2013-2014

# Dental Health Screening Program Report


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## Executive Summary

The Dental Health Screening 2013-2014 in the Saskatoon Health Region is the fifth of the series of screening surveys conducted after every five year interval since 1993-1994. After the termination of the Children's Dental Plan in 1993, the Saskatchewan Dental Health Education Program mandated a dental screening component to be repeated every five years.[1] The 2013-2014 screening not only marks two decades of this continuum, but also provides an extensive and more critical evaluation of oral health of children in comparison to the past program reports. In accordance with the past dental screening, a more innovative screening was designed which provided better interpretation of measures and resulted in new findings which were analyzed to better understand the oral health of children in Saskatoon Health region.

The 2013-2014 screening participation rate was 88.05% of Grade 1 and Grade 7 students in 148 schools in Saskatoon Health Region. The mean age and gender distribution of both Grades were also assessed. To understand the oral hygiene and health better, oral health issues which included calculus, staining, gingivitis and malocclusion were also analyzed among the students. The oral health issues were found to be higher with age as the rate in Grade 7 students were elevated.

Previously measured as Early Childhood Caries (ECC), the Dental Health Screening 2013-2104 marks the introduction of measuring it according to the new definition as Early Childhood Tooth Decay (ECTD). Additionally, severe-ECTD (S-ECTD) is also defined as the extreme form of ECTD according to the specific criteria (Refer to **Appendix-C**). Only 0.88% experienced ECTD, however, the S-ECTD rate was relatively higher with 40 (1.10%) of Grade 1 students suffering from it. Though the ECTD rate could not be compared to past screening results due to the change in definitions, it still provides baseline for future screening.

To better understand the burden of tooth decay, the number of quadrants (maximum of 4) affected by the decay were recorded. Grade 1 had the higher percentage of students with all four quadrants involved (2.75%) compared to Grade 7 (0.34%) where the percentage was lower than the past screening record.

The past and present dental decay was assessed using "deft" and "DMFT" index. The "deft" is a teeth index which measures the prevalence of dental caries/decay in deciduous dentition, in contrast to "DMFT" which is used for the same measurement in permanent dentition (Refer to **Appendix-C**). Generally, the dental health of Grade 1 students was found to be poor compared to Grade 7 students. The average deft + DMFT measurement of Grade 1 students was 2.79 compared to 1.25 in Grade 7 students. The cavity-free percentages of Grade 1 (47.28%) and Grade 7 (55.57%) also indicates that the dental decay was more prevalent in Grade 1 students.

The "deft" and "DMFT" indices were also used to assign every student with a Dental Health Status which were categorized as NDE, CCC, PCC and NEC (Refer to **Appendix-C**). No evidence of Care (NEC) was found in 11.11% of Grade 1 students though decay was evident in their cases. The NEC percentage has increased compared to the past screening 2008-2009 results of Grade 1 where the NEC score was 9.3%. The Grade 7 NEC percentage 2013-2014 was relatively low at 3.83%.

The Dental Health Screening 2013-2014 also assessed children based on their dental health treatment needs which were recorded as Priority Scores. The unmet dental health needs in Grade 1 students were experienced by 19.65% and 6.96% of students were observed in Grade 7 students who required urgent or immediate dental treatment. On the other hand, the tobacco usage was found to be low with 0.30% of Grade 7 students responding 'Yes' when asked about tobacco usage.

The detailed analysis regarding the dental health trends in the Saskatoon Health Region demonstrated that oral health has deteriorated over the past two decades for age 6/ Grade 1 students. Except for the students who presented with pain, all of the other oral health measures were found to be depreciated. The percentage of Grade 1 students with cavities (20.92%) and NEC (11.11%) were the highest and cavity free (47.28%) were found to be the lowest in 2013-2014 compared to all the past screening since 1993-1994. Similarly, the Grade 7 screening results 2013-2014 when compared to the Grade 7 results 2008-2009 yielded the same results . Except for the students who presented with pain, the rest of the measurements of Grade 7 showed that the oral health of the age12/Grade 7 students was better in 2008-2009.

The *Canadian Oral Health Strategy (COHS) Guidelines 2005-2010* were used in the previous screening report 2008-2009, to compare the screening results in accordance with the given goals and guidelines. The Saskatoon Health Region screening results 2008-2009 met the COHS guidelines. However, the 2008-2009 results were further analyzed with 2013-2104 results in line with the *Canadian Oral Health Framework (COHF)* to compare the outcomes. The measurements in 2008-2009 were better in reference to the Guidelines related to both age 6 /Grade 1 and age 12/ Grade 7. The Dental Health Screening 2013-2014 results for age 6/Grade 1 met one of the two and age 12/Grade 7 met three out of the four Guidelines of COHS 2005-2010 for the particular age group.

The new *Canadian Oral Health Framework 2013-18* (COHF) is the second national oral health Framework produced by the Federal, Provincial and Territorial Dental Directors.[2] The Dental Health Screening 2013-2014 results were measured in line with the COHF guidelines. Two of the goals were related to the dental screening data which were measured accordingly. The first one which was to assess improvement in oral health of children and youth included guidelines for age 6/Grade1 and age 12/Grade 7. All the three Guidelines for age 6/Grade 1 were not met according to the Saskatoon Health Region 2013-2014 screening data for this age group. With regard to age 12/ Grade 7, the guideline which required < 1.0 average "DMFT" was met

as the average "DMFT" of Grade 7 students was 0.93. However, the other guideline related to >70% students with "DMFT"= 0 for age 12/Grade 7 was not met.
The second goal of COHF 2013-2018 analyzed was to assess the improvement in oral health of Aboriginal people. All the three guidelines related to the school based preventive services provision, age 6/Grade 1 and age 12/Grade 7 Aboriginal students were met. The statistics also provided baseline for future screening and analysis.

On the basis of a detailed statistical analysis, the effect of different factors were analyzed on the oral health of children in 2013-2014 . The Dental Health Screening 2013-2014 was the first screening of the continuum to study the oral health impacts related to New Immigrants and Aboriginal population. The analysis yielded that the New Immigrant, Low Income Neighborhood and Aboriginal students were more likely to experience dental decay, unmet dental health needs and no evidence of care (NEC). Generally, the oral health indicators in the above mentioned categories indicated their poor health in comparison to the controls. Additionally, the association of these factors with oral health was statistically significant.

Similarly, the children who visited the dentist in the past year and those who had dental Insurance had better oral health when compared to the children who did not. In both cases the association was found to be statistically significant.

In the case of Low Income Neighborhoods students, 11.88 % were measured with no evidence of care (NEC) and 19.31% had unmet dental treatment needs compared to 7.52% and 14.17% measurements in students who were not from Low Income neighborhoods respectively. Apart from the statistical analysis, the epidemiological studies also suggested an association between the Neighborhood Income status and dental decay (Odds ratio: 1.4).

Dental health disparities were also studied between children attending schools located in Urban and Rural communities. The combined deft + DMFT score for Urban was 2.13 and 2.06 in Rural. The results in this comparison was not straight forward but generally students in rural areas scored better in most of the oral health indicators. The NEC in Urban students was calculated as 8.24% compared to 6.81% in Rural students. Similarly, the unmet dental health needs in Urban locations was 15.02% in comparison to 11.33% in Rural locations. Out of the 16 health indicators, 13 of them had better measurements in Rural locations and 9 out of those differences or associations were statistically significant. However, the epidemiological studies suggested no association between the location and the dental decay. (Odds ratio : 1.1)

The link between fluoride and its benefit in the reduction of caries was first discovered in 1930's. After much research, the controlled addition of fluoride to drinking water yielded successful results in reducing the dental decay. Later on, community water fluoridation was considered to be "one of the 10 greatest public health achievements of the 20th Century" by Centers for Disease Control and Prevention (CDC). It receives an immense support by World Health Organization (WHO), CDC, Health Canada, Public Health Agency of Canada and the American and Canadian Dental and allied health associations. Community water fluoridation

was first introduced in Canada in 1940s.[3] Despite the advocacy, water fluoridation remains an issue with a national average below 50% according to the 2007 measurements.[4]

As reported by the *Saskatchewan Community Fluoride Data 2010* document, 36% of the communities have access to water fluoridation in Saskatchewan with 86% of the communities in Saskatoon Health Region receive fluoride through the drinking water (Refer to **Appendix-D** for the list of Fluoridated Communities' 2014).

Despite this fact, the most contradictory result in Dental Health Screening 2013-2014 compared to past screening was established in the comparison of students in fluoridated and non-fluoridated communities. In the past, children who lived in communities with fluoridated water had significantly better oral health on almost every measure.[5] In 2013-2014, out of the 13 oral health indicators examined in the two populations, the difference of measures due to fluoridation effect is statistically insignificant in 10 of them. Additionally, the epidemiological studies also suggested no association between community water fluoridation and the dental decay. To summarize, fluoridation did not have a huge impact on the oral health of the children in 2013-2014 screening results in Saskatoon Health Region.

The 2013-2014 results clearly signifies the recent inadequate water fluoridation issue in the Region. "For a dental benefit the fluoride level needs to be adjusted to 0.7 mg/L".[4]and as advocated by Health Canada, the level should be maintained to protect the teeth from dental decay".[6] However, on the contrary, the City of Saskatoon's *Drinking Water Quality and Compliance Reports*' exhibit different results. The average fluoride level for 2008 -2013 reports was 0.47 mg/L which is far below the required level of fluoride to be effective against dental decay.[7,8,9,10,21] Hence, the communities which were labeled as fluoridated actually were unable to receive the benefits of fluoride and this clearly justifies the dental screening 2013-2014 result regarding Community Water Fluoridation. Refer to **Appendix-E** for the maps of communities with water fluoridation and moreover, **Appendix-F** clearly shows that only Quill Lake is fluoridated at the optimum level out of these communities. Due to increased awareness about this issue, some of the schools in SHR (Dundurn and Hanley) which already received fluoridated water still continued with the fluoride mouth rinse program for children, in response to the inadequate water fluoridation.

In the present scenario, " improving water fluoridation to optimum levels" is now considered to be integral for the betterment of oral health in children by observatories and research units.[11] The dental screening 2013-2104 results further provided evidence in this regard and clearly indicates the significance of adequate water fluoridation at the optimal level of 0.7 mg/L.
Consequently, the Dental Health Program Screening 2013-2014 report provides a platform to assess oral health status and gauge the effectiveness of preventive dental programs and policies. It is a step forward for the betterment of Oral Health of children and communities in Saskatoon Health Region.

## Introduction

*"Oral diseases are the most common of the chronic diseases and are important public health problems because of their prevalence, their impact on individuals and society, and the expense of their treatment."*- Bulletin of World Health Organization (WHO),2005.[12]

Since 1993, The Saskatchewan Health Dental Health Education Program mandated a dental screening component for every Health Region to be repeated at 5 year intervals. The Dental Health Screening 2013-2014 is the fifth dental screening program in this regard and marks the two decades of dental surveillance and screening in Saskatoon Health Region. The purpose of this series of dental screenings is to monitor oral health of children, evaluate the preventive programs and policies and to recommend future actions for the betterment of oral health of children and communities in the region.

The Dental Health Screening 2013-2014 report emphasizes the prime oral health issues related to age 6/Grade 1 and age 12/Grade 7 students. One of the key aspects to gauge the oral health of age 0 to 6 years old is through the measurement of Early Childhood Tooth Decay (ECTD). The ECTD is a rampant caries disease which can progress much more quickly than general decay. Due to its significance, ECTD is now measured under a new definition (Refer to **Appendix-C**).

In April 2008, Health Canada made public the findings and recommended 0.7mg/L of fluoride in drinking water to effectively prevent dental decay/ caries without establishing the adverse effects of fluorosis.[1] Though Saskatoon Health Region categorically advocates fluoridation, the optimal level of 0.7mg/L of fluoride in drinking water is still desirable. This issue may well be a contributing factor to the increase in dental disease in the Saskatoon Health Region.

Oral health is a fundamental component of general health, not only the dental tissues , but all the oral soft tissues have the potential to interfere with the quality of life by acquiring pathologies. Though completely preventable, dental decay/caries is on the rise in the Saskatoon Health Region over the past two decades. The infections of gums and other tooth supporting tissues are also the major cause of pain and tooth loss. Maintenance of oral hygiene and health in children is the key for their brighter smiles in the future. Due to lack of universal dental care program, a proper planning and formulation of preventive oral health strategies for children is of prime importance.

The Dental Health Program Screening 2013-2014 report is an attempt to present the facts and analyze the health measures with the purpose to improve oral health of children in Saskatoon Health Region.

## Methods

Dental screening was offered to the Grade 1 and Grade 7 students who attended schools in Saskatoon Health Region between September 2013 to June 2014. The screening was conducted by licensed Saskatchewan Dental Therapists with the help of history* and visual examination. The oral examination was aided by tongue depressor, mouth mirror and/or LED flashlight. The detailed examination included recording a series of various oral health indicators for every student screened. Generally, these measures were related to past and present oral health indicators. The recordings were then entered in to the database where further oral health measures were automatically calculated by the Microsoft Access software.

All the students who participated were initially provided with a *"Dear Parent or Guardian"* letter (Refer to **Appendix-G)**. Apart from the consent, the letter required 4 optional questions to be completed by the Parent/Guardian and the responses to these questions were also added to the database. After the screening, *"Dental Screening Results"* form was sent to the Parent/ Guardian of every student who participated (Refer to **Appendix-H)** . The form was completed to inform the Parent/Guardian about the oral health and the treatment required for every student.

The recordings from the visual examination and history* especially from the "Dear Parent or Guardian" letter and "Dental Screening Results" form, provided extensive oral health data which was analyzed in this report.

After entering in to the Access database, the screening data was exported to Excel and SPSS 22.0 for a detailed analysis. The data was filtered, cleaned and the anomalies were resolved. In cases where anomalous values were not identified, they were excluded from the analysis. For the inferential statistics, the significance level ($\alpha$) was taken as 0.05 prior to the calculation of p-value.

*****_History is a narrative or record of past events and circumstances that are or may be relevant to a patient's current state of health._

## Dental Health Screening 2013-2014 Results:

### Participation:

The total number of students of Grade 1 and Grade 7 who participated in the Dental Health Screening 2013-2014 in the Saskatoon Health Region are 6611.
**Table-1** further elaborates on the number of screened students in relation to the total enrolments.

**Table-1:** Participation Data.

| TOTAL ENROLMENTS | TOTAL SCREENED | TOTAL ABSENT | TOTAL REFUSED |
|---|---|---|---|
| 7508 | 6611(88.05%) | 551(7.34%) | 346 (4.61%) |

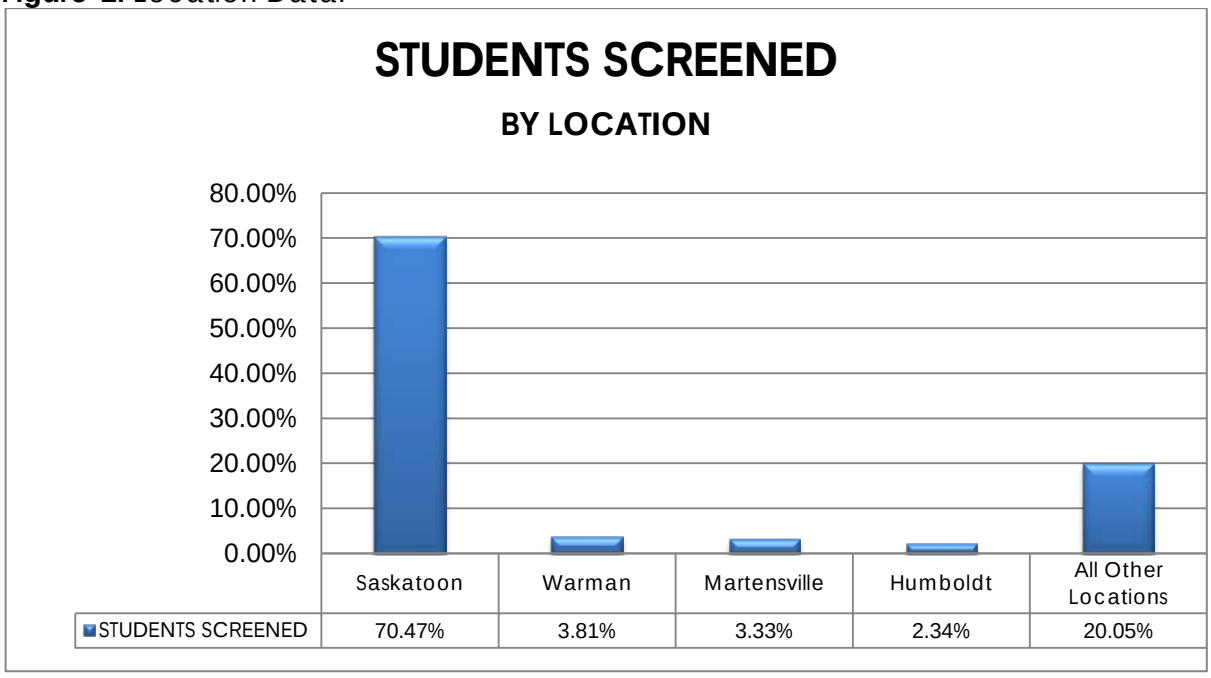
### Location:

Out of the total students screened, the highest number of students were screened at Saskatoon followed by Warman, Martensville and then Humboldt. **Table-2** and **Figure- 1** illustrates the screening data associated with the Location of the Schools.

**Table-2:** Location data.

| LOCATION | NUMBER OF STUDENTS SCREENED | % SCREENED |
|---|---|---|
| Saskatoon | 4659 | 70.47% |
| Warman | 252 | 3.81% |
| Martensville | 220 | 3.33% |
| Humboldt | 155 | 2.34% |
| All Other Locations | 1325 | 20.05% |

**Figure-1:** Location Data.



## Schools:

The Dental Screening was carried out in 148 schools in the Saskatoon Health Region. **Appendix-A** and **Appendix-B** exhibits details on dental health by School in Saskatoon Health region for Grade One and Grade 7 students in 2013-2014 respectively. The four schools with the highest number of participation are listed in the **Table-3** below.

**Table-3:** School Data.

| TOTAL COUNTS→ BY SCHOOLS | |
|---|---|
| Dr. John G. Egnatoff School | 160 |
| Warman Elementary School | 148 |
| Dundonald School | 138 |
| Valley Manor Elementary School | 132 |
| St. Peter School | 129 |

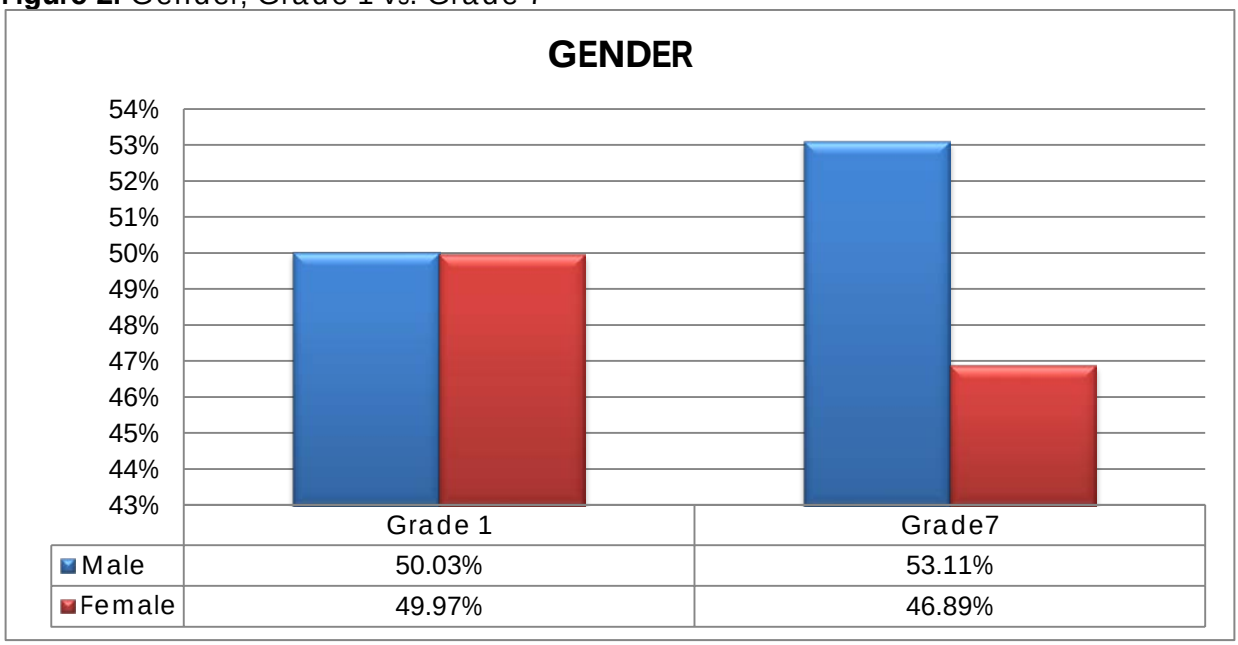
## Gender:

The gender was observed to have a similar distribution in the Grade 1 and Grade 7. Both Males and Females had an equal distribution with males presenting in a slightly higher proportion especially in Grade 7. **Table-4** and **Figure- 2** elaborates on this information.

