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FAMILY HEALTH SERVICES DIVISION • HAWAII DEPARTMENT OF HEALTH • STATE OF HAWAII

Hawaii Smiles 2015

The Oral Health of Hawaii's Children

Hawaii Smiles

EXECUTIVE SUMMARY

With *Hawaii Smiles,* the Hawaii State Department of Health takes its first in-depth look at the oral health status of a representative sample of third grade children throughout the state. During the 2014-2015 school year, a total of 3,184 third grade children in 67 public elementary schools on six islands received a dental screening. Third grade children were screened because third grade is the target elementary school population for the National Oral Health Surveillance System. The findings presented in this report support the need for *culturally appropriate community-based prevention programs, screening and referral services, and restorative dental care to improve the oral health of Hawaii's children.*

The results of *Hawaii Smiles* confirm that Hawaii's children have the highest prevalence of tooth decay in the United States. The results also demonstrate that the burden of oral disease is significantly greater in certain segments of the population. For example, tooth decay is disproportionately experienced by low-income children, defined as those who are eligible for the National School Lunch Program (NSLP). About 31% of children eligible for NSLP have untreated tooth decay compared to 13% for those not eligible. The disparities gap is even more pronounced when looking at urgent dental needs due to pain and/or infection. The need for urgent dental care is more than five times higher in low-income children compared to their higher-income peers (13% vs. 2% respectively).

KEY FINDINGS

1. Hawaii has the highest prevalence of tooth decay among third graders in the United States. More than 7 out of 10 third graders (71%) are affected by tooth decay; substantially higher than the national average of 52%.
2. Almost 1 out of 4 third graders (22%) in Hawaii has untreated tooth decay demonstrating that many children are not getting the dental care they need.
3. About 7% of Hawaii's third grade children are in need of urgent dental care because of pain or infection. If applied to all children in kindergarten to sixth grade, more than 6,600 children in Hawaii's public elementary schools experience pain or infection due to dental disease on any given day.
4. More than 60% of children in Hawaii do not have protective dental sealants, a safe, simple, cost-effective clinical intervention to prevent tooth decay in molar teeth.
5. There are significant oral health disparities by income, as well as by race/ethnicity, among third graders in Hawaii.
6. Third graders living in Kauai, Hawaii, and Maui counties are more likely to have experienced tooth decay than children living in Honolulu County.

There are also oral health disparities based on race/ethnicity with Micronesian and Other Pacific Islanders (Guam, Samoa, Tonga and Other Pacific Islands) having the highest prevalence of untreated decay. About 56% of Micronesian and 41% of Other Pacific Islander children have untreated decay – four times higher than the prevalence among White (13%) and Japanese (11%) children. As with income, the race/ethnicity disparities gap is more pronounced when we look at the need for urgent dental care. Thirty percent (30%) of Micronesian and 23% of Other Pacific Island children have dental pain and/or infection compared to only 3% of White and 2% of Japanese children.

With this report, the Hawaii State Department of Health builds upon the oral health data in the *2015 Oral Health Key Findings* report to inform policy development and program planning. Based on the findings of this study, Hawaii must strengthen oral disease prevention efforts and implement strategies that lead to improved access to both preventive and restorative dental care for all children. Everyone has a role in improving and promoting the oral health of Hawaii's children.

Several key strategies have been identified to improve the oral health of children in Hawaii. The strategies are grouped into three general categories highlighted in the key findings: *community-based prevention programs, screening and referral services, and restorative dental care.* Teeth develop before birth and start to appear in the mouth when a child is about 6 months of age. Therefore, the strategies listed below demonstrate efforts to prevent tooth decay starting from the prenatal period all the way through childhood.

COMMUNITY-BASED PREVENTION PROGRAMS

- Incorporate oral health promotion and preventive services, such as parental education and fluoride varnish, into well-child visits, Women, Infants, Children (WIC), Early Head Start, Head Start and other early childhood programs geared toward children 0-5 years of age.
- Expand school-based oral health prevention programs at high risk schools to include, at a minimum, the placement of dental sealants, the application of topical fluorides and oral health education.
- Conduct ongoing educational campaigns to (1) encourage the first dental visit by age one, (2) increase oral health literacy and awareness, (3) promote the importance of oral health as part of general health and well-being, and (4) promote the benefits of water fluoridation and other fluorides for the reduction of dental disease.

SCREENING AND REFERRAL SERVICES

- Offer oral health screenings and referral services in programs that serve children at greatest risk.
- Develop case management systems that help parents navigate the complex dental care delivery and payment system to assure that children needing dental care obtain it.

RESTORATIVE DENTAL CARE

- Increase the number of children who use their annual dental exam benefits offered through their insurance (private and public) coverage.
- Assess and address issues regarding Medicaid participation among private dentists.
- Advocate for the expansion of dental services that target high-risk populations.

QUICK FACTS

DECAY EXPERIENCE

- 71% of Hawaii's third grade children have experienced tooth decay.

UNTREATED TOOTH DECAY

- 22% of Hawaii's third grade children have untreated tooth decay.

DENTAL SEALANTS

- 38% of Hawaii's third grade children have dental sealants.

NEED FOR URGENT DENTAL CARE

- 7% of Hawaii's third grade children are in need of *urgent* dental care because of pain or infection.

ORAL HEALTH DISPARITIES

- In Hawaii, low-income, Micronesian, Native Hawaiian, Other Pacific Islander and Filipino children have poorer oral health outcomes.

COMMUNITY WATER FLUORIDATION

- 11% of Hawaii's residents are served by a fluoridated community water system.

