2010

Snohomish County SMILE Survey

Healthy Communities & Assessment

Oral Health Program

3020 Rucker Avenue, Ste. 206

Everett, WA 98201

SNOHOMISH HEALTH DISTRICT

WWW.SNOHD.ORG

PUBLIC HEALTH
always working for a safer & healthier
SNOHOMISH COUNTY

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

Key Findings for the Snohomish County 2010 SMILE Survey

Tooth decay (filled or unfilled) of Snohomish County children ages 2-4 and 6-8 years exceeds the Healthy People 2010 health objectives for the Nation.

Untreated tooth decay in Snohomish County is higher than in Washington State.

Snohomish County currently meets and exceeds the HP2010 health objectives for:

- Community water fluoridation
- Dental Sealants
- Untreated decay

Compared to 2005:

The use of preventive dental sealants in permanent teeth has increased (54% 2005 to 65% 2010).

Access to a dentist continues to improve for all children in Snohomish County.

While oral health disparities remain, they have improved.

Dental treatment for low income children increased.

Snohomish County children who were minority or who spoke a language other than English had less untreated and rampant disease.

Children enrolled in Head Start or ECEAP were more likely to have had dental care. Snohomish County Head Start/ECEAP children had greater unmet dental needs when compared with Washington State.

2010 SMILE Survey Results Snohomish County

Introduction

The June 2000 Surgeon General's Report on Oral Health states that dental disease in children is a common, chronic problem and an infectious disease. Dental disease impacts ability to eat, sleep and attend to learning. Dental caries begins in early childhood and continues throughout life. It is the single most common chronic disease of childhood. It is five times more common than asthma.[1] Children in 3rd grade are at the height of dental caries experience in the primary teeth. Evaluation of the prevalence of tooth decay, treated or untreated, in primary teeth is an indicator of risk for tooth decay in the permanent teeth that are just now beginning to come into the mouth. Cavities are the result of irreversible breakdown in the tooth enamel as a result of bacterial infection. If identified early, cavitation can be prevented and the breakdown (demineralization) of the tooth enamel reversed.[2] Fillings, while the standard treatment for restoring the tooth structure, do not prevent future tooth decay. Cavities and fillings, by third grade, are a measure of total disease experience in primary teeth. Dental sealants in 3rd grade are one measure of prevention for permanent teeth, since the permanent teeth are just beginning to erupt into the mouth. Eighty-seven percent of dental caries in permanent teeth will occur in the pits and fissures of the permanent molars.[3]

In 2010, Snohomish Health District conducted a survey of Kindergarten and 3rd graders comparable to the Washington State Department of Health's (DOH) 2010 SMILE Survey. Like the DOH survey, Snohomish Health District (SHD) surveyed children in Head Start as well. The oral health information from these surveys helps communities understand the disproportionate affects dental disease has on children from low-income families, children from minority groups and children from immigrant/refugee families. The purpose of this report is to compare the oral health of children in Snohomish County with children in Washington State for 2010. (http://www.doh.wa.gov/cfh/Oral_Health/Documents/SMILESurvey 2010 FullReport.pdf) The report also highlights similarities and differences in the oral health of Snohomish County children between the 2005 and 2010 SMILE Surveys.

History of Oral Health Surveillance

Year	WA Statewide DOH Survey	Snohomish Co SHD Survey
2000	2nd/3rd grade Head Start Native American	2nd/3rd grade Head Start
2005	2nd/3rd grade Head Start/ECEAP Native American	2nd /3rdgrade Head Start/ECEAP
2010	Kindergarten 3rd grade Head Start /ECEAP Native American	Kindergarten 3rd grade Head Start /ECEAP

Table 1

[1] Edelstein B, Douglass C. Dispelling the cavity free myth. Public Health Reports 1995, 110:522-30.
[2] Featherstone JD. Remineralization, the natural caries repair process--the need for new approaches. Adv Dent Res. 2009;21(1):4-7.
[3] U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. Preventing Dental Caries. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2005. http://www.cdc.gov/NCCdphp/publications/factsheets/Prevention/oh.htm.

Snohomish County SMILE Survey, 2010

Methods

The 2010 Snohomish County SMILE Survey used the same methodology as the 2010 Washington State SMILE Survey. An electronic data file of all elementary schools in Snohomish County was obtained from the Washington State Office of the Superintendent of Public Instruction (OSPI). Demographics included age, gender, race, language spoken at home, and for elementary students, eligibility for free and/or reduced price lunch program (low income). Data on race were reported by parents to each school and recorded on the data entry form from class lists of children at each school. At the time of the screening, each child was asked what language their family usually speaks at home with the responses categorized as English, Spanish or other language.

Schools had the option of participating with positive consent or passive consent. All Snohomish County schools elected to use passive consent. Licensed and registered dental professionals attended calibration training in the fall of 2010. Examiners used gloves, a penlight and a dental mirror to look at the children's teeth at the school. This type of dental screening underreports dental disease. Oral health indicators recorded for the survey included: untreated caries (decay), treated caries, rampant caries (decay on 7 or more teeth), dental sealants (one or more on permanent teeth), and treatment urgency (none, early, urgent).

Sampling and Response Rate
Elementary School Participation
SMILE Survey, 2010

	Number of Schools	Number Enrolled	Number Screened	Response Rate
Sample Schools	21	3422	2607	76.2%
Participating Schools	19	3075	2607	84.8%

Table 2

In order to increase the reliability of results, comparing Washington State and Snohomish County, additional schools were selected in Snohomish County using the same sampling methodology as Washington State. Schools with at least 25 children in the kindergarten and third grade were included in the sampling frame. In the prior school year 2008-2009 OSPI enrollment data identified 114 Snohomish County eligible schools with 14,892 Kindergarten and third grade children. The 2009-2010 OSPI enrollment data identified 101 schools with an enrollment of 15,577 children. Schools were stratified by the level of participation in reduced fee and free programs (RFL): yes or no (See Appendix I). This ensured a representative sample of schools by income. Twenty-one schools were systematically selected within each RFL Program strata to achieve a sample size of 1344 children (K and 3rd) within a 95% probability of representing Kindergarten and 3rd grade children, based upon a response Reduced-fee and free Lunch program data is a useful proxy for low income because children whose families are at 185% of the federal poverty level qualify for this program, and it is routinely reported by the Office of the Superintendent of Public Instructions (OSPI). The Medicaid Program also has a sharing agreement with OSPI to assure that children with Medicaid coverage are enrolled in RFL programs. This percent of children eligible for the RFL program was used to select a proportional probability sample. The term 'low income' will refer to participants that participated in the RFL in this survey analysis.

RFL data were obtained from OSPI Child Nutrition Program staff using a random code number assigned to each child to maintain confidentiality of his RFL eligibility. Code numbers were reported on the data collection form and on a class list. The class list was sent to the Child Nutrition Program at each school. The Child Nutrition Program staff identified and returned the code numbers for those children that participated in the low income program, and the code number was recorded on the data collection form after the oral assessment. Examiners did not know the income status of individual children.

For Snohomish County, the number of children needed to be seen within a 95% probability of covering the true value, with 19 schools participating, and the 84.8% response rate would have been 2499 children for Kindergarten and third grade. The number of children participating in the Snohomish County SMILE Survey was 2607, yielding sufficient power to generalize the results.

If a school refused to participate, a replacement school within the sampling strata was randomly selected. If the sample school plus two replacement schools refused to participate, no data were collected in that sampling stratum. Two schools did not participate and they were not significantly different from other schools in the same sampling strata (See Appendix I). All sampling stratums were represented in the SMILE Survey, 2010.

Data entry and analysis

Data entry and analysis were completed using EPI INFO Version 3.2.2. EPI INFO is a public access software program developed and supported by the Centers for Disease Control and Prevention (CDC). Additional chi-square analyses were done using QuickCalcs Online Calculator for Scientists by GraphPad. The data was analyzed for non-response, and no significant differences were found. Unlike Washington State or King County, response rates from the participating schools were not significantly different (Appendix 2). The data reported was adjusted for non-response and clustering**.**

In all of the analyses, the Washington State results did not include the 16 over-sampled Snohomish County schools. It should be noted that the Washington State sample was kept intact as originally identified; therefore, all results for the state (53 schools) included the three (6% of the State sample) Snohomish County schools.

Comparisons between Washington State and Snohomish County

A two tailed chi-square test was used to identify any statistical difference. The chi-square testing was used to compare the Snohomish County 2010 data with the Washington State 2010 data or with the Snohomish County 2005 data. A *p* value of less than .05 was used as the threshold to identify statistical significance within this report.
P values are reported for statistically significant findings.

Representation

Enrollment and Free/Reduced Price Lunch Program Participation in all Elementary Schools in Sampling Frame, Sample Schools and Participating Schools SMILE Survey, 2010

	K & 3rd Grade Enrollment	Percent on RFL	Percent White	Percent Hispanic	Percent African-American	Percent Other Race
Schools in 2010 sampling frame (n=101)	15577	36.6	66.0	13.1%	3.2%	17.7%
Sample Schools (n= 21)	3422	31.0	61.5	16.3%	3.0	18.9%
Participating Schools (n= 19)	3075	32.0	59.6	16.7	3.1	20.6%
Children Screened (n= 2607)	2607	36.6	66.4	16.7%	4.0	12.9%

Table 3

Combining the statewide and additional county sample, 21 schools were selected for the Snohomish county sample, of which 19 schools participated. Of the 19 participating schools, 3 schools with a kindergarten and third grade enrollment of 369 were part of the 2010 Washington State sample and 16 schools with an enrollment of 2774 were from the Snohomish County over sample. Additional data tables can be found in Appendix 4.

Participation in RFL
Enrollment and Free/Reduced Price Lunch Program
Snohomish County
Kindergarten or 3rd Grade

	Kind & 3rd Grade Enrollment	Percent Low Income	*p* value
Snohomish County Schools with Kind and/or 3rd Grade (n=114)	14,892	30.5% (4542)	0.32
Participating Schools (n=19)	2607	36.6% (954)	

Table 4

Though the Snohomish County sample appears to have a higher rate of low income families than all schools within Snohomish County, the difference was not found to be statistically significant. The free and reduced lunch proportion of the sample is representative of Snohomish County overall.

Age
Kind and 3rd grade participants
Snohomish County and Washington State
SMILE Survey, 2010

	Snohomish County 3rd grade	WA State 3rd grade	Snohomish County Kindergarten	WA State Kindergarten
Mean Age in years (Standard Deviation) Range	8.0 (±SD) 6 – 10 years	8.6 (±SD) 5-10 years	5.6 (±SD) 5-9 years	5.5 (±SD) 5-9 years

Table 5

The average age of the 3rd grade participants was 8 years, in Snohomish County compared to 8.6 years in the Washington State sample. Snohomish County Kindergarten average age was more similar to Washington, 5.6 compared to 5.5 years old. By age 9 or 10 children begin to naturally exfoliate their primary teeth and thus the survey data may under represented children with past caries experience.

Gender
Kindergarten and 3rd Grade Participants
Snohomish County and Washington State
SMILE Survey, 2010

Gender	Sno Kind #	Sno Kind %	WA Kind #	WA Kind %	Sno 3rd #	Sno 3rd %	WA 3rd #	WA 3rd %
Male	**684**	**53.9%**	1443	50.6%	**675**	**51.0%**	1470	51.0%
Female	**586**	**46.1%**	1414	49.2%	**649**	**49.0%**	1396	48.7%

Table 6

Gender distribution among Snohomish County 3rd grade participants was similar to Washington State participants. While gender distribution among Kindergarten participants appears to be different between the two regions, there was no statistical difference. *(p*=0.13)

Race*
Snohomish County vs. Washington State
Kindergarten or 3rd Grade
SMILE Survey, 2010

	Sno County Kind	WA State Kind	*p* value	Sno County Third	WA State Third	*p* value
White Non-Hispanic	66.32	65.08	0.439	66.95	63.58	0.035
Non White Hispanic	33.68	34.92		33.05	36.42	

Table 6 (Adjusted for non-response)

*Participants that reported their race

Snohomish participants' race was similar to Washington State participants for Kindergarten children. The Snohomish County sample, like Snohomish County as a whole, was statistically more White/non-Hispanic than Washington State. Due to small numbers, race was combined into White/non-Hispanic and non-White/Hispanic. Past surveys have found that non-white/Hispanic communities have higher dental caries experience than White/Non-Hispanic communities.