**Table-4:** Gender Data.

| | GENDER | |
|---|---|---|
| | Male | Female |
| Grade 1 | 1820 (50.03%) | 1818 (49.97%) |
| Grade7 | 1579 (53.11%) | 1394 (46.89%) |

**Figure 2:** Gender; Grade 1 vs. Grade 7



### Age:

The age of students was entered into the record at the time of examination and the descriptive statistics were analyzed based on the information. **Table-5** shows the mean age of Grade 1 and Grade 7 respectively.

**Table-5:** Age.

| | Mean Age |
|---|---|
| **Grade 1** | 6.60 years (79.25 months) |
| **Grade7** | 12.62 years (151.46 months) |

### Oral Health Assessment:

Oral health was primarily assessed by measuring the presence or absence of oral disease. This was achieved by visual examination and detailed history questions. The major focus was on dental decay where DMFT/deft Index was used to analyze the past and the present dental health. (Refer to **Appendix-C** for "Dental Screening Program Definitions-2013/2014").

The students of Grade 1 and Grade 7 were also examined to recommend and inform the Parents/Guardian about the dental treatment needs. In Grade 1, 2255 (61.98%) students were recommended sealants and 32 (0.88%) were recommended treatment to existing fillings. Space maintainers, appliances or retainers which required attention were found in 7 (0.19%) of Grade 1 students. There were no restored fractures found and 1 (0.02%) non-restored fracture was observed in Grade 1 students.

On the other hand, 2727 (91.73%) Grade 7 students were recommended sealants. The lower percentage of sealants was recommended in Grade 1 students compared to Grade 7 students due to the eruption sequence of the teeth. The relatively low number of permanent molars in age 6 /Grade 1 was the obvious reason for this phenomenon.

Furthermore, existing fillings which require treatment were presented by 17 (0.57%) and 6 (0.20%) needed additional care of the space maintainer appliance for Grade 7 students. There were 14 (0.47%) non-restored fractures and 5 (0.17%) of Grade 7 students had restored fracture in the oral cavity.

(Refer to **Appendix-C** for "Dental Screening Program Definitions-2013/2014").

Simultaneously with the dental screening program, a dental sealant program was conducted. This program provided services to 621 students of Grade 1 and 434 students of Grade 7 in 50 schools.

Besides the dental decay, other oral health issues were also assessed to determine the outstanding treatment needs.

## Oral Health Issues:

This information was collected under the category of Calculus, Staining, Gingivitis and Malocclusion. All of these measures are a good indicator of oral health and hygiene. The terms are defined as follows

***Calculus:*** Hardened plaque on teeth.

***Staining:*** suspicious areas (possible decay), tartar or frank surface staining.

***Gingivitis:*** Bleeding gums, early signs of gum disease ( Inflammation of gums).

***Malocclusion:*** Crooked or crowded teeth and/or poor bite."[1]

The Oral Health issues are generally found at higher rates in Grade 7 students when compared to Grade 1. **Table-6** shows the numbers and percentages of these measures in both the Grades with the total counts. **Figure-3** further illustrates this information in a chart form.

**Table-6:** Oral health Issues.

| | CALCULUS | STAINING | GINGIVITIS | MALOCCLUSION |
|---|---|---|---|---|
| GRADE 1 | 90 (2.47%) | 172 (4.73%) | 8 (0.22%) | 825 (22.68%) |
| GRADE 7 | 175 (5.85%) | 182 (6.12%) | 332 (11.17%) | 1298 (43.66%) |
| Total | 265 (4.01%) | 354 (5.35%) | 340 (5.14%) | 2123 (32.11%) |

**Figure-3:** Oral Health issues; Grade 1 vs. Grade 7.

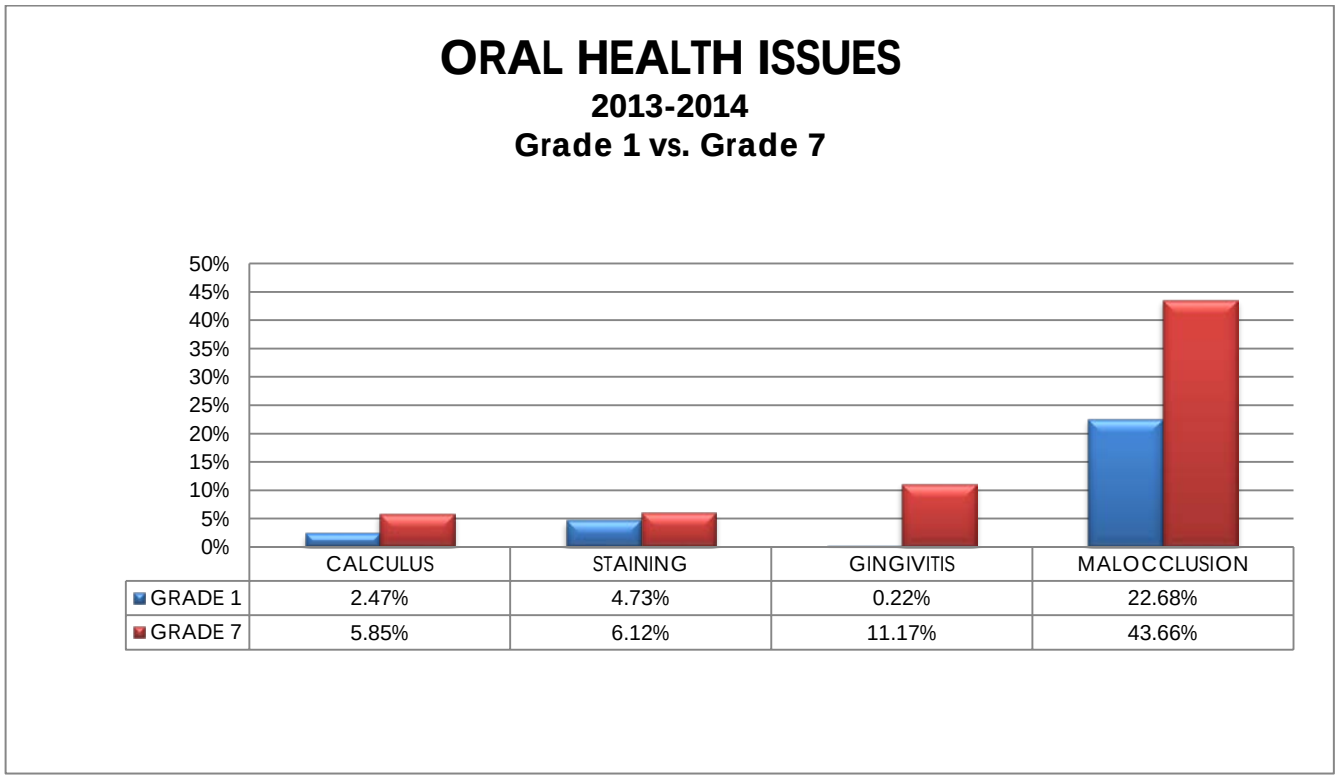
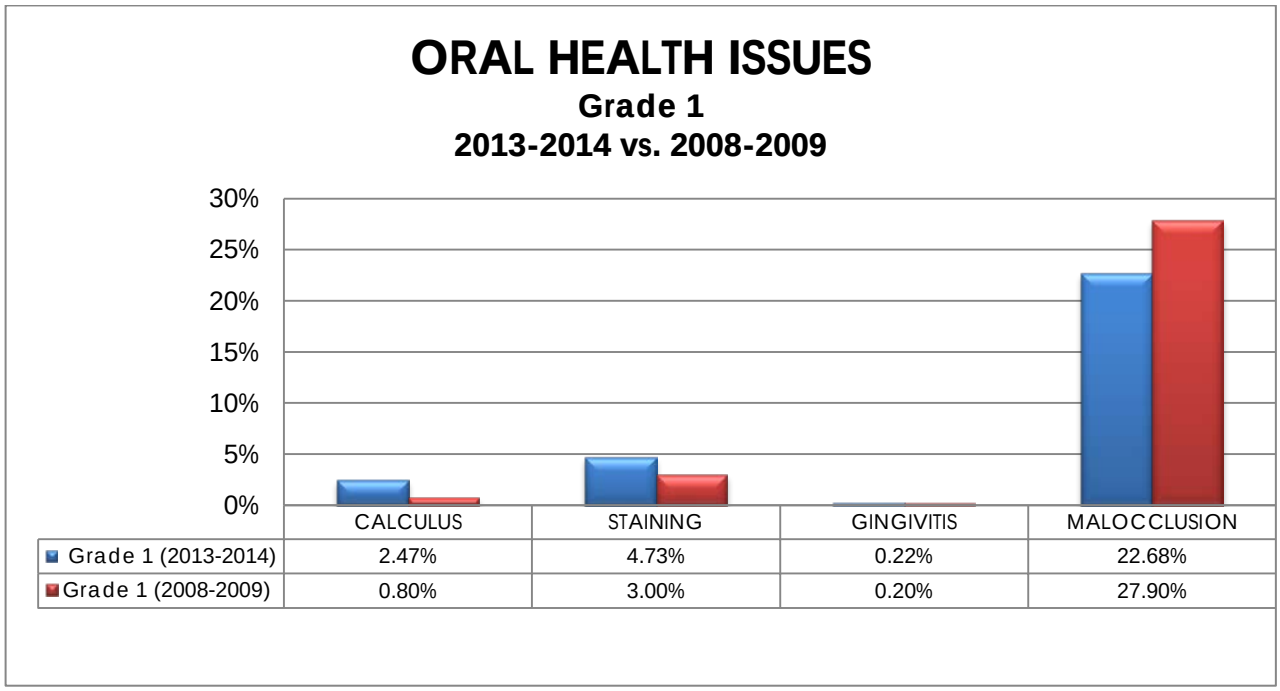



**Figure-4** and **Figure-5** demonstrates the comparison of Grade 1 and Grade 7 oral health issue measures with the 2008-2009 Dental Health Screening Report results.

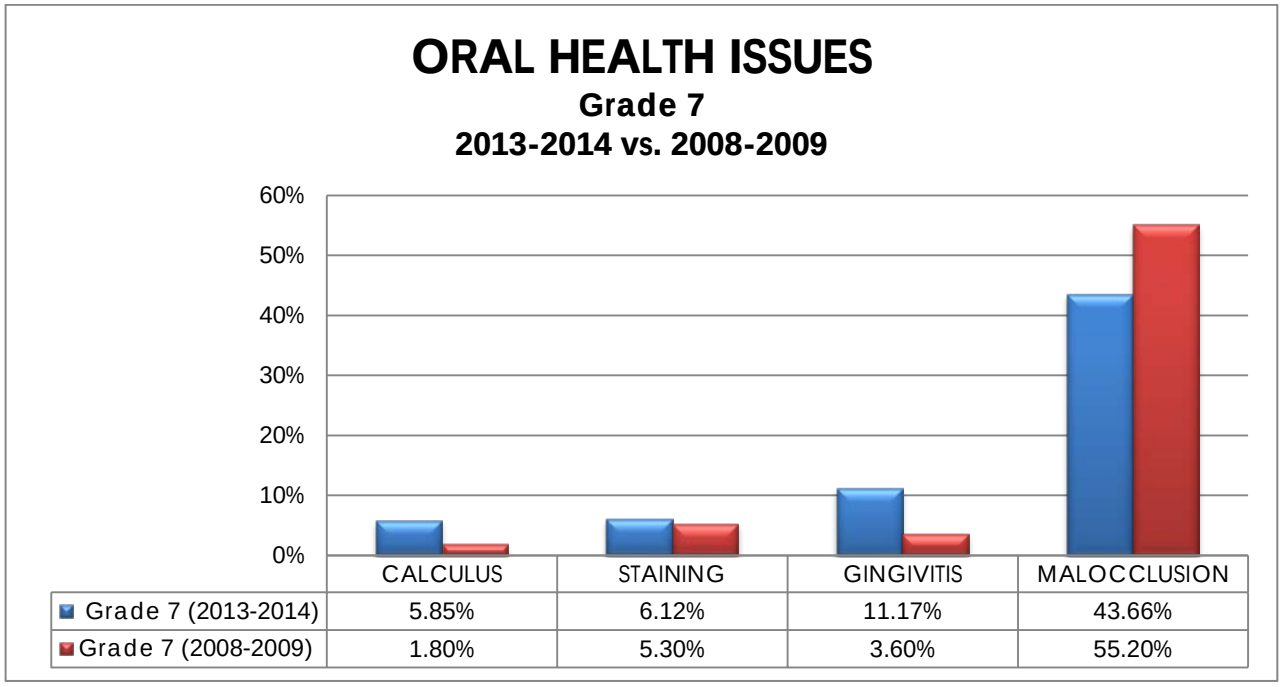
In general, the issues have risen over the five year period except for the Malocclusion which has decreased in both Grade 1 and Grade 7.

**Figure-4:** Grade 1; 2013-2014 vs. 2008-2009.




| | CALCULUS | STAINING | GINGIVITIS | MALOCCLUSION |
|---|---|---|---|---|
| Grade 1 (2013-2014) | 2.47% | 4.73% | 0.22% | 22.68% |
| Grade 1 (2008-2009) | 0.80% | 3.00% | 0.20% | 27.90% |

**Figure-5:** Oral Health Issues Grade 7: 2013-2014 vs. 2008-2009




| | CALCULUS | STAINING | GINGIVITIS | MALOCCLUSION |
|---|---|---|---|---|
| Grade 7 (2013-2014) | 5.85% | 6.12% | 11.17% | 43.66% |
| Grade 7 (2008-2009) | 1.80% | 5.30% | 3.60% | 55.20% |

### Early Childhood Tooth Decay(ECTD):

Previously measured as Early Childhood Caries (ECC), the Dental Health Screening 2013-2104 marks the introduction of measuring it according to the new definition as Early Childhood Tooth Decay (ECTD). Additionally, severe ECTD (S-ECTD) is also defined as the extreme form of ECTD according to the specific criteria mentioned in the definition as described by the American Academy of Pediatric Dentistry, 2008 (Refer to **Appendix-C** for "The Dental Screening Program Definitions-2013/2014)".

In either case, the Dental Screening Database has the formula set to calculate these measures (ECTD, SECTD) automatically.

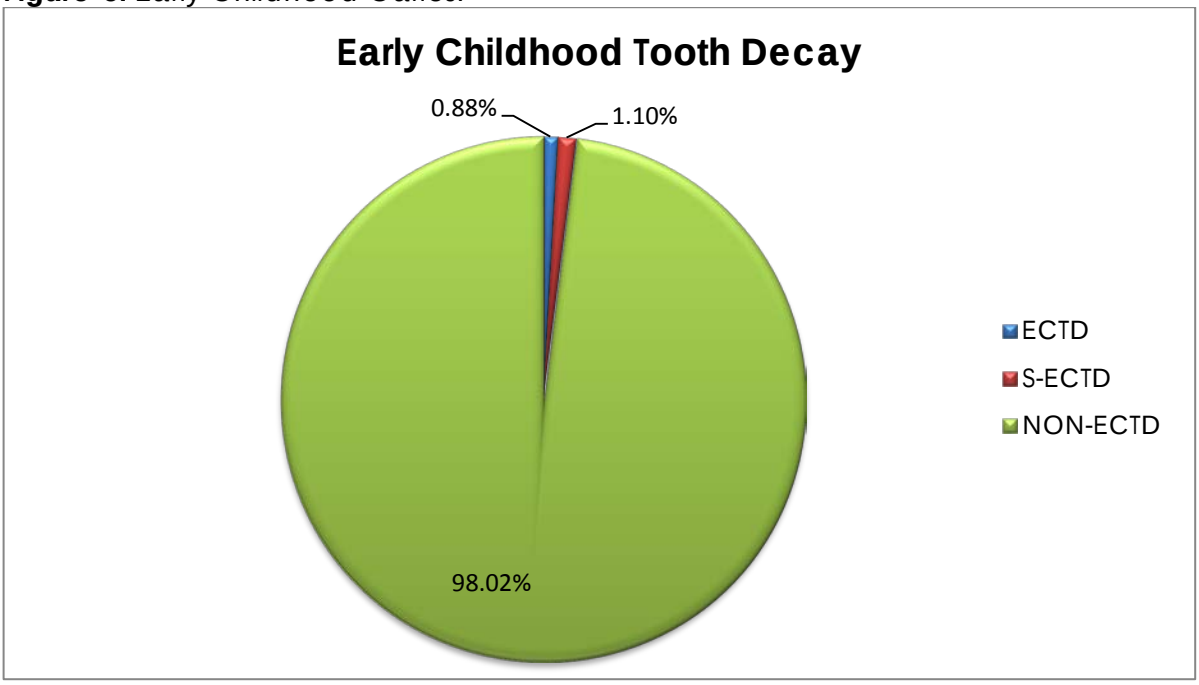
Due to the reasons mentioned above, the ECTD and S-ECTD rate cannot be compared to the past screening results as the criteria in this Report are different from the past.

As ECTD is only measured in a child less than 71 months of age, the Grade 7 students were not applicable for this measure. Hence, **Table-7** and **Figure-6** illustrates the counts and percentages for the total of 3638 Grade 1 students.

**Table-7:** Early Childhood Tooth Decay

| | ECTD | S-ECTD | NON-ECTD |
|---|---|---|---|
| EARLY CHILDHOOD CARIES | 32 | 40 | 3566 |
| | 0.88% | 1.10% | 98.02% |

**Figure-6:** Early Childhood Caries.



## Quadrants:

The dental arches were divided in to four quadrants; upper right, upper left, lower right and lower left. To better understand the burden of tooth decay, the number of quadrants affected by the decay were recorded.