THE IMPORTANCE OF GOOD ORAL HEALTH

Although tooth decay (dental caries) is a preventable bacterial disease, it continues to be the most common chronic disease of children in the United States. In fact, it is five times more common than asthma and two times more common than childhood obesity.[1-3] Nationally, tooth decay affects more than half of all children by the third grade.[4]

The public perception is largely that tooth decay is an insignificant occurrence. If left untreated, however, poor oral health has significant consequences on children and their families including:

- **Pain:** Tooth decay can cause acute or chronic pain. Many children are not aware that teeth are not supposed to hurt.
- **Infection:** Infected teeth are reservoirs of bacteria that flood the rest of the body, leaving the child prone to many other childhood infections, including ear infections and sinus infections. Development of secondary infections, in more severe cases, may require emergency care or hospitalization.
- **Nutrition problems:** Chronically painful and infected teeth make chewing and swallowing uncomfortable and difficult. Children with dental disease often do not get the nutrition they need to grow.
- **Tooth and space loss:** Chronic childhood tooth decay often results in the early loss of "baby" teeth. This can result in space loss due to movement of remaining teeth into the space, leaving insufficient room for the adult teeth to come into the mouth.
- **Sleep deprivation:** Children with chronically painful teeth have trouble getting a good night's sleep.
- **Attention problems:** Children with infected and painful teeth have a hard time relaxing, sitting still, and paying attention in class.
- **Slower social development:** Disfigured or missing teeth can lead to difficulties speaking and can negatively affect a child's self-esteem. When a child's front teeth are damaged or missing in their very crucial early years of development, they often can't form words correctly.
- **Missed school days:** Children with infected and painful teeth miss more school days than other children, disrupting their educational and social experiences. One study demonstrated that children between 5 to 17 years of age in the United States missed 1,611,000 school days due to acute dental problems – an average of 3.1 days per 100 students.[5]
- **Missed work hours:** Parents are more likely to miss work because of their child's dental problems.[6]
- **Increased costs of dental care:** As tooth destruction progresses, the treatment costs for families and the State increase considerably.
- **Poor overall health:** Dental disease impacts overall health and children with poor oral health often have poor overall health.

TOOTH DECAY IS PREVENTABLE

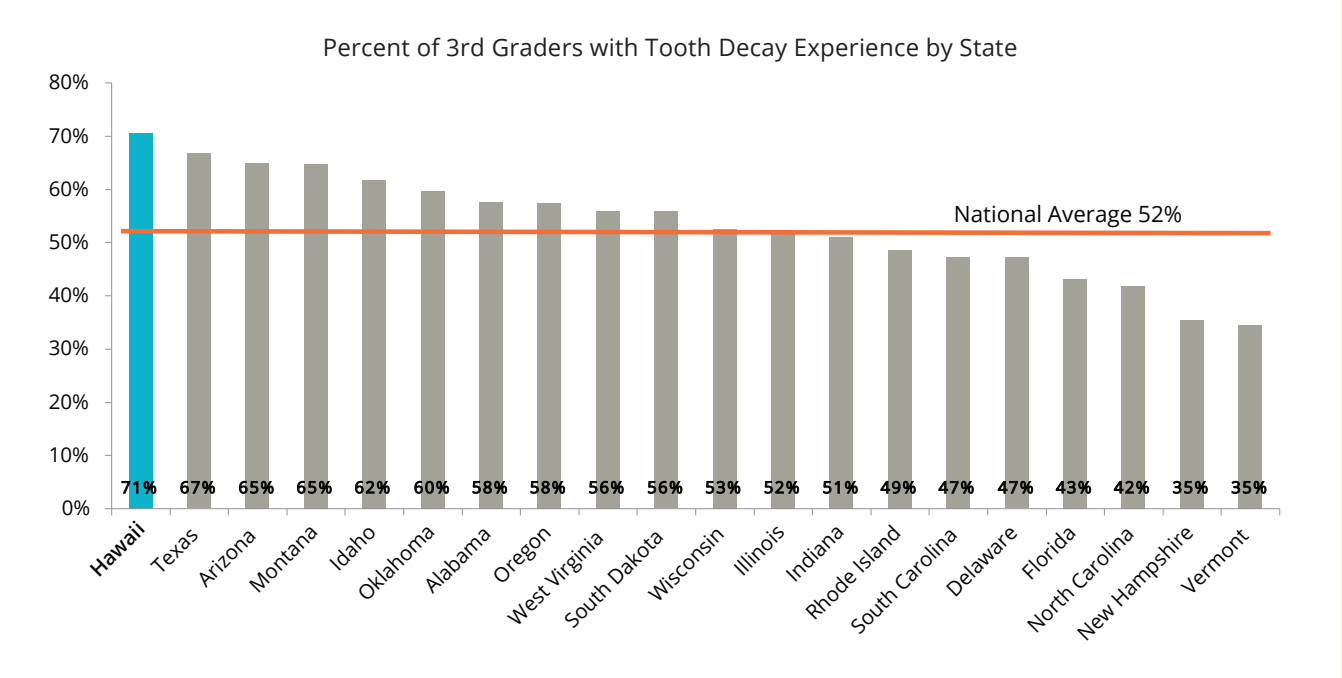
Tooth decay can be prevented. Medical, dental and public health professionals must focus dental disease prevention efforts on families with children less than 2 years of age because ***two is too late***. The American Dental Association, the American Academy of Pediatric Dentistry, and the American Association of Pediatricians all recommend preventive dental care and parent education by age 1. Evidence based strategies for preventing tooth decay in children include:

