current oral health data available for AI/ANs living in the IHS OKC Area, focusing on several key oral health indicators. Further, this report offers a look at how the AI/AN population in the IHS OKC Area fares, relative to IHS nationally (IHS Overall) and the general U.S. population (U.S. Overall).

The overarching theme of this report outlines that, in spite of programs and intervention efforts, significant oral health disparities remain, between AI/ANs living in the IHS OKC Area, and the general U.S population (and in some instances, IHS overall population). In most cases, this report indicates that AI/ANs are two to three times more likely to suffer from oral health diseases compared to the general U.S. population.

However, there are measurable signs of significant improvement. Early childhood caries (ECC) has declined among AI/ANs living within the OKC service area. According to the 2018-2019 IHS Oral Health Survey Data of children aged 1-5 years in the IHS OKC Area (relative to IHS Overall) and results for the 53 IHS/tribal service units that participated in the 2010 and 2018-19 oral health surveys, the IHS OKC Area has seen a 45% reduction of the prevalence of ECC since 2010 and saw the lowest percentage of children with decay experience and untreated decay.

Although significant strides have been made to target the improvement of individual health behaviors to prevent oral diseases, attention must be directed toward the health care as well as the social and political system that supports the individual to improve their oral health. The IHS continues to be chronically underfunded; it has a budget that meets only a small portion of the needs of the population served. Based on 2015-2020 data from IHS, the IHS per capita expenditure for patient health services was $4,078 in FY 2019 compared to $9,726 per person for health care spending nationally in CY 2019.[17] Delivery of health care, including oral health care, becomes substantially more complicated when the direct services system is underfunded and without a sufficient safety net.

Oral disease is associated with an array of social determinants, such as gender, age, education level, income, race and ethnicity, access to medical insurance, and geographic location. Oral diseases and issues such as poor access to dental care and low oral health literacy levels are social, political, behavioral, and medical in nature.

Toward the end of this report, we look at programs and efforts inside and outside of the clinic operatory that are working to provide opportunities for AI/ANs to access oral health services and education. We talk about the progress of the Early Childhood Caries Collaborative, the potential of the Community Health Aide Program expansion, specifically the incorporation of Dental Health Aide Therapists (DHAT), Community Dental Health Coordinators (CDHC), and teledentistry. We also outline national efforts to adjust the lens and reframe the discussion surrounding the core of the oral health crisis affecting Indian Country, in addition to other minority and underserved groups.

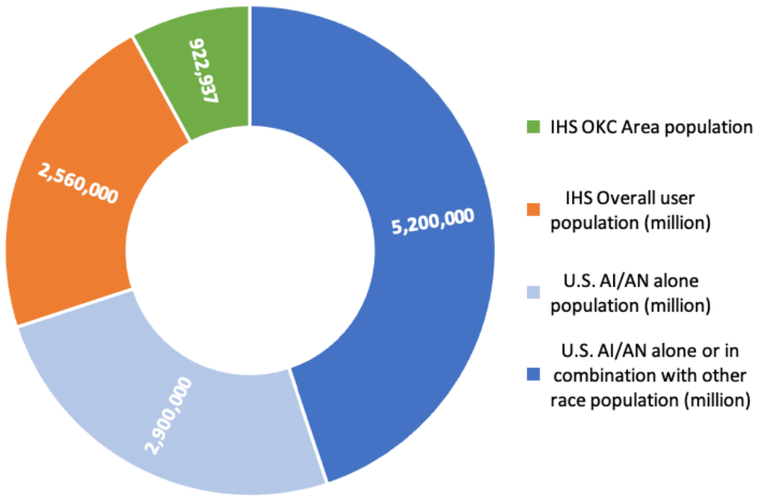
It is the hope of the authors, contributors, and peer review panel that this report will initiate discussions, partnerships, and ultimately, action to improve the oral health, and thus the overall health and wellness of AI/ANs living in the IHS OKC Area.

Oral health is a vital part of well-being and impacts quality of life. Though there have been major improvements in oral health outcomes, disparities persist among minority groups in the United States (U.S.).[4, 11, 18, 19] Compared to the general population in the U.S., AI/ANs are more likely to have worse oral health outcomes.[4, 11, 18, 19]

As of January 2020, the IHS serves members of 574 federally recognized Tribes in 37 states, and 2.56 million AI/ANs.[5]

Among the IHS Overall user population, 49% are male, 51% are female, and the median age is 25 years.[5]

Figure 1. Demographics of AI/AN population by area



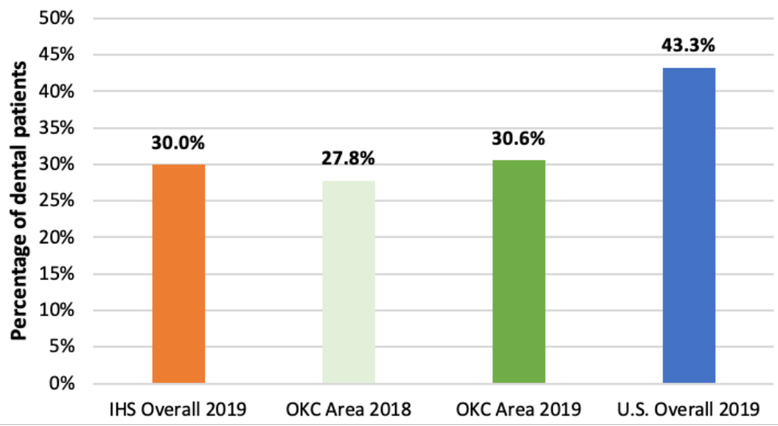
The state of Oklahoma has the second largest AI/AN population in the U.S. at 527,282 nearing a million (922,937) in the overall IHS OKC Area (Kansas, Oklahoma, and Texas).[20]

The IHS Oklahoma City Area (IHS OKC Area), served over one quarter (28%) of the total active IHS user population nationally in FY2013.[5] The OKC Area has historically been underfunded by IHS, consistently in the bottom 25% of all IHS areas, and continues to be one of three Areas routinely receiving the lowest funding.[21] American Indians and Alaska Natives make a substantial contribution to the culture, health, and economic prosperity of Oklahoma and surrounding states. Even so, the health outcomes of American Indians in the IHS OKC Area lag behind those of the general population. Further, this lag is exacerbated in many important socio-economic metrics and in a region where the general population is habitually near the bottom of a variety of health outcome measures, such as heart disease, obesity, diabetes, and stroke.

DENTAL CARE ACCESS

Access to dental services is a prerequisite for the control of oral disease in susceptible or high-risk populations. The Government Performance and Results Act (GPRA) access to dental care measure is currently aligned with Healthy People (HP)* 2020 measure of the percentage of patients who have visited the dentist within the previous 12-months.[12]

Figure 2. Percentage of dental services received among patients by year and area



**It is important to note when HP 2020 statistics are referred to in this report for the general U.S. population, these figures come from the National Health and Nutrition Examination Survey (NHANES) estimates.*

GPRA results from 2019 reported slightly higher percentages, compared to the 2018 GPRA results of AI/AN patients that received dental services in the previous year in the OKC Area.[2] The 2019 GPRA results showed the national percentage of AI/AN patients who had received dental services in the past year had increased from the previous 2018 report.[2, 12] The national 2019 GPRA target for this indicator was 27%.[2, 12] The HP2020 goal for this measure is 49%.[14] The percentage of AI/AN children, adolescents, and adults who visited the dentist, within the IHS system in the past year, was more than 13% lower than that of the general U.S. population.[14]

DENTAL SEALANTS

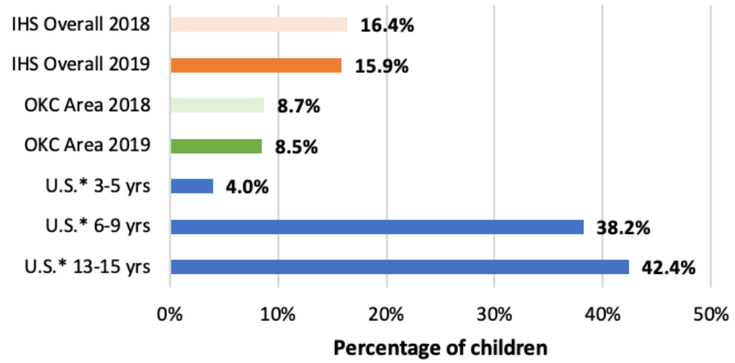
Dental sealants have been extensively researched and documented in the dental literature as a safe and effective preventive intervention to reduce tooth decay, however, dental sealants are believed to be severely underutilized.[12]