Combined Grade Comparison
Snohomish County and Washington State
Kindergarten and 3rd Grade Combined
SMILE Survey, 2010

	Sno County Total Enroll	Sno %	WA State	WA State %	Sno County Sample 2010	Sno Percent	WA State # Sample 2010	WA State % Sample
White Non-Hispanic	10327	66.3%			1722	66.7%	3650	64.4%
Non White Hispanic	5250	33.7%			875	33.6%	2088	36.3%
	15577		140,000		2597*		5741	

Table 7

When combined data for kindergarten and third grade is compared, Snohomish County has a lower proportion of non-white/Hispanic population than Washington State.

Income/RFL %
Kindergarten and 3rd Grade
SMILE Survey, 2010

	Sno County Kind	WA State Kind	*p* value	Sno County Third	WA State Third	*p* value
Not RFL	58.84	54.93	0.000	58.84	49.41	0.000
RFL	41.16	45.07		41.16	50.59	

Table 8 (Adjusted for non-response)

The results indicate that Snohomish County has a smaller proportion of children from low income families when compared to Washington State.

Grade Level -Proportion
Snohomish County and Washington State
Kindergarten and 3rd Grade Children Screened
State SMILE Survey, 2010

	Snohomish County	Washington State	*p* value
Kind	1269 (49.0%)	2858 (49.9%)	0.39
Third	1324 (51.0%)	2875 (50.1%)	

Table 9

The proportion of Kindergarten and Third grade students in the Snohomish county and Washington State survey are similar.

Language

No comparable information was available for language spoken at home in the county-wide enrollment data. At the time of the screening, each child was asked what language his/her family usually speaks at home, with the responses categorized as English, Spanish or other language.

	Sno County Kind	WA State Kind	P	Sno County Third	WA State Third	*p* value
English	82.79	84.84	0.100	84.91	85.96	0.37
Not English	17.21	15.16		15.09	14.04	

Table 10 (Adjusted for non-response)

The children that participated in the SMILE survey were not different, compared with county enrollment for Kind/3rd by race or income.

Comparison 2005 and 2010 SMILE Surveys

Comparisons between the 1996, 2000, 2005 and 2010 SMILE Surveys should be done cautiously since the types of surveys, sample sizes, sampling strategies, response rates and dental technology varied. This report will focus on the comparisons with 3rd grade participants in the most similar SMILE Surveys, 2005 and 2010.

Response Rates
Kind and 3rd Grades
SMILE Surveys 2005 and 2010

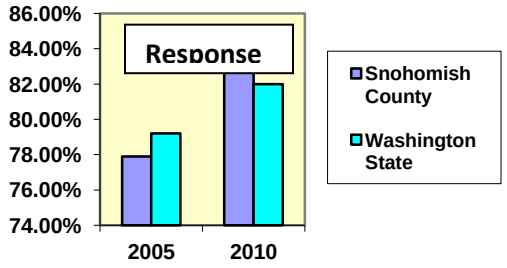


Figure 1

In 2000 both Washington State and Snohomish County surveys used positive consent, requiring families to return a consent form to the school for their children to participate. Positive consent tends to over represent children with dental caries experience and unmet dental treatment, as parents perceive the screening as an opportunity to learn about their child's oral health. Thus, differences found when comparing the two years may be due to sample differences or bias and may not reflect true differences.

In 2005 and 2010 a passive consent methodology was used for both surveys. Parents returned the consent form only if they did not wish their children to participate. Passive consent resulted in larger participation (2005:79.2%, 2010: 84.2%). A larger participation of selected children resulted in a better representation of the targeted population and improved its overall oral health status.

Sampling bias

The CDC Basic Screening Survey methodology can both over and under estimate dental disease experience. Caries detection instruments, including x-rays, instruments and other tools, detect small cavities commonly missed with the visual dental screening criteria used for the SMILE Survey. However, there are currently no dental standards for determining when an individual has dental caries that requires restoration, that is not easily seen by the naked eye. Early cavities can be reversed without restoration if the tooth structure has not been broken. [4]

Dental materials have also changed. In past years, dental filling materials were predominantly silver/amalgam materials that are easily seen. The trend has been to fill decay with tooth colored materials that look like the natural tooth. This may have biased the collected data toward reductions in treated tooth decay, simply because the newer fillings could not be easily and quickly identified.

Washington State Medicaid program increased fees paid to practitioners for dental treatment for children under age 6, beginning in 1995, to improve access to dental care; this may bias sampled data. Increased fees can be incentives for practitioners to increase restoration for children with Medicaid coverage, especially when the perception is that families with low incomes may not return for routine follow up dental care. In 2009, fees for extensive dental treatments for children under age 6 were significantly enhanced. For example, the D2390 fee was doubled for anterior primary teeth that are lost the soonest, and that fee was higher than most any other routine (not specialty) dental service for permanent teeth of older children or adults. Fees for large restorations and crowns on primary teeth were enhanced as well ((http://hrsa.dshs.wa.gov/RBRVS/Index.html#d)). There were no reimbursements for providing conservative treatments that avoid restoration.

Snohomish County has a lower proportion of low income and non-white populations as compared to Washington State or other counties. To compare Snohomish County more accurately, data comparisons included race (white/non-white), income (RFL% and non-RFL%) and language spoken at home (English/not English)

[4] N.J. Cochrane, F. Cai, N.L. Huq, M.F. Burrow and E.C. Reynolds **New Approaches to Enhanced Remineralization of Tooth Enamel.** *J DENT RES* 2010 89: 1187 originally published online 25 August 2010

Snohomish County General Results

GENERAL RESULTS- Snohomish County 2010

Distribution of Treated Decay, Untreated Decay, and Caries Experience Among the Primary & Permanent Dentitions of Children Screened
General Results - Snohomish County
SMILE Survey, 2010

	Sno Kind (n=1269)	Percent CI	Sno Third (n=2858)	Percent CI
Caries free	708	55.8%	494	37.3%
Caries experience				
-primary teeth	561	44.2%	830	62.7%
-permanent teeth			250	18.9%
Permanent Only Treated decay	1085	85.6%	1098	82.9%
Untreated decay	183	14.4%	226	17.1%
Rampant caries	199	15.7%	258	19.4
Dental Sealants			860	65.0%
Treatment Need				
- No obvious problem	1102	87.7%	1106	84.8%
- Early dental care needed	154	12.2%	199	15.0%
- Urgent dental care needed	11	0.9%	19	1.4%

Table 11

Dental caries increases with age. Older children will have more tooth decay because their teeth have been in the mouth longer. Tooth decay in the permanent teeth will be low in this survey because the majority of permanent teeth have not yet erupted or have not been erupted long enough to develop cavities.

Tooth decay affects 44.2 % of primary and permanent teeth of Snohomish County kindergarten children. By 3rd grade nearly 62.7% have experienced cavities. Only 37.3% remain cavity free. One in every six children in Snohomish County has cavities that have not been filled.

The National Health Assessment and Nutrition Survey (NHANES) for the United States found, by the end of high school, over 87% of children will have had dental caries experience in the permanent teeth.

Disproportionate Burden of Disease in Snohomish County

Children from minority families, low-income families, or immigrant/refugee families are significantly more likely to suffer from dental disease.[5] [6][7]

Comparison by Poverty
Snohomish County SMILE Survey, 2010
Kindergarten Children Screened
Stratified by Eligibility for the RFL Program

Variable	Not Eligible (n=861)	Eligible (n=406)	*p* value
Caries experience – primary and/or perm	45.8%	67.2%	0.000
Untreated decay	12.4%	18.7%	0.003
Rampant caries	12.1%	23.2%	0.000
Need early or urgent treatment	10.5%	15.8%	0.006
Need urgent treatment	0.7%	1.2%	0.015

Table 12

Kindergarten children that participate in the Reduced Fee and Free Lunch program, a proxy for lower income, had higher dental needs, treated and untreated caries compared to their higher income counterparts. However, even among those with higher incomes, nearly half (45.8%) had dental caries experience and 1 in 10 (12.1%) had rampant caries.

Snohomish County SMILE Survey, 2010
3rd Grade Children Screened
Stratified by Eligibility for the RFL Program

Variable	Not Eligible (n=778)	Eligible (n=544)	*p* value
Caries experience – primary and/or perm	53.7%	75.6%	<.0001
Caries experience – permanent teeth	14.4%	25.4%	<.0001
Untreated decay	12.0%	24.5%	<.0001
Rampant caries	13.2%	28.5%	<.0001
Need early or urgent treatment	10.3%	21.9%	<.0001
Need urgent treatment	1.0%	2.0%	<.0001
Third Grade Children Only			
Dental Sealants	65.9%	63.6%	

Table 13

[5] Oral Surgeon Report on Oral Health, 2000
[6] Snohomish County SMILE Survey, 2000
[7] Snohomish County SMILE Survey, 2005

Income continues to indicate significant disparity in oral health and access to preventive and therapeutic dental care among third grade children. However, even among higher income children, over half had dental caries and 13.2% had rampant tooth decay.

.

Higher income children had better access to care than lower income children in Snohomish County.

Snohomish County SMILE Survey, 2010
Kindergarten Children Screened
Comparison with Minorities

Variable	White /Non-Hispanic (n=838)	Minorities (n=427)	*p* value
Caries experience – primary and/or perm	40.2%	52.2%	0.000
Untreated decay	12.4%	18.6%	0.005
Rampant caries	12.7%	21.8%	0.000
Need early or urgent treatment	10.5%	15.3%	0.001
Need urgent treatment	0.4%	1.9%	0.001

Table 14

Snohomish County SMILE Survey, 2010
3rd Grade Children Screened
Comparison with Minorities

Variable	White Non-Hispanic (n=880)	Minorities (n=434)	*p* value
Caries experience – primary and/or perm	58.4%	71.4%	0.000
Caries experience – permanent teeth	16.6%	23.7%	0.002
Untreated decay	16.0%	18.9%	0.192
Rampant caries	16.8%	24.7%	0.001
Need early or urgent treatment	14.2%	16.4%	0.223
Need urgent treatment	1.1%	2.1%	0.223
Third Grade Children Only			
Dental Sealants	65.2%	64.3%	0.737

Table 15

Dental disease impacts minorities at significantly higher rates in Snohomish County. Minorities were significantly more likely to have caries experience, untreated tooth decay and rampant tooth decay than White/Non Hispanics.

However, in 2010, minorities were no different than their counterparts in receipt of dental sealants, one measure of access to preventive care.

All Non-White/Hispanic populations were combined due to the sample size so data comparing white and non-white populations should be interpreted cautiously. See Appendix 4, Table C. Non-White/Hispanic populations are referred to as Minorities.

Comparison by Language

Language Spoken at Home
Snohomish County Kindergarten Children Screened
SMILE Survey, 2010

Variable	English (n=1044)	Other Language (n=217)	*p* value
Caries experience – primary and/or perm	40.5%	62.2%	0.000
Untreated decay	13.1%	20.8%	0.003
Rampant caries	12.7%	30.0%	0.000
Need early or urgent treatment	11.0%	17.8%	0.006
Need urgent treatment	0.8%	1.4%	0.016

Table 16

Language Spoken at Home
Snohomish County 3rd Grade Children Screened
SMILE Survey, 2010

Variable	English (n=1120)	Other Language (n=199)	*p* value
Caries experience – primary and/or perm	60.4%	75.8%	0.000
Caries experience – permanent teeth	17.8%	25.8%	0.008
Untreated decay	16.8%	18.2%	0.634
Rampant caries	18.2%	26.3%	0.008
Need early or urgent treatment	14.9%	15.2%	0.755
Need urgent treatment	1.3%	2.0%	0.755
Third Grade Children Only			
Dental Sealants	64.2%	69.2%	0.172

Table 17

For the purposes of this survey, students were asked what language was spoken at home. Many families in the Snohomish County area retained cultural traditions even after several generations of living in the area.