- **Fluoride varnish:** Application of fluoride varnish twice a year to the teeth of all infants and children starting when the first tooth comes into the mouth at about 6 months of age has been shown to prevent tooth decay. Fluoride varnish can be applied at medical and dental clinics and in community settings such as preschools and WIC programs.
- **Brushing with fluoride toothpaste:** Parental brushing with fluoride toothpaste twice a day as soon as teeth appear in the mouth prevents tooth decay.
- **Community water fluoridation:** Fluoridation has been shown to prevent tooth decay in both children and adults.
- **Fluoride supplements:** Daily fluoride supplementation starting at 6 months of age is recommended for children whose water supply does not contain fluoride.
- **Good eating habits:** Limiting food and beverages with added sugars will prevent dental decay and other health issues.
- **Early and regular dental visits:** All children should be referred to a dentist as early as 6 months of age to establish a dental home. Following that initial visit, most children should have a dental examination at least once a year; some high risk children may need more frequent examinations.
- **Dental sealants:** Dental sealants are placed to protect the chewing surface of the permanent molars soon after they come into the mouth around 6 and 12 years of age.
- **Improved family oral health:** Decreasing dental disease among a child's caregivers, benefits the oral health of the child. Through routine oral health care, early education regarding infant oral health can be shared with pregnant mothers and caregivers.

Preventing tooth decay improves a child's health and keeps them from having costly dental care. Because of this, ending cavities saves money for both the family and society. Annual spending on dental care in the U.S. is well over $100 billion, representing nearly 20% of children's overall health spending.[7] Medicaid-enrolled children who received their first preventive dental visit by age 1 had 40% lower dental care costs over 5 years than children who received their first preventive visit at a later age.[8] Therefore, early dental visits can reduce the need and cost associated with future treatment.

Addressing the oral health needs of Hawaii's infants, toddlers, and young children, requires the development of policies and strategies that will ensure all children receive the oral health care they need. There is no better investment in the future of Hawaii than supporting the health and well-being of our children.

KEY FINDING #1: HAWAII HAS THE HIGHEST PREVALENCE OF TOOTH DECAY AMONG THIRD GRADERS IN THE UNITED STATES. MORE THAN 7 OUT OF 10 THIRD GRADERS (71%) ARE AFFECTED BY TOOTH DECAY; SUBSTANTIALLY HIGHER THAN THE NATIONAL AVERAGE OF 52%.



State data source: Centers for Disease Control and Prevention, Oral Health Data, 2012-2015
National data source: National Health and Nutrition Examination Survey (NHANES) 2005-2010

Tooth decay experience or being affected by tooth decay means that a child has had tooth decay in the primary (baby) and/or permanent (adult) teeth during his or her lifetime. Decay experience can be past (fillings, crowns, or teeth that have been extracted because of decay) or present (untreated tooth decay or cavities). In Hawaii, 71% of third grade children have experienced tooth decay. This represents the highest prevalence for any state that has collected similar data in the recent past (2012-2015) and substantially higher than the national average for third grade children of 52%.[4] This suggests that ***Hawaii needs more primary prevention programs***. Primary prevention programs, may include parent and caregiver education, dental sealants and topical fluoride applications. Hawaii is the state with the lowest percent of its population served by fluoridated water (11% vs. 75% nationally). Because of this, Hawaii's children must access fluoride from other, more costly, sources if they are to receive the tooth decay prevention benefits of fluoride.

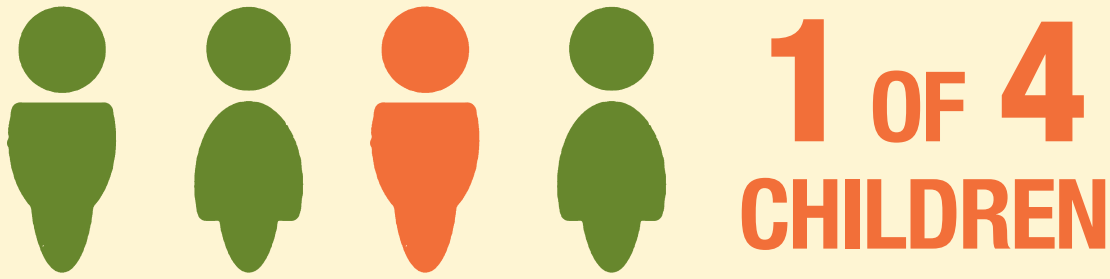
THE PROBLEM

Too many children in Hawaii are affected by tooth decay.

To Address this Problem Hawaii MUST...

Improve access to community based primary prevention programs.

KEY FINDING #2: ALMOST 1 OUT OF 4 THIRD GRADERS (22%) IN HAWAII HAVE UNTREATED TOOTH DECAY DEMONSTRATING THAT MANY CHILDREN ARE NOT GETTING THE DENTAL CARE THEY NEED.



Having untreated decay means that a child has tooth decay or a cavity that has not received appropriate treatment. Tooth decay in children destroys more than just a smile. Untreated decay compromises the child's ability to eat well, sleep well, and function well at home and at school. In addition, the unpleasant appearance of untreated decay can compromise a child's self-esteem and social development. Untreated tooth decay in children can be painful and without appropriate treatment can lead to infection of the teeth and gums. Although rare, infections due to untreated tooth decay can lead to severe illness and even death.

Children who had not visited a dentist in the last year were significantly more likely to have untreated decay (54% vs. 16%). Third grade children that had not been to the dentist in the last year were also less likely to have protective dental sealants (23% vs. 41%). By increasing the percent of Hawaii's children with an annual dental visit, the percent with untreated decay will likely decrease and those with protective dental sealants will likely increase.