The 2019 GPRA results indicated a 0.2% decrease of intact dental sealants in AI/AN children (age 2-15 years) in the IHS OKC Area from the previous year.[2]

The GPRA results indicated a 0.5% decrease of intact dental sealants in AI/AN in IHS Overall from the 2018 report.[2, 12] The national GPRA target for this indicator was 16%.[2, 12, 13]

The HP 2020 initiative reported 4% of children aged 3-5 years received dental sealants on their primary molars in 2012.[12, 14]

Figure 3. Percentage of children with dental sealants by year and area



**Most recent U.S. data comes from NHANES report for children aged 3-5 (2012) 6-9 (2013-2016) and 13-15 years (2013-2016), respectively.*

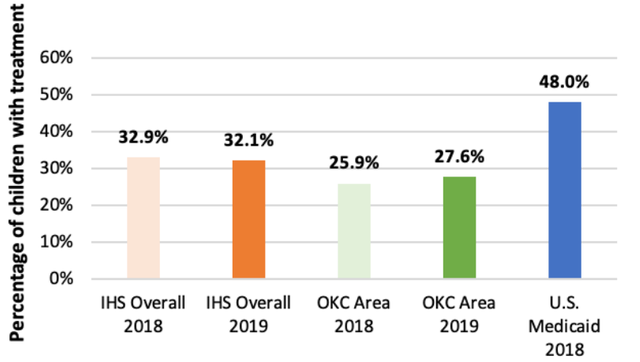
Sealants on permanent molars reduce the risk of cavities by 76%.[10] A 2016 guideline panel convened by the American Dental Association (ADA) and the American Academy of Pediatric Dentistry (AAPD) recommends the use of sealants on the surface of the tooth that is used for chewing (occlusal) of primary and permanent molars in children and adolescents.[15]

TOPICAL FLUORIDE

Fluoride is a mineral that occurs naturally and is released from rocks into the soil, water, and air. Almost all water contains some fluoride, but usually not enough to prevent tooth decay. It can be delivered topically and systemically. Topical fluorides strengthen teeth already present in the mouth, making them more decay-resistant, whereas systemic fluorides are ingested and become incorporated into forming tooth structures. Systemic fluorides also provide topical protection, because fluoride is present in saliva, which continually bathes the teeth.[8]

Children Aged 0-15 Years

Figure 4. Percentage of topical fluoride treatment among children by year and area



The 2019 results showed a 0.8% decrease from 2018 in topical fluoride treatments for IHS overall.[2, 12] Additionally, the 2019 GPRA results reported about a 2% increase in the IHS OKC Area from the previous 2018 report.[2] The national GPRA target for topical fluoride treatments was 30% which is significantly less than children on Medicaid nationwide.

For the general U.S. population, no NHANES data was available for this indicator; therefore, data on Medicaid-enrolled children receiving preventative care was used for a national estimate, but is not directly comparable.[16]

The primary sources of fluoride include drinking water in fluoridated communities, toothpaste, beverages and food processed with fluoridated water, and other professional dental products (e.g., mouth rinses, gels, and foams).

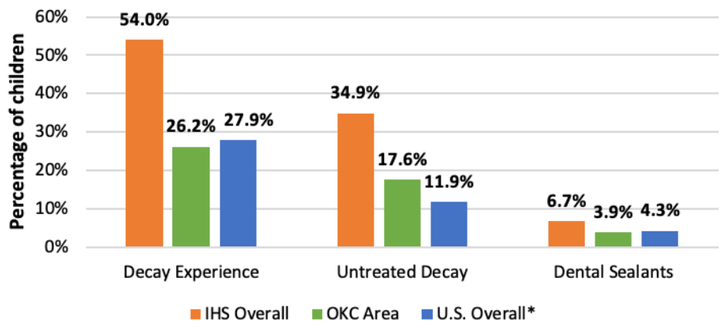
IHS SURVEY CHILDREN AGED 1-5 YEARS

In 2010, the IHS implemented an ongoing oral health surveillance system designed to monitor trends in oral health among the AI/AN population served by IHS and Tribal programs. Since the implementation of the surveillance system, oral health data have been obtained from four different age cohorts: preschool children, elementary school children, adolescents, and adults. The data listed below represent the most recent data from each cohort.

Dental Outcomes Among Children Aged 1-5 Years

The 2018-2019 IHS Oral Health Survey Data Brief states that AI/AN children age 1-5 are **three times more likely** to have ECC than white children. More than half of AI/AN children between 1-5 years of age have early childhood caries.[7]

Figure 5. Percentage of children aged 1-5 years with decay experience, untreated decay and dental sealants by area



**U.S. data comes from NHANES 2013-2016 for decay experience and untreated decay for children aged 3-5 years, and NHANES 2011-2012 for dental sealants for children aged 3-5 years.*

When compared to the IHS Overall results for the 53 IHS/tribal service units that participated in both the 2010 and 2018-19 oral health surveys, the IHS OKC Area has seen a 45% reduction of the prevalence of ECC since 2010 and saw the lowest percentage of children with decay experience and untreated decay.

Early Childhood Caries (ECC) is the most common health problem for AI/AN preschool children, five times more common than asthma.[1] Left untreated, ECC can have serious consequences, affecting a child's growth, as well as causing pain and potentially life-threatening infection, needless pain and suffering, difficulty chewing (which can compromise a child's nutrition and slow their development), and impaired speech development.[8]

UNDERSTANDING THE IMPACT OF ECCS

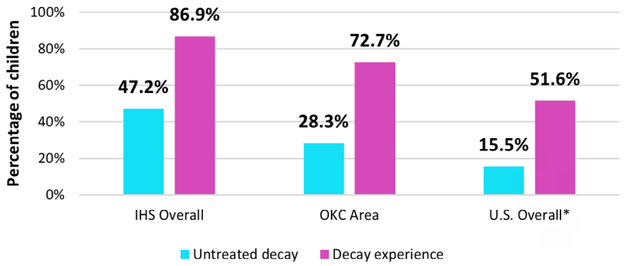
Due to their young age and an inability to cooperate for dental care, treatment of preschool children with ECC is often provided in a hospital-based operating room under general anesthesia, resulting in significant out-of-pocket costs, as much as $9,350 per child. However, ECC is largely preventable, through a combination of individualized and community-based strategies, including community water fluoridation, dental sealants, use of fluoride toothpastes at home, professionally applied topical fluorides such as fluoride varnish, good infant feeding practices, a healthy diet low in sugar and refined carbohydrates, and regular dental visits starting when the first tooth emerges at about 4-12 months of age.[7]

IHS SURVEY CHILDREN AGED 6-9 YEARS

Dental caries, or tooth decay, is damage to a tooth due to decay-causing bacteria in the mouth, which makes acid that attacks a tooth's surface (enamel). The result is a cavity, or small hole in the tooth, that can cause pain, infection, and tooth loss if not treated.[4, 9] In permanent teeth, untreated decay or decay experience (decayed, restored teeth or teeth missing due to caries) can lead to serious oral health problems for children if not treated.