Therefore, this data mixed both students that were newly arrived in this country and those whose families chose to maintain cultural traditions that could be associated with higher rates of tooth decay.

However, minority children are receiving dental sealants at a similar rate as their English speaking counterparts, indicating some increase to access to preventive dental services.
Kindergarten children whose primary language is not English are significantly more likely to have experienced decay, more untreated decay, more rampant decay and more likely to have urgent dental needs than other populations surveyed. However, by third grade, untreated tooth decay and need for urgent care was similar to Snohomish County overall

Snohomish County and Washington State Comparison 2010

General Results -Snohomish County and Washington State Comparisons

General Results - Snohomish County and Washington State
Kindergarten Children
SMILE Survey, 2010

	Sno (n=1269)	Percent CI	WA (n=2858)	Percent CI	*p* value
Caries free	708	55.8%	1729	60.5%	p=0.005
Caries experience – primary and/or permanent teeth	561	44.2%	1129	39.5%	p=0.005
Treated decay	1085	85.6%	2461	86.1%	p=0.644
Untreated decay	183	14.4%	397	13.9%	p=0.664
Rampant caries	199	15.7%	414	14.5%	p=0.314
Treatment Need					
- No obvious problem	1102	87.7%	2477	88.0%	p=0.840
- Early dental care needed	154	12.2%	339	11.9%	p=0.280
- Urgent dental care needed	11	0.9%	42	1.5%	p=0.280

Table 18

Snohomish County Kindergarten children were more likely to have dental caries experience as compared to Washington State. However, they were similar in the proportion of those with dental treatment, rampant caries and urgency of dental care.

General Results - Snohomish County and Washington State
3rd Grade Children
SMILE Survey, 2010

	Sno (n=1324)	Percent CI	WA (n=2875)	Percent CI	*p* value
Caries free	494	37.3%	1212	42.2%	0.003
Caries experience – primary and/or permanent teeth	830	62.7%	1663	57.8%	0.003
Caries experience – permanent teeth	250	18.9%	418	14.5%	0.000
Treated decay	1098	82.9%	2447	85.1%	0.070
Untreated decay	226	17.1%	428	14.9%	0.070
Rampant caries	258	19.4%	548	19.1%	0.745
Dental sealants	860	65.0%	1449	50.4%	0.000
Treatment Need					
- No obvious problem	1106	84.8%	2448	87.1%	0.045
- Early dental care needed	199	15.0%	364	12.7%	0.035
- Urgent dental care needed	19	1.4%	6	2.2%	0.035

Table 19

By third grade, oral health care disparities have increased for Snohomish County children with more third grade children with caries experience and untreated tooth decay than their counterparts in Washington State. There was no difference in the proportion of children with rampant tooth decay. Snohomish County children had significantly better use of dental sealants indicating improved access to preventive dental care. Third grade children were also more likely to have had fillings in their newly erupted permanent teeth.

Snohomish County kindergarten children were statistically similar to Washington State for the oral health measures, treated decay, untreated decay, rampant decay, dental sealants and treatment needs. The proportion of children that remained caries free was lower. Snohomish County had better access to dental care that may have resulted in an increased number of children with dental treatment as reflected by this survey.

Snohomish County third grade children were significantly more likely to have had had dental treatment ($p<0.005$) and to have had dental sealants. This is an indication of access to dental care.

The proportion of Snohomish County third grade children with untreated tooth decay was higher than Washington State.

POVERTY COMPARISON

Comparison of Snohomish County and Washington State
Kindergarten Grade Children Screened
SMILE Survey, 2010
Stratified by Poverty

Variable	Sno Eligible %(#) (n=407)	WA Eligible R/F % (#) (n=1279)	*p* value
Caries experience – primary and/or perm	55.9% (227)	50.7% (649)	0.000
Untreated decay	18.7% (76)	17.9% (229)	0.639
Rampant caries	23.2% (94)	22.1% (283)	0.000
Need early or urgent treatment	16.0% (64)	Unavailable	
Need urgent treatment	1.7% (16)	Unavailable	

Table 20

Comparison of Snohomish County and Washington State
3rd Grade Children Screened
SMILE Survey, 2010
Stratified by Poverty

Variable	Sno Eligible %(#) (n=545)	WA Eligible R/F % (#) (n=1450)	*p* value
Caries experience – primary and/or perm	75.6% (411)	68.3% (990)	0.000
Caries experience – permanent teeth	25.4% (138)	18.7% (271)	0.000
Untreated decay	24.5% (133)	19.0% (275)	0.000
Rampant caries	28.5% (155)	25.9% (376)	0.000
Need early or urgent treatment	21.9% (119)	16.2% (228)	0.000
Need urgent treatment	2.0% (11)	Unavailable	
Third Grade Children Only			
Dental Sealants	63.6% (346)	49.7% (720)	<0.0001

Table 21

Dental caries experience in Snohomish County low income Kindergarten and third grade children were higher when compared with Washington State low income children.

However, for kindergarten children, the percentage of untreated caries was lower than for third grade children. Perhaps the Access to Baby and Child Dentistry Program has improved access to dental care for younger children, but not for older children.

NOT POVERTY COMPARISON
Comparison of Snohomish County and Washington State
Oral Health of Kindergarten Children Screened
SMILE Survey, 2010
Stratified by Not Poverty

Variable	Sno Not Eligible (n=862)	WA Not Eligible (n=1559)	*p* value
Caries experience – primary and/or perm	38.6% (332)	30.4% (474)	0.000
Untreated decay	12.4% (107)	10.7% (167)	0.086
Rampant caries	12.1% (104)	8.2% (128)	0.000
Need early or urgent treatment	10.5% (90)	Unavailable	
Need urgent treatment	0.7% (6)	Unavailable	

Table 22

Comparison of Snohomish County and Washington State
Oral Health of 3rd Grade Children Screened
SMILE Survey, 2010
Stratified by Not Poverty

Variable	Sno Not Eligible (n=779)	WA Not Eligible (n=1416)	*p* value
Caries experience – primary and/or perm	53.7% (418)	47.1% (667)	0.003
Caries experience – permanent teeth	14.4% (112)	10.3% (146)	0.006
Untreated decay	12.0% (93)	10.6% (150)	0.356
Rampant caries	13.2% (103)	12.0% (170)	0.418
Need early or urgent treatment	10.3% (80)	9.5% (133)	0.499
Need urgent treatment	1.0% (8)	Unavailable	
Third Grade Children Only			
Dental Sealants	65.9% (513)	51.1% (724)	<0.0001

Table 23

There were significant caries disparities for children of higher income families in Snohomish County compared to Washington State.

Caries experience, treated and untreated was higher for higher income families in Snohomish County compared to Washington State.

Higher income children in Snohomish County were as likely to have rampant caries when compared to Washington State.

Higher income children were more likely to have had dental sealants.

Snohomish County children whose families have higher income had better access to care compared with children in Washington State.

MINORITY COMPARISON
Comparison of Snohomish County and Washington State
SMILE Survey, 2010
Kindergarten Children Screened
Stratified by Minority- Not White

Variable	Sno Minority (n=427)	WA Minority (n=991)	*p* value
Caries experience – primary and/or perm	52.2% (223)	50.0%(495)	0.53
Untreated decay	18.3% (78)	18.0% (178)	0.888
Rampant caries	21.8% (93)	21.5% (213)	0.85
Need early or urgent treatment	15.3% (65)	14.9% (148)	0.888
Need urgent treatment	1.9% (8)	2.2% (22)	0.689

Table 24

Comparison of Snohomish County and Washington State
SMILE Survey, 2010
3rd Grade Children Screened
Stratified by Minority - Not White

Variable	Sno Minority (n=435)	WA Minority (n=1033)	*p* value
Caries experience – primary and/or perm	71.4% (310)	64.4%(665)	0.000
Caries experience – permanent teeth	23.7% (103)	13.8% (143)	<0.0001
Untreated decay	18.9% (82)	17.2% (178)	0.446
Rampant caries	24.7% (107)	22.9% (237)	0.480
Need early or urgent treatment	16.4% (71)	15.3% (154)	0.488
Need urgent treatment	2.1% (9)	Unavailable	
Third Grade Children Only			
Dental Sealants	64.3% (279)	55.8% (576)	0.003

Table 25

There were no differences in caries experience, untreated decayorrampant caries between Snohomish County and Washington State for minority children in Kindergarten…by third grade, a greater proportion of minority children had had dental restoration/experience. Decreased untreated dental caries combined with increased dental experience is a reflection of improved access to a dentist and dental care. Third grade children also had greater proportion of teeth sealed, another indicator of access to dental care. There were no school based dental sealant programs in Snohomish County 2010.

NOT MINORITY COMPARISON
Comparison of Snohomish County and Washington State
SMILE Survey, 2010
Oral Health of Kindergarten Children Screened
Stratified by White/ Not Minorities

Variable	Sno White Not Minorities %(#) CI (n=841)	WA White Not Minorities %(#) CI (n=1847)	*p* value
Caries experience – primary and/or perm	40.2%(337)	33.8%(625)	0.000
Untreated decay	12.4% (104)	11.8%(218)	0.647
Rampant caries	12.7% (106)	10.7%(197)	0.000
Need early or urgent treatment	10.5% (88)	10.3% (190)	0.920
Need urgent treatment	0.4% (3)	1.1% (20)	0.059

Table 26

Comparison of Snohomish County and Washington State
SMILE Survey, 2010
Oral Health of 3rd Grade Children Screened
Stratified by White/ Not Minorities

Variable	Sno White Not Minorities %(#) CI (n=881)	WA White Not Minorities %(#) CI (n=1803)	*p* value
Caries experience – primary and/or perm	58.4%(514)	54.1%(975)	0.000
Caries experience – permanent teeth	16.6%(146)	15.0% (271)	0.294
Untreated decay	16.0% (141)	13.6%(245)	0.091
Rampant caries	16.8% (148)	16.8%(302)	1.000
Need early or urgent treatment	14.2% (125)	11.6% (205)	0.046
Need urgent treatment	1.1% (10)	Unavailable	0.223
Third Grade Children Only			
Dental Sealants	65.2% (574)	47.5% (856)	<0.0001

Table 27

For Snohomish County white children, dental caries experience and untreated caries were higher for Kindergarten and Third grade compared to Washington State. Rampant caries rate was not different for third grade compared to Washington State, and appeared to be improved? for Kindergarten.

LANGUAGE AT HOME – NOT ENGLISH

Comparison of Snohomish County and Washington State
SMILE Survey, 2010
Oral Health of Kindergarten Children Screened
Stratified by Language Spoken at Home = Other Language

Variable	Sno- Not English (n=217)	WA Not English (n=409)	*p* value
Caries experience – primary and/or perm	62.2% (135)	56.2% (230)	0.000
Untreated decay	20.8% (45)	19.8% (81)	0.572
Rampant caries	30.0% (65)	26.4 (108)	0.000
Need early or urgent treatment	17.5% (38)	Unavailable	0.001
Need urgent treatment	1.4% (3)	Unavailable	0.011

Table 28

Comparison of Snohomish County and Washington State
SMILE Survey, 2010
Oral Health of 3rd Grade Children Screened
Stratified by Language Spoken at Home = Other Language

Variable	Sno- Not English (n=199)	WA Not English (n=386)	*p* value
Caries experience – primary and/or perm	75.8% (150)	65.3% (252)	0.0097
Caries experience – permanent teeth	25.8% (51)	14.0% (54)	0.0005
Untreated decay	18.2% (36)	18.1% (70)	1.0000
Rampant caries	26.3% (52)	28.2 (109)	0.6101
Need early or urgent treatment	18.1% (75)	18.6 (148)	0.5342
Need urgent treatment	1.7% (7)	1.5% (12)	0.8109
Third Grade Children Only			
Dental Sealants **Sno (n=1324)** **WA (n=2875)**	69.2% (137)	62.4% (241)	0.0001

Table 29

In children where non-English language is spoken at home, there are disparities for dental caries experience in permanent and primary teeth in Kindergarten and Third grade between Snohomish county and Washington State. At third grade rampant caries rate was similar to Washington State's. Untreated tooth decay rates were similar for both regions for Kindergarten. Dental sealant utilization was higher for Snohomish County children that spoke a language other than English than Washington State's children.