Hawaii mirrors the national average regarding untreated tooth decay (22% and 23% respectively). This demonstrates that substantial treatment is being performed by Hawaii's dental providers to offset the much higher prevalence of disease in the state. While these efforts are commendable, expensive treatment and transportation costs for children living on neighbor islands continue to mount, costing individuals, families, and the State considerably more time and money. To decrease the overall burden of dental disease, more focus on prevention is needed.

THE PROBLEM

Too many children in Hawaii have untreated tooth decay.

To Address this Problem Hawaii MUST...

Develop services and policies that encourage use of the dental care system and allow for better access to dental care.

KEY FINDING #3: ABOUT 7% OF HAWAII'S THIRD GRADE CHILDREN ARE IN NEED OF URGENT DENTAL CARE BECAUSE OF PAIN OR INFECTION. IF APPLIED TO ALL CHILDREN IN KINDERGARTEN TO SIXTH GRADE, MORE THAN 6,600 CHILDREN IN HAWAII'S PUBLIC ELEMENTARY SCHOOLS EXPERIENCE PAIN OR INFECTION DUE TO DENTAL DISEASE ON ANY GIVEN DAY.

About 23% of Hawaii's third grade children need dental care – with 7% needing urgent dental care because of pain or infection and 16% needing early care. In 2014-2015, there were close to 14,000 third grade children in Hawaii. If 23% need dental care, this means that more than 3,220 third grade children are in the classroom with a cavity and about 1,000 of them attend school in pain or with an oral infection, both of which can affect their ability to concentrate and learn. If these percentages are applied to all children in kindergarten to sixth grade, almost 21,900 children have untreated decay and more than ***6,600 experience pain or an oral infection due to dental disease on any given day***. The percent of Hawaii's children needing urgent dental care is substantially higher than the national average among 6-9 year olds of less than 1%.[9]

The *Hawaii Smiles* survey did not include complete diagnostic dental examinations. Instead, dental screenings were performed. This is a quick look inside the mouth with a dental mirror, without x-rays and the more advanced diagnostic tools. Because of this, some problems were likely missed. It is reasonable to assume that these findings actually underestimate the number of children needing dental care.

THE PROBLEM

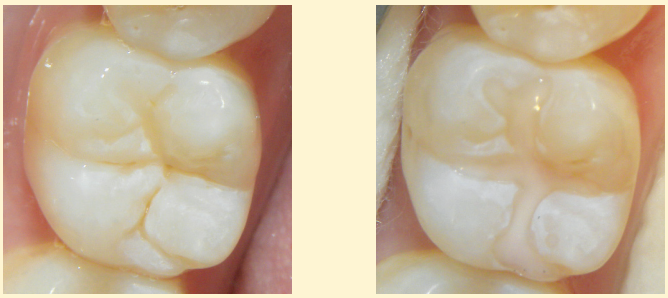
Too many children in Hawaii have dental pain or a dental infection.

To Address this Problem Hawaii MUST...

Develop community-based screening and referral programs that include a case management component so that children in need have better access to dental care.

KEY FINDING #4: MORE THAN 60% OF CHILDREN IN HAWAII DO NOT HAVE PROTECTIVE DENTAL SEALANTS, A SAFE, SIMPLE, COST-EFFECTIVE CLINICAL INTERVENTION TO PREVENT TOOTH DECAY IN MOLAR TEETH.

Molar Tooth with Before and After Dental Sealants



BEFORE AFTER

Dental sealants are thin plastic coatings that are applied to the grooves on the chewing surfaces of the permanent back teeth, which usually appear when a child is about 6 years of age. Sealants protect the chewing surfaces from tooth decay by keeping germs and food particles out of these grooves. They are a safe, effective way to prevent tooth decay among school-aged children. The Surgeon General's report on oral health indicates that sealants can reduce decay in school-aged children by more than 70%.[1] In some cases, placement of sealants can even stop tooth decay that has already started.[10]

A 2012 Hawaii Dental Service study, based on commercial insurance patients, found that children who had sealants placed on first molars experienced fewer dental problems during their childhood. The study examined dental claims for children with continuous insurance coverage and found that those who did not have sealants on their first molars incurred 34% more dental expenditures by age 15 than those who had received the sealants.[11]

Sealants can be applied in a dentist's office or through school-based sealant programs that generally target children in second grade. School-based sealant programs are especially important for reaching children from low-income families who are less likely to receive private dental care.