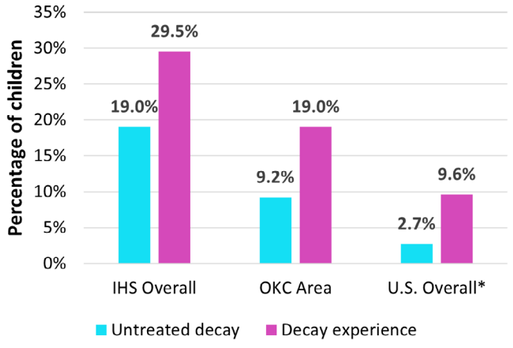
The 2016-2017 IHS Oral Health Survey Data Brief states that AI/AN children aged 6-9 years are **three times more likely** than white children to have untreated tooth decay.[3]

Figure 6. Percentage of children aged 6-9 years with untreated decay or decay experience in primary and/or permanent teeth by area



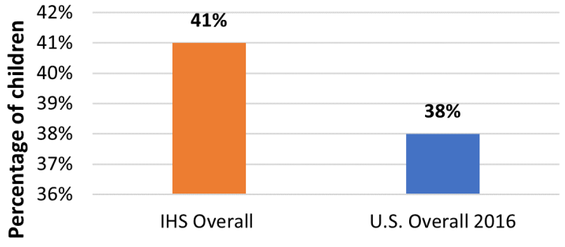
**U.S. data comes from NHANES 2013-2016 report for primary/permanent teeth*

Figure 7. Percentage of children aged 6-9 years with untreated decay or decay experience in permanent teeth by area



**U.S. data comes from NHANES 2011-2016 report for children aged 6-8 years for permanent teeth*

Figure 8. Percentage of children aged 6-9 years with dental sealants by area



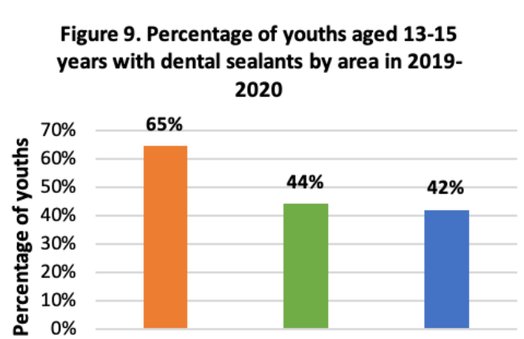
Please note the IHS OKC specific data citation for this section is as follows: Phipps, K.R. (2020). [2016-2017 IHS Oral Health Survey of AI/AN Children Aged 6-9 Years]. Unpublished data.

IHS SURVEY CHILDREN AGED 13-15 YEARS

A nationwide IHS survey was conducted to collect data from AI/AN dental clinic patients aged 13 to 15 years. Based on key findings in the report, adolescents are accessing dental services at a significantly lower rate than the general U.S. population.[22] In the general U.S. population, there has been a major reduction in the occurrence of tooth decay among adolescents, yet within the AI/AN population percentages have increased or remained the same.

DENTAL SEALANTS

Figure 9. Percentage of youths aged 13-15 years with dental sealants by area in 2019-2020



**U.S. data comes from NHANES 2013-2016 report for youths aged 13-15 years*

DECAY EXPERIENCE AND UNTREATED DECAY

Untreated decay can negatively impact the quality of life for adolescents due to pain, low self-esteem, lost school days, difficulty chewing and speaking.[6]

Figure 10. Percentage of youths aged 13-15 years with decay experience by area in 2019-2020

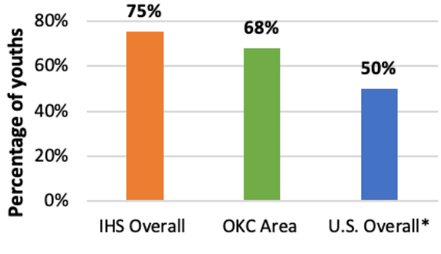
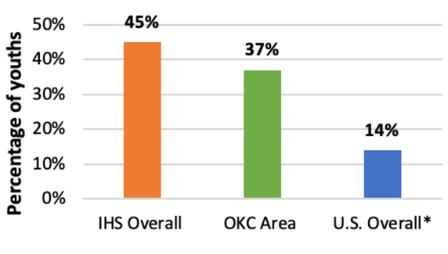


Figure 11. Percentage of youths aged 13-15 years with untreated decay by area in 2019-2020



**U.S. data comes from NHANES 2013-2016 report for youths aged 13-15 years*

Please note the IHS OKC specific data citation for this section is as follows: Phipps, K.R. (2020). [2019-2020 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] Unpublished data.

AI/AN adults suffer disproportionately from poor oral health outcomes such as untreated caries, periodontal disease, missing teeth and lack of access to dental care, relative to the general U.S. adult population. Many of the oral health services provided by the IHS are focused on children, resulting in limited availability of services for adults. There is a critical need to increase preventive and restorative services for adults.

In 2015, results from the IHS OKC Area indicated about 8% of adults established a patient exam, 31% of adults had a hygiene appointment, 11% of adults had a new patient exam, 14% of adults had a restorative appointment, 32% of adults had a dental visit for a walk-in or emergency purposes, and about 2% of adults visited the dentist for other reasons. Further, only 30.6% of adults visited a dentist in the past year.

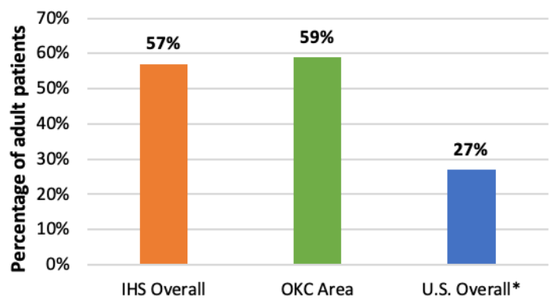
UNTREATED DECAY

The following compares the 2015 reported results of AI/AN adult dental patients aged 35+ in IHS Overall, the IHS OKC Area and the general U.S. population.[4,23]

Tooth decay can affect people of all ages.

The use of fluoride, good oral hygiene, limited consumption of foods high in sugars and starches, not using tobacco products, and routine dental check-ups and cleanings can help prevent tooth decay.[4, 9]

Figure 12. Percentage of adults aged 35+ years with untreated decay by area



**U.S. data comes from NHANES 2011-2012 report for adults aged 20-64 years*

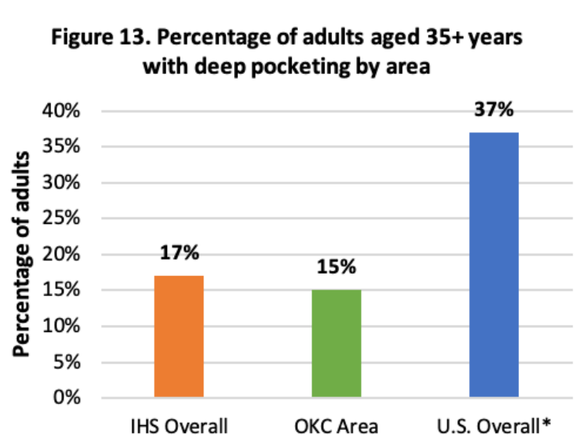
Please note the IHS OKC specific data citation for this section is as follows: Phipps, K.R. (2020). [2016-2017 IHS Oral Health Survey of AI/AN Adult Dental Patients Aged 35+ Years]. Unpublished data.