### *Grade 1:*

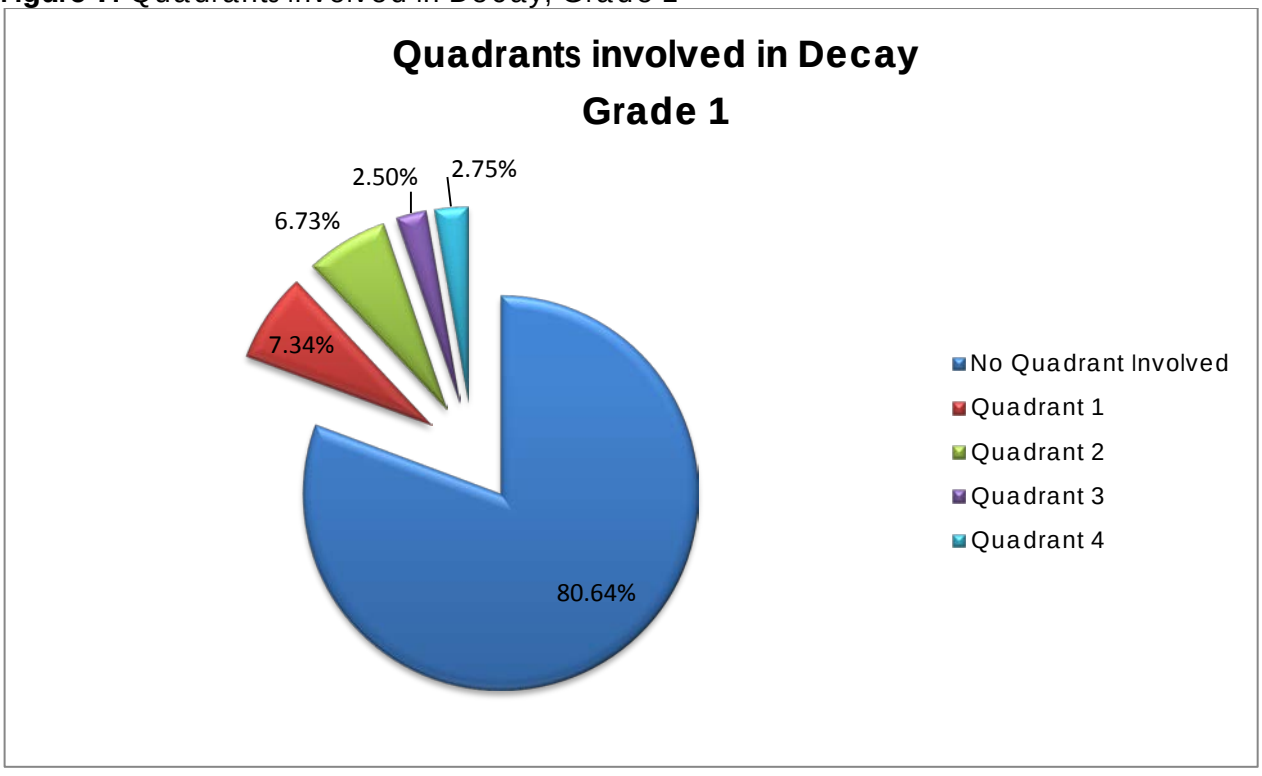
Out of 703 Grade 1 students with tooth decay, most students had one or two of their quadrants involved. However, 100 of the Grade ones had four of the Quadrants involved which is considerably higher when compared to Grade 7. **Table-8** and **Figure 7** exhibits this information for the Grade 1 students in detail.

**Table-8:** Quadrants involved in Decay: Grade 1

**Grade 1 - Quadrants involved in Decay**

| No Quadrant Involved | Quadrant 1 | Quadrant 2 | Quadrant 3 | Quadrant 4 |
|---|---|---|---|---|
| 2935 (80.68%) | 267 (7.34%) | 245 (6.73%) | 91 (2.50%) | 100 (2.75%) |

**Figure 7:** Quadrants involved in Decay; Grade 1



***Grade 7:***

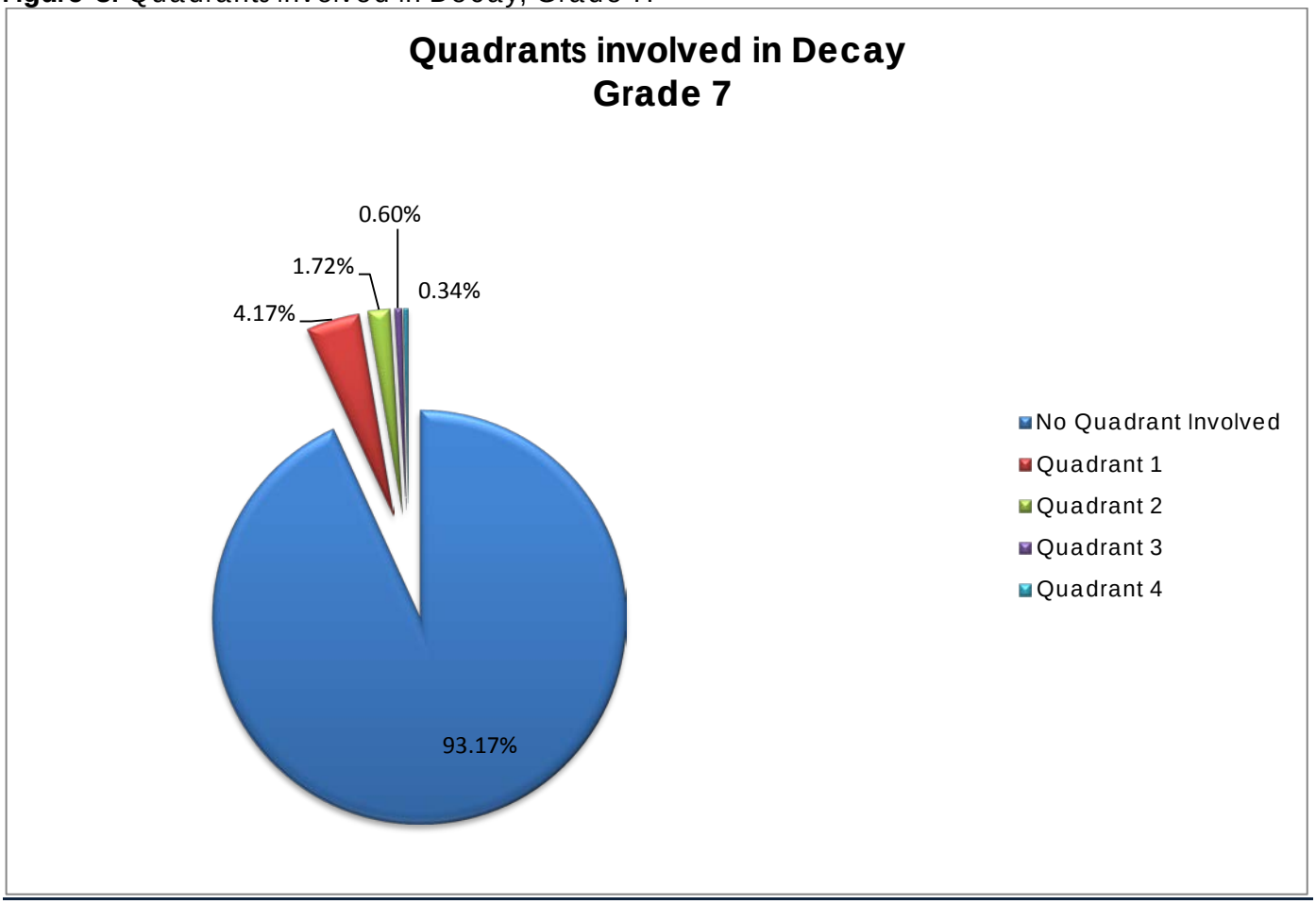
Out of 203 of the Grade 7 students who had decay, only one quadrant was involved in the majority of them. The students with all four quadrants involved with tooth decay were 10 in number, which is low compared to Grade 1(2013-2014) and past screening records. **Table-9** and **Figure-8** further illustrate the details.

**Table-9:** Quadrants involved in Decay; Grade 7.

**Grade 7 - Quadrants involved in Decay**

| No Quadrant Involved | Quadrant 1 | Quadrant 2 | Quadrant 3 | Quadrant 4 |
|---|---|---|---|---|
| 2770 (93.17%) | 124 (4.17%) | 51 (1.72%) | 18 (0.60%) | 10 (0.34%) |

**Figure-8:** Quadrants involved in Decay; Grade 7.



## "deft" Index:

"deft" is a Primary/Deciduous teeth Index which measures the prevalence of dental caries/decay in the Primary dentition. It is a count of the number of decayed ***(d)***, extracted***(e)***[due to caries] and filled ***(f)***deciduous teeth. "it measures not just current dental disease, but a history of tooth decay evidenced by fillings and extraction."[(1)]

Based on the "deft" Index information collected in the Dental Health Screening 2013-2104, *"deft" components* and *"deft" scores* can be analyzed for both the Grade 1 and Grade 7 students (Refer to **Appendix -C** for "The Dental Screening Program Definitions 2013/2014").

### *Grade 1:*

Following are the results for "deft" components and "deft" scores of Grade 1 for the Dental Screening 2013-2014 at Saskatoon Heath Region.

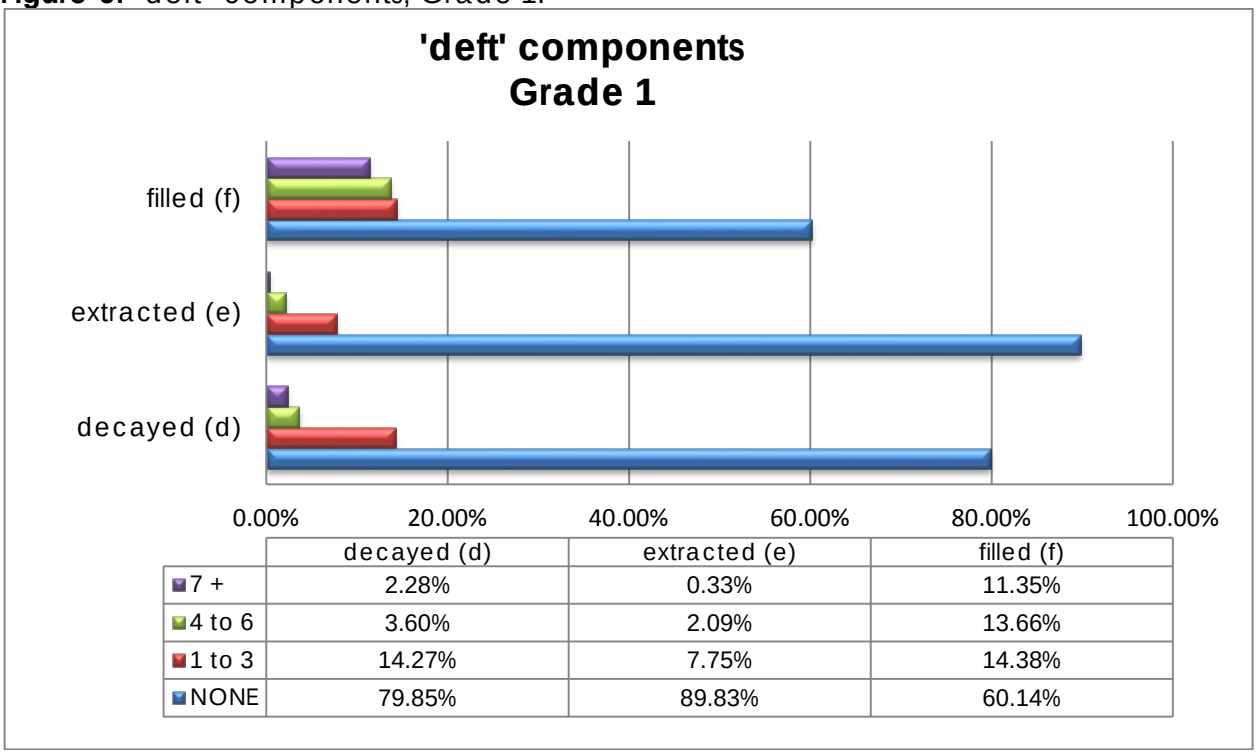
- "deft" components- Grade 1:

Out of the total Grade 1 students, 20.15% had at least one or more decayed (d) and 39.4% had one or more filled (f) deciduous teeth. The low percentage of decayed (d) and high percentage of filled (f) is a positive indication of access to dental treatment for the Grade 1 students. On the other hand, 10.17% of students had at least one deciduous tooth extracted which is the tooth fatality rate of this specific group. Refer to the following **Table-10** and **Figure-9** for further detail.

**Table-10**: "deft" components; Grade 1.

| GRADE 1 → 'deft' components | | | |
|---|---|---|---|
| **Number of Affected Teeth** | **decayed (d)** | **extracted (e)** | **filled (f)** |
| **NONE** | 2905 (79.85%) | 3268 (89.83%) | 2188 (60.14%) |
| **1 to 3** | 519 (14.27%) | 282 (7.75%) | 540 (14.38%) |
| **4 to 6** | 131(3.60%) | 76 (2.09%) | 497 (13.66%) |
| **7 +** | 83 (2.28%) | 12 (0.33%) | 413 (11.35%) |

**Figure-9:** "deft" components; Grade 1.




| | decayed (d) | extracted (e) | filled (f) |
|---|---|---|---|
| 7 + | 2.28% | 0.33% | 11.35% |
| 4 to 6 | 3.60% | 2.09% | 13.66% |
| 1 to 3 | 14.27% | 7.75% | 14.38% |
| NONE | 79.85% | 89.83% | 60.14% |

- "deft" scores- Grade 1:

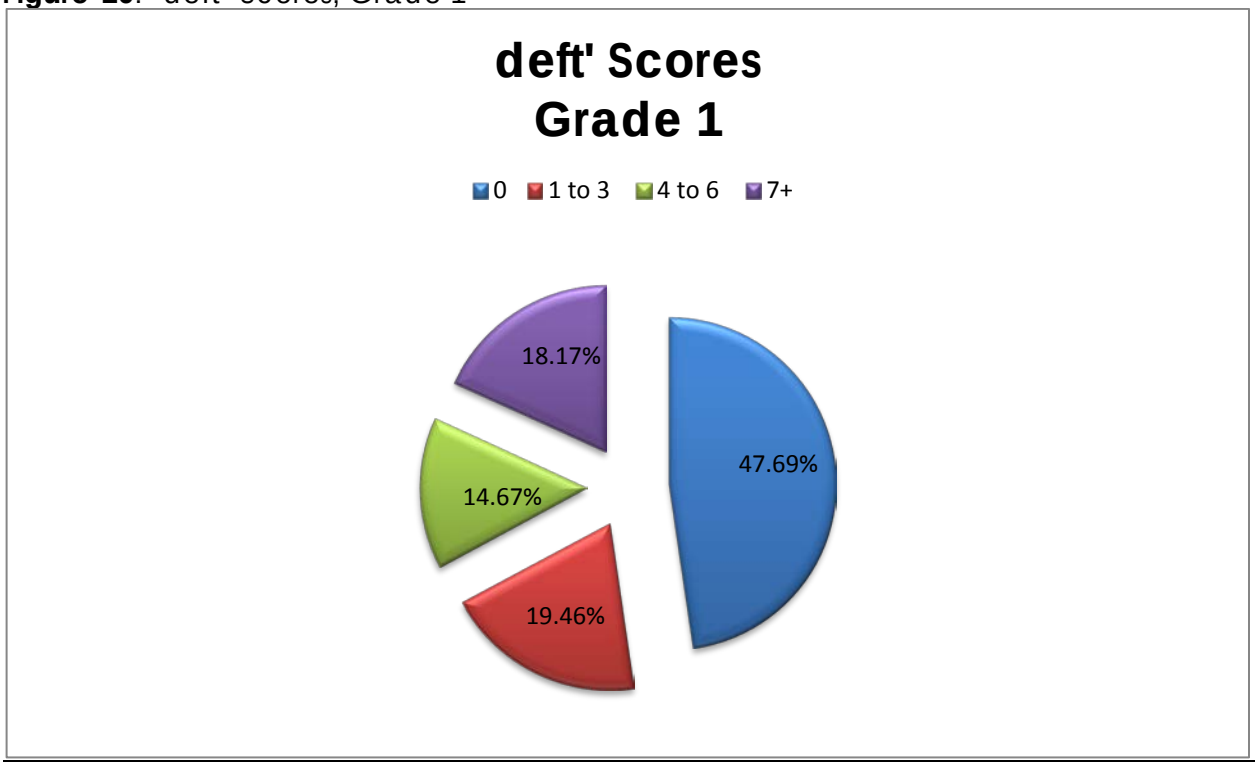
The average "deft" score of Grade1 was **2.73**

The morbidity/prevalence of Dental Caries in the primary dentition of Grade 1 students was 52.3% in 2013-2014. For the table and chart representation, refer to **Table-11** and **Figure-10** respectively.

**Table-11:** "deft" scores; Grade 1

| GRADE 1 | |
|---|---|
| deft' Score | Number (%) |
| 0 | 1735 ( 47.69%) |
| 1 to 3 | 708 ( 19.46%) |
| 4 to 6 | 534 ( 14.67%) |
| 7+ | 661 ( 18.17%) |

**Figure-10**: "deft" Scores; Grade 1




***Grade 7:***

Following are the results for "deft" Components and "deft" Scores of Grade 7 for the Dental Screening 2013-2014 at Saskatoon Heath Region.

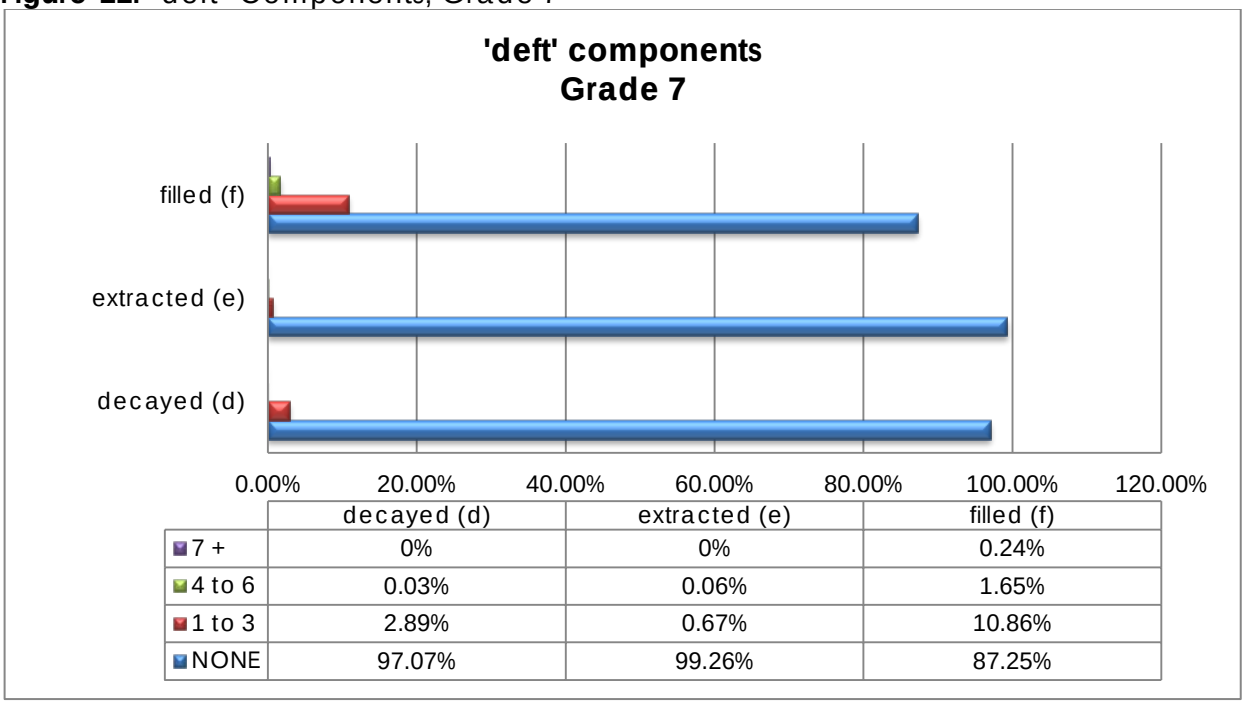
- "deft" components- Grade 7 :

Out of the total Grade 7 students, 2.92 % had at least one or more decayed (d) and 12.75 % had one or more filled (f) deciduous teeth. The low percentage of decayed (d) and high percentage of filled (f) is again indicative of improved access to dental treatment for the Grade 7 students. On the other hand, 0.73% of students had at least one deciduous tooth extracted which is the tooth fatality rate of this specific group. Refer to the following **Table-12** and **Figure-11** for further details.