THE PROBLEM

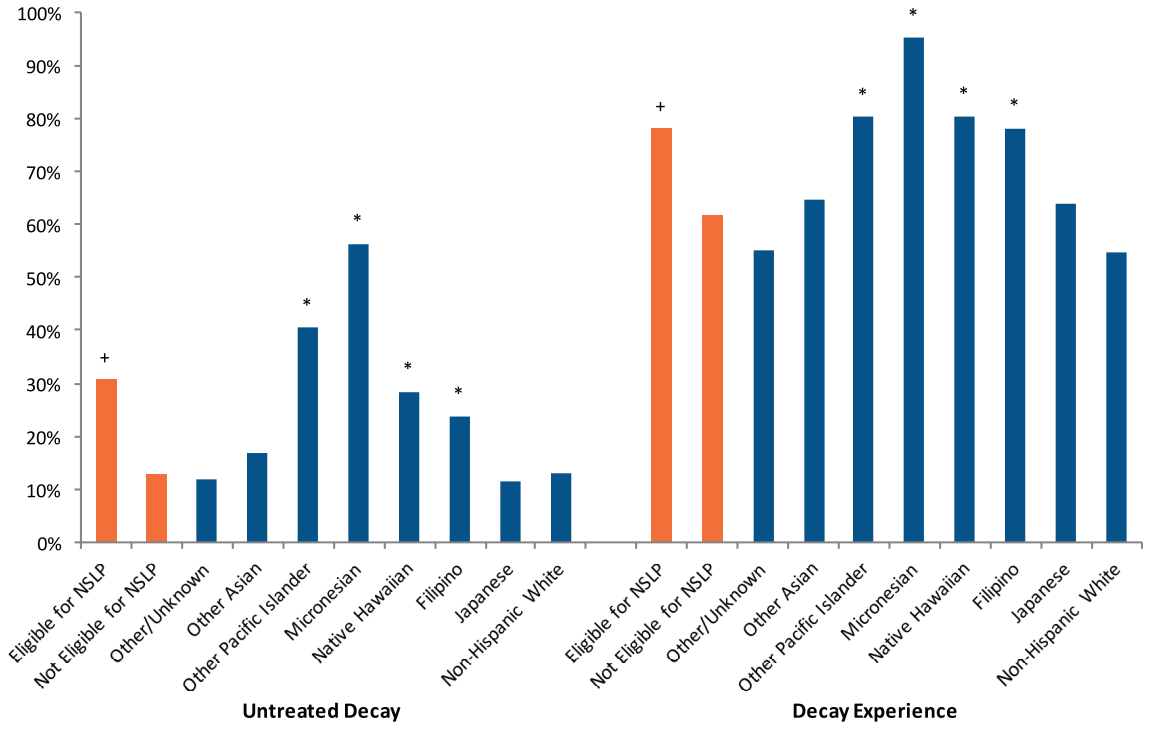
Not enough children in Hawaii have preventive dental sealants.

To Address this Problem Hawaii MUST...

Increase access to preventive dental sealants by providing education on the importance of sealants and encouraging the development of school-based sealant programs.

KEY FINDING #5: THERE ARE SIGNIFICANT ORAL HEALTH DISPARITIES BY INCOME, AS WELL AS BY RACE/ETHNICITY, AMONG THIRD GRADERS IN HAWAII.

Percent of Hawaii's 3rd grade children with untreated decay and decay experience by eligibility for the National School Lunch Program (NSLP) and race/ethnicity, 2014-2015



* Significantly different than non-Hispanic Whites (p<0.05)
\+ Significantly different than not eligible for NSLP (p<0.05)
Other Pacific Islander: Guamanian/Chamarro, Samoan, Tongan, and Other Pacific Islander
Other Asian: Chinese, Indo-Chinese, Korean, Asian two or more, and Other Asian
Other/Unknown: American Indian/Alaska Native, Black, Hispanic, multi-racial, and unknown race/ethnicity

Children eligible for NSLP are significantly more likely to have decay experience and untreated decay. In Hawaii, Micronesian, Native Hawaiian, Other Pacific Islander (Guamanian/Chamorro, Samoan, Tongan, Other Pacific Islander), and Filipino children are significantly more likely to have decay experience and untreated decay than non-Hispanic White children. This suggests that lower-income children and racial/ethnic minorities are not getting the benefit of early preventive services and are less likely to access a dentist for restorative treatment.

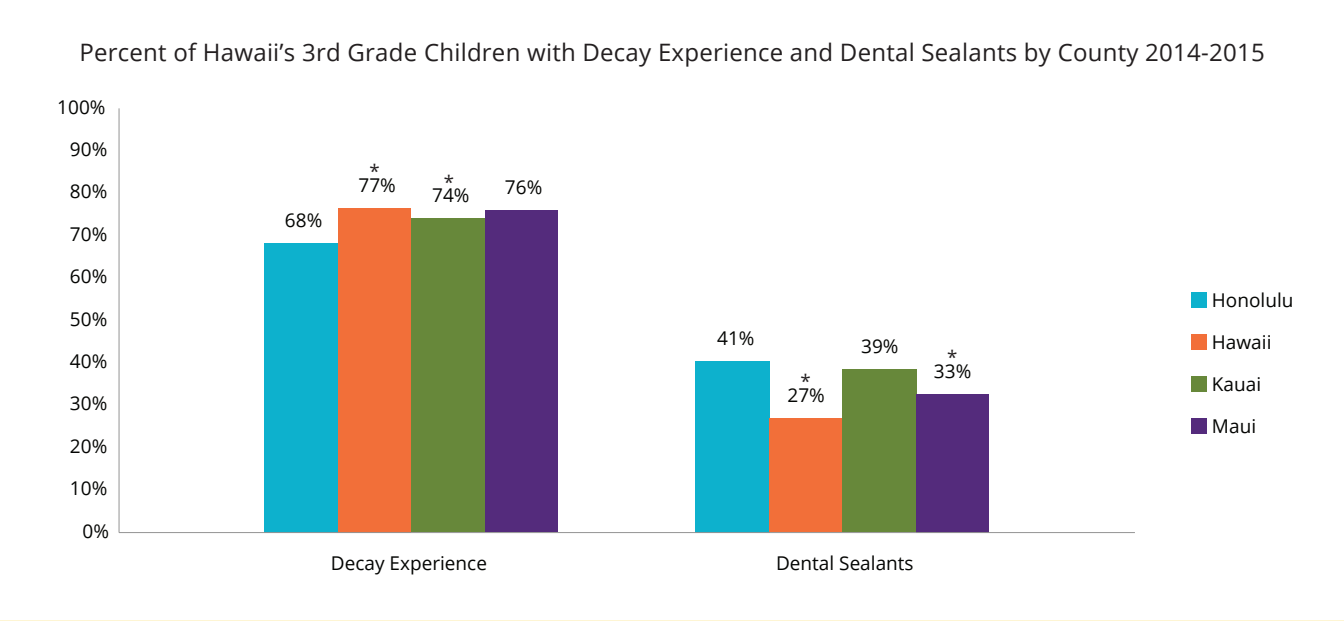
THE PROBLEM

Low-income, Micronesian, Native Hawaiian,
Other Pacific Islander and Filipino children have more dental disease.