MODERATE TO DEEP POCKETS

The following compared the 2015 reported results of AI/AN adult dental patients aged 35+ in IHS Overall, the IHS OKC Area, and the general U.S. population.[4,14]

Moderate to deep pocketing is an indicator of periodontal disease. Periodontal disease is a form of gum disease wherein the tissues that hold teeth in place become infected.[4, 24] Poor dental hygiene, diabetes and smoking can greatly increase the risk of gum disease, as bacteria in the mouth (plaque) can build up on the teeth and harden. If left untreated, periodontal disease can result in sore, bleeding, painful gums, and loss of bone that holds the teeth in the jaw.[4, 24]

Figure 13. Percentage of adults aged 35+ years with deep pocketing by area



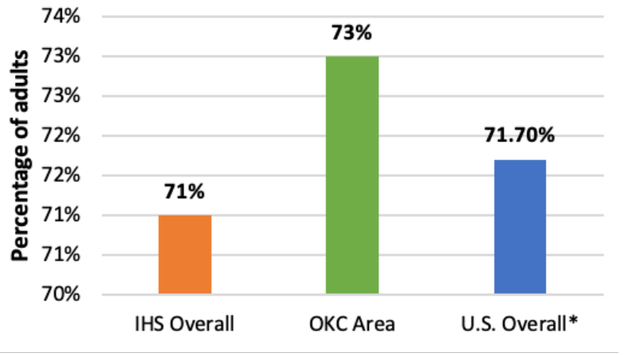
**U.S. data for 45-74-year-old adults from 2014*

Similarly to dental caries prevention, regularly brushing teeth with fluoride toothpaste, flossing, not using tobacco products, and routine dental check-ups and cleanings can help keep gums healthy.[4, 24]

TOOTH LOSS DUE TO DECAY OR GUM DISEASE

The following compares the 2015 reported results of AI/AN adult dental patients aged 35+ in IHS Overall, the IHS OKC Area and the general U.S. population.[4,23]

Figure 14. Percentage of adults aged 35+ with tooth loss due to decay or gum disease by area



*U.S. overall data from 2013-2016

In 2015, 83% of AI/AN patients aged 40-64 years reported having had teeth pulled because of tooth decay or gum disease in IHS overall.[4] Records from 1991 in the IHS OKC Area indicated that 15% of adults 20 years and older needed teeth extracted due to tooth decay or gum disease.[11]

The IHS overall average of decayed, missing and filled permanent teeth among adults aged 34-44 years was 14% in 1991.[11] The IHS overall prevalence of tooth loss for adults aged 35-44 years is 71%, whereas the IHS OKC Area prevalence was 73% in 2015.[4, 12]

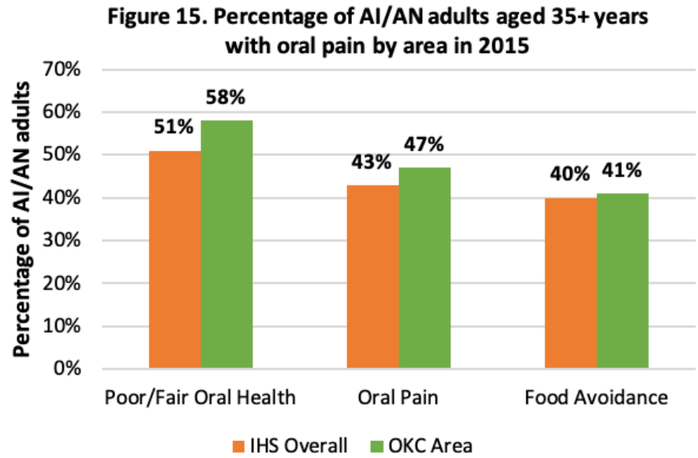
For the general U.S. population, HP 2020 reported about 72% of adults aged 45-64 years reported tooth loss due to dental caries or periodontal disease between 2013-2016.[14]

Please note the IHS OKC specific data citation for this section is as follows: Phipps, K.R. (2020). [2016-2017 IHS Oral Health Survey of AI/AN Adult Dental Patients Aged 35+ Years]. Unpublished data.

ORAL PAIN

According to the 2015 reported results from the survey of AI/AN adult dental patients aged 35+, AI/AN patients are more likely to report poor/fair oral health, painful aching in the mouth and avoiding certain foods due to issues in the mouth.[4] Poor or fair oral health can be the result of oral pain experienced by patients.

Figure 15. Percentage of AI/AN adults aged 35+ years with oral pain by area in 2015

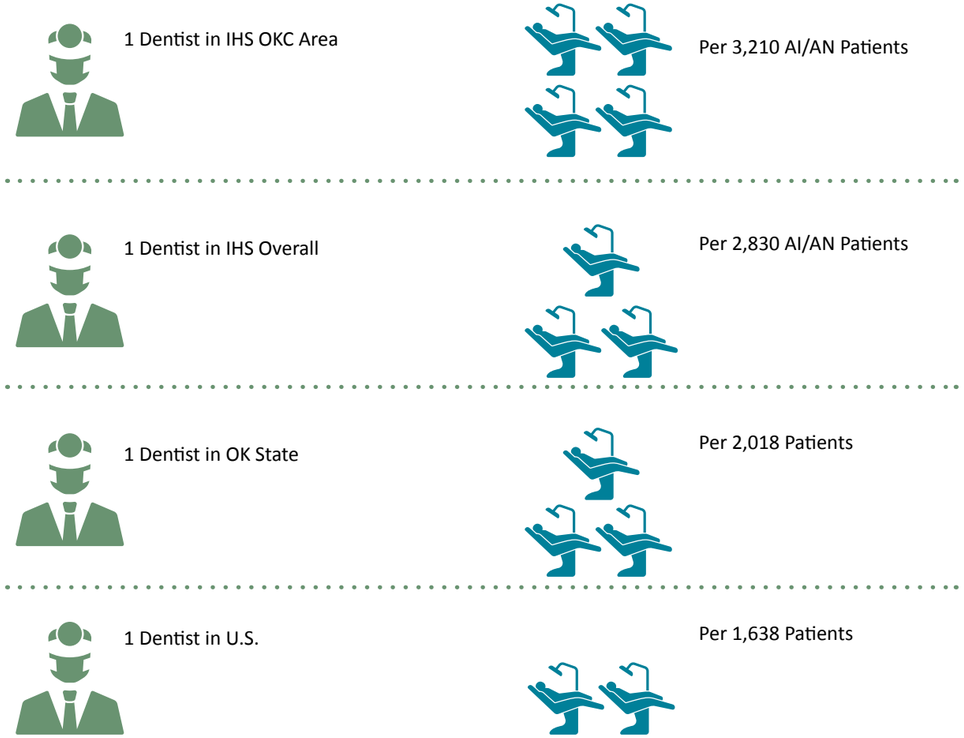


Please note the IHS OKC specific data citation for this section is as follows: Phipps, K.R. (2020). [2016-2017 IHS Oral Health Survey of AI/AN Adult Dental Patients Aged 35+ Years]. Unpublished data.

DENTIST TO POPULATION RATIO

The IHS Congressional Budget Justification for 2021 reported that there was approximately one dentist per 2,830 patients in the IHS system.[13] Currently, there are no published dentist to population estimates for the IHS OKC Area. After identifying filled dentist positions from tribal and IHS-operated clinics in the IHS OKC Area and supplementing with the NPI registry, it was found there are approximately 121 dentists working in Indian Health Service, Tribal Nations, and Urban Indian Facilities (ITUs). According to the FY 2019 IHS OKC Area User Population Report, there are 388,486 users in this area.[25] This indicates there is approximately one dentist per 3,210 users in the IHS OKC Area as of 2019. By comparison, according to the American Dental Association, the dentist to population ratio for the state of Oklahoma is one dentist per 2,018 users. The general U.S. population ratio is one dentist per 1,638 users.[26]

Figure 16. Dentist to Patient Ratio



WATER FLUORIDATION IN OKALHOMA

Community water fluoridation is a cost-effective method to deliver fluoride to communities regardless of age, educational attainment, or income level.[19, 27] Residents living in areas with water fluoridation have 25% fewer cavities than those living in communities without fluoridation.[2] Water fluoridation saves money for families and the healthcare system; it is an effective strategy to eliminate population health disparities and promote social justice. According to a 2010 report from the Pew Center on the States, with every dollar invested on water fluoridation, a person saves up to $38.00 in oral health treatment costs annually. Recent evidence continues to indicate that the economic benefit of community water fluoridation exceeds the intervention cost. Further, the benefit-cost ratio increases with the community population. Figure 17 displays the 2017 status of water fluoridation in Oklahoma as reported by the Oklahoma State Department of Health.[27, 29]