LANGUAGE SPOKEN AT HOME – ENGLISH

Comparison of Snohomish County and Washington State
SMILE Survey, 2010
Oral Health of Kindergarten Children Screened
Stratified by Language = English

Variable	Sno English % (#) (n=1044)	WA English % (#) (n=2289)	*p* value
Caries experience – primary and/or perm	40.5% (422)	36.5% (835)	0.000
Untreated decay	13.1% (136)	13.2% (302)	1.000
Rampant caries	12.7% (132)	11.8% (269)	0.000
Need early or urgent treatment	11.0%(114)	Unavailable	0.006
Need urgent treatment	0.8% (8)	Unavailable	0.016

Table 30

Comparison of Snohomish County and Washington State
SMILE Survey, 2010
Oral Health of 3rd Grade Children Screened
Stratified by Language = English

Variable	Sno English % (#) (n=1120)	WA English % (#) (n=2364)	*p* value
Caries experience – primary and/or perm	60.4% (676)	57.1% (1349)	0.0614
Caries experience – permanent teeth	17.8% (199)	14.9% (351)	0.0265
Untreated decay	16.8% (188)	14.6% (346)	0.0979
Rampant caries	18.2% (204)	17.6% (416)	0.6468
Need early or urgent treatment	15.1%(167)	12.0% (288)	0.0093
Need urgent treatment	1.3% (15)	2.2% (55)	0.0979
Third Grade Children Only			
Dental Sealants **Sno (n=860)** **WA (n=1449)**	64.2% (718)	48.7% (1152)	<0.0001

Table 31

English speaking children (Kindergarten and third grade) in Snohomish County have had more caries experience than English speaking children in Washington State. English speaking third grade children were more likely to have untreated tooth decay than English speaking third grader children in Washington State. Sealant utilization was much higher in Snohomish County.

SNOHOMISH COUNTY COMPARISON 2005 AND 2010 THIRD GRADE ONLY

COMPARISONS BETWEEN 2005 AND 2010
Snohomish County 3rd Grade Only

Comparisons SMILE Survey 2005 and 2010
Snohomish County 3rd Grade Only
Response Rates

	2005 (n= 1442)	2010 (n=1324)	*p* value
Response Rate	77.6%	84.8%	p<0.0001
Race/Ethnicity=White/Non-Hispanic	78.6%	66.5%	p<0.0001
Reduced Fee and Free Lunch	28.3%	41.1%	p<0.0001

Table 32

The response rates were different from the third grade populations participating in 2005 and 2010. A greater proportion of Non-Minorities participated in 2005 (78.6%). A greater proportion of third grade children on the reduced fee and free lunch program participated in 2010. Comparisons from 2005 and 2010 should be interpreted cautiously due to overall population changes in the County.

COMPARISONS BY INCOME
Snohomish County 3rd Grade Only
Low Income

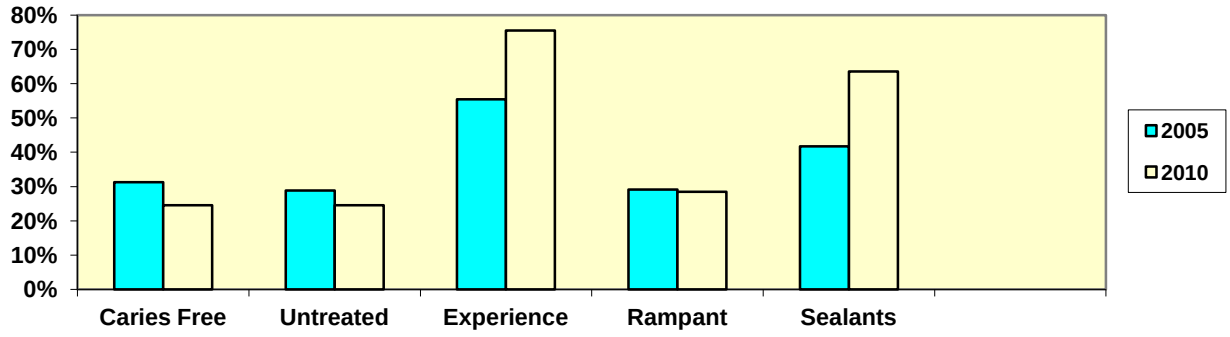


Figure 2

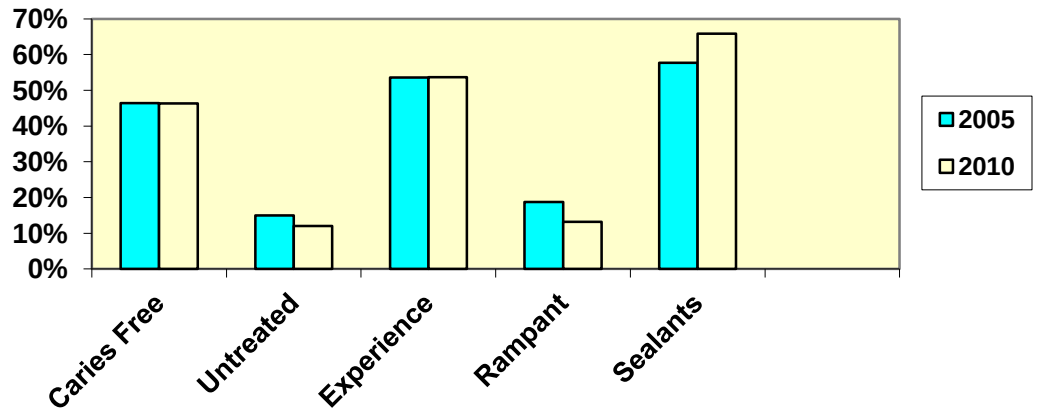
Snohomish County 3rd Grade Only
Low Income

Variable	2005 (n=371)	2010 (n=545)	*p* value
Caries Free	31.3%	24.5%	0.0259
Caries experience – primary and/or perm	68.7%	75.6%	0.0259
Caries experience – permanent teeth	25.1%	25.4%	0.9203
Untreated decay (primary + perm)	30.2%	24.5%	0.0603
Rampant caries	29.1%	28.5%	0.8231
Dental Sealants	46.6%	63.6%	<0.0001
Need early or urgent treatment	25.3%	21.9%	0.2176
Need urgent treatment	4.3%	2.0%	0.0439

Table 33

Since 2005, Snohomish County access to dental care has improved for children, as indicated by the increase in dental experience (treated and untreated), the decline in untreated dental caries, rampant decay? (7 or more cavities/fillings), and in the increase in dental sealants. There was a positive change in the proportion of low income children with rampant dental caries and untreated tooth decay (7 or more teeth).

Comparisons SMILE Survey 2005 and 2010
Snohomish County 3rd Grade Only
Not Low Income



-

Figure 3

Variable	2005 (n=939)	2010 (n=779)	*p* value
Caries Free Caries experience – primary and/or perm	46.4% 53.6%	46.3% 53.7%	1.0000
Caries experience – permanent teeth	12.3%	14.4%	0.2176
Untreated decay	15.0% 11.6% 19.7%	12.0%	0.1208
Rampant caries *p* value<.001	18.8% 16.4% 21.5%	13.2%	<0.0001
Dental Sealants *p* value <.001	57.7% 54.5% 60.9%	65.9%	<0.0001
Need early or urgent treatment	12.5% 10.5% 14.8%	10.3%	0.2094
Need urgent treatment	1.2% 0.6% 2.2%	1.0%	0.6119

Table 34

The proportion of children from higher income families that experienced tooth decay, treated or untreated, did not change significantly over time. However the proportion of higher income children with rampant tooth decay, declined.

COMPARISONS BY RACE/MINORITY

Comparisons SMILE Survey 2005 and 2010
Snohomish County 3rd Grade Only
Race = -Minority Only

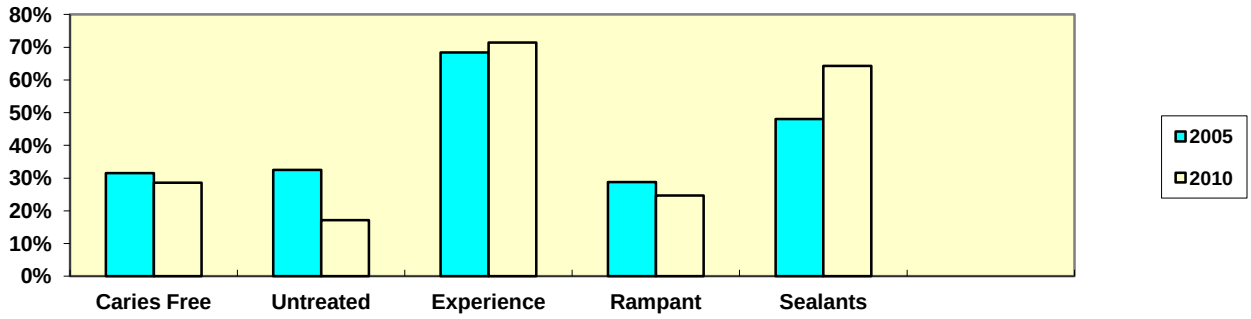


Figure 4

SMILE Survey 2005 and 2010
Snohomish County 3rd Grade Only
Race = Minority

Variable	2005 (n=295) % (#)	2010 (n=435) % (#)	*p* value
Caries Free Caries experience – primary and/or perm	31.5% (93) 68.4% (202)	28.6% (124) 71.4% (310)	0.3802
Caries experience – permanent teeth	15.6% (46)	23.7% (103)	0.0078
Untreated decay	32.5% (96) 23.7% 43.8%	17.2% (178)	< 0.0001
Rampant caries	27.8% (82) 22.8% 33.3%	24.7% (107)	0.3440
Dental Sealants	48.1% (142) 42.3% 54.0%	64.3% (279)	<0.0001
Need early or urgent treatment	26.8% (79) 21.8% 32.2%	16.4% (71)	0.0008
Need urgent treatment	3.4% (10) 1.6% 6.1%	2.1% (9)	0.2713

Table 35

Disparities in oral health have improved since 2005.

There were no statistical changes in decay experience or rampant decay for children that were Minority from 2005 to 2010 Smile Surveys.

However, untreated tooth decay rates dropped significantly from 32.5% in 2005 to 17.2% in 2010 ($p<0.0001$). Dental sealant utilization increased from 48.1% in 2005 to 64.3% in 2010 ($p=0.0001$).
Caries experience in permanent teeth increased significantly as well.

The survey methodology under represented the total caries experience. Increased access to dental care would be expected to increase overall experience, increase the rate of dental sealants and other preventive services, and decrease the rate untreated tooth decay.