To Address this Problem Hawaii MUST...

Develop community based prevention programs, screening and referral services, and restorative dental care programs that target the highest risk populations.

KEY FINDING #6: THIRD GRADERS LIVING IN KAUAI, HAWAII, AND MAUI COUNTIES ARE MORE LIKELY TO HAVE EXPERIENCED TOOTH DECAY THAN CHILDREN LIVING IN HONOLULU COUNTY.



* Significantly different than Honolulu County (determined by confidence intervals)

Compared to Honolulu County, third grade children living in Kauai, Hawaii, and Maui Counties have higher rates of decay experience. While 68% of the third grade children in Honolulu County had a history of tooth decay, children living in Kauai, Hawaii, and Maui Counties had decay experience ranging from 74-77%.

One reason for the higher prevalence of dental decay when comparing counties may be associated with access to preventive oral health care. Due to the increased prevalence of disease demonstrated among children in Kauai, Hawaii, and Maui Counties, additional primary prevention programs would be beneficial in these counties. Sealants are one such primary preventive measure that has been shown to reduce dental decay. However, Hawaii (27%) and Maui (33%) Counties demonstrated a significantly lower percentage of children with existing sealants when compared to Honolulu County (41%).

THE PROBLEM

Children living in Kauai, Hawaii, and Maui Counties have less access to preventive oral health care.

To Address this Problem Hawaii MUST...

Improve access to community-based primary prevention programs, such as school-based oral health programs and community education campaigns.

KEY STRATEGIES TO IMPROVE ORAL HEALTH

The results of *Hawaii Smiles* highlight the need for improvements in the oral health of children living in Hawaii. Access to culturally appropriate community-based prevention programs, screening and referral services, and restorative dental care must be improved. The Hawaii State Department of Health, in collaboration with various stakeholders, has identified several strategies which could improve the oral health of children in Hawaii. The strategies are grouped into three general categories highlighted in the key findings: *community-based prevention programs, screening and referral services, and restorative dental care*. Because teeth develop before birth and start to appear in the mouth when a child is about 6 months of age, efforts to prevent tooth decay must start during pregnancy and continue throughout childhood.

COMMUNITY-BASED PREVENTION PROGRAMS

- Incorporate oral health promotion and preventive services, such as parental education and fluoride varnish, into well-child visits, Women, Infants, Children (WIC), Early Head Start, Head Start and other early childhood programs geared toward children 0-5 years of age.
- Expand school-based oral health prevention programs at high risk schools to include, at a minimum, the placement of dental sealants, the application of topical fluorides and oral health education.
- Conduct ongoing educational campaigns to (1) encourage the first dental visit by age one, (2) increase oral health literacy and awareness, (3) promote the importance of oral health as part of general health and well-being, and (4) promote the benefits of water fluoridation and other fluorides for the reduction of dental disease.

SCREENING AND REFERRAL SERVICES

- Offer oral health screenings and referral services in programs that serve children at greatest risk.
- Develop case management systems that help parents navigate the complex dental care delivery and payment system to assure that children needing dental care obtain it.

RESTORATIVE DENTAL CARE

- Increase the number of children who use their annual dental exam benefits offered through their insurance (private and public) coverage.
- Assess and address issues regarding Medicaid participation among private dentists.
- Advocate for the expansion of dental services that target high-risk populations.

SURVEY METHODS

Hawaii Smiles sampled children in third grade, the target elementary school population for the National Oral Health Surveillance System. Public and charter elementary schools with at least 20 children in third grade were included in the sampling frame from four counties in Hawaii: Kauai, Hawaii, Honolulu, Maui. The sampling frame was stratified by county then ordered by the school's National School Lunch Program (NSLP)* participation rate. A systematic probability proportional to size sampling scheme was used to select 64 schools. If a school refused to participate, a school within the same sampling interval was randomly selected. Data is available for all 64 sampling intervals; 58 original schools and 6 replacement schools. In addition, to the 64 schools selected, 3 additional schools on Molokai were also screened resulting in a total of 67 schools representing 64 sampling intervals.

Screenings were completed during the 2014-2015 school year. Letters were sent home to parents explaining the goals of the survey. Parents were asked to return a signed consent form. Only those children whose parents returned a positive consent form were screened. Of the 5,541 third grade children enrolled in the 67 schools, 3184 were screened for a response rate of 57%. Trained dental examiners completed the screenings using gloves, penlights, and disposable mouth mirrors. The training consisted of a two hour didactic session followed by a two hour clinical training. Inter- and intra-rater reliability were not determined. The diagnostic criteria outlined in the Association of State and Territorial Dental Director's publication *Basic Screening Surveys: An Approach to Monitoring Community Oral Health* were used.[14]

Data were collected on paper forms and Microsoft Access was used to enter the data. All statistical analyses were performed using the SAS software complex survey procedures (Version 9.3; SAS Institute Inc., Cary, NC). Sample weights were used to produce population estimates based on selection probabilities and indicating the number of children in the sampling interval each screened child represented.