**Table-12:** "deft" components; Grade 7

| GRADE 7 → 'deft' components | | | |
|---|---|---|---|
| **Number of Affected Teeth** | **decayed (d)** | **extracted (e)** | **filled (f)** |
| **NONE** | 2886 (97.07%) | 2951(99.26%) | 2594 ( 87.25%) |
| **1 to 3** | 86 ( 2.89%) | 20 ( 0.67%) | 323 ( 10.86%) |
| **4 to 6** | 1 ( 0.03%) | 2 ( 0.06%) | 49 ( 1.65%) |
| **7 +** | 0 ( 0%) | 0 ( 0%) | 7 ( 0.24%) |

**Figure-11:** "deft" Components; Grade 7




| | decayed (d) | extracted (e) | filled (f) |
|---|---|---|---|
| 7 + | 0% | 0% | 0.24% |
| 4 to 6 | 0.03% | 0.06% | 1.65% |
| 1 to 3 | 2.89% | 0.67% | 10.86% |
| NONE | 97.07% | 99.26% | 87.25% |

- "deft" scores- Grade 7:

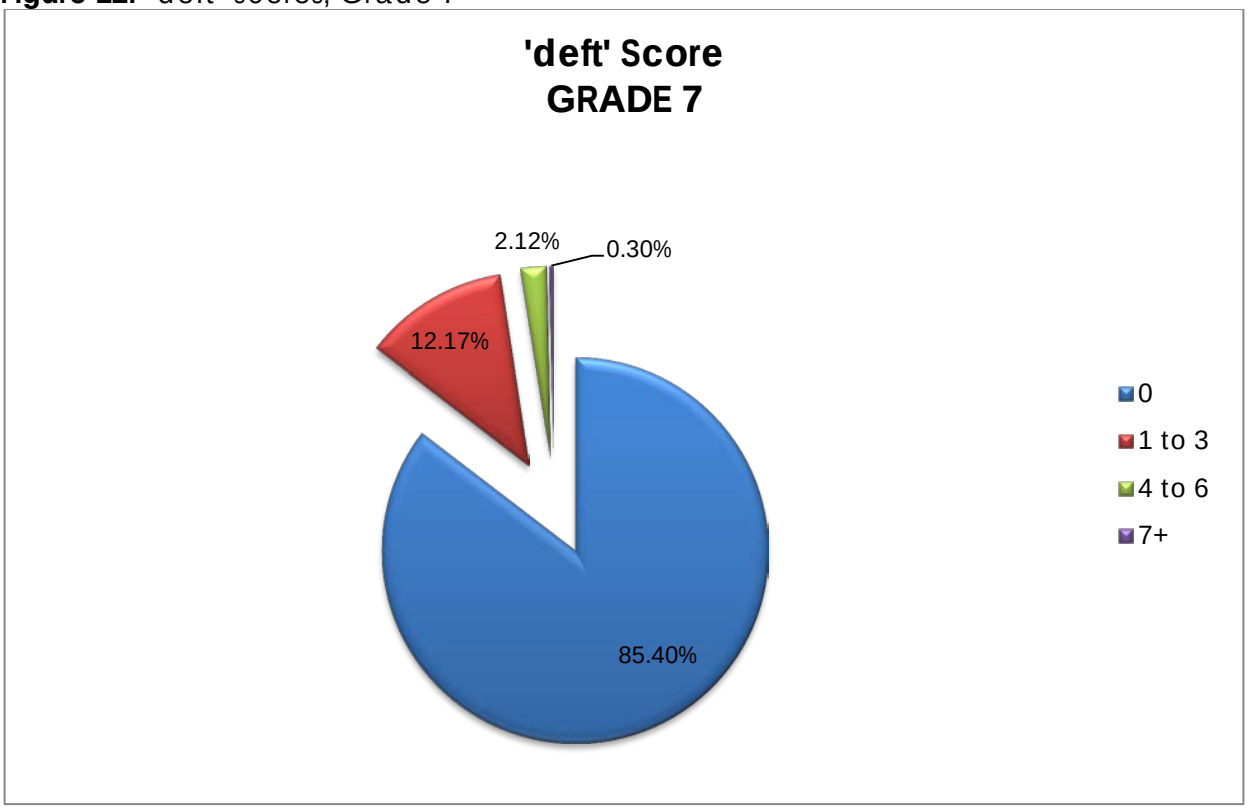
The average "deft" Score for Grade 7 was **0.31**

The morbidity /prevalence of Dental Caries in the primary dentition of Grade 7 students was 14.59 % in 2013-2014. For the table and chart representation, refer to **Table-11** and **Figure-10** respectively.

**Table 13:** "deft" scores; Grade 7

| GRADE 7 | |
|---|---|
| deft' Score | Number (%) |
| 0 | 2539 (85.40%) |
| 1 to 3 | 362 (12.17%) |
| 4 to 6 | 63 (2.12%) |
| 7+ | 9 (0.30%) |

**Figure 12:** "deft" scores; Grade 7



## "DMFT" Index:

"DMFT" is another commonly used Index to measure the prevalence of dental caries/decay in the Permanent Dentition. It is a count of the number of Decayed ***(D)***, Missing ***(M)***(due to caries) and Filled ***(F)*** permanent teeth. "it measures not just current dental disease, but a history of tooth decay in adult teeth evidenced by Filled and Missing teeth." [1](Refer to **Appendix -C** for "The Dental Screening Program Definitions 2013/2014").

As a result of this measurement, the "DMFT" components and "DMFT" scores of Grade 1 and Grade 7 for 2013-2014 are mentioned below.

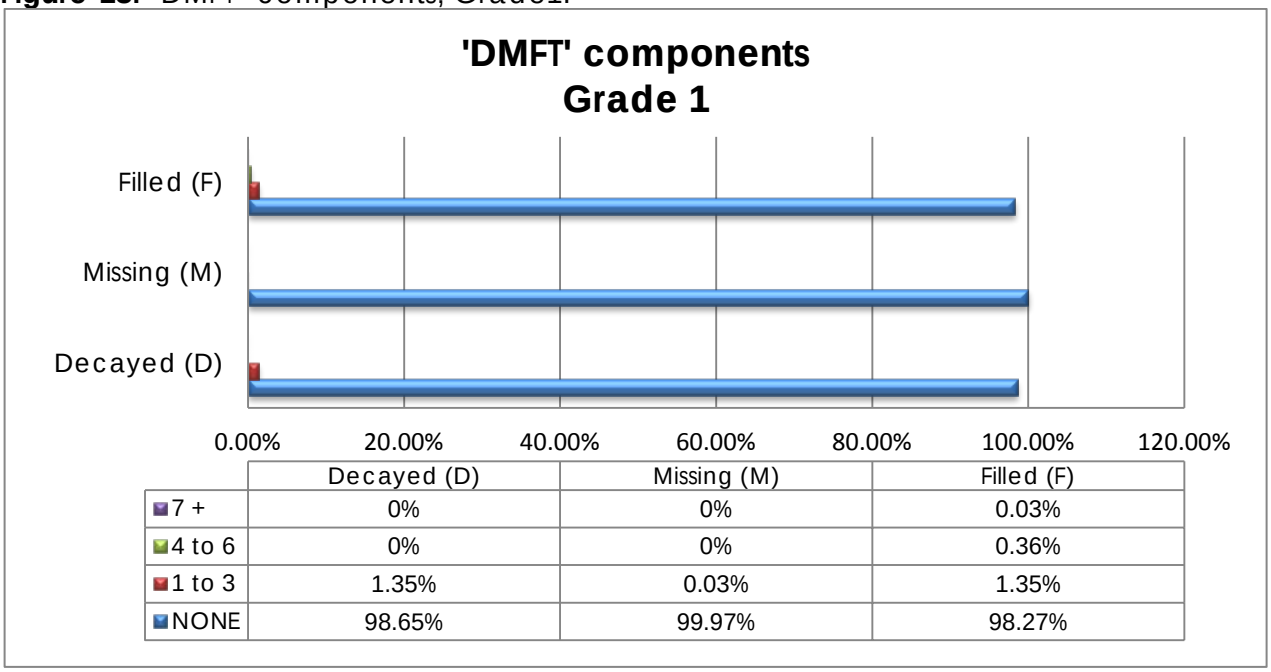
### *Grade 1:*

- "DMFT" components- Grade 1:
  Out of the total number of Grade 1 students, 1.35% had at least one or more Decayed (D) and 1.74% had one or more Filled (F) permanent teeth. On the other hand, 0.027% of students had at least one permanent tooth Missing (M) (extracted due to caries) which is the Tooth Fatality Rate of this specific group. As the average age of Grade one students is 6.6 years, the number of Permanent teeth affected are very low. This is due to the sequence of permanent teeth eruption which starts from the age of 6-7 years, resulting in low number of permanent teeth actually present in Grade 1 students. Refer to the following **Table-14** and **Figure-13** for further details.

**Table-14:**"DMFT" components; Grade1.

| GRADE 1 → 'DMFT' components | | | |
|---|---|---|---|
| **Number of Affected Teeth** | **Decayed (D)** | **Missing (M)** | **Filled (F)** |
| **NONE** | 3589 ( 98.65%) | 3637 ( 99.97%) | 3575 ( 98.27%) |
| **1 to 3** | 49 ( 1.35%) | 1( 0.027%) | 49 ( 1.35%) |
| **4 to 6** | 0 ( 0%) | 0 ( 0%) | 13 ( 0.36%) |
| **7 +** | 0 ( 0%) | 0 ( 0%) | 1 ( 0.03%) |

**Figure-13:** "DMFT" components; Grade1.




| | Decayed (D) | Missing (M) | Filled (F) |
|---|---|---|---|
| 7 + | 0% | 0% | 0.03% |
| 4 to 6 | 0% | 0% | 0.36% |
| 1 to 3 | 1.35% | 0.03% | 1.35% |
| NONE | 98.65% | 99.97% | 98.27% |

- "DMFT" scores- Grade 1:

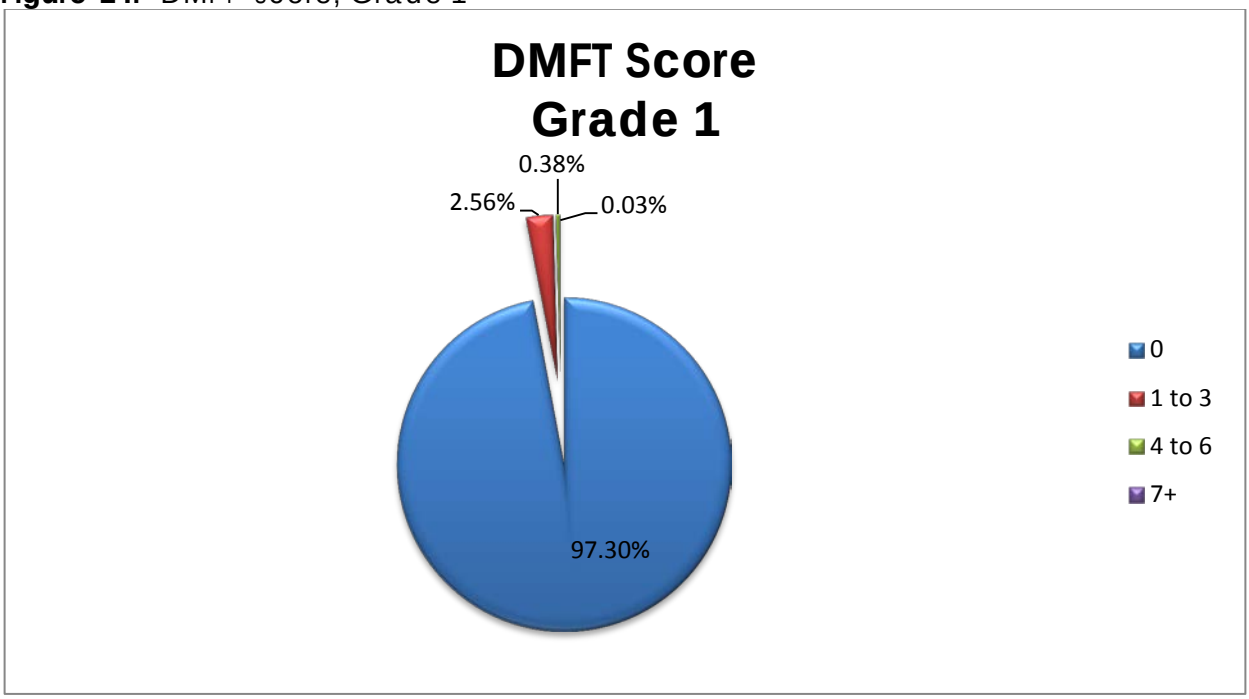
The average "DMFT" Score for Grade1 was **0.06**.

There were 97% of Grade 1 students who had a DMFT score of zero. The morbidity /prevalence of dental caries in the permanent dentition of Grade 1 students was 2.97% in 2013-2014. For the table and chart representation, refer to the**Table-15** and **Figure-14** respectively.

**Table-15:** "DMFT" score; Grade 1

| GRADE 1 | |
|---|---|
| **DMFT' Score** | **Number (%)** |
| 0 | 3530 ( 97.30%) |
| 1 to 3 | 93 (2.56%) |
| 4 to 6 | 14 ( 0.38%) |
| 7+ | 1( 0.03%) |

**Figure-14:** "DMFT" score; Grade 1




***Grade 7***

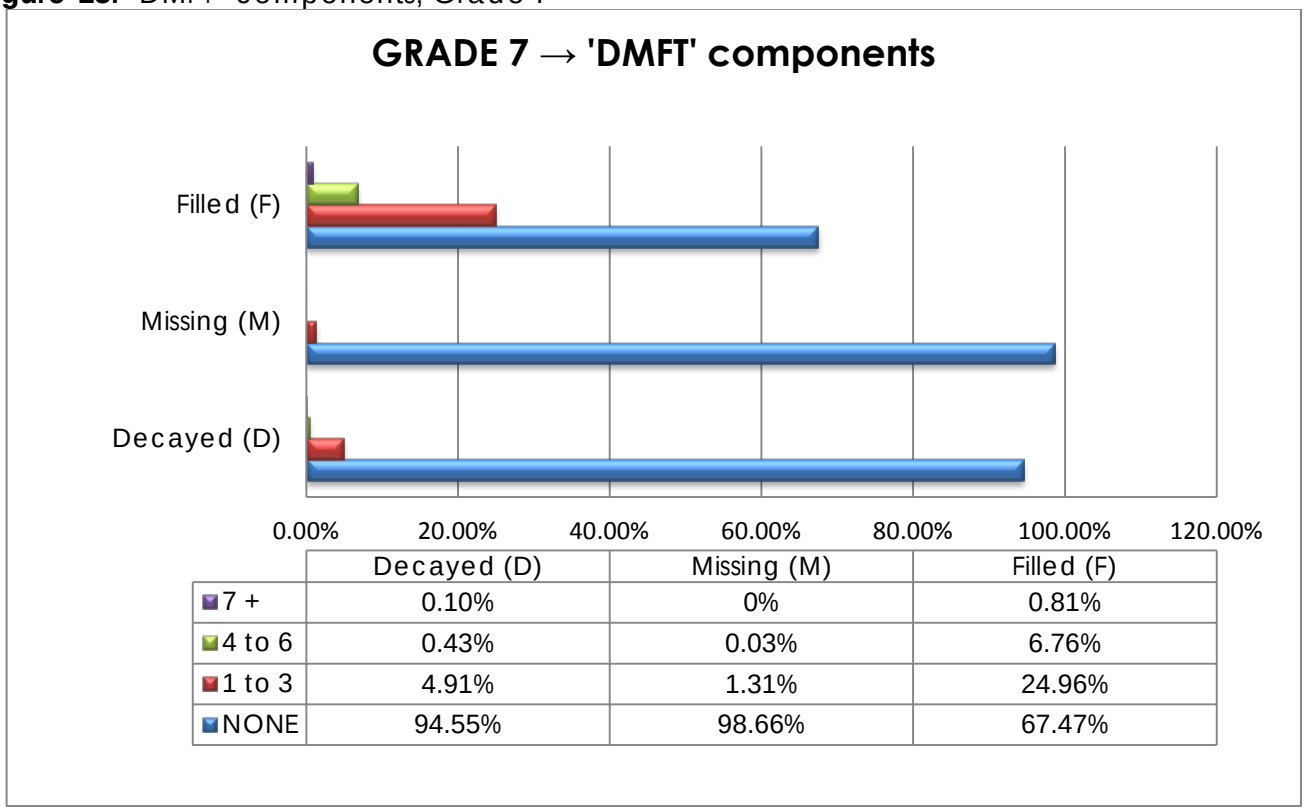
- "DMFT" components- Grade 7:

Out of the total number of Grade 7 students, 5.44% had at least one or more Decayed (D) and 32.53% had one or more Filled (F) permanent teeth. On the other hand, 1.34% of students had at least one permanent tooth Missing (M)( extracted due to caries) which is the Tooth Fatality Rate of this specific group. Refer to the following **Table-16** and **Figure-15** for further detail.

**Table-16:** "DMFT" components; Grade 7

| GRADE 7 → 'DMFT' components | | | |
|---|---|---|---|
| **Number of Affected Teeth** | **Decayed (D)** | **Missing (M)** | **Filled (F)** |
| **NONE** | 2811( 94.55%) | 2933 ( 98.66%) | 2006 (67.47%) |
| **1 to 3** | 146 ( 4.91%) | 39 ( 1.31%) | 742 ( 24.96%) |
| **4 to 6** | 13 ( 0.43%) | 1( 0.03%) | 201( 6.76%) |
| **7 +** | 3 ( 0.10%) | 0 ( 0%) | 24 ( 0.81%) |

**Figure-15:** "DMFT" components; Grade 7




| | Decayed (D) | Missing (M) | Filled (F) |
|---|---|---|---|
| 7 + | 0.10% | 0% | 0.81% |
| 4 to 6 | 0.43% | 0.03% | 6.76% |
| 1 to 3 | 4.91% | 1.31% | 24.96% |
| NONE | 94.55% | 98.66% | 67.47% |

- "DMFT" scores- Grade 7:

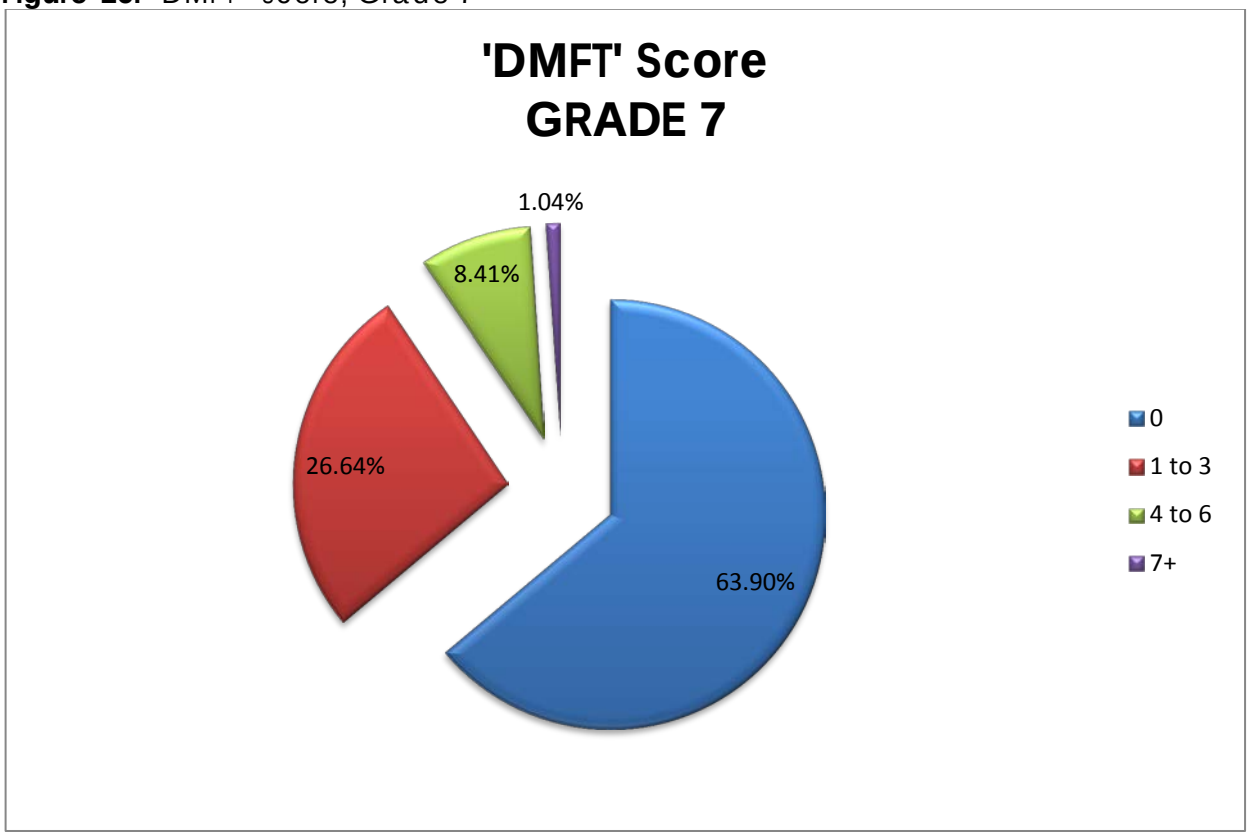
The average "DMFT" score for Grade 7 was **0.93**.