Access to dental care has improved for Minority children

Snohomish County 3rd Grade Only
Race = White/Non-Hispanic

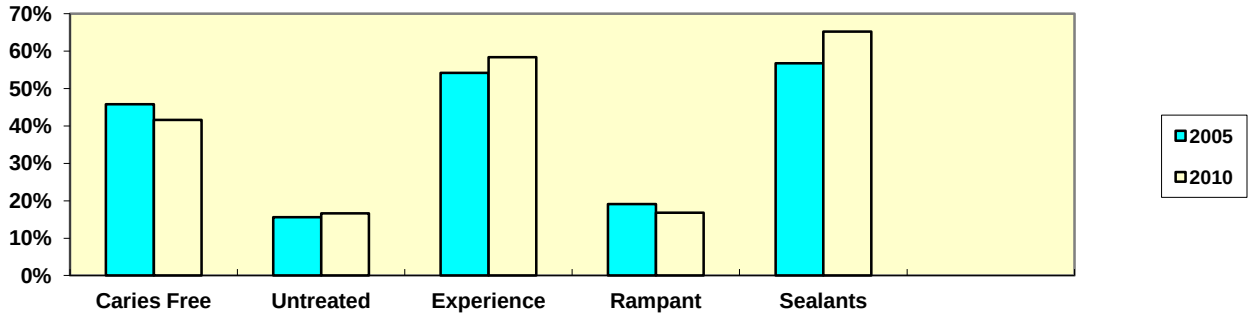


Figure 5

Variable	2005 (n=1121)	2010 (n=881)	*p* value
Caries Free Caries experience – primary and/or perm	45.8% 54.2%	41.6% 58.4%	0.0660
Caries experience – permanent teeth	15.6%	16.6%	0.5598
Untreated decay	15.3% 43.5% 54.8%	16.0%	0.6892
Rampant caries	19.1% 16.9% 21.5%	16.8%	0.1859
Dental Sealants	56.8% 53.9% 59.8%	65.2%	0.0002
Need early or urgent treatment	12.9 11.0% 15.0%	14.2%	0.4166
Need urgent treatment	1.6% 1.0% 2.6%	1.1%	0.3741

Table 36

Dental sealant utilization increased for non-minority children. There is a tendency to have a greater proportion of children with caries experience, yet, there was no statistical difference in all other parameters.

COMPARISON BY LANGUAGE

Comparisons SMILE Survey 2005 and 2010
Snohomish County 3rd Grade Only
Language = English

Variable	2005 (n=1248)	2010 (n=1120)	*p* value
Caries Free	45.3% (565)	39.6% (443)	0.0057
Caries experience – primary and/or perm	54.7% (683)	60.4% (676)	
Caries experience – permanent teeth			
Untreated decay	16.1% (201)	17.8% (199)	0.2815
Rampant caries	18.9%(236)	18.2% (204)	0.1844
Dental Sealants	56.8% (709)	64.2% (718)	0.0003
Early or urgent treatment needed	13.3% (166)	15.1% (167)	0.2131
Urgent treatment needed	1.6% (20)	1.3% (15)	0.2788

Table 37

Comparisons SMILE Survey 2005 and 2010
Snohomish County 3rd Grade Only
Language = NOT English

Variable	2005 (n=185)		2010 (n=199)	*p* value
Caries Free	24.9% (46)		24.2% (48)	1.0000
Caries experience – primary and/or perm	75.1%		75.8% (150)	
Untreated decay	37.3% (69) 25.3%	53.1%	25.8% (51)	0.0137
Rampant caries	34.6% (64) 27.8%	41.9%	18.2% (36)	0.0002
Dental Sealants	42.4% (78) 35.2%	49.9%	26.3% (52) 69.2% (137)	<0.0001
Early or urgent treatment needed	31.9% (59) 25.2%	39.1%	15.5% 30)	0.0002
Urgent treatment needed	4.3% (8) 1.9%	8.3%	2.0% (4)	0.2424

Table 38

Since 2005, access to dental treatment for non-English speaking children has continued to improve. The number of children receiving dental sealants, one measure of access to dental care, increased for those that speak a language other than English. The proportion of children with untreated decay or rampant caries had improved as well

DENTAL SEALANT COMPARISONS

Comparisons SMILE Survey 2005 and 2010
Snohomish County 3rd Grade Only
Dental Sealants

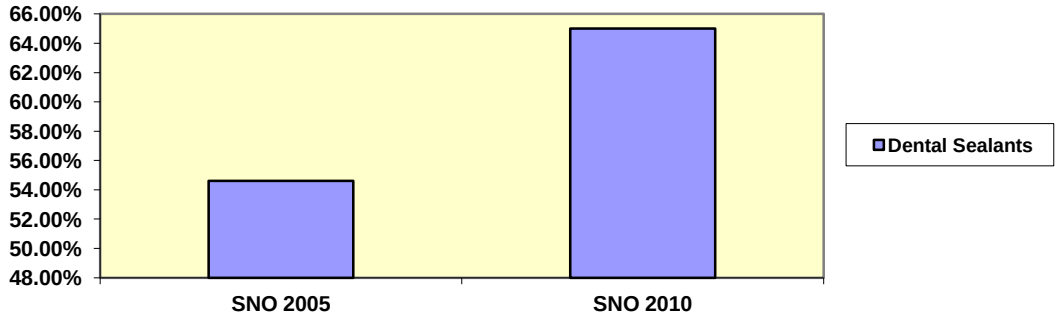


Figure 6

There was a significant (p<.001) increase in dental sealant use in Snohomish County overall, since SMILE Survey 2005, especially for children that were low income, spoke a language other than English or were non-white.

Dental sealants increased for those that were both high and low income and White/non-Hispanic or non-White/Hispanic and those that spoke a language other than English. Since dental sealants have been increasing, a decrease in dental caries experience in the permanent teeth can be expected.

The year before the SMILE Survey was conducted there were no school-based dental sealant programs in Snohomish County.

Snohomish County and Washington State Comparisons 2010

General Results

SMILE Survey, 2010
Comparison Snohomish County and Washington State
3rd Grade Only

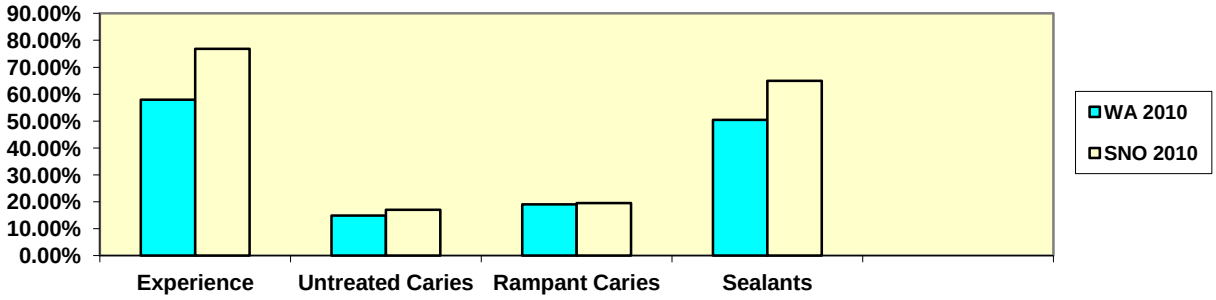


Figure 7

Snohomish County third grade children had more tooth decay, more fillings and more dental sealants than Washington State overall.

Overall, Snohomish County third grade children were not statistically different from Washington State in treatment needed.

COMPARISONS BY INCOME

Comparison Snohomish County and Washington State
SMILE Survey 2010 only
Kindergarten Oral Health Status - Low Income

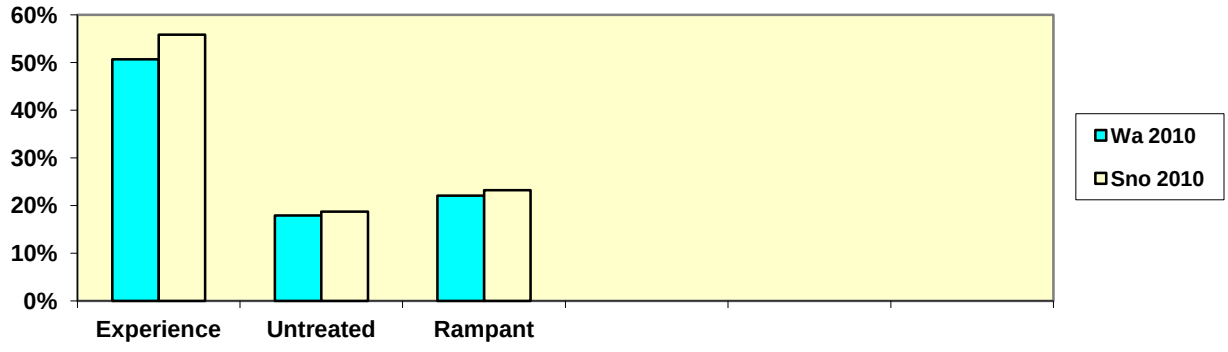


Figure 8

Comparison Snohomish County and Washington State
SMILE Survey 2010 only
3rd Grade Children
Oral Health Status - Low Income

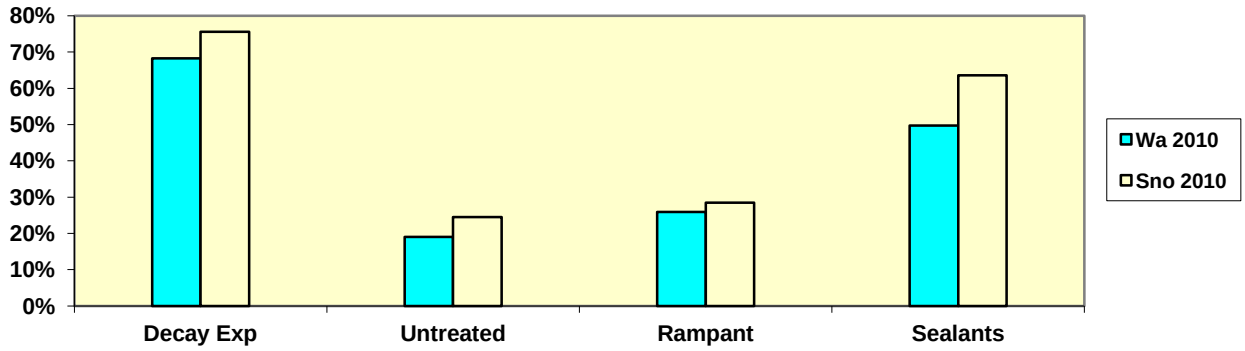


Figure 9

Snohomish County Kindergarten and Third grade children still experienced more tooth decay and fillings, along with preventive dental sealants, than Kindergarten and Third grade children in Washington State. These differences appear to be greater for third grade children as compared to Kindergarten children.

COMPARISONS BY LANGUAGE

Comparison Snohomish County and Washington State
3rd Grade Children
Language Spoken at Home = Not English Only

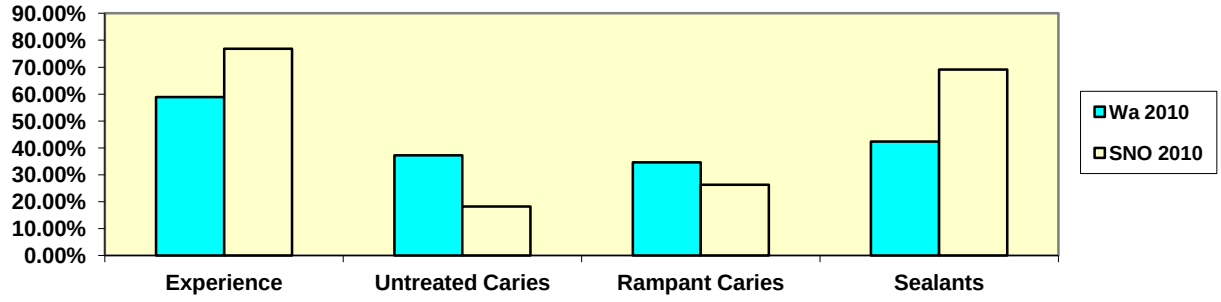


Figure 10

Access to dental care has improved for children that speak a language other than English in Snohomish County as compared to Washington State.

There was significant differences in access to dental care for families that speak a language other than English at home, as reflected by the overall caries experience, untreated dental caries, rampant caries and use of dental sealants.