Information on parent reported race/ethnicity and eligibility for the National School Lunch Program was provided by the Hawaii State Department of Education. Prior to analysis, unique identifiers were removed from the dataset so that anonymity was maintained.

Table 1 presents additional information on the number of schools and children in the state, the sampling frame, participating schools, and children screened. In terms of eligibility for NSLP, the children screened are representative of all third grade children in Hawaii's public and charter schools.

TABLE 1: **Comparison of Hawaii schools in the sampling frame, participating schools and children screened**

	# Schools	# 3rd Graders	NSLP%
All schools with 3rd grade	203	13,985	53.4%
All schools in sampling frame	184	13,781	53.4%
Participating schools	67	5,541	54.7%
Children screened	67	3,184	52.9%

Source: Hawaii State Department of Education
NSLP = National School Lunch Program

* The National School Lunch Program (NSLP) is a federally assisted meal program operating in public and nonprofit private schools. It provides nutritionally balanced, low-cost or free lunches to children each school day. Eligibility for NSLP is often used as an indicator of socioeconomic status. To be eligible for NSLP during the 2014-2015 school year, annual income for a family of four in Hawaii could not exceed $50,746.(13)

TABLE 2: **Demographic characteristics of the third grade children screened, 2014-2015**

Characteristic	Weighted Percent	Confidence Interval
Gender (n=3,175)		
Female	49.7	46.7 – 52.7
Male	50.3	47.3 – 53.3
NSLP Participation (n=3,166)+		
No	47.1	40.2 – 54.0
Yes	52.9	46.0 – 59.8
County (n=3,184)		
Honolulu	69.1	68.0 – 70.2
Hawaii	14.1	13.8 – 14.3
Kauai	4.9	3.4 – 6.5
Maui	11.9	11.7 – 12.1
Race/Ethnicity (n=3,184)		
White (non-Hispanic)	21.8	16.6 – 27.0
Japanese	10.3	6.5 – 14.1
Filipino	22.5	16.3 – 28.6
Native Hawaiian	22.4	17.9 – 26.8
Micronesian	4.2	2.2 – 6.1
Other Pacific Islander	5.8	3.5 – 8.0
Other Asian	6.8	4.1 – 9.5
Other/Unknown	6.3	4.2 – 8.5

+ NSLP= National School Lunch Program

NOTE: Information on race/ethnicity and NSLP participation was provided by the Hawaii State Department of Education (DOE). Because of small sample sizes, some of the categories provided by DOE were collapsed into the following: White: Parent reported child's race as White or Portuguese; Other Pacific Islander: Parent reported child's race as Guamanian/Chamorro, Samoan, Tongan, or Other Pacific Islander; Other Asian: Parent reported child's race as Chinese, Indo-Chinese, Korean, Asian two or more, or Other Asian; and Other/Unknown: Parent reported child's race as American Indian/Alaska Native, Black, Hispanic, Multi-racial, or Unknown

TABLE 3: **Percent of Hawaii's third grade children with decay experience, untreated decay, dental sealants, urgent need for dental care, eligible for NSLP, and with a dental visit in the last year by selected characteristics, 2014-2015**