Figure 17. Water Fluoridation Status in Oklahoma in 2017

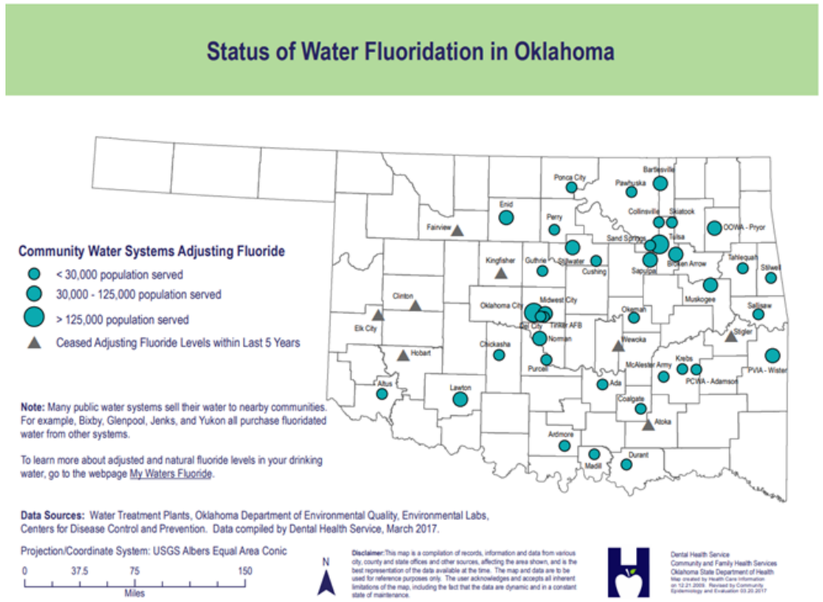


Image Source: https://www.ok.gov/health2/documents/FluoridatedWater_20170320.pdf

ACCESS TO FLUORIDATED WATER (CONT)

Community water fluoridation is the single most effective public health intervention to prevent tooth decay, reducing decay by more than 25% across the lifespan.[30] Drinking water with fluoride protects the minerals in tooth enamel, keeping teeth strong and solid. Health benefits include less pain and suffering because of tooth decay.

In Oklahoma, approximately 70% of the population receives fluoridated water[8] in comparison to 73%[30] of the U.S. population.[15] There is no state mandate to fluoridate nor are there rules requiring notification if a community ceases the service. The most populous cities of Oklahoma City and Tulsa fluoridate, which encompasses almost half of Oklahomans on public water supplies. In Oklahoma, decisions about adding fluoride to drinking water are made at the local level. The Oklahoma State Department of Health, Dental Health Service, assists communities through education and promotion. The Oklahoma Department of Environmental Quality is the regulatory agency for water fluoridation; they enforce the EPA standards. Fluoride is present in all water sources. Community water fluoridation is the adjustment of fluoride in drinking water to a level that prevents tooth decay.[30]

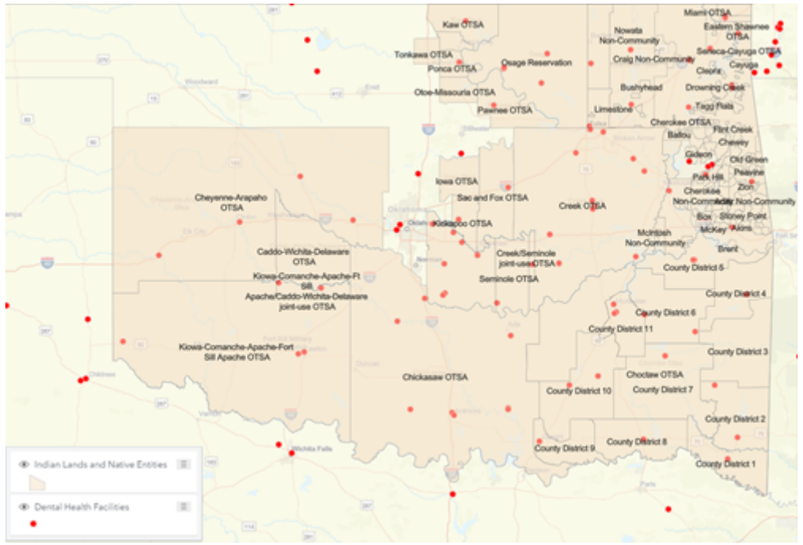
There are many challenges to the continuation of water fluoridation: maintenance costs, infrastructure costs, poor economy, misinformation, and lack of perceived value by city officials and the public. Identifying local champions to advocate for public health is a key strategy when facing opposition or apathy toward fluoridation.

According to the CDC, 73% of the total U.S. population on community water systems had access to properly fluoridated water. In addition, HP 2020 aims for 80% of the U.S. population on community water systems to have access to fluoridated water.[30] Recently, opposition to fluoridation has been growing worldwide, emphasizing the potential and serious risk of toxicity when factoring in additional modalities of fluoride intake.[31] However, over 70 years of studies and practical experience overwhelmingly merit the safe and equitable public health benefits of community water fluoridation. The CDC recognize fluoridation of drinking water as one of the Ten Great Public Health Achievements of the 20th century.[30] Fluoridation of drinking water is endorsed by the American Medical Association, the American Academy of Pediatrics, and the World Health Organization.

TRIBAL LANDS IN OKLAHOMA THAT RESIDE IN DESIGNATED HEALTH PROVIDER SHORTAGE AREAS

The rural population in the U.S. comprises approximately one-fifth of the total population, and approximately 20% of racial/ethnic minorities live in rural areas.[32, 33] Evidence has shown that populations in rural areas have a lower frequency of dental visits compared to populations in urban areas,[34, 35] and this may be even more prevalent among dental health professional shortage areas. Access to dental providers is one of the most common factors cited as a cause of rural oral health disparities. It is difficult to recruit dental providers to rural areas because of comparatively lower salary and revenues, the capital needed to start a rural practice, and unwillingness to live in rural regions, among other reasons.[36]

Figure 18. Dental Health Professional Shortage Areas within Oklahoma Tribal Land



Dental health professional shortage areas (Dental HPSAs) are areas designated by the Health Resources and Services Administration (HRSA) Bureau of Health Workforce (BHW) as having too few dental health care providers, relative to the size of its population. Dental HPSAs are areas of greatest oral health care need. Residents who live in these areas are at risk of a lack of access to quality dental care because the needs of the community exceed provider capacities. Figure 18 displays the dental health professional shortage areas as indicated by the red dot in the legend within Indian lands and Native entities.[36] The image signifies the scarce availability of dental care available to AI/AN populations on tribal land.[36]

TRIBAL LANDS IN OKLAHOMA THAT RESIDE IN DESIGNATED HEALTH PROVIDER SHORTAGE AREAS (CONT)

AI/AN peoples are often denied preventive and restorative dental services such as endodontic care, crowns, bridges, dentures, and surgical extractions because the IHS is severely underfunded. With that, most basic, emergency care services, as well as restorative and preventive care, are provided primarily for children.[37, 38]

Further, the relative geographic isolation of Tribal populations and the difficulty of recruiting physicians/dentists to practice in TTUs within rural areas are other major impediments to providing IHS benefits to larger populations.[38] Because there is such a large burden of disease among this population, even if all available positions for dental providers serving AI/AN communities were filled, the dentist to population ratio may still be insufficient.[38]

Evidence has shown the implementation of dental therapists to underserved populations may greatly improve oral burden of disease amongst the AI/AN population. Moreover, programs that focus on early, preventive, restorative and lifetime treatment would further improve oral health outcomes.

CONCLUSION

Oral health is a social justice issue. American Indian and Alaska Natives (compared to non-American Indian or Alaska Native ethnic groups) are more likely to experience oral health disparities. According to the 2010 Census, 0.9% of the U.S. population, or 2.9 million people identified as AI/AN alone. Further, about 12%, or 5.2 million people identified as AI/AN alone or in combination with another race. In Oklahoma, roughly 10% identify as AI/AN alone.[39] That AI/AN populations suffer disproportionately indicates that the foundations of healthcare, government, and educational services are rooted in injustice. Due to historical and ongoing systemic injustices, AI/AN populations do not have access to timely and quality health services, including but not limited to, oral health. However, increasing transparency within these systems, acknowledging historical context, and establishing multi-disciplinary teams can greatly improve health care, including oral health.