COMPARISON BY RACE

Comparisons SMILE Survey 2005 and 2010
3rd Grade Children
Race = Minority Only

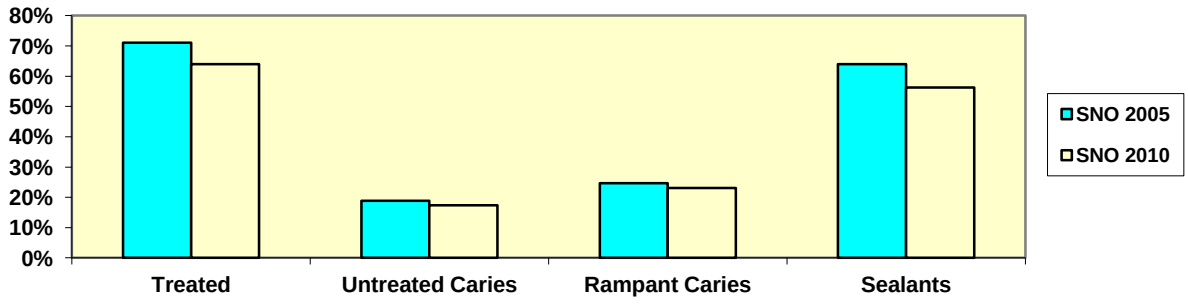


Figure 11

Disparities in oral health for third grade children are similar to Washington State. Snohomish County minority children have more dental treatment and dental sealants.

HEAD START AND ECEAP PROGRAMS

The Oral Health of Children in Snohomish County HeadStart/ECEAP Programs

HeadStart and Early Childhood, Education and Assistance Program (ECEAP) provide early learning opportunities for families with limited incomes, generally below 175 of the federal poverty level. Head Start and ECEAP have written policy addressing oral health care for the children and families enrolled in their programs. This survey was not intended to be representative of all Snohomish County children. Improvements in early preventive dental services may be demonstrated in changes in dental access or improvements in oral health status in children enrolled in HeadStart and ECEAP.

An electronic data file of all Head Start and ECEAP programs in Washington was developed by the Washington State Department of Health. The data file, which was for the 2008-2009 school year, contained the following information for each program – site name, program type (ECEAP, Head Start and Early Head Start), contact information and funded enrollment. Three Snohomish County sites were selected in the Washington State sample.

All Snohomish County Head Start and ECEAP sites that were identified on the electronic data file from Washington State Department of Health were contacted for participation in the Snohomish County survey.

The survey included all Head Start/ECEAP programs in Snohomish County listed in the State survey database. All screenings were conducted by a dental hygienist who had attended a survey training session sponsored by DOH and had been a calibrated examiner for the 2000, 2005 and 2010 surveys. Data analysis was done using the EPI-INFO program produced by the CDC and cross checked by the Snohomish Health District Health Statistics and Assessment program using STATA. Because the response rates were consistently high across all of the preschool sites, the data were not adjusted for non-response.

All children enrolled and present on the day of screening were examined unless a parent/guardian returned a consent form specifically requesting that the child not take part in the survey. A dental hygienist completed the screenings using gloves, penlights, and disposable mouth mirrors. *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. The screeners attended a full-day training session which included a didactic review of the diagnostic criteria along with a hands-on calibration session.*

Information on age and language spoken at home were obtained from the child and/or teacher, while gender and race were determined by the screener and/or teacher.

Oral Health Status Head Start/ECEAP

Enrollment, Number Participants and Response Rate in Snohomish County Head Start /ECEAP Participants SMILE Survey, 2010

	Number of Sites	Enrolled	Number Screened	Response Rate
All Head Start & ECEAP Sites in County	38	1480	NA	NA
Participating Sites	15	686	538	78.4%

Table 39

The preschool portion of the Snohomish County survey included 15 Head Start/ECEAP sites in Snohomish County with 686 children enrolled and 538 children participating for a response rate of 78.4%. The age range in the Snohomish County (1-6 years old), was similar to Washington State (1-6 years old). A response rate of 78.4% was similar to the 76% response rate for Washington State (p=0.759).

Snohomish County SMILE Survey, 2010
Head Start/ECEAP
Demographics
Age, Gender, Language Spoken at Home, and Race of Head Start/ECEAP Children Screened

Variable	All Children Screened		3-5 Year Olds Only	
	Number	Percent	Number	Percent
Age				
1 year	2	0.4%		
2 years	1	0.2%		
3 years	49	9.1%	49	9.2%
4 years	375	69.7%	375	70.1%
5 years	111	20.6%	111	20.7%
6 years				
Gender				
Male	253	47.0%	251	46.9%
Female	285	53.0%	284	53.1%
Missing/Unknown				
Language Spoken at Home				
English	297	55.2%	295	55.1%
Spanish	174	32.3%	173	32.3%
Other	69	11.2%	60	11.2%
Missing/Unknown	7	1.3%	7	1.3%
Race/Ethnicity				
White	265	49.3%	263	49.2%
African American	46	8.6%	46	8.6%
Hispanic	195	36.2%	194	36.3%
Asian	17	3.2%	17	3.2%
American Indian/Alaska Native	6	1.1%	2	.4%
Other	2	0.4%	7	1.3%
Missing/Unknown				

Table 40

The proportion of children that were non white and spoke a language at home other than English was greater than the Snohomish county general population. Hispanic children enrollment rate in Head Start or ECEAP had increased from 31.3% in 2005 to 36.3% in 2010.

General Results Snohomish County Head Start/ECEAP

Snohomish County SMILE Survey, 2010
Oral Health Status of Head Start and ECEAP Children Screened

	All Children (n=538)		3-5 Year Olds Only (n=535)	
	Percent of Children		Percent of Children	
Caries free	57.6% 53/3%	61.8%	57.4% 53.1%	61.6%
Caries experience	42.4% 38.2%	46.7%	42.6% 38.4%	46.5%
Treated decay	28.8% 25.1%	32.9%	29.0% 25.2%	33.1%
Untreated decay	19.1% 16.0%	22.8%	19.3% 16.0%	22.9%
Rampant decay (or a history of)	17.7% 16.1%	23.0%	17.8% 14.7%	21.3%
Early childhood cavities	19.3% 16.1%	23.0%	19.4% 16.2%	23.1%
White spot lesions	16.5% 13.6%	20.0%	16.6% 13.6%	20.1%
Treatment Need				
No obvious problem	83.3% 79.8%	86.3%	83.2% 79.7%	86.2%
Early dental care needed	16.5% 13.6%	20.0%	16.6% 13.6%	20.1%
Urgent dental care needed	0.2% 0.0%	1.2%	0.2% 0.0%	1.2%

Table 41

The following results are restricted to the 535 children that range in age from 3-5 years. 42.6% percent of children had decay experience (untreated or fillings) and 19.3% had untreated decay at the time of the screening.[8] 17.8% percent of Snohomish County Head Start/ECEAP children had rampant (7 or more teeth affected) tooth decay. 19.4% of the children in the survey had early childhood caries. Early childhood caries is tooth decay that begins before age two and is measured by any decay in the upper front teeth.

[8] The percent of children with untreated decay is assumed to be an under estimation because radiographs (x-rays) were not taken.

Oral Health Status of Head Start and ECEAP Children Screened Stratified by Race/Ethnicity
Snohomish County - 3 to 5 Year Olds Only
Stratified by Race

Variable	White (n=263)		African American (n=46)		Hispanic (n=194)		Asian (n=17)	
Caries experience	38.4% 32.5%	44.6%	30.4% 17.7%	45.8%	51.0% 43.8%	58.3%	35.3% 14.2%	61.7%
Untreated decay	17.9% 13/4%	23.0%	13.0% 4.9%	26.3%	21.1% 15.6%	27.6%	23.5% 6.8%	49.9%
Rampant caries	12.2% 8.5%	16.7%	10.9% 3.6%	23.6%	24.2% 18.4%	30.9%	23.5% 6.8%	49.9%
Early childhood caries	12.9% 9.1%	17.6%	10.9% 3.6%	23/6%	29.4% 23.1%	36.3%	23.5% 6.8%	49.9%
White spots	13.7% 9.8%	18.4%	10.9% 3/6%	23.6%	20.6% 15.2%	27.0%	29.4% 10.3%	56.0%
Early or urgent treatment needed (need dental visit)	14.4% 10.4%	19.3%	13% 4.9%	26.3%	19.1% 13.8%	25.3%	5.9% 0.1%	28.7%
Urgent treatment needed	0%		0%		0%			

Table 42

There were significant differences between White/non-Hispanic preschool children and preschool children that were Minority in the prevalence of early childhood caries (ECC) in Snohomish County.

Children that were Minority were more likely to have caries experience, untreated decay, and white spot lesions and to need dental care. They were almost twice as likely to have early childhood caries and rampant tooth decay.

Hispanic children were more likely to have dental caries experience, both treated and untreated. They were less likely to have visited the dentist than White or African American children.

Asian children were more likely to have dental caries experience, both treated and untreated, however they were more likely to have visited the dentist than White or African American children.

Comparison Snohomish County with Washington State-HeadStart/ECEAP

Snohomish County SMILE Survey
Comparison Snohomish County and Washington State
Head Start ECEAP Participants
Age

Age	WashingtonState	Snohomish County
Mean (Standard Deviation)	4.1 years	4.1 years

Table 43

Head Start/ECEAP participants in Snohomish County were similar when compared with children in the Washington State sample.

Snohomish County SMILE Survey
Comparison Snohomish County and Washington State
Head Start ECEAP Participants
Oral Health Status

Oral Health Measures	Snohomish County 2010		Washington State 2010		
	3-5 Year Olds Only (n=535)		3-5 Year Olds Only (n= 1597)		*p* value
	Percent of Children				
Caries free	57.4% 53.1%	61.6%	59.7% 57.2%	62.2%	0.4165
Caries experience	42.6% 38.4%	46.5%	40.3% 37.8 %	42.8%	0.4165
Treated decay	29.0% 25.2%	33.1%	31.4% 29.0%	33.7%	0.3044
Untreated decay	19.3% 16.0%	22.9%	13.0% 11.3%	14.7%	0.0007
Rampant decay (or a history of)	17.8% 14.7%	21.3%	17.2% 15.3%	19.1%	0.7418
Early childhood cavities	19.4% 16.2%	23.1%	15.5% 13.7%	17.4%	0.0314
White spot lesions	16.6% 13.6%	20.1%	20.5 18.4%	22.7%	0.0585
Treatment Need					
- No obvious problem	83.2% 79.7%	86.2%	88.0% 86.4%	89.6%	0.0063
- Early dental care needed	16.6% 13.6%	20.1%	11.0% 9.41%	2.5%	0.0011
- Urgent dental care needed	0.2% 0.0 %	1.2%	1.0% 0.6%	1.5%	0.0001

Table 44

Distribution of Treated Decay among Head Start/ECEAP Children Screened
Comparison- Snohomish County and Washington State
SMILE Survey, 2010
Number of Children (Percent of Total)*

No Untreated Cavities	Snohomish County (80.1%) (n=538)	Washington (86.6%) (n=1597)
No Treated Decay (Cavity free)	(310)57.6%	949 (59.4%)
Treatment Complete	(125)23.2%	435 (27.2%)

Table 45

Proportion of cavity free kids was not statistically different from Washington State. While it appears as if fewer children in Snohomish County complete dental treatment, the result was not statistically significant (*p*=0.0788).

Distribution of Untreated Decay among Head Start/ECEAP Children Screened
Comparison Snohomish County and Washington State
SMILE Survey, 2010
Number of Children (Percent of Total)

Untreated Cavities Present	Snohomish County (n=538)	Washington (n=1597)
No Treatment	(73)13.6%	148 (9.3%)
Some Treatment	(30)5.6%	65 (4.1%)

Table 46

The proportion of children in Head Start and ECEAP that have not yet had dental treatment was slightly higher than Washington State (*p*=0.0068). Both Head Start and ECEAP have a proportion of children each year that move and/or do not complete the program, replaced by new children that may have not yet had the opportunity to visit the dentist (8.7% CEF DATA 06/30/2010). Head Start and ECEAP staff were very successful in linking over 95% of families to dental homes by the end of their school year.