Characteristic	Decay Experience Percent (95% CI) n = 3,181	Untreated Decay Percent (95% CI) n = 3,182	Dental Sealants Percent (95% CI) n = 3,180	Needs Urgent Dental Care Percent (95% CI) n = 3,173	Eligible for NSLP Percent (95% CI) n =3,166	Dental Visit in Last Year* Percent (95% CI) n = 2,447
All children	**70.6 (67.5 - 73.6)**	**22.4 (19.1 - 25.7)**	**37.6 (35.1 - 40.1)**	**7.2 (4.9 - 9.5)**	**52.9 (46.0 - 59.8)**	**88.1 (85.6 - 90.5)**
Gender						
Female	69.0 (65.0 - 72.9)	20.7 (17.3 - 24.0)	40.1 (36.8 - 43.5)	5.4 (4.0 - 6.7)	52.7 (45.3 - 60.1)	89.1 (86.5 - 91.7)
Male	72.1 (69.0 - 75.2)	24.0 (19.8 - 28.2)	35.1 (31.5 - 38.6)	9.0 (5.2 - 12.8)	53.1 (45.7 - 60.6)	87.1 (83.6 - 90.5)
NSLP participation+						
No	61.8 (58.6 - 65.1)	12.9 (10.5 - 15.3)	40.9 (37.3 - 44.5)	2.3 (1.4 - 3.3)	--	92.4 (90.1 - 94.8)
Yes	78.2 (75.1 - 81.3)	30.8 (26.4 - 35.1)	34.7 (30.1 - 39.3)	11.6 (7.8 - 15.3)	--	83.6 (80.2 - 87.0)
County						
Honolulu	68.2 (63.9 - 72.5)	21.5 (16.8 - 26.1)	40.5 (37.1 - 44.0)	7.2 (4.0 - 10.4)	49.3 (39.6 - 58.9)	89.1 (85.7 - 92.5)
Hawaii	76.5 (73.3 - 79.7)	26.3 (22.9 - 29.7)	26.9 (21.8 - 32.0)	6.1 (3.7 - 8.5)	72.1 (63.3 - 80.9)	88.4 (85.3 - 91.5)
Kauai	74.1 (NA)	26.2 (NA)	38.5 (NA)	7.1 (NA)	55.0 (NA)	81.3 (NA)
Maui	76.0 (71.6 - 80.3)	21.7 (17.1 - 26.2)	32.6 (29.5 - 35.7)	8.5 (5.9 - 11.1)	50.5 (40.8 - 60.2)	85.4 (81.6 - 89.2)
Race/Ethnicity						
White (non-Hispanic)	54.9 (49.9 - 60.0)	13.2 (9.6 - 16.8)	44.2 (37.7 - 50.8)	2.7 (1.4 - 4.0)	35.5 (27.9 - 43.0)	86.8 (82.2 - 91.4)
Japanese	63.7 (59.4 - 67.9)	11.4 (8.2 - 14.7)	36.5 (31.7 - 41.3)	1.8 (0.5 - 3.1)	25.1 (15.5 - 34.6)	96.1 (93.3 - 98.8)
Filipino	78.2 (74.4 - 82.0)	23.8 (21.1 - 26.6)	37.5 (32.8 - 42.2)	8.4 (6.5 - 10.3)	54.3 (46.8 - 61.7)	88.2 (84.3 - 92.2)
Native Hawaiian	80.4 (76.7 - 84.2)	28.5 (22.3 - 34.6)	35.7 (31.8 - 39.7)	6.5 (2.1 - 10.9)	70.3 (62.8 - 77.9)	86.2 (79.0 - 93.4)
Micronesian	95.2 (91.7 - 98.8)	56.4 (49.3 - 63.5)	29.9 (21.7 - 38.1)	30.0 (21.9 - 38.1)	91.6 (83.2 - 100.0)	72.7 (56.5 - 88.9)
Other Pacific Islander	80.2 (73.2 - 87.2)	40.5 (27.2 - 53.9)	34.4 (24.0 - 44.8)	22.7 (8.5 - 36.9)	72.9 (63.3 - 82.6)	80.9 (68.2 - 93.5)
Other Asian	64.8 (57.5 - 72.1)	17.0 (11.0 - 23.1)	29.7 (21.6 - 37.8)	3.6 (0.2 - 7.0)	39.3 (27.3 - 51.3)	94.5 (90.0 - 98.9)
Other/Unknown	55.1 (42.6 - 67.5)	12.0 (6.2 - 17.9)	39.7 (28.8 - 50.5)	3.9 (1.1 - 6.8)	62.7 (50.2 - 75.2)	91.2 (86.3 - 96.0)
Dental visit in last year*						
No	73.5 (66.3 - 80.7)	54.1 (45.1 - 63.0)	23.2 (16.8 - 29.6)	25.9 (16.1 - 35.7)	68.3 (60.7 - 75.9)	--
Yes	68.7 (65.2 - 72.2)	15.8 (13.1 - 18.6)	41.1 (37.6 - 44.6)	3.4 (2.2 - 4.6)	47.3 (40.3 - 54.4)	--

+ NSLP= National School Lunch Program

* Information on time since last dental visit was missing for 737 children and results should be viewed with caution

NA=Not applicable, all schools on Kauai were screened

CI=Confidence interval

NOTE: Information on race/ethnicity and NSLP participation was provided by the Hawaii State Department of Education (DOE). Because of small sample sizes, some of the categories provided by DOE were collapsed into the following: White: Parent reported child's race as White or Portuguese; Other Pacific Islander: Parent reported child's race as Guamanian/Chamorro, Samoan, Tongan, or Other Pacific Islander; Other Asian: Parent reported child's race as Chinese, Indo-Chinese, Korean, Asian two or more, or Other Asian; and Other/Unknown: Parent reported child's race as American Indian/Alaska Native, Black, Hispanic, Multi-racial, or Unknown

NOTE: All estimates are weighted

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PARTICIPATING SCHOOLS

Honolulu County

Aikahi Elementary
Aina Haina Elementary
August Ahrens Elementary
Barbers Point Elementary
Holomua Elementary
Kaala Elementary
Kaewai Elementary
Kahuku Elementary
Kapalama Elementary
Lehua Elementary
King William Lunalilo Elementary
Maemae Elementary
Makakilo Elementary
Makalapa Elementary
Mililani Ike Elementary
Mililani Mauka Elementary
Mililani Waena Elementary
Mokapu Elementary
Puuhale Elementary
Royal School
Sunset Beach Elementary
Wahiawa Elementary
Waianae Elementary
Waiau Elementary
Waikiki Elementary
Gustav H. Webling Elementary

Kauai County

Eleele Elementary
Hanalei Elementary
Kalaheo Elementary
Kapaa Elementary
King Kaumualii Elementary
Kekaha Elementary
Kilauea Elementary
Koloa Elementary
Elsie H. Wilcox Elementary

Hawaii County

Ernest Bowen de Silva Elementary
Haaheo Elementary
Prince Jonah Kuhio Kalanianaole Elementary & Intermediate
Chiefess Kapiolani Elementary
Kaumana Elementary
Ke Kula o Nawahiokalaniopuu Iki Laboratory Public Charter School
Keaau Elementary
Kealakehe Elementary
Keonepoko Elementary
Konawaena Elementary
Mountain View Elementary
Paauilo Elementary & Intermediate
Pahoa Elementary
Waiakea Elementary
Waiakeawaena Elementary
Waikoloa Elementary & Middle
Waimea Elementary

Maui County

Lanai High & Elementary
Kahului Elementary
Kamalii Elementary
Pomaikai Elementary
Kihei Elementary
Lihikai Elementary
Makawao Elementary
Princess Nahienaena Elementary
Pukalani Elementary
Puu Kukui Elementary
Wailuku Elementary
Kaunakakai Elementary
Kilohana Elementary
Kualapuu Elementary New Century Public Conversion Charter School
Maunaloa Elementary

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