Unfortunately, in several key indicators, comparisons of bad to worse are outlined throughout the report. There are alarmingly significant gaps in cost-effective, evidenced-based preventative treatments such as fluoride varnish applications and dental sealant placements. For example, 48% of Medicaid users received a fluoride varnish treatment in 2018, compared to only 32.1% among IHS overall and an astoundingly low 27.6% for the IHS OKC Area in 2019 (GPRA). The national GPRA target is set at only 30%, how does that promote the value of preventative care and further contribute to the egregious oral health disparity?

> **“YOU NEVER CHANGE THINGS BY FIGHTING THE EXISTING REALITY. TO CHANGE SOMETHING, BUILD A NEW MODEL THAT MAKES THE EXISTING MODEL OBSOLETE.”**
>
> -BUCKMINSTER FULLER

Further, in 2020, the Oklahoma Oral Health Coalition released a statewide oral health report card. That report found that, when compared to the nation’s performance on 13 key oral health indicators, Oklahoma scores a “D.” Oklahoma, the IHS OKC Area, and the nation can do better.[40] However, innovative strategies, including those aimed at merging oral health care and prevention, are showing some progress. The ECC Collaborative, an IHS program, is one such multi-faceted effort. It educates dental providers, as well as other health care workers and the community itself, about preventing ECC and early intervention to reduce the harm of tooth decay. The program was designed to promote ECC prevention by focusing on proven oral health strategies, such as early access to dental care, fluoride varnish applications, sealants (for primary teeth and permanent teeth), and interim therapeutic restorations. The ECC Collaborative also initiated the ongoing oral health surveillance system referenced earlier in this report.

The expansion of the Community Health Aide Program (CHAP) to the lower 48 states is one approach toward helping our communities achieve optimal oral health. CHAP is a multidisciplinary system of mid-level behavioral, community and dental health professionals that work alongside licensed providers to offer patients increased access to quality care. Under the CHAP, tribes and IHS facilities have the opportunity to add new mid-level dental providers, such as dental health aide therapists (or dental therapists) to the dental team. Under their scope of work, DHATs can fill cavities, place temporary crowns, and perform uncomplicated tooth extractions, while dentists tend to more complex, revenue-generating procedures. Dental therapy has been gaining momentum across the country to provide preventive and routine restorative care to geographically isolated and underserved tribal communities. Evidence shows that dental therapists have improved access to safe, culturally relevant oral health care in tribal communities.

Further, 638 tribally-operated programs have been utilizing innovative approaches to address oral health disparities. They include training Community Health Representatives (CHR) to be Community Dental Health Coordinators (CDHC). CDHCs provide community-based prevention, care coordination, and patient navigation to link services to individuals who do not typically receive dental care in underserved rural, urban, and AI/AN communities. Thus, culturally relevant, community-based oral health programs can serve as the pillars of a thriving, healthy community.[41] In the wake of the COVID-19 pandemic, the oral health disparities mentioned in this report have been exacerbated by less access to care and widespread cancellation of community events that promote good oral hygiene and provided oral health education to adults and children. Oral health stakeholders, policy-makers, and insurers are looking at ways to integrate care with teledentistry platforms and processes to mitigate the ripple effects of the COVID-19 pandemic. Tribal leaders in Oklahoma and abroad are paving the way for these innovations to continue to provide care and support to Native communities.

CONCLUSION (CONT)

The Oral Health Progress and Equity Network (OPEN) was formed in 2013 to address oral health inequities through a social justice and health equity lens. This national network includes representatives from all 50 states who are working at every organizational level to improve oral health for all. Members of OPEN regularly engage in learning from groups across the country working on social justice and health equity to identify challenges, opportunities, and skills that can help move their own work forward alongside the work of improving oral health. Members learn about oral health among key socioeconomic groups, about culturally competent approaches to oral health, and about thoughtful public policy ideas that may reduce health disparities. Over the last decade, OPEN has created a movement, sparking a nationwide conversation that includes policymakers, providers, public health activists, and grassroots organizers. The results of this conversation are an acknowledgement that the system of healthcare in place today is not working for the most vulnerable.

The data outlined in this report offer a snapshot of the current oral health status of AI/ANs living in the IHS OKC area. To address the oral health crisis in Indian Country locally and abroad, a multimodal approach that engages the individual, family, community, Tribal leadership, plus health and social service providers must be developed, implemented, and sustained. This multimodal approach should combine primary, secondary, and tertiary prevention strategies layered with strategies to increase access and systemic changes to reduce the consequences of social inequities.[42]

The Native Oral Health Network represents one such strategy working to intertwine these layers by providing a platform for individuals and organizations to capitalize on the empowerment of connection for a common purpose and goal. It is NOHN's mission to build healthier Native communities by connecting oral health to overall health and wellness through peer support, collaboration, and community engagement. The NOHN is the first oral health network in Oklahoma focusing on Native communities, and since 2017, NOHN has worked to build a resource library, build capacity to amplify the community voice, and work with stakeholders to identify solutions for a better quality of life for Native peoples. To those ends, NOHN has increased primary data collection efforts that increase the oral health data available for the IHS OKC Area through SPTHB's Tribal Behavioral Risk Factor Surveillance Survey (TBRFSS) that will contribute to future versions of this report.

A mental model shift of the notion that oral care can and should only be provided in a dental clinic must occur for disparity gaps to close. Public policies and organizations should invest in oral health promotion, prevention, and community-based health programs. By utilizing the entire dental team to the full extent of their scope of practice and license, and adding dental therapists, there is an opportunity to expand accessible and affordable dental services to underserved AI/AN communities inside and outside the clinic doors. More concerted efforts should focus on addressing the social determinants of health and shift from acute care and treatment to chronic disease prevention and management. Additionally, prevention and health behavior science should integrate with oral health care and promotion activities.

METHODS

All the data provided in this publication come from various reports. Data for the most recent adult oral health statistics come from the 2015 IHS Oral Health Survey of AI/AN dental patients aged 35 years and older. This is composed of a dental screening and an optional patient questionnaire. A total of 11,462 AI/AN adults aged 35 and older were screened and 9,662 AI/AN adults aged 35 and older completed the questionnaire.[4] The sampling frame for the 2015 survey consisted of all service units with an estimated 35+ year old user population of 100 or more. A stratified probability proportional to size (PPS) cluster sampling design was used to select IHS service units. The sampling frame was stratified by IHS Area, and service units were sorted within each Area based on operational status (Tribal 638 Programs or IHS) and/or state. A systematic PPS sampling scheme was used to select 62 service units. If a service unit refused to participate, another service unit within the same sampling interval was randomly selected. Data are available for 63 service units collected at 84 different IHS and Tribal dental clinics.[4] The reported survey data used sample weights to produce population estimates based on selection probabilities.

Data for the most recent children oral health measures come from the fiscal year (FY) 2019 IHS Government Performance and Results Act (GPRA) Performance Results and the 2018-2019 IHS Oral Health Survey of Children Ages 1-5.[2, 13] The GPRA measures are calculated by using the Integrated Data Collections System (IDCS).[2, 13] This system is a part of the National Data Warehouse to which service units and health systems can export their data for IHS GPRA reporting.[2, 13] There are IHS GPRA national targets that are set annually through Annual Performance Plans. IHS factors the GPRA annual targets from the 12 service areas when setting the national IHS GPRA targets. However, it is important to note that not all ITUs in the IHS OKC Area report their oral health data. Roughly only 45% of ITUs in the OKC Area report data that inform the National IHS GPRA targets.

Data for the most recent adolescent oral health outcomes come from the 2019-2020 IHS brief on oral health among 13-15 year olds.[22] A nationwide survey was conducted to collect data from AI/AN dental clinic patients. Similarly to other IHS briefs, a probability sample of IHS Service units were selected. A total of 5,200 dental clinic patients were screened.[22]

Data for the current oral health outcomes of children aged 1-5 years come from the 2018-2019 IHS Oral Health Survey. The sampling technique for selecting service units was the same as in the 2015 IHS surveys for adults and adolescents. There were a total of 73 IHS service units that participated and 9,275 children screened in community-based settings. The majority of the children screened were aged 3-4 years. Dental clinic patients were not screened.[7]

No previously published reports exist for the calculation of a dentist-to-population ratio for the IHS OKC Area. Data on the IHS OKC Area user population were readily available through user population reports, but the number of dentists working in dental clinics in the IHS OKC Area was not publicly available. Calls were made to every ITU dental clinic in the IHS OKC Area from May 6-12, 2020 to inquire about the number of dentists typically working in each facility. Because the calls were made during the COVID-19 pandemic, and clinics were not operating under normal conditions, furloughed dentists were included in these numbers to give a more accurate estimate of the dental clinics' typical capacity. No names or personal identification information were obtained during these calls. If contact could not be made at a clinic, the National Provider Identifier (NPI) database was used to obtain an estimate. Through the NPI database, the search procedure was to search by city and state for dentists, then find dentists registered to the clinics by matching the address of the dentist to the address of the clinic. Dental provider employment opportunities were cross-checked with clinic and IHS websites under employment opportunities. The user population data come from the IHS OKC Area FY 2019 User Population Report.[25] The IHS User Population is a count by residence of AI/AN registrants who have had a direct or contract (inpatient, ambulatory, or dental) encounter with the health system during the years October 1, 2016 through September 30, 2019.[25]

The U.S. national and Oklahoma state dentist data from the American Dental Association (ADA) come from their Health Policy Institute Supply of Dentists file.[43] The data from this file are aggregated, snapshotted, and reported once a year from the ADA Masterfile.[43] The Masterfile collects additional data on dentists, including name, specialty, date of birth, gender, year of graduation, and dental school of graduation. The number of dentists in Oklahoma is based on practice location rather than state licensure. Reporting where dentists are practicing rather than where they are licensed allows for a more accurate depiction of the supply of dentists in each state. Practice addresses are given to the ADA through the ADA Distribution of Dentist Survey, the ADA Survey of Dental Graduates, state dental societies, and local dental associations. The Masterfile is also supplemented by the NPI registry.

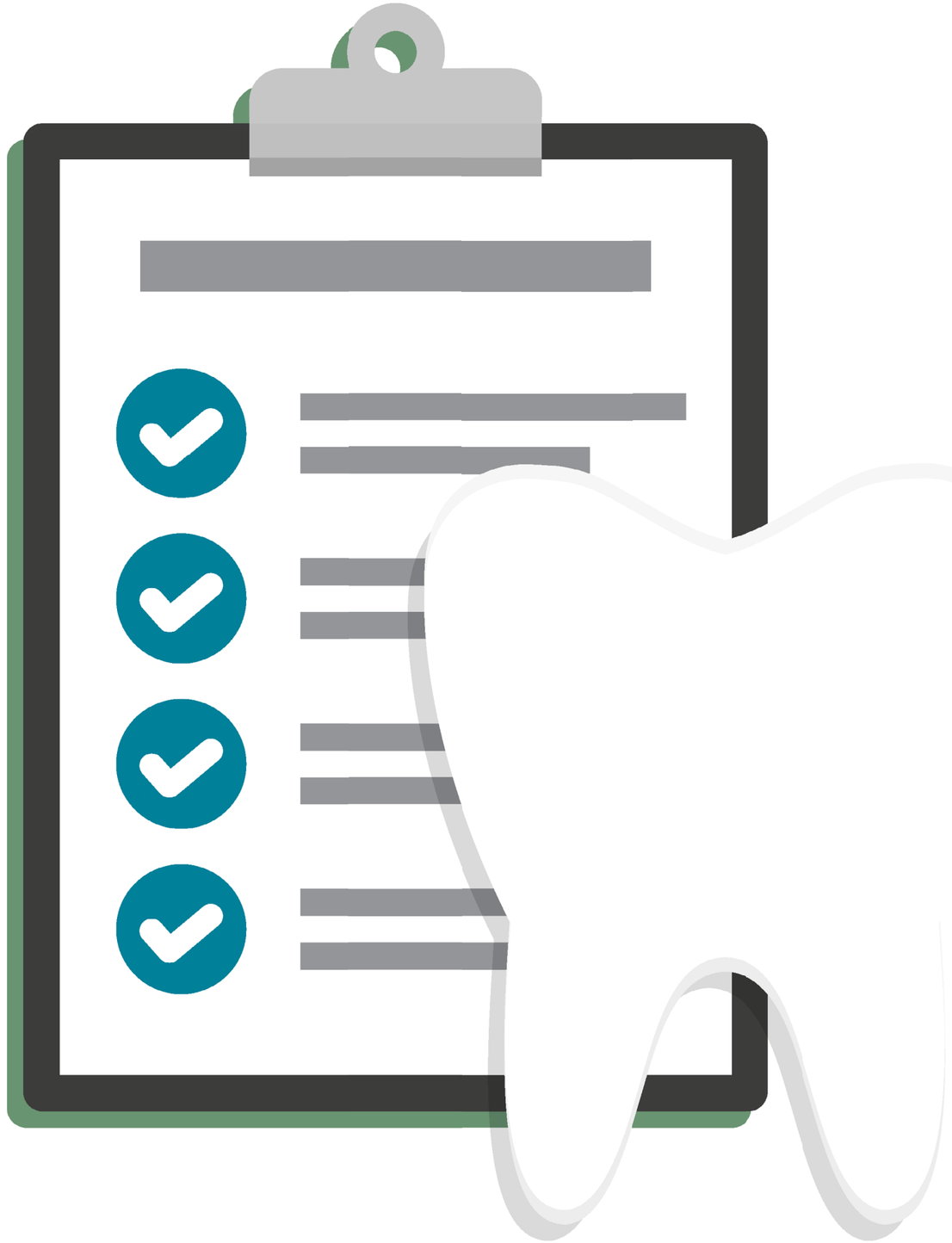
LIMITATIONS

Data specific to AI/ANs include those who utilize the IHS and Tribal health systems and does not include those AI/ANs who seek care elsewhere. The data from the IHS 2015 Oral Health Survey may not be representative of the general population of AI/ANs as this was a survey of dental patients seeking treatment at ITUs. Further, some AI/ANs seek dental care only when there is a health issue, which may result in an overestimation of the prevalence of dental disease among all age groups. There may be an underestimation of the prevalence of total tooth loss, as adults without teeth are less likely to visit a dentist.

The use of the IHS user population to calculate the dentist to population ratio may overestimate dental users, as the IHS user population includes any registrants who have had a direct or contract encounter with the health system, which, along with dental services, includes inpatient and ambulatory services over a span of three years. The number of dentists in the IHS OKC Area may be underestimated, as it only includes estimates from the past year.

This publication is an attempt to provide a comparative snapshot of the current oral health status of AI/ANs living within the IHS OKC Area to national-level metrics. Due to the lack of standardization and alignment across tribal, federal, and other national-level entities on data collection methods, time periods, and oral health indicators, it is extremely difficult to provide a direct comparison. Given that, our best effort in presenting this data comparison accompanies our commitment to working with partners, and advocating to ensure the sovereignty, validity, and accuracy of our report to best reflect the health status of our AI/AN population with the information available.

There is a small portion of dentists working in IHS facilities who are not licensed in one state, but rather are commissioned officers, which may affect the estimated number of dentists working in the IHS OKC Area. However, this limitation is partially eliminated by the American Dental Association's use of practice addresses, as opposed to state licensure records, in their Masterfile. The American Dental Association routinely updates the Masterfile, but publicly available reports provide only a snapshot of the file once a year, which may also be a limitation in the estimation of dentists in the U.S. and Oklahoma.



FAQ'S

1. HOW OFTEN ARE THE IHS ADULT ORAL HEALTH SURVEYS CONDUCTED?

The 2015 IHS Adult Oral Health Survey is the most recent published survey on adult oral health within the AI/AN populations. The next survey was scheduled for 2021, but has been postponed due to the COVID-19 pandemic. The next survey will focus specifically on adults 55 and over to raise awareness of geriatric oral health. Previous surveys were conducted in 1984, 1991, and 1999. The IHS oral health survey timeline is a fluid timeline. The timeline changes based on the needs and priorities of the IHS Division of Oral Health.

2. HOW WAS THE DENTIST TO POPULATION RATIO CALCULATED?

The dentist to population ratio was calculated using information from the National Provider Identifier (NPI) for registered dentists, calls to confirm dentist positions in dental clinics in the IHS OKC Area, and the Oklahoma City Area Fiscal Year (FY) 2019 User Population Report for the user population estimate. Approximately 121 dentists working in IHS, tribal, and urban ITUs in the IHS OKC Area were confirmed. According to the FY 2019 OKC Area User Population Report, there are 388,486 users in this area. To obtain the ratio the formula as follows was used:

$$\frac{\text{(388,486 users in the OKC Area)}}{\text{(121 dentists in OKC ITU facilities)}}$$

= 3,210 dental users in the OKC Area per dentist

3. ARE THERE GPRA TARGETS OR GOALS SET FOR EACH SPECIFIC SERVICE AREA?

Yes, there are OKC Area specific targets that are not publicly available. Each IHS, Tribal, and urban facility is asked to have a goal of a 10% increase each year. The clinic specific GPRA goals make up the IHS OKC Area goals, which are then added to other IHS areas to create the IHS national targets. However, not all ITU clinics participate in sharing their numbers with IHS.

4. WHY IS THERE A DISCREPANCY IN ORAL HEALTH DATA REPORTING ACROSS IHS AND CDC?

The IHS and CDC have not consistently published oral health data within the same exact year or age groups. Moreover, sampling collection strategies may vary. Therefore, it is important to note the year and age groups represented in each section.

5. IS THERE A FOLLOW-UP TO THE 2000 U.S. SURGEON GENERAL'S REPORT ON ORAL HEALTH?

The U.S. Department of Health and Human Services, the Office of the Surgeon General, the National Institutes of Health (NIH), and the U.S. Public Health Service's Oral Health Coordinating Committee will release a new Surgeon General's Report on oral health in 2021. The NIH National Institute of Dental and Craniofacial Research is the lead federal organization working with the Surgeon General to produce the report. The purpose of this report will be to document progress in oral health since publication in 2000 of the first Surgeon General's Report on oral health. The new report will also describe key issues that currently affect oral health, identify challenges and opportunities that have emerged since publication of the first report, outline a vision for the future, and initiate a call to action.

For more information visit: https://www.nidcr.nih.gov/news-events/2020-surgeon-generals-report-oral-health#:~:text=2020%20Surgeon%20General%27s%20Report%20on%20Oral%20Health.%20The,with%20the%20Surgeon%20General%20to%20produce%20the%20report.

6. WHAT IS THE DIFFERENCE IN DECAY EXPERIENCE AND UNTREATED DECAY?

Decay experience includes decayed and unrestored teeth, restored teeth, and teeth missing due to caries. This is often noted as DMFT (decayed, missing, filled teeth). Untreated decay refers to decay that has not been treated or filled.

7. WHAT ARE SOME MAJOR EPIDEMIOLOGICAL CHALLENGES IN INDIAN COUNTRY?

The challenges can be divided into three categories: **Methodological**, **Structural**, and **Historical**.

Methodological: Racial misclassification, lack of data available, establishing data-sharing agreements

Structural: Distance between epidemiology centers and Tribes, fiscal instability, competing Tribal interests

Historical: Mistrust and lack of public health and data infrastructures.

GLOSSARY

DEMOGRAPHIC TERMS

AI/AN	American Indian/Alaska Natives
IHS	Indian Health Service
ITU's	Indian Health Service, Tribal Nations, and Urban Indian Facilities Tribes, Tribal Organizations, and Urban Indian Organizations
Tribal 638 Programs	Tribal Contract or Compact Health Centers (also called a 638 contract or compact) are operated by Tribes or Tribal organizations and Urban Indian Health Centers. They are outpatient health care programs and facilities that specialize in caring for American Indians and Alaska Natives. They are operated under the Indian Self-Determination Act.
IHS OKC Area	The Indian Health Service Oklahoma City Area (IHS OKC Area) refers to 44 federally recognized American Indian Tribes in Kansas (4), Oklahoma (39), and Texas (1). A large number of Tribes in the OKC Area have opted to operate their own health programs, including large scale hospitals, smaller preventive care programs and behavioral health programs. The Area consists of 8 Service Units with federally operated hospitals, clinics, and smaller health stations. The OKC Area is also home to Urban Clinics and Urban Demonstration Projects that operate similarly to Service Units. All the Urban Clinic facilities are Federally Qualified Health Centers, which provide ambulatory outpatient health care to Urban communities.
IHS Overall	This includes estimates from the national Indian Health Service User Population.

CLINICAL TERMS

Periodontal Disease	Untreated gingivitis can advance to periodontitis or periodontal disease. Toxins produced by the bacteria in plaque irritate the gums. The toxins stimulate a chronic inflammatory response and the tissues and bone that support the teeth are broken down and destroyed, creating periodontal pockets.
Caries	Dental caries or cavities, more commonly known as tooth decay, are caused by a breakdown of the tooth enamel. This is the result of bacteria on teeth that break down foods and produce acid that destroys tooth enamel and results in tooth decay.
ECC	**Early Childhood Caries:** The presence of one or more decayed (non-cavitated or cavitated lesions), missing (due to caries) or filled tooth surfaces in any primary tooth in a pre-school-aged child between birth and 71 months.
Occlusal	Surface of the tooth that is used for chewing.
ITR	**Interim Therapeutic Restorations:** A restoration placed on teeth to prevent the progression of caries. They do not require general anesthesia or local anesthetic and are indicated for infants, children, adolescents, and children with special health care needs.

GOVERNMENTAL TERMS

GPRA	Government Performance and Results Act: Enacted in 1993, GPRA is designed to improve program management throughout the federal government. GPRA requires federal agencies to demonstrate that they are using their funds effectively toward meeting their missions. The law requires agencies to have both a 5-year Strategic Plan in place and to submit Annual Performance Plans describing specifically what the agency intends to accomplish toward those goals with their annual budget request. GPRA also requires agencies to have performance measures with specific annual targets. Every year, the Indian Health Service reports results for these GPRA performance measures.
NPI	The National Provider Identifier: A Health Insurance Portability and Accountability Act (HIPAA) Administrative Simplification Standard. The NPI is a unique identification number for covered health care providers. Covered health care providers and all health plans and health care clearing houses must use the NPIs in the administrative and financial transactions adopted under HIPAA. The NPI is a 10-position, intelligence-free numeric identifier (10-digit number). This means that the numbers do not carry other information about healthcare providers, such as the state in which they live or their medical specialty. The NPI must be used in lieu of legacy provider identifiers in the HIPAA standards transactions.
RPMS	The IHS clinical information system is called the Resource and Patient Management System. RPMS is a decentralized integrated solution for management of both clinical and administrative information in healthcare facilities. RPMS has 4 main components: hardware, software, network, and database.
Dental HPSAs	Dental health professional shortage areas: Areas designated by the Health Resources and Services Administration Bureau of Health Workforce (BHW) that have shortages of dentists and identify areas of greatest need.

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Tyler Dougherty, MPH, CPH
Epidemiologist/Biostatistician,
TECPHI Program Manager,
Southern Plains Tribal Health Board

Lisa Pendarvis, MPH
Director of Programs,
Oklahoma Primary Care Association

Jana Winfree, DDS, MPH
State Dental Director,
Oklahoma State Department of Health

Lancer Stephens, PhD (Wichita/Creek)
Assistant Professor of Research,
Health Promotion Sciences,
Hudson College of Public Health;
Associate Core Director,
Oklahoma Shared Clinical and Translational Resources;
Director of Special Populations,
Stephenson Cancer Center

Kathy Phipps, Dr.PH
Data and Surveillance Coordinator,
Association of State and Territorial Dental Directors;
Consultant, Indian Health Service;
Consultant, Northwest Portland Area Indian Health Board

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9705 N Broadway Extension, Suite 200
Oklahoma City, Oklahoma 73114 | 405.652.9200 | www.spthb.org