Snohomish County SMILE Survey
Comparison Snohomish County and Washington State
Head Start ECEAP Participants - 3 to 5 Year Olds Only
Race

Variable	White Non-Hispanic (n=263)		Minority (n=265)		*p* value
	Percent of Children		Percent of Children		
Caries experience	38.4% 32.5%	44.6%	46.4% 40.3%	52.6%	0.0651
Untreated decay	17.9% 13.4%	23.0%	19.6% 15.0%	24.9%	0.6560
Rampant caries	12.2% 8.5%	16.7%	22.6% 17.7%	28.2%	<0.0001
Early childhood caries	12.9% 9.1%	17.6%	26.0% 20.9%	31/8%	<0.0001
White spots	13.7% 9.8%	18.4%	19.6% 15.0%	24.9%	0.0797
Early or urgent treatment needed	14.4% 10.4%	19.3%	18.1% 13.7%	23.3%	0.2891
Urgent treatment needed	0%		.4% 0.0%	2.1%	0.0009

Table 47

Disparities among children in Head Start were significant for early childhood caries and rampant caries. Access to dental treatment appears to be similar**.** Early prevention initiatives need to focus on minority populations before entry into Head Start or ECEAP programs**,** preferably before age two, for the prevention of severe early childhood caries. A 2010 Snohomish County survey of Head Start indicated that 80% of families had used Women, Infant and Children (WIC) services for their Head Start or ECEAP enrolled children while they were infants or toddlers..

Snohomish County SMILE Survey
Comparison Snohomish County and Washington State
Head Start ECEAP Participants - 3-5 Years Only
Language

Variable	English (n=295)		Other Language (n=233)		*p* value
	Percent of Children		Percent of Children		
Caries experience	38.3%		47.2%		0.0417
	32.7%	44.1%	40.7%	53.8%	
Untreated decay	19.3%		18.5%		0.7374
	15.0%	24.3%	13.7%	24.0%	
Rampant caries	12.9%		22.3%		>0.0001
	9.3%	17.2%	17.1%	28.2%	
Early childhood caries	13.2%		26.6%		>0.0001
	9.6%	17.6%	21.1%	32.8%	
White spots	14.2%		19.3%		0.1265
	10.5%	18.8%	14.4%	25.0%	
Early or urgent treatment needed	15.9%		17.2%		0.7241
	11.9%	20.6%	12.6%	22.6%	
Urgent treatment needed	.3%		0.0%		
	0.0%	1.9%			

Table 48

Disparities among children in Head Start were significant for caries experience, early childhood caries, and rampant caries.

Access to dental treatment appears to be similar**.** Early dental caries prevention initiatives need to focus on populations that speak a language other than English for the prevention of severe early childhood caries.

Oral Health Status of Head Start and ECEAP Children Screened
Snohomish County SMILE Survey 2005 and 2010 Comparison

Oral Health Measure	3-5 Year Olds Only		
	2005 (n=984) Percent	2010 (n=535) Percent	*p* value
Caries free	58.1%	57.4% 53.1 61.6%	0.07858
Caries experience	41.9%	42.6% 38.4% 46.5%	0.8278
Treated decay	24.2%	29.0% 25.2% 33.1%	0.0432
Untreated decay	25.3%	19.3% 16.0% 22.9%	0.0075
Rampant caries	11.9%	17.8% 14.7% 21.3%	0.0019
ECC	16.7%	19.4% 16.2% 23.1%	0.1811
White spot lesions	23.3%	16.6% 13.6% 20.1%	0.0024
Treatment Need	74.8%	83.2% 79.7% 86.2%	0.0024
-No obvious problem	23.2%	16.6% 13.6% 20.1%	0.0002
-Early dental care needed	2.0%	0.2% 0.0% 1.2%	<0.0001
-Urgent dental care needed			

Table 49

Since 2005 there have been significant improvements for preschool children enrolled in Head Start or ECEAP! While overall caries experience had not changed, a greater proportion of children have had dental treatment and fewer untreated cavities. Fewer children needed early or emergent dental care and a larger proportion of children had no obvious dental problems.

Snohomish County Comparison 2005 to 2010

Snohomish County SMILE Survey
Comparison from 2005 to 2010
Head Start ECEAP Participants
Stratified by Race/Ethnicity

	Sno White/non-Hispanic 2005 (n=471)	Sno 2010 White (n=263)	*p* value	Sno Co Hispanic Non-white/ 2005 (n475)	Sno CO 2010 Hispanic/Non-white (n=194)	*p* value
Caries experience	35.6%	38.4%	0.4247	48.1%	51.0%	0.4964
Untreated decay	20.0%	17.9%	0.5578	30.6%	21.1%	0.0136
Rampant caries	8.2%	12.2%	0.0918	15.6%	24.2%	0.0107
ECC	10.7%	12.9%	0.3974	22.7%	29.4%	0.0756
White spots	19.2%	13.7%	0.0665	27.6%	20.6%	0.0640
Early care needed	18.6%	14.4%	0.1540	27.9%	19.1%	0.0186
Urgent care needed	1.5%	0%	<0.0001	2.6%	0%	<0.0001

Table 50

Overall caries experience did not differ between White and non-White Snohomish County Head Start/ECEAP populations.

A significant decrease in urgent dental care (abscesses) was observed for both White and non-White Head Start/ECEAP children.

Untreated dental caries for Minority children improved from 30.6% in 2005 to 21.1% in 2010.

However, rampant caries (>6 teeth affected) significantly increased for minority children but not for White/non-Hispanic populations.

SNOHOMISH COUNTY AND WASHINGTON STATE HEALTHY PEOPLE 2010 OBJECTIVES

Healthy People 2010 Objectives

Comparison: Washington State with Snohomish County for 3rd Graders SMILE Survey 2010 Healthy People 2010 Objectives

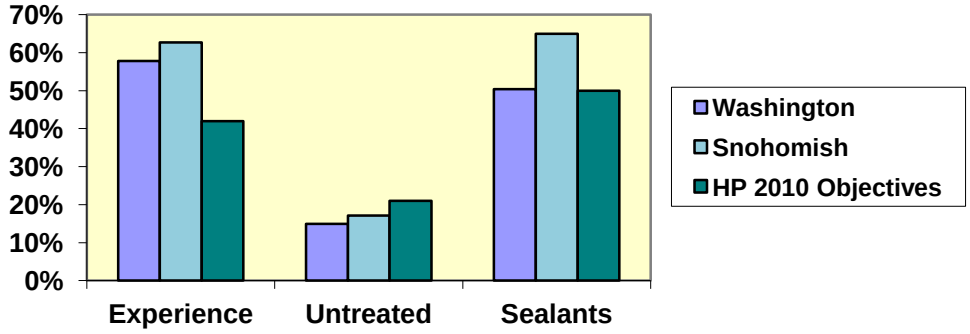


Figure 12

Three specific objectives for children 6-8 years old from the Healthy People 2010 objectives are:

21-1 reducing the proportion of children who have dental caries experience (42%)
21-2 reducing the prevalence of untreated tooth decay (21%)
21-8 increasing the proportion of children who have dental sealants (50%)

Neither Washington State nor Snohomish County is meeting the objective for caries experience. Snohomish County is doing better than Washington State.

In both Washington State and Snohomish County the percentage of children with untreated tooth decay has met the HP 2010 objective.

Snohomish County, but not Washington State, is meeting the HP2010 objective for dental sealants by Third grade (54.6%) and just barely for 6-8 years olds (49.5%).

Comparison - Washington State with Snohomish County 2-4 Years Old HP 2010 Objectives – Children 2-4 Years Old

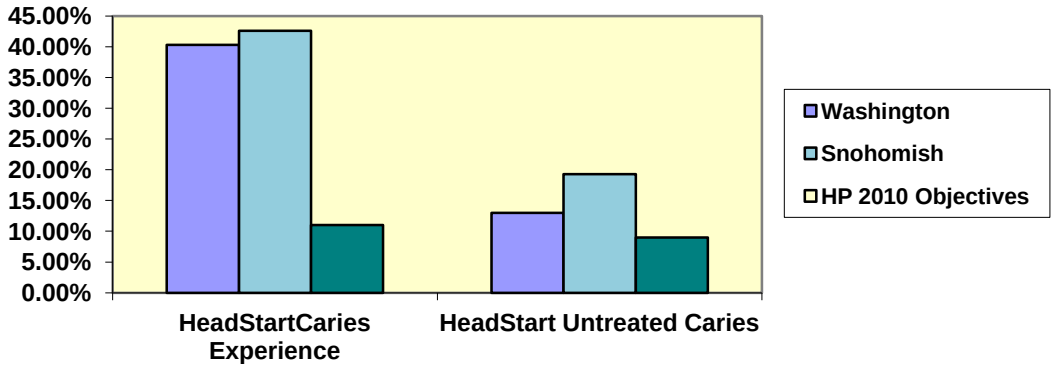


Figure 13

There are two specific HP 2010 objectives for children 2-4 years old, which is slightly younger than children in the Snohomish County sample of Head Start/ECEAP.

21-1a. Reduce the proportion of young children with dental caries experience in

Primary teeth to 11%

21-2a. Reduce the proportion of young children with untreated dental decay in their

Primary teeth to 9%

Children in Head Start/ECEAP programs are not meeting the Healthy People 2010 Objectives in either Snohomish County or Washington State.

Dental Sealants

Comparison of Snohomish County 2010 and Washington State, 2010

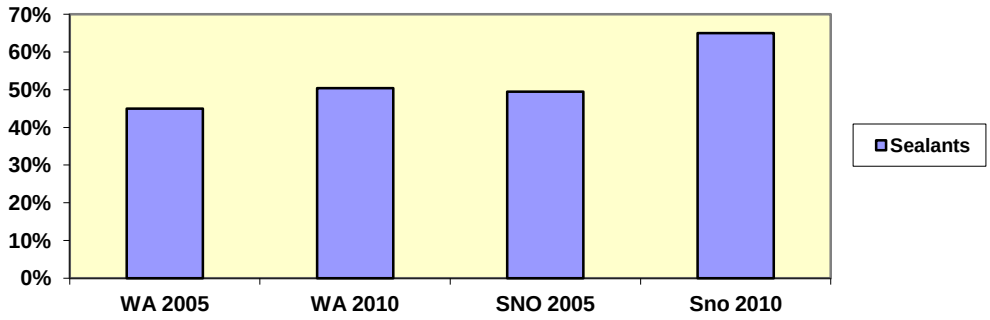


Figure 14

Dental sealants are protective coatings applied to the grooves and pits of permanent molars which have shown to be the most vulnerable to tooth decay. Dental sealants have strong clinical evidence for efficacy for individuals and populations. The Centers for Disease Control and the US Task Force consider school-based dental sealants programs second, only to water fluoridation, for improvements in community health.[9]

While dental sealants are slightly higher in Snohomish County than in Washington, the difference is not statistically significant. Neither has met the HP 2010 objective in 2010 with 50% of dental sealants between ages 6-8 year of age. Children that were targeted for the SMILE survey are slightly older than the HP2010 measure. Second grade students are usually 7-8 years old, while 3rd grade students are 8-9 years old. The data on dental sealants, like Washington State, indicates that future dental caries experience may not be prevented or that children are not receiving adequate preventive care. [10]

School based dental sealants programs began in Snohomish County in 1992. Programs were terminated at the beginning of the 2008-2009 school years, and therefore would not have directly impacted SMILE survey outcomes.

---

[9] Oral Health. Guide to Community Preventive Services Website. Centers for Disease Control and Prevention. www.thecommunityguide.org/oral/. Last updated: 06/14/2005. Accessed on: 8.29.2006.

[10] It should be noted that the SMILE Survey, 2005 was not designed to be representative of 6-8 year old children; however, the average age of children participating in both the Washington State and Snohomish County surveys was 8 years.