There were 63.90% Grade 7 students with a DMFT score of zero. The morbidity /prevalence of dental caries in the permanent dentition of Grade 7 students was 36.09% in 2013-2014. For the table and chart representation, refer to **Table-17** and **Figure-16** respectively.

**Table-17:**"DMFT" score; Grade 7

| GRADE 7 | |
|---|---|
| **DMFT' Score** | **Number (%)** |
| 0 | 1900 (63.90%) |
| 1 to 3 | 792 (26.64%) |
| 4 to 6 | 250 (8.41%) |
| 7+ | 31(1.04%) |

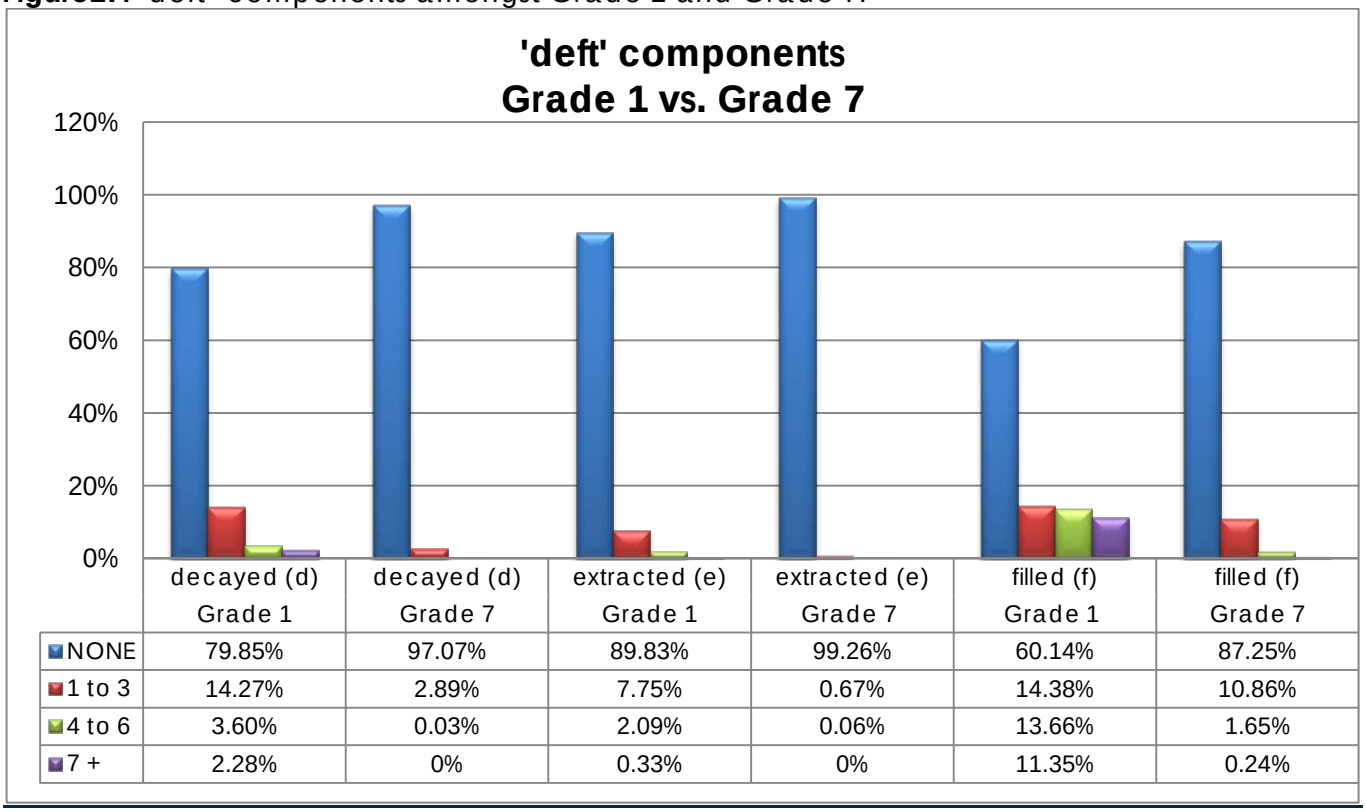
**Figure-16:** "DMFT"" score; Grade 7



## Comparison of "deft' components amongst Grade 1 and Grade 7:

**Figure-17** exhibits the above mentioned information in detail. Mostly the primary dentition is affected in Grade 1 and the number of affected teeth in Grade 7 are low. The Bar Chart shows the highest numbers recorded in filled (f) teeth followed by the decayed (d) deciduous teeth in the Grade 1 students.
Although 39.39% of Grade 1 students had fillings, 20.15% had current caries. This reasonably concludes the success of treatment provision but indicates that more emphasis is required on caries prevention for the age 6/Grade 1 students.

**Figure17:** "deft" components amongst Grade 1 and Grade 7:

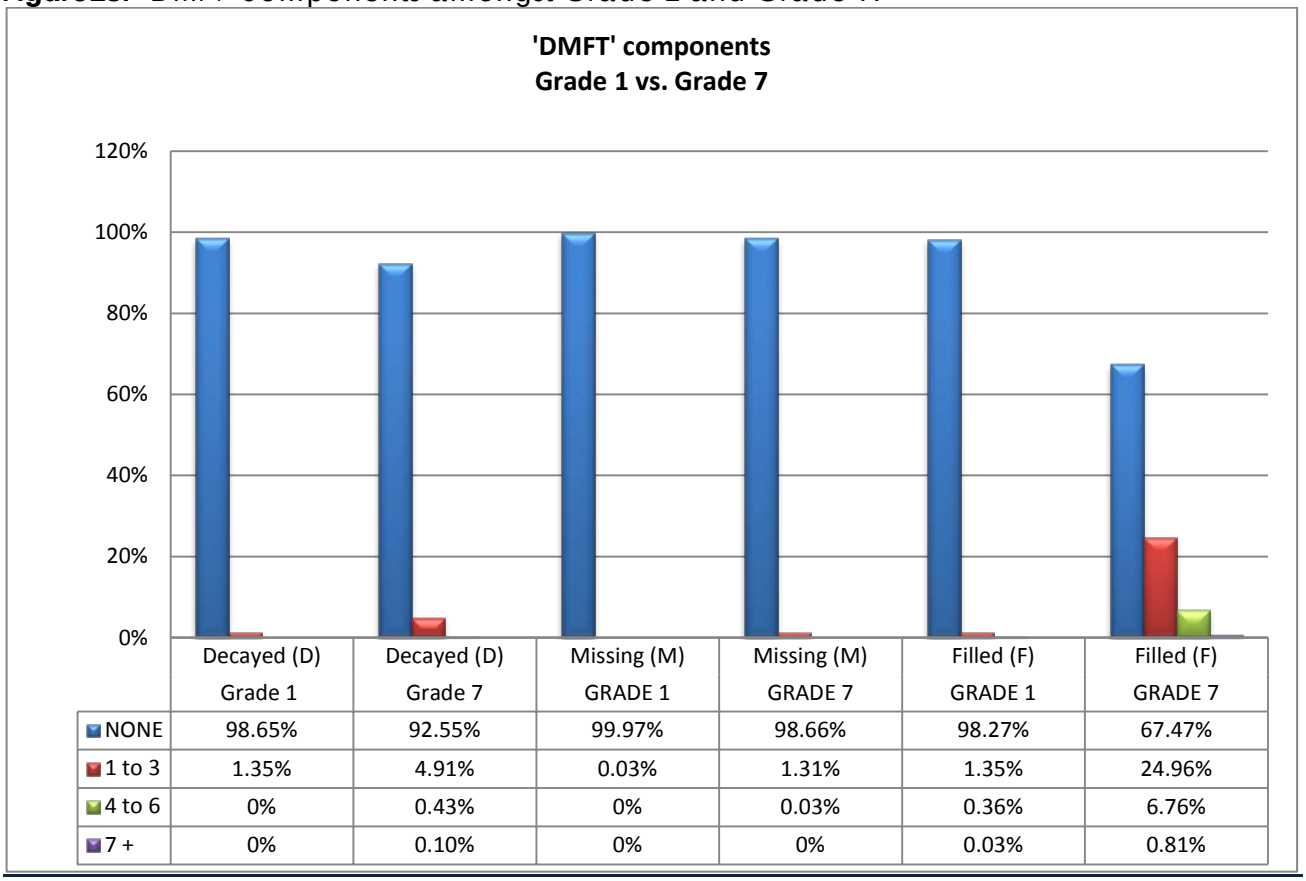



| | decayed (d) Grade 1 | decayed (d) Grade 7 | extracted (e) Grade 1 | extracted (e) Grade 7 | filled (f) Grade 1 | filled (f) Grade 7 |
|---|---|---|---|---|---|---|
| NONE | 79.85% | 97.07% | 89.83% | 99.26% | 60.14% | 87.25% |
| 1 to 3 | 14.27% | 2.89% | 7.75% | 0.67% | 14.38% | 10.86% |
| 4 to 6 | 3.60% | 0.03% | 2.09% | 0.06% | 13.66% | 1.65% |
| 7 + | 2.28% | 0% | 0.33% | 0% | 11.35% | 0.24% |

## Comparison of "DMFT " components amongst Grade 1 and Grade 7:

**Figure-18** exhibits the above mentioned information in detail. The Bar Chart suggests that the DMFT components related to permanent dentition were in better control than the deft components in both Grades. The number of teeth affected are zero in > 94% cases in all the three components except for Filled (F) for Grade 7. The higher percentage in the Filled (F) for Grade 7 indicates the past occurrence of caries which had been already restored.

**Figure18:** "DMFT' components amongst Grade 1 and Grade 7:

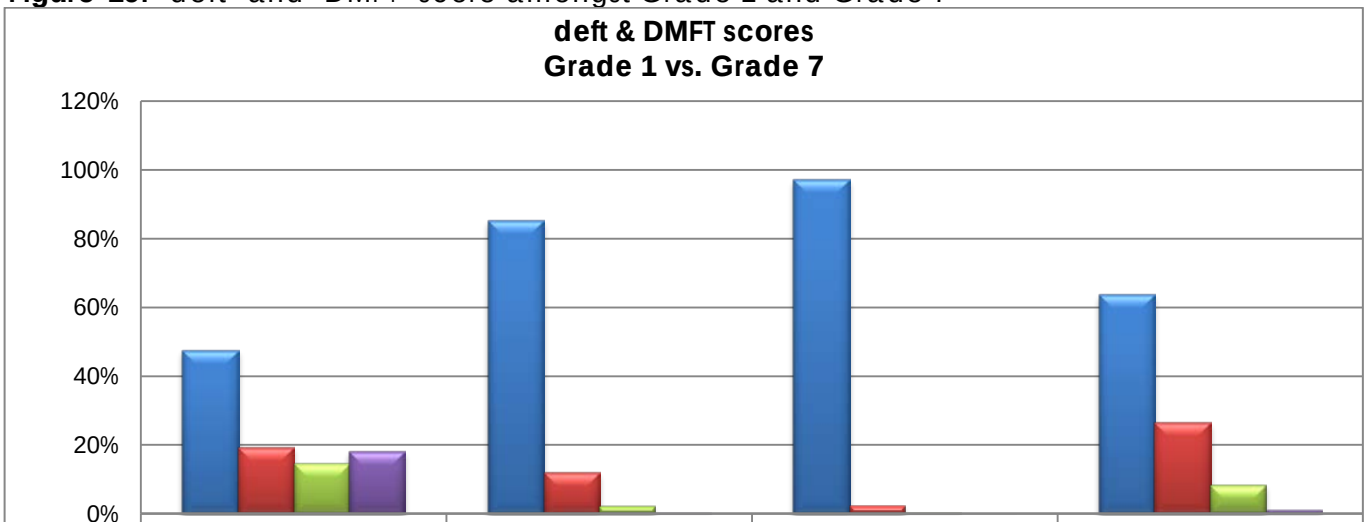



| | Decayed (D) Grade 1 | Decayed (D) Grade 7 | Missing (M) GRADE 1 | Missing (M) GRADE 7 | Filled (F) GRADE 1 | Filled (F) GRADE 7 |
|---|---|---|---|---|---|---|
| NONE | 98.65% | 92.55% | 99.97% | 98.66% | 98.27% | 67.47% |
| 1 to 3 | 1.35% | 4.91% | 0.03% | 1.31% | 1.35% | 24.96% |
| 4 to 6 | 0% | 0.43% | 0% | 0.03% | 0.36% | 6.76% |
| 7 + | 0% | 0.10% | 0% | 0% | 0.03% | 0.81% |

## Comparison of the "deft" score and the "DMFT" score of Grade 1 and Grade 7:

**Figure-19** exhibits the above mentioned information in detail. The Bar Chart suggests the areas of major concern which are "deft" scores related to primary dentition in Grade 1 and "DMFT" scores related to permanent dentition in Grade 7. The grade-wise difference is primarily due to the presence of primary and permanent teeth in age 6 and age 12 respectively. However, as more than half of the Grade 1/age 6 students have "deft" Score of 1 or more, this indicates the highest prevalence of past and present dental caries in this specific Index and group.

**Figure-19:** "deft" and "DMFT" score amongst Grade 1 and Grade 7




| | deft GRADE 1 | deft GRADE 7 | DMFT GRADE 1 | DMFT GRADE 7 |
|---|---|---|---|---|
| 0 | 47.69% | 85.40% | 97.30% | 63.90% |
| 1 to 3 | 19.46% | 12.17% | 2.56% | 26.64% |
| 4 to 6 | 14.67% | 2.12% | 0.38% | 8.41% |
| 7+ | 18.17% | 0.30% | 0.03% | 1.04% |

To summarize, as per "deft" and "DMFT" scores and components, the primary dentition associated with Grade 1/age 6 has experienced the highest burden of dental decay/ caries as observed in Dental Health Screening 2013-2104 in Saskatoon Health Region.

### Dental Health Status:

The Combination Index was calculated from deft/DMFT to assign every student with a Dental Health Status. The Database automatically calculated the status from the information. (Refer to **Appendix-C** for "The Dental Screening Program Definitions-2013/2014" for Calculation Formulas).

Following were the categories allotted to every student based on his or her deft/DMFT index.

- **No Decay Experience (NDE)** = indicates that no decay, fillings or extractions are evident.
- **Complete Caries Care (CCC)** = indicates that all decayed teeth appear to have been treated.
- **Partial Caries Care (PCC)** = indicates that some teeth have been treated, but decay is still evident.
- **No Evidence of Care/Neglect (NEC):** indicates that there is decay but no evidence of past or present dental treatment.

***Grade 1 Dental Health Status:***

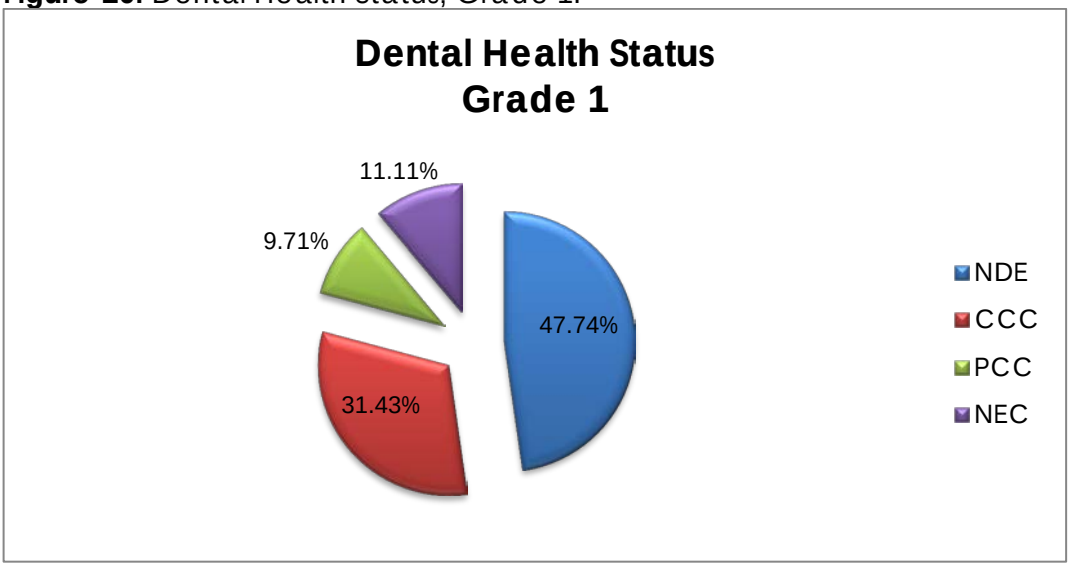
No decay, fillings or extractions (NDE) were found in 47.74% of Grade 1 students in both permanent and deciduous dentition. However, 11.11% were found to have no evidence of care (NEC) though decay was evident in these cases. The NEC percentage has increased compared to the past screening 2008-2009 where the NEC score was 9.3%.[(1)]

**Table-18** and **Figure-20** illustrates further detail in this regard.

**Table-18:** Dental Health Status; Grade 1

| Dental Health Status → Grade 1 | | | |
|---|---|---|---|
| **NDE** | **CCC** | **PCC** | **NEC** |
| 1736 (47.74%) | 1143 (31.43%) | 353 (9.71%) | 404 (11.11%) |

**Figure-20:** Dental Health Status; Grade 1.



***Grade 7 Dental Health Status:***

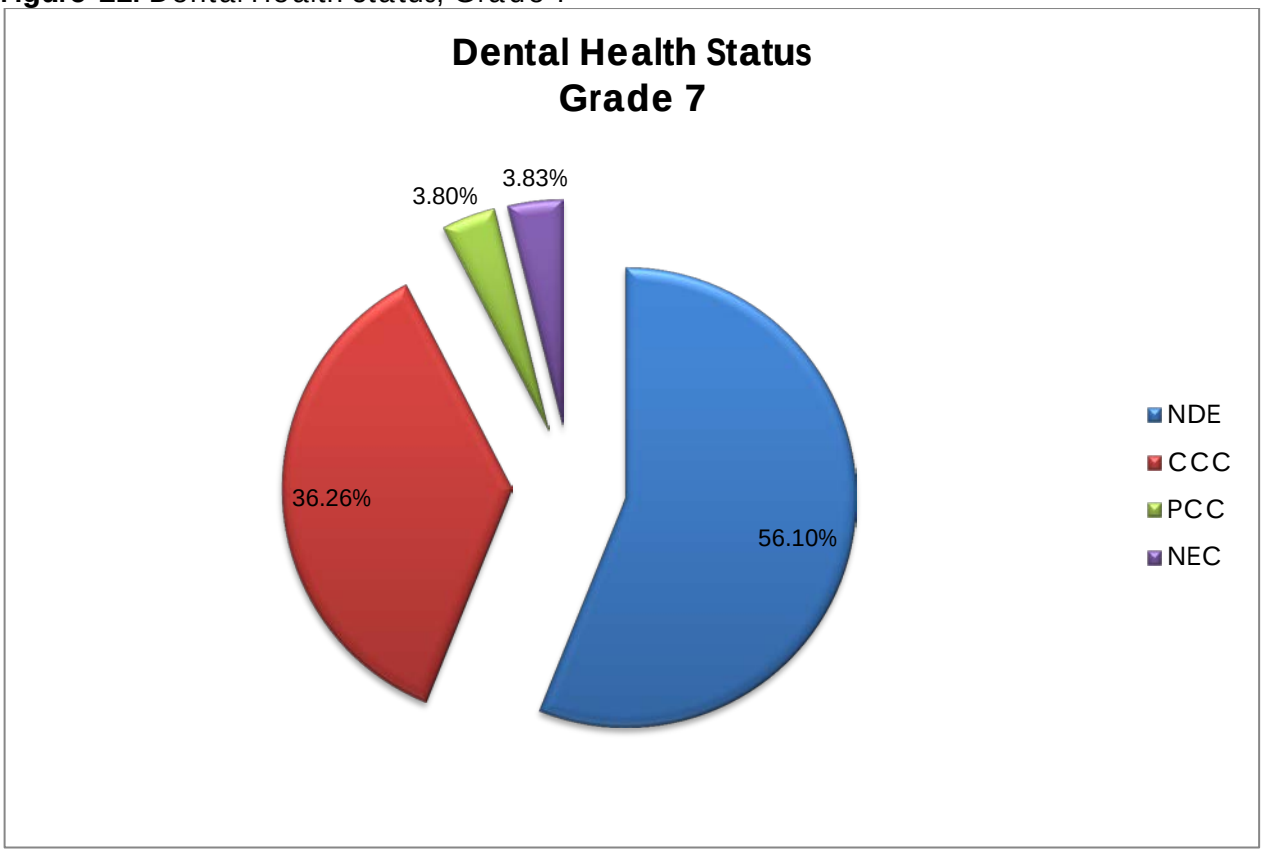
No decay, fillings or extractions were found in 56.10% of Grade 7 students in both permanent and deciduous dentition. However, 3.83% were found to have no evidence of care (NEC) despite decay present. Out of the total of Grade 1 students 36.25% were categorized as Complete Caries Care (CCC) which has increased compared to 2008-2009 Dental Screening where it was 29.8%. This indicates that decayed teeth have been restored.

**Table-19** and **Figure-21** illustrate further detail in this regard.

**Table-19:** Dental Health Status; Grade 7

| Dental Health Status → Grade 7 | | | |
|---|---|---|---|
| **NDE** | **CCC** | **PCC** | **NEC** |
| 1668 (56.10%) | 1078 (36.25%) | 113 (3.80%) | 114 (3.83%) |

**Figure-21:** Dental Health Status; Grade 7

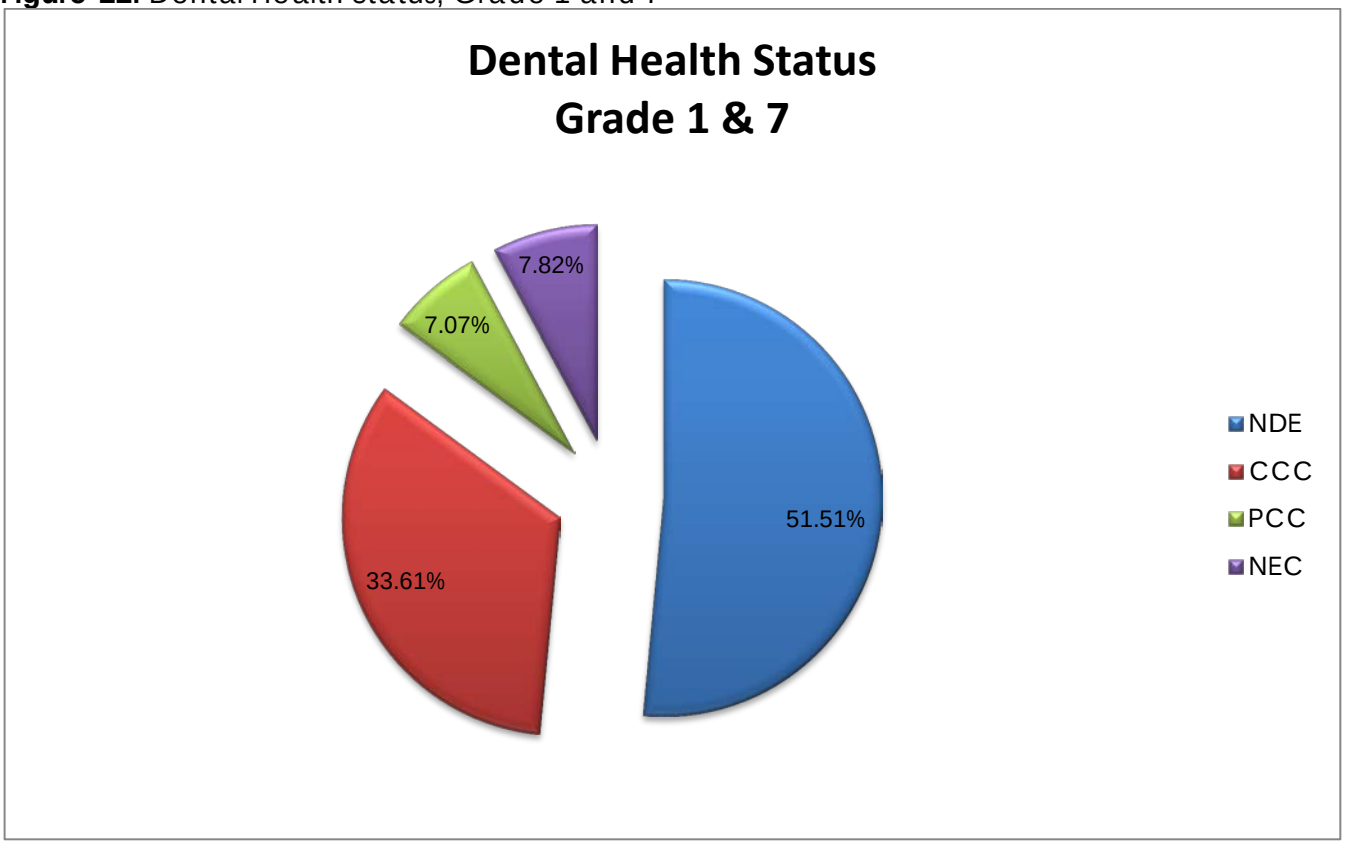


***Combined Grade 1 and Grade 7 Dental Health Status:***
Following **Table-20** and **Figure-22** shows the Dental Health Status of both Grades together.

**Table-20:** Dental Health Status; Grade 1 and 7

| Dental Health Status Grade 1& 7 | | | |
|---|---|---|---|
| **NDE** | **CCC** | **PCC** | **NEC** |
| 3404 (51.51%) | 2221 ( 33.61%) | 467 (7.07%) | 517 (7.82%) |

**Figure-22:** Dental Health Status; Grade 1 and 7



## Dental Health Needs- PRIORITY SCORES:

Students were also assigned scores based on the Treatment Priority with regard to their dental health needs. The Database automatically calculated this score for every specific case.
( Refer to **Appendix-C** for "The Dental Screening Program Definitions-2013/2014" for Calculation Formulas). The Priority Scores were assigned based on 3 categories which are as follows;

Priority 1 = Urgent (pain or infection) requiring immediate treatment.
Priority 2 = Treatment required as soon as possible.
Priority 3 = No immediate treatment required.

Unmet dental health needs are calculated by adding the Priority Score 1 and Priority Score 2.

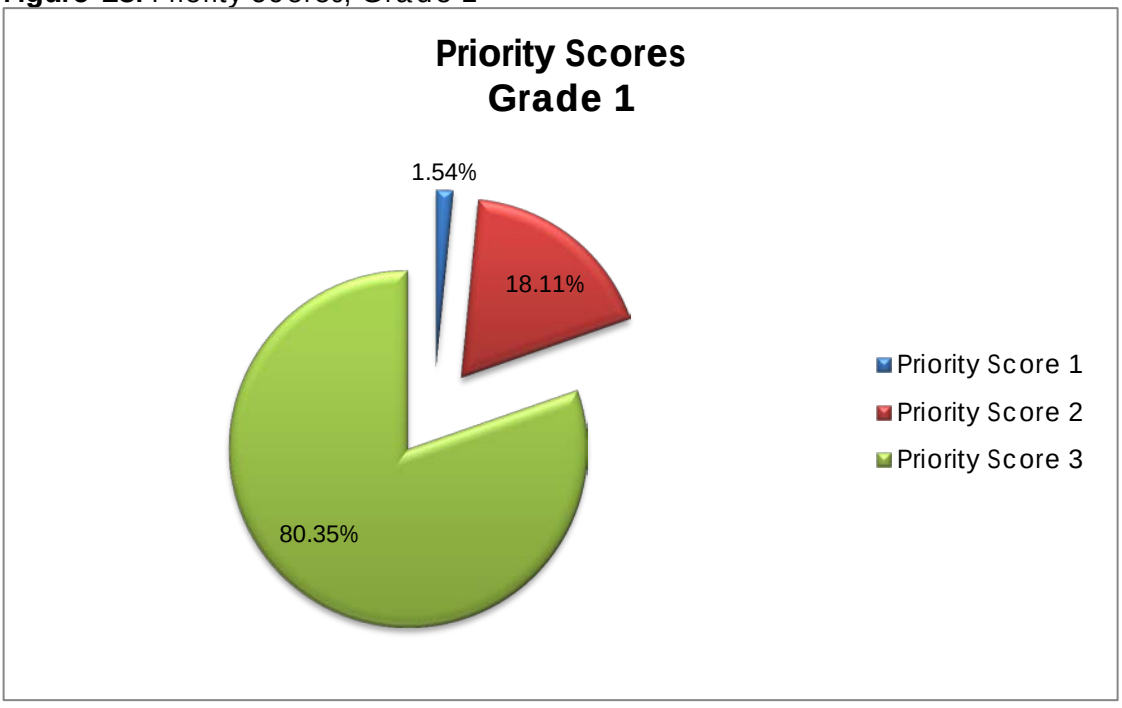
***Grade1; Priority Scores:***

In 80.35% of Grade 1 students no immediate treatment was required. However, the unmet dental health needs of this group was 19.65%.
**Table 21** and **Figure-23** exhibits the scores distribution amongst the Grade 1 students in 2013-2104 Dental Screening.

**Table-21:** Priority Scores; Grade 1

| Dental Health Needs<br>Priority Scores → Grade 1 | | |
|---|---|---|
| Priority Score 1 | Priority Score 2 | Priority Score 3 |
| 56 (1.54%) | 659 (18.11%) | 2923 (80.35%) |

**Figure-23:** Priority Scores; Grade 1



***Grade7 Priority Scores:***

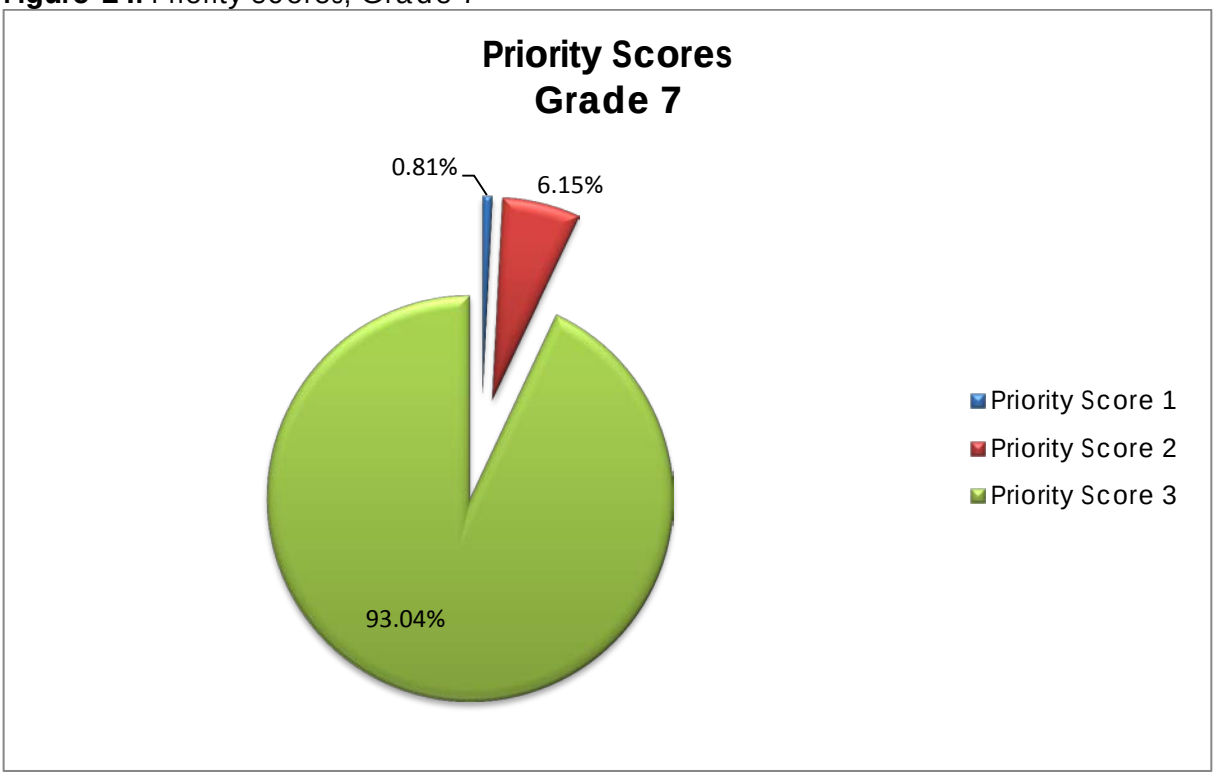
In 93.04% of Grade 7 students no immediate treatment was required. However, the unmet dental health needs of this group was 6.96% which is quite low compared to Grade 1.

**Table 22** and **Figure-24** exhibits the scores distribution amongst the Grade 7 students in 2013-2104 Dental Screening.

**Table 22:** Priority Scores; Grade 7

| Dental Health Needs<br>Priority Scores → Grade 7 | | |
|---|---|---|
| **Priority Score 1** | **Priority Score 2** | **Priority Score 3** |
| 24 (0.81%) | 183 (6.15%) | 2766 (93.04%) |

**Figure-24:** Priority Scores; Grade 7



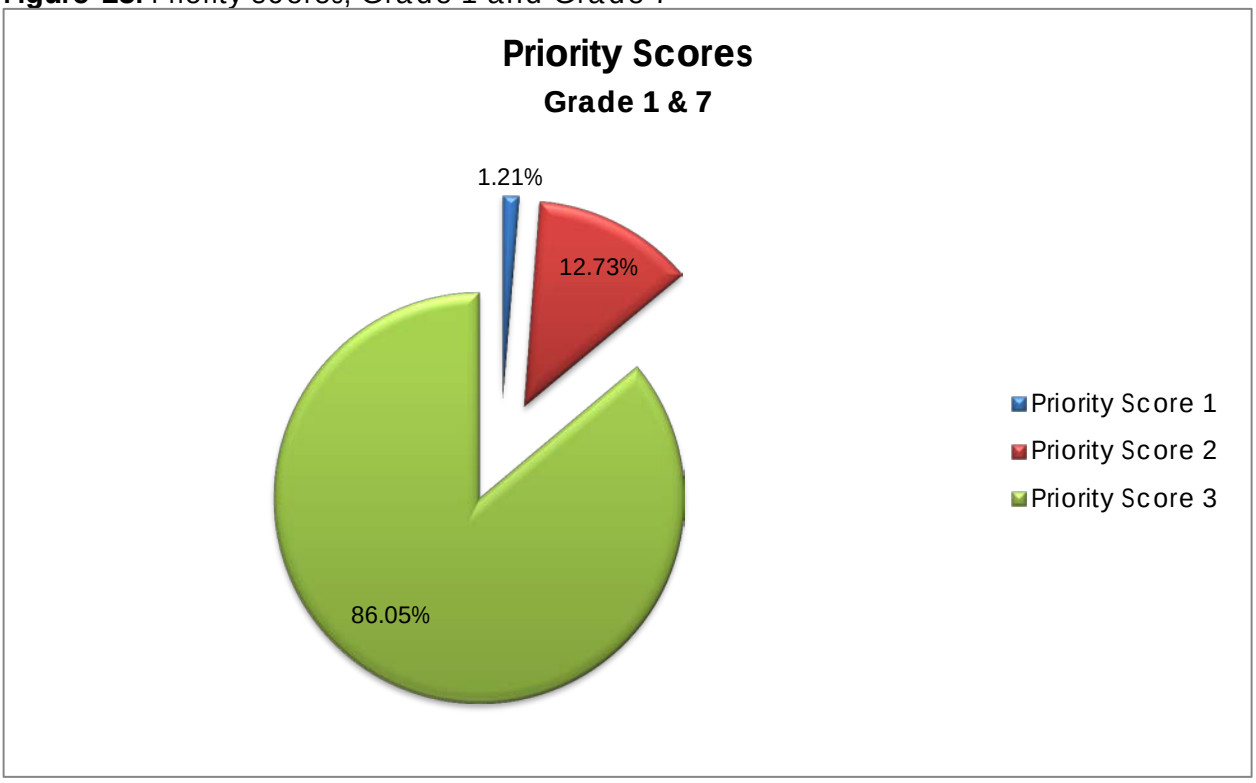
***Grade 1 and 7 Priority Scores:***

Table-23 and Figure-25 illustrates the total numbers and percentages of Priority Scores in both the Grades combined.

**Table-23:** Priority Scores; Grade 1 and Grade 7

| Dental Treatment Requirements<br>Priority Scores | | |
|---|---|---|
| **Priority Score 1** | **Priority Score 2** | **Priority Score 3** |
| 80 (1.21%) | 842 (12.73%) | 5689 (86.05%) |

**Figure-25:** Priority Scores; Grade 1 and Grade 7



### Tobacco Usage:

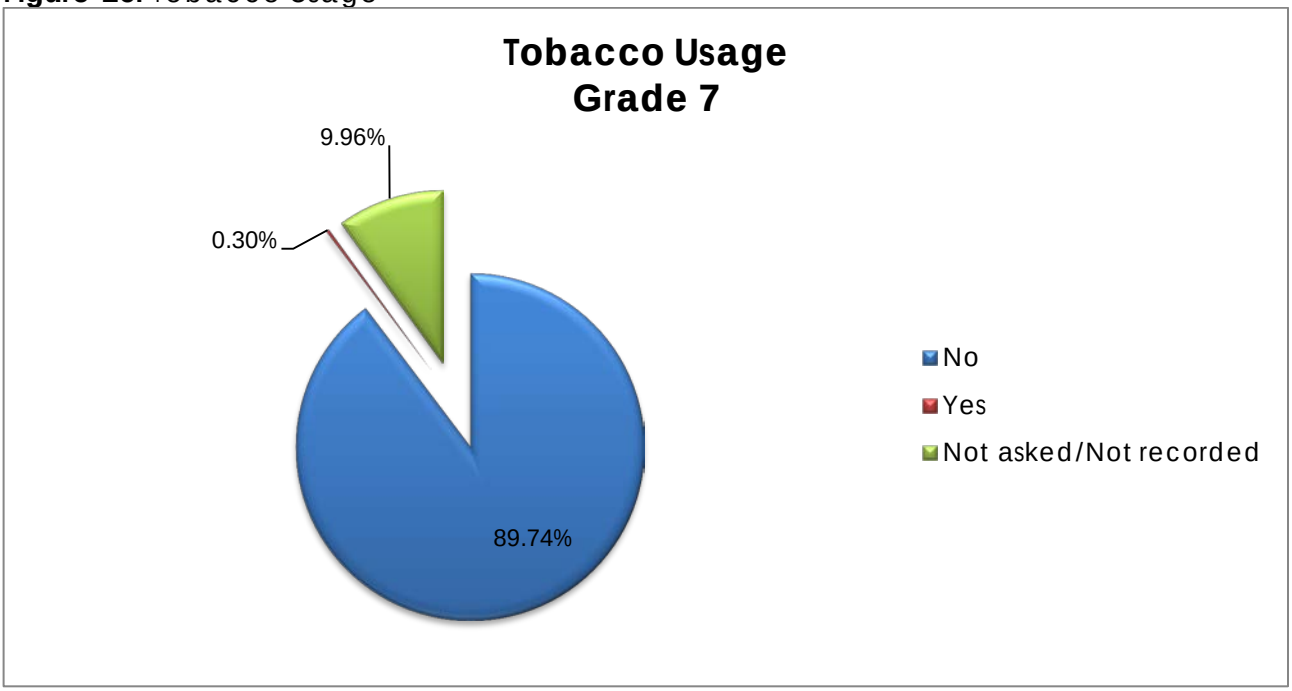
Only Grade 7 students were asked about Tobacco Usage. Out of 2973 Grade 7 students, 2677 were asked about Tobacco use. The responses of 296 (9.96%) were not recorded. From the Grade 7 students, 2668 (89.74%) answered "No" and only 9 (0.30%) replied "Yes" to Tobacco Usage.

**Table-24 and Figure-26** illustrate the details with regard to Tobacco Usage numbers and percentages.

**Table-24:** Tobacco Usage

| TOBACCO USAGE | |
|---|---|
| **Response** | **Number (%)** |
| No | 2668 (89.74%) |
| Yes | 9 (0.30 %) |
| Not asked/Not recorded | 296 (9.96%) |

**Figure-26:** Tobacco Usage




Out of the 9 Grade 7 students who answered 'Yes' for Tobacco, 8 (0.22%) used Cigarettes and 1 (0.03%) used spit tobacco.

**Table-25** shows this information in a tabular form.

**Table-25:** Types of Tobacco use

| Cigarettes | Cigar | Pipe | Spit Tobacco |
|---|---|---|---|
| 8(0.27%) | 0 (0%) | 0 (0%) | 1 (0.03%) |

## Dental Health Trends Saskatoon Health Region, 2013-2014:

Dental Health Screening has been regularly conducted from 1993-1994 to 2013-2014 after every 5 year period. This provides the opportunity to compare the health trends in Saskatoon Health Region over the last two decades. The screening initially involved Grade 1 until 2008-2009, where both the Grade 1 and Grade 7 students participated. Hence, 2013-2014 Screening Grade 1 results can be historically compared to all the four Dental Health Screenings. However, Grade 7 Screening results will be compared to the last 2008-2009 Dental Screening Data.

***Grade 1; Historical Comparison:***

**Table-26** exhibits the comparison of dental health markers of Grade 1 students in Saskatoon Health Region over a period of 20 years. Dental health has deteriorated in 2013-2014 compared to past screening results. The average deft/DMFT, number of students with cavities and students with No Evidence of Dental Care (NEC) increased in the 2013-2014 findings. The only exception is the 1.65% of Grade 1 students who presented with pain in the Dental Health Screening 2013-2014, which is the lowest yet.
**Figure-27** to **Figure-30** further illustrates the information in a chart format.

**Table -26:** Historical Comparison; Grade-1

| GRADE 1 | | | | | | |
|---|---|---|---|---|---|---|
| SCREENING YEAR | NUMBER OF CHILDREN SCREENED | Average deft/DMFT | * % with Cavities | No Evidence of Dental Care | Pain | ** Cavity free |
| 1993-1994 | 3963 | 3.13 | 17.30% | 8.20% | 6.00% | 51.60% |
| 1998-1999 | 3960 | 2.45 | 20.50% | 10.00% | 3.30% | 53.80% |
| 2003-2004 | 3085 | 2.15 | 16.60% | 10.30% | 2.70% | 53.90% |
| 2008-2009 | 2849 | 2.36 | 19.20% | 9.30% | 4.00% | 50.80% |
| 2013-2014 | 3638 | 2.79 | 20.92% | 11.11% | 1.65% | 47.28% |

**** % with Cavities = d(Decay in Decidous teeth) + D(Decay in Permanent teeth) > 0.***
***** Cavity Free = deft + DMFT = 0.***

**Figure-27:** Grade 1 Comparisons; Average deft/DMFT

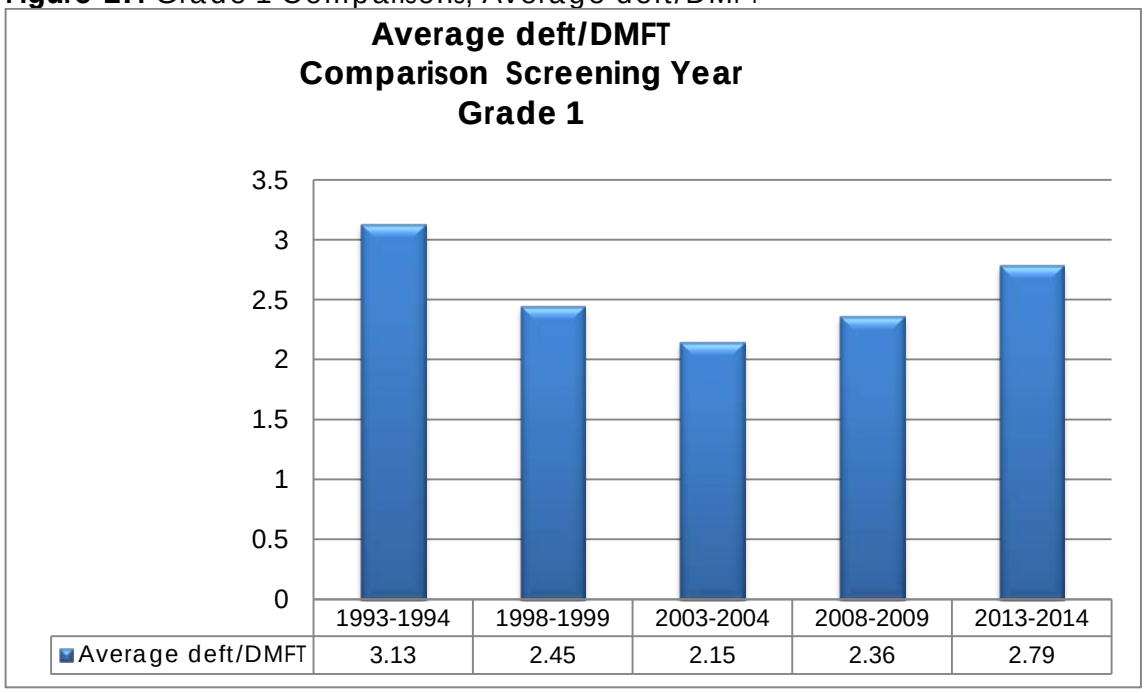



**Figure-28:** Grade 1 Comparisons; % with cavities

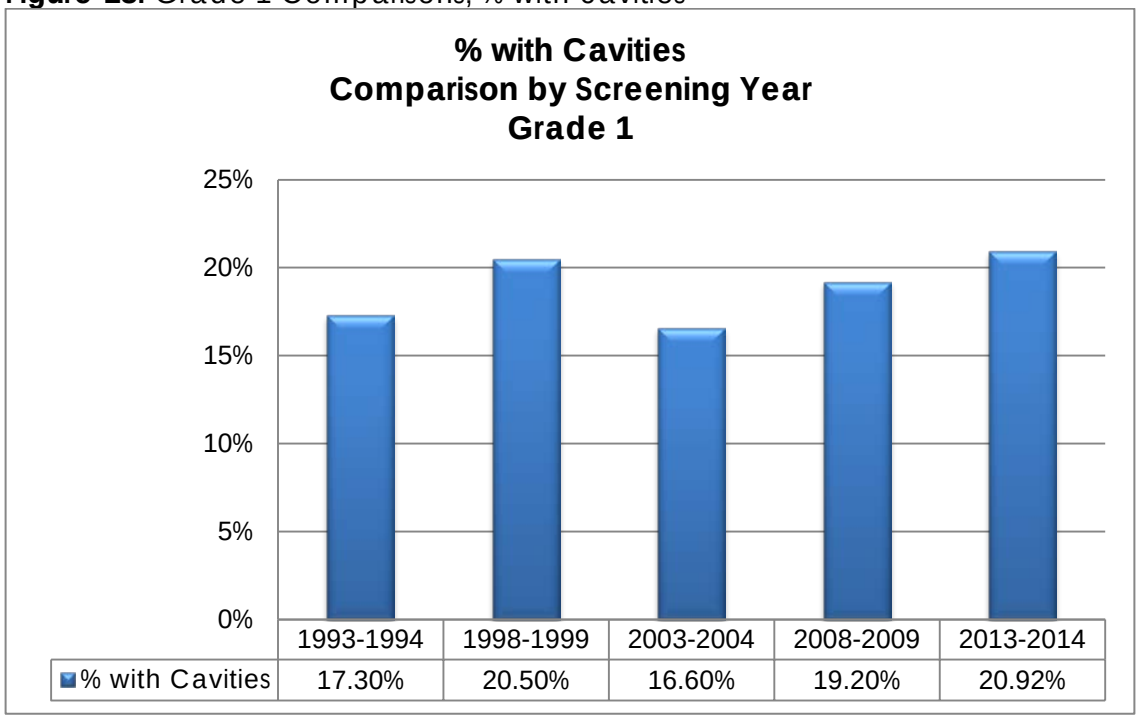


**Figure-29:** Grade 1 Comparisons; Pain & NEC

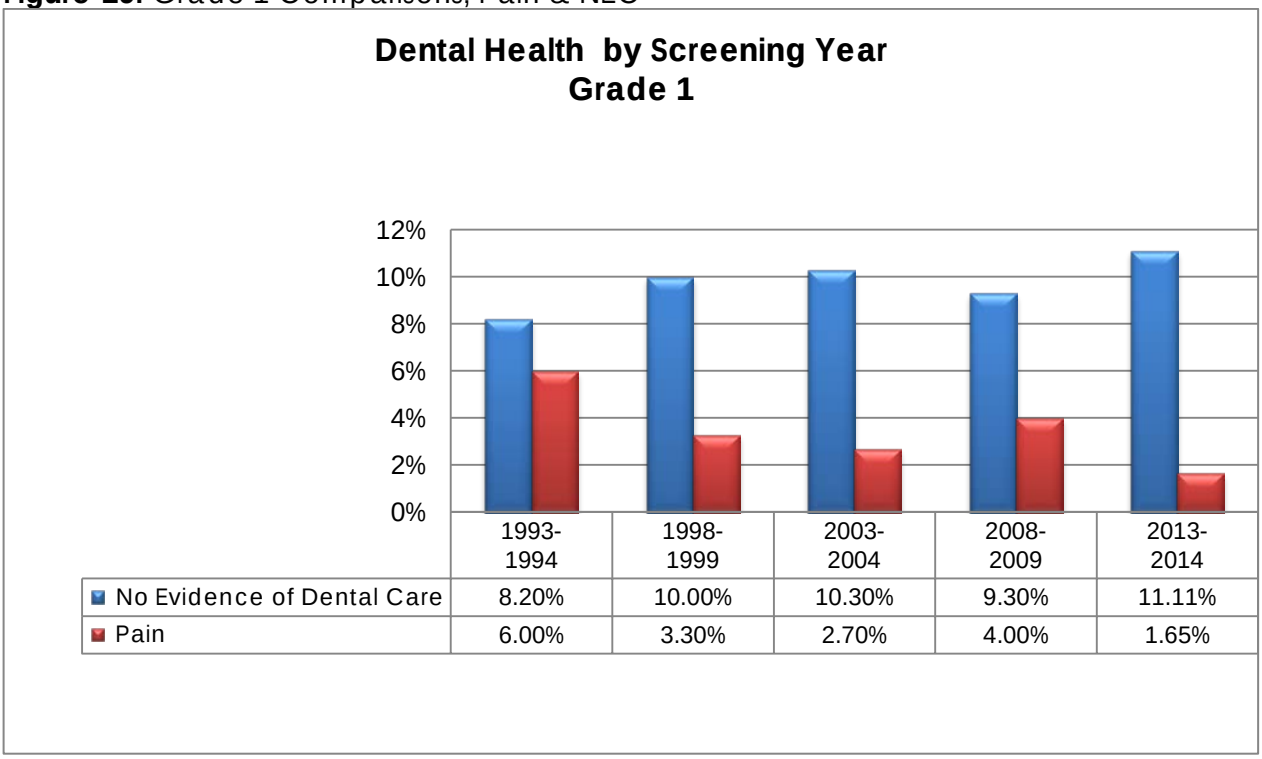
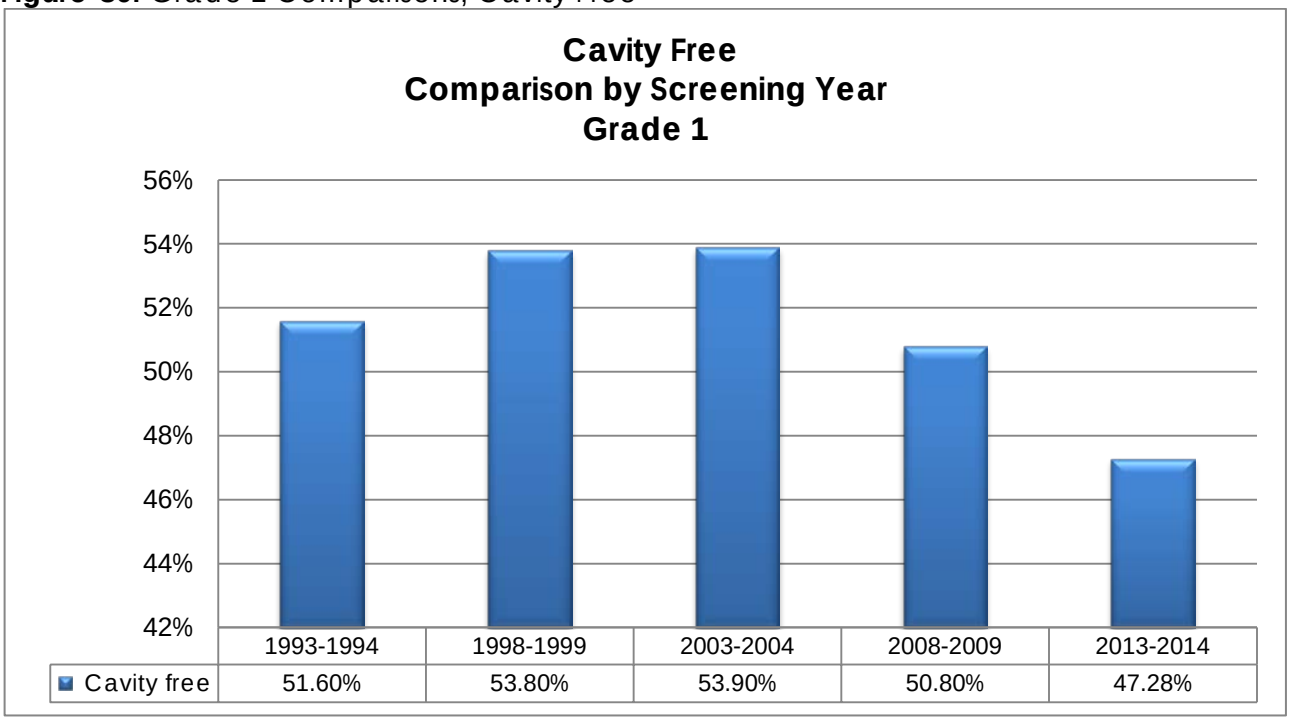



**Figure-30:** Grade 1 Comparisons; Cavity Free



***Grade7; Historical Comparison:***

**Table-27** exhibits the comparison of 2013-2014 dental health markers of Grade 7 students compared to 2008-2009 Dental Screening results in Saskatoon Health Region . Generally, the results showed a deterioration in dental health of Grade 7 students in 2013-2014 over a 5 year period. The average deft/DMFT, number of students with cavities and students with No Evidence of Dental Care (NEC) increased as per the findings in 2013-2014. The percentage of cavity free Grade 7 students also decreased in comparison.

**Figure-31** to **Figure-34** further illustrates the information in a chart format.

**Table-27:**Comparison with Past Screening; Grade 7

| Grade 7 | | | | | | |
|---|---|---|---|---|---|---|
| SCREENING YEAR | NUMBER OF CHILDREN SCREENED | Average deft/DMFT | % with Cavities | No Evidence of Dental Care | Pain | Cavity free |
| 2008-2009 | 3068 | 0.85 | 6.40% | 3.60% | 0.90% | 66.60% |
| 2013-2014 | 2973 | 1.25 | 16.85% | 3.83% | 0.77% | 55.57% |

**Figure-31:** Grade 7 Comparison; Average deft/DMFT

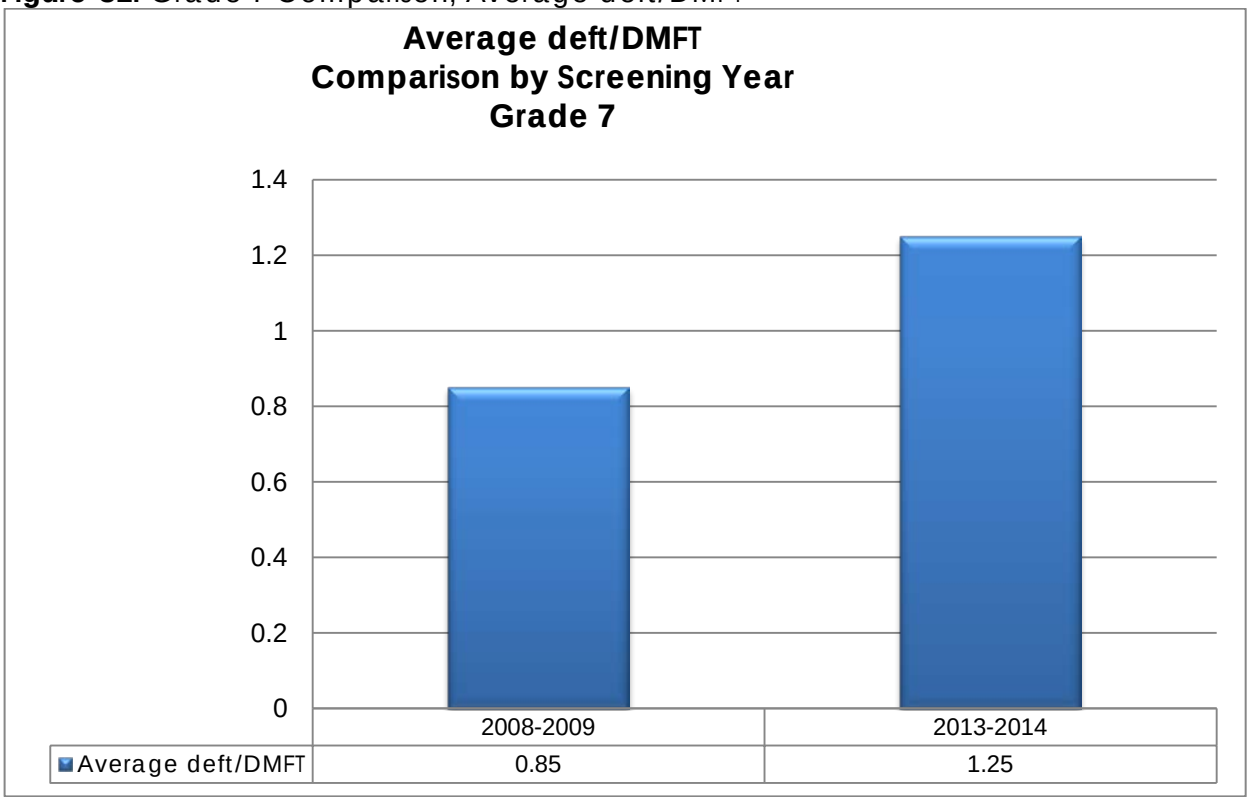


**Figure-32:** Grade 7 Comparison; % with Cavities

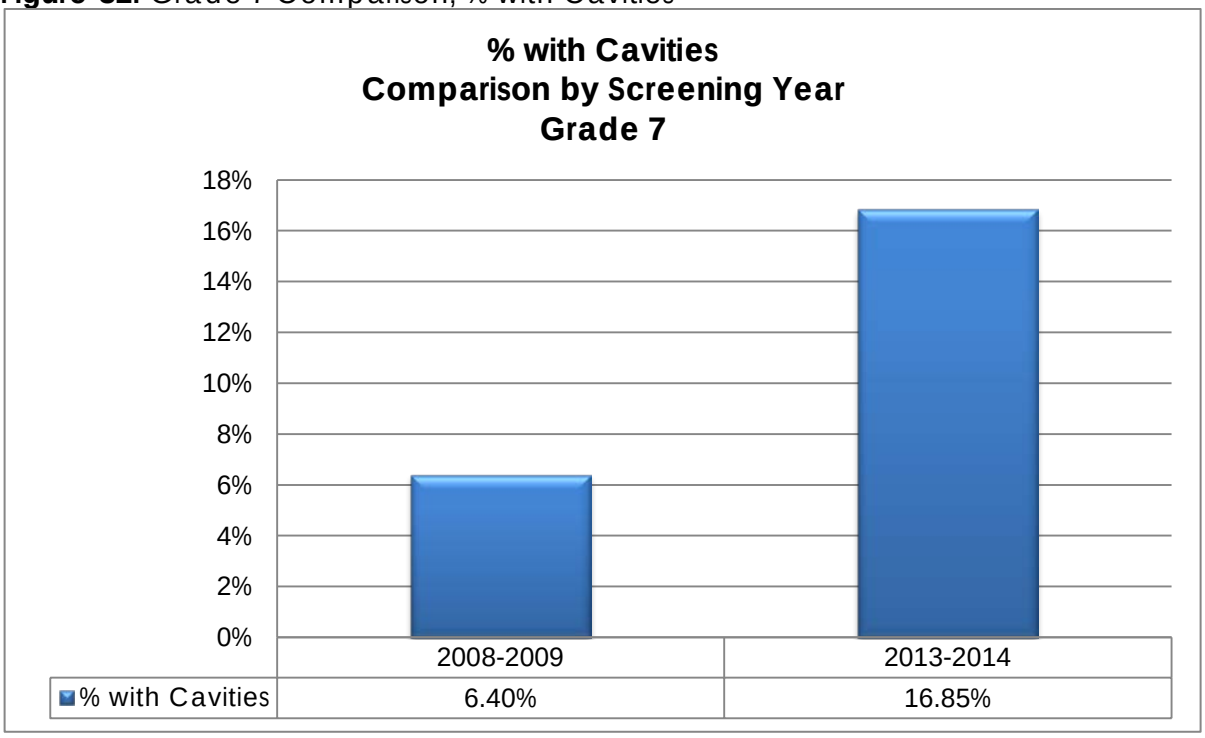



**Figure-33:** Grade 1 Comparisons; Pain & NEC

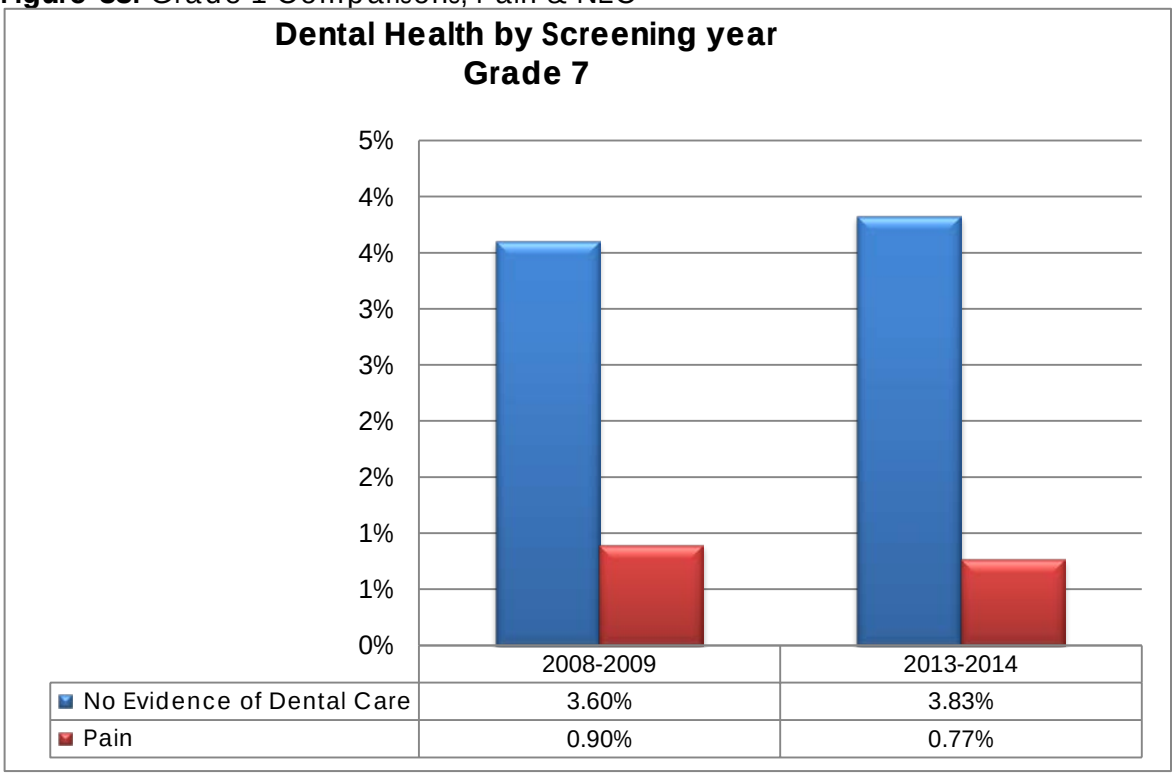
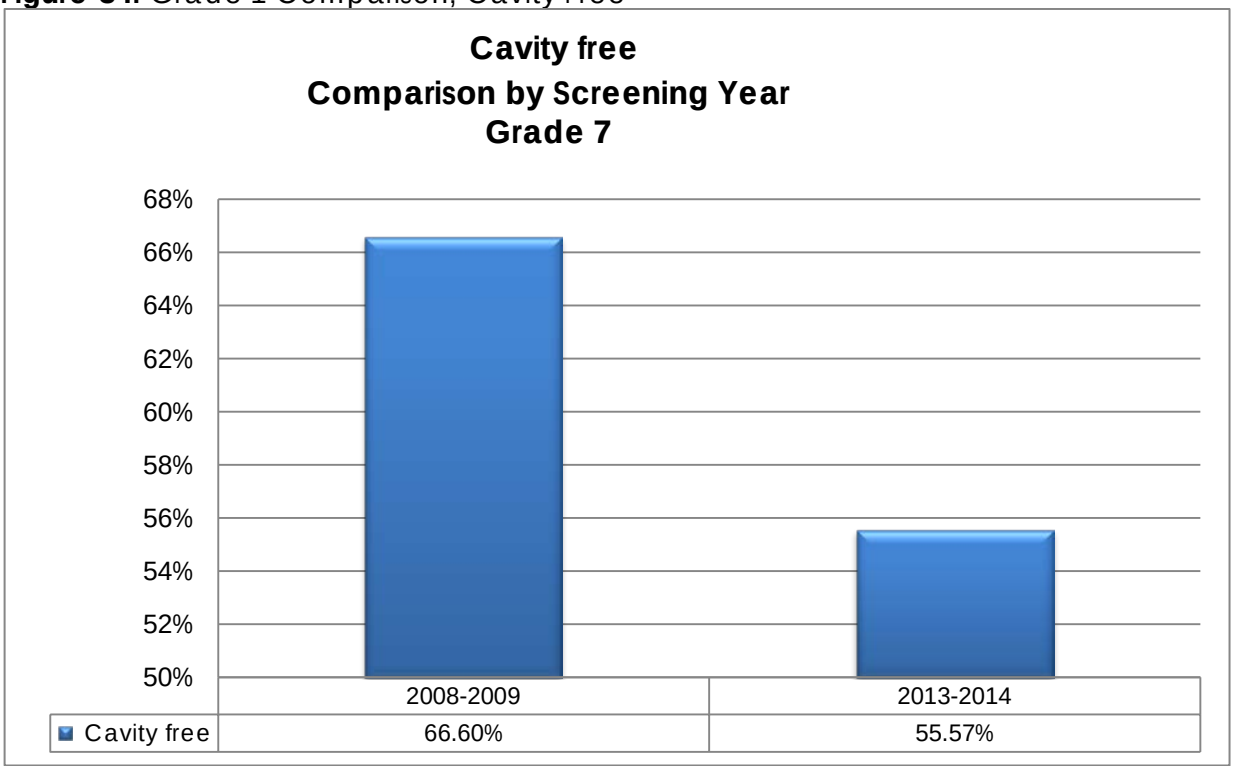


**Figure-34:** Grade 1 Comparison; Cavity Free



## Canadian Oral Health Strategy (COHS) Guidelines for 2010:

- *A comparison of 2013-2014 Dental Screening with 2008-2009 in meeting the past COHS goals.*

In Dental Health Screening 2008-2009 Report, Canadian Oral Health Strategy 2005-2010 standards were used to examine and analyze the screening results. The COHS provided guidelines for both age 6/Grade 1 and age 12/Grade 7. Following are the results of the 2008-2009 screening measured to meet the guidelines and further compared in this report to 2013-2014 screening results to analyze the difference.

***Grade 1: COHS Guidelines; 2008-2009 vs. 2013-2014.***

**Table-28** shows the COHS Guidelines with a comparison of screening results of 2008-2009 and 2013-2014 for age 6/Grade 1 students. The data indicates that the percentages are quite close, but the 2008-2009 Grade 1 students presented with better dental health than the latest screening results. Though the past screening met both the guidelines for Grade 1, the 2013-2014 screening results percentages lagged behind in meeting one of the 2010 guidelines related to dental decay. Refer to the table below for details regarding COHS 2010 guidelines for Grade 1.

**Table-28:** COHS 2010 Guidelines→ Grade 1; 2008-2009 vs. COHF 2013-2014

| COHS 2005-2010 - Grade 1 | | |
|---|---|---|
| **COHS** | 50% of children have never experienced dental decay | No more than 20% of children have unmet dental treatment needs |
| **SHR 2008- 2009** | 50.80% | 19.40% |
| **SHR 2013-2014** | 47.28% | 19.65% |

***Grade 7 :COHS Guidelines; 2008-2009 vs. 2013-2014.***

**Table-29** shows the COHS guidelines with a comparison of screening results of 2008-2009 and 2013-2014 for age 12/Grade 7 students. The data indicates that the Grade 7 students in 2008-2009 presented with better dental health than the latest screening results. There is a noticeable difference in measurements with regard to goals related to permanent tooth decay and the Significant Caries Index[a]. Though the past screening met all four guidelines for Grade 7, the 2013-2014 screening met 3 of them. Refer to the table below for further details.

**Table-29:** COHS 2010 Guidelines→ Grade 7; 2008-2009 vs. COHF 2013-2014

| COHS 2005-2010 -Grade 7 | | | | |
|---|---|---|---|---|
| **COHS** | 75% of children have never experienced decay in their permanent teeth | No more than 10%of children have unmet dental treatment needs. | Average 'DMFT' OF 1.0 OR LESS | Significant Caries Index (SiC), DMFT Of of 3.0 or less. |
| **SHR 2008-2009** | 74.80% | 6.50% | 0.60 | 1.81 |
| **SHR 2013-2014** | 63.90% | 6.96% | 0.93 | 2.70 |

***(a) Significant Caries Index (SiC) is calculated by recording the Mean "DMFT" scores of 1/3rd of the population with highest "DMFT" scores.[1]***

## Canadian Oral health Framework 2013-2018 (COHF):

"The Canadian Oral Health Framework 2013-18 (COHF) is the second national oral health framework produced by the Federal, Provincial and Territorial Dental Directors. It follows the Canadian Oral Health Strategy (COHS), 2005-10." [(2)]
COHF has categorized the ten goals in two areas

1) **oral health status** goals.
2) **oral health system** goals.

Two of the goals that can be analyzed by the Dental Health Screening results are related to **Oral Health Status** goals. The following two goals are examined in line with the SHR Dental Screening 2013-2014 results to examine the dental health status of children and the Aboriginal population.

- **Improve Oral Health-1. Improve the oral health of children and youth.**
- **Access to Care- 2. Improve oral health access for Aboriginal People.**

➢ **Improve Oral Health- COHF Guidelines 2013-2018 for age 6/Grade 1:**

**Table-30** illustrates the guidelines and the Dental Health Screening 2013-2014 results of age 6/ Grade 1. All the three indicators are not met according to the Saskatoon Health Region 2013-2014 Screening data for age 6/Grade 1. Refer to the table below for details.

**Table-30:** COHF Guidelines 2013-2018; Grade1 /age 6

| Canadian Oral Health Framework 2103-2018 : **Appendix 1: Improve Oral Health of Children** GRADE-1 | | | | |
|---|---|---|---|---|
| **#** | **Objective** | **Baseline** | **Indicator** | **SHR 2013-2014** |
| **1.a** | Reduce the number of teeth affected by cavities in 6-year-olds | 2.52 | **deft +DMFT of <2.5** for 6 y.o. | **2.79** |
| **1.b** | Reduce the percentage of 6-year-olds who experienced cavities | 46.60% | 55%. of 6 y.o. have **dmft +DMFT=0** | **47.28%** |
| **1.c** | Reduce the percentage of 6-year-olds with untreated cavities | 18.60% | <15% of 6 y.o. have **d+D>0** | **20.92%** |

- **Improve Oral Health- COHF Guidelines 2013-2018 for <u>age 12 /Grade 7:</u>**

**Table-31** illustrates the guidelines and the Dental Health Screening 2013-2014 results of age 12 / Grade 7. Guideline 1.d is met as the age 12/Grade 7 average DMFT was 0.93. The DMFT also shows improvement from the baseline measure. The screening results 2013-2014 of age 12/Grade 7 showed improvement from the baseline measure (61.30%) of DMFT = 0 students. However, It did not meet the indicator of > 70% of 12 years to have DMFT = 0. Refer to the table below for details.

**Table 31:** COHF 2013-2018; Grade 7/ age 12

| Canadian Oral Health Framework 2103-2018 : **Appendix 1: Improve Oral Health of Children** | | | | |
|---|---|---|---|---|
| GRADE-7 | | | | |
| **#** | **Objective** | **Baseline** | **Indicator** | **SHR 2013-2014** |
| **1.d** | Improve the DMFT rate for 12 year olds | 1.02 | **DMFT of <1.0** for 12 y.o. | **0.93** |
| **1.e** | Decrease the percentage of 12-year-olds who experienced permanent tooth cavities | 61.30% | >70% of 12 y.o. have **DMFT=0** | **63.90%** |

**<u>Access to Care</u>- 2. Improve oral health access for Aboriginal People.**

Every Grade 1 and Grade 7 student was given a form to be completed by their Parent or Guardian. Apart from inquiring about the demographics and consent, the form mentioned a few optional questions. One of the optional questions was "Does your child have dental insurance? and if "Yes", what type of insurance does your child have?". On the basis of this information, students who declared their coverage from First Nations and Inuit Health Branch were considered to be a "First Nations/Inuit" student. As the question was optional, a small sample ( n= 199) was recognized as Aboriginal.

Though the sample was small, it was utilized in this report to analyze the COHF 2013-2018 guidelines from the results and specially to provide baseline for the future.

- **Improve oral health access for Aboriginal Population - COHF Guidelines 2013-2018 for <u>FN/I School based preventive services:</u>**

The schools in the Saskatoon Health Region that are classified as Community Schools are 17 in number. These schools are identified as High Risk Schools with a high percentage of Aboriginal students. **Appendix-I** lists the 2013-2014 Community Schools.

In the Saskatoon Health Region in 2013-2014, the Oral Health Program provided preventive services to 10 of these schools. These preventive services included Sealants, Fluoride Varnish and Fluoride Mouth Rinse Programs. The services in the remaining 7 schools were provided by University of Saskatchewan, College of Dentistry and White Buffalo Youth Lodge Dental Clinic. Hence, all (100%) of the high Aboriginal populated schools were provided with preventive dental services to meet the objective 2.b as shown in the table below. Additionally, the services provided by White Buffalo Youth Lodge Dental Clinic have been taken over by the SHR Oral Health Program starting February/2014. **Table 32 (A)** exhibits this information in detail.

**Table 32 (A):** COHF 2013-2018; FN/I school-based preventive services

| Canadian Oral Health Framework 2103-2018 : **Appendix 2: Improve Oral Health of Aboriginal People** | | | | |
|---|---|---|---|---|
| **#** | **Objectives** | **Baseline** | **Indicator** | **SHR 2013-2014** |
| **2.b** | 50% of FN/I schools provide school-based preventive dental services | Not available (few) | % of FN/I schools provide school-based preventive dental services | 100% |

- **Improve oral health access for Aboriginal Population - COHF Guidelines 2013-2018: age 6/Grade 1:**

**Table 32 (B)** exhibits the objective for FN/I - age 6 /Grade 1 and the 2013-20114 screening result in the Saskatoon Health Region. This indicator was met as 19.79% of Aboriginal age 6/Grade 1 students had deft + DMFT = 0. Refer to the table below for detail.

**Table 32 (B):** COHF 2013-2018; FN/I- age 6 /Grade 1

| Canadian Oral Health Framework 2103-2018 : **Appendix 2: Improve Oral Health of Aboriginal People** GRADE-1 | | | | |
|---|---|---|---|---|
| **#** | **Objectives** | **Baseline** | **Indicator** | **SHR 2013-2014** |
| **2.c** | Improve the oral health status of those children entering school (6 year olds) | 13.90% | 15% of 6 y.o. FN/I have **dmft +DMFT=0** of 6 year-old First Nations and Inuit children have not had tooth decay | **19.79%** |

- **Improve oral health access for Aboriginal Population - COHF Guidelines 2013-2018: age 12/Grade 7:**

**Table 32 (C)** exhibits the objective for FN/I - age 12 /Grade 7 and the screening result 2013-2014 in Saskatoon Health Region. This indicator was met as 39.81% of Aboriginal age 12 /Grade 7students had DMFT = 0. Refer to the table below for details.

**Table-32 (C):** COHF 2013-2018; FN/I- age 12 /Grade 7

| Canadian Oral Health Framework 2103-2018 : **Appendix 2: Improve Oral Health of Aboriginal People** GRADE- 7 | | | | |
|---|---|---|---|---|
| **#** | **Objectives** | **Baseline** | **Indicator** | **SHR 2013-2014** |
| **2.d** | Improve the oral health status of 12 year old FN/I | 17.8% of 12 y.o. FN/I (from p. 37 COHF)<br>38.7% of 12 y.o. Canadians | 20% of 12 y.o. FN/I have **DMFT=0** | 39.81% |

## Comparative Analysis:

On the basis of Dental Screening 2013-2014 results, the oral health of the students were compared based on different criterion. The comparative analysis involved designating students in to groups based on a specific measure to examine the effect of that particular factor on their oral health. This included statistically analyzing the association of the factor with the oral health of the students.

*The Significance Level α = 0.05 was used for the statistical analysis. The p-value was generated by the application of relevant statistical test. In this analysis three statistical test were used namely; 1) Chi-square test 2) Fisher's Exact test and 3) Independent two sample T-test. The p-value is the measure of whether the outcome of endeavor is due to actual effect or mere random chance. To simplify, if the p-value is less than 0.05 ( significance level), the factor has an effect on the dental health of the students.*

Following are the list of factors used to analyze the students' oral health

- Location of School → Urban vs. Rural.
- Neighborhood Income Status → Low Income Measure (LIMS) vs. Non-Low Income Measure neighborhoods.
- Community Water Fluoridation → Fluoridated vs. Non-Fluoridated communities.
- Immigration Status → New