Access to Dental Care in Snohomish County[11]

Access to preventive dental care and dental treatment can influence rates of tooth decay. In April of 2004 and 2007, Snohomish County Health District surveyed dental practices to determine the availability of dental care. In 2012 a comparable survey was conducted, The Health Professional Shortage Area Survey. This survey found a dramatic increase in pediatric dental providers and increase focus on children 0-5 years old.

In areas with insufficient providers, untreated dental caries rates would be expected to be higher. In areas with adequate providers, overall dental caries experience may be expected to increase, as the survey methodology under represents overall dental caries. If preventive efforts increase, the overall dental caries experience would decline, as more children remain caries free. This is not to say that significant changes in experience have not already occurred, only that this survey does not count the number of cavities or fillings that children have. There also have been changes in dental diagnostic aids that can overestimate dental caries that could be addressed without restoration (fillings). [12,13] If there are sufficient providers and dental caries experience increases or remains unchanged, then preventive or restorative services that are provided may need to be examined more closely.

In Snohomish County there is a significant disparity in access to care for individuals with lower incomes.

Not all providers accept all dental coverage. There are restrictions by age and types of service delivered. Some do not accept payment by third party providers.

Only 3% of the dentists accept new Medicaid patients without restrictions.

Only federally qualifiedhealth centers (SeaMar and Community Health Center of Snohomish County) in Snohomish County offer dental care on a sliding fee scale for children with low family incomes. In 2009, the Community Health Centers of Snohomish County saw over half of all children with Medicaid coverage.

Children and families with extensive dental needs and low family income may find dental care impossible to afford.

Preventive dental care is beginning earlier.

[11] Health Professional Shortage Areas Survey, Access to Dental Care in Snohomish County, Snohomish Health District, 2005.

[12] Bader JD, Shugars DA A systematic review of the performance of a laser fluorescence device for detecting caries. J Am Dent Assoc. 2004 Oct;135(10):1413-26.

[13] Diniz MB, Boldieri T, Rodrigues JA, Santos-Pinto L, Lussi A, Cordeiro RC.The performance of conventional and fluorescence-based methods for occlusal caries detection: an in vivo study with histologic validation. J Am Dent Assoc. 2012 Apr;143(4):339-50.

Conclusions

Dental decay is a preventable infectious disease that continues to disproportionately affect children in Snohomish County. Untreated dental disease affects children's ability to eat, sleep, and attend to learning.

Snohomish County children have higher rates of dental restoration when compared with children in other areas of the State.

As is the case with other health issues, children from low-income families are disproportionately impacted by dental disease.

Snohomish County and the Seattle area have more private dental offices and community dental clinics to provide dental care than many other Washington counties.

The proportion of dental providers serving families with low incomes has increased.

Over half of children in Snohomish County are seen by the federally qualified health centers in Snohomish County.

Minority children are at least twice as likely, as compared with White/non-Hispanic children, to have untreated dental disease.

The disproportionate burden of dental disease along racial lines continues to be a problem.

Preschool Minority children are at significantly higher risk for Early Childhood Caries and rampant dental caries.

Early Childhood Caries refers to the decay of the top front teeth usually associated with infant feeding practices. Understanding cultural differences in feeding infants and toddlers could help providers in Snohomish County address practices that increase the incidence of ECC.

Dental sealant rates have increased dramatically in Snohomish County.

Snohomish Health District discontinued the school based dental sealant program in 2009.

In Snohomish County, approximately 75% of the population benefit from access to fluoridated water systems. In comparison, it is estimated that about 60% of the State population benefits from access to fluoridated water systems.

I

Appendix I
SMILE Survey, 2010
Sampling Frame
Participating and Non-participating Schools*

*Based upon the 2008-2009 enrollment data by school for the Reduced and Free Lunch Program

School Name	# Kinder	# 3rd Grade	K+3 Count	RFL%	
Mukilteo Elementary	59	96	155	9.3%	
Forest View Elementary School	107	78	185	10.0%	
Mill Creek Elementary	113	122	235	12.0%	
Sherwood Elementary	42	51	93	12.6%	State
Silver Firs Elementary	106	83	189	13.9%	
	81	84	165	18.3%	Declined
Westgate Elementary	37	56	93	18.6%	State
Utsalady Elementary	66	89	155	20.5%	
Hazelwood Elementary	66	81	147	24.6%	
	94	88	182	24.9%	Declined
Allen Creek Elementary School	89	94	183	26.1%	State
Beverly Elementary	69	88	157	26.9%	
Meadowdale Elementary	46	70	116	29.0%	
Lynnwood Elementary	71	67	138	32.3%	
Pinewood Elementary	73	86	159	34.1%	
Picnic Point Elementary	95	80	175	36.8%	
Shoultes Elementary	71	80	151	39.3%	
Hillcrest Elementary School	92	100	192	47.2%	
Emerson Elementary School	90	104	194	57.6%	
Liberty Elementary	89	82	171	73.8%	
Horizon Elementary	143	112	255	82.4%	
Total	1699	1791	3490		

Table 51

Appendix II
SMILE Survey, 2010
Participating Schools
Actual 2009-2010

Participating Schools[14]	**Schools** (n=19)	**Kind & 3rd Grade Total Enrollment** (n=3075)	**Number Participating** (n=2615)	**Response Rate** 85.0%
Allen Creek Elementary School		165	154	93.3
Beverly Elementary		138	120	87.0
Emerson Elementary		198	192	97.0
Forest View Elementary School		187	142	76.0
Hazelwood Elementary		117	95	72.6
Hillcrest Elementary		230	200	87.0
Horizon Elementary		251	229	91.2
Liberty Elementary		141	111	78.8
Lynnwood Elementary		124	108	87.0
Meadowdale Elementary		131	111	84.8
Mill Creek Elementary		201	180	89.6
Mukilteo Elementary		142	127	89.4
Picnic Point Elementary		180	155	86.1
Pinewood Elementary		162	143	88.3
Sherwood Elementary		136	107	78.7
Shoultes Elementary		151	127	84.1
Silver Firs Elementary		195	144	73.8
Utsalady Elementary		103	71	69.0
Westgate Elementary		123	99	80.5

Table 52

[14] Out of the initial sample of 21 schools, 4 declined participation. Two of these schools were replaced with other randomly selected schools.

Appendix III
Head Start / ECEAP Programs
Participating in Snohomish County

Edmonds Community College North County HeadStart
Edmonds Community College Center for Families ECEAP
Lake Stevens ECEAP
Granite Falls ECEAP
Madison Elementary ECEAP
Trailside ECEAP
Mukilteo ECEAP
Centrepointe Green HeadStart
Eight Ave Early Head Start
Tomorrow's Hope ECEAP

Appendix IV – Table A

Age, Grade, Gender, Eligibility for the Free or Reduced Price Meal Program, Language Spoken at Home, and Race/Ethnicity of Children Screened

SMILE Survey, 2010

Variable	Kindergarten (n=1269)		3rd Grade (n=1324)		Both Grades (n=2593)	
	Number	Percent	Number	Percent	Number	Percent
Age						
5 years	512	40.3%			512	19.7%
6 years	746	58.7%			746	28.7%
7 years	8	0.6%	1	0.1%	9	0.3%
8 years	1	0.1%	529	39.9%	530	20.4%
9 years	3	0.2%	771	58.1%	774	29.8%
10 years			25	1.9%	25	1.0%
11 years			1	0.1%	1	
12 years						
Gender						
Male	684	53.9%	675	51.0%	1359	52.4%
Female	586	46.1%	649	49.0%	1235	47.6%
Missing/Unknown						
Free/Reduced Lunch Eligibility						
Not eligible	862	67.9%	779	58.8%	1641	63.4%
Eligible	407	32.1%	545	41.2%	952	36.6%
Missing/Unknown	7	0.6%	1	0.1%	1	0.0%
Language Spoken at Home						
English	1044	82.8%	1120	84.9%	2164	83.9%
Spanish	132	10.4%	143	10.8%	275	10.6%
Other	85	6.7%	56	4.2%	141	5.4%
Missing/Unknown	8	0.7%	6	0.5%	14	0.6%
Race/Ethnicity						
White	841	66.3%	881	67.0%	1722	66.7%
African American	56	4.4%	48	3.6%	104	4.0%
Hispanic	201	15.9%	232	17.5%	433	16.7%
Asian	116	9.1%	111	8.4%	227	8.8%
American Indian/Alaska Native	9	0.7%	14	1.1%	23	0.9%
Other	45	3.5%	30	2.3%	75	2.9%
Missing/Unknown			9	0.7%	9	0.3%

Table 53

Appendix IV – Table B

Distribution of Treated Decay, Untreated Decay and Caries Experience Among the Primary & Permanent Dentitions of Children Screened Kindergarten and 3rd grade only

	Sno-Kind (n=1269)	WA Kind (n=2838)	Sno- 3rd (n=1324)	WA 3rd (n=2866)
	Percent of Children	**Percent of Children**	**Percent of Children**	**Percent of Children**
Treated Decay				
No treated decay	14.4	13.9	17.1	14.9
Primary teeth only	34.8	29.4		
Primary and permanent teeth			11.6	11.1
Permanent teeth only			3.3	0.8
Untreated Decay				
No untreated decay	85.6	86.1	82.9	85.1
Primary teeth only	13.9	13.0		
Primary and permanent teeth			2.3	2.5
Permanent teeth only			2.7	1.3
Caries Experience				
No caries experience (caries free)	55.8	60.5	37.3	42.2
Primary teeth only	44.2	39.5		
Primary and permanent teeth			15.2	13.8
Permanent teeth only			3.7	1.1

Table 54

Appendix IV – Table C
Comparison by Race/Ethnicity-Minority
Snohomish County SMILE Survey, 2010
Kindergarten and 3rd Grade Children Screened
Stratified by Race/Ethnicity

Variable	White (n=1722)		African American (n=104)		Hispanic (n=433)		Asian (n= 227)	
Caries experience – primary and/or perm	49.5% 47.1%	51.9%	47.1% 37.2%	49.5% 57.2%	68.1% 63.4%	72.4%	59.5% 52.8%	65.9%
Caries experience – permanent teeth	9.0% 7.7%	10.4%	11.5% 6.1%	19.3%	15.7% 12.5%	19.6%	5.3% 2.8%	9.1%
Untreated decay	14.3% 12.7%	16.0%	17.3% 10.6%	26.0%	19.4% 15.9%	23.6%	17.2% 12.5%	22.7%
Rampant caries	14.8% 13.2%	16.6%	6.7% 9.8%	24.9%	29.4% 25.2%	34.0%	22.0% 16.8%	28.0%
Need early or urgent treatment	13.2% 11.6%	14.9%	16.3% 9.8%	24.9%	18.3% 14.8%	22.3%	16.7% 12.1%	22.2%
Need urgent treatment	0.8% 0.4%	1.3%	0		2.3% 1.2%	4.4%	0.9% 0.1%	3.1%
Third Grade Children Only								
Dental sealants	65.2% 62.0%	68.4%	47.9% (p=0.0007) 33.3%	62.8%	65.4% 58.8%	71.5%	65.8% 56.2%	74.5%

Table 55

Acknowledgements

Snohomish Health District

LeeAnn HoaglinCooper, RDH, BS,
Oral Health Program

Carrie McLachlan, MPH
Healthy Communities and Assessment Program Manager

Patricia Yepassis-Zembrou, MD, MPH
Epidemiologist

Department of Health
Kathy Phipps, DrPH, Oral Epidemiology
Justin Weissner, MPH

Examiner
LeeAnn HoaglinCooper RDH, Snohomish Health District

Participants
Kindergarten and Third Grade Classrooms
Edmonds School District
Everett School District
Lake Stevens School District
Marysville School District
Mukilteo School District
Stanwood School District

Head Start/ECEAP Programs of Snohomish County

PUBLIC HEALTH
always working for a safer & healthier
SNOHOMISH COUNTY

Snohomish Health District
3020 Rucker Avenue, Suite 206
Everett, WA 98201

425.339.5219 ph
425.339.8726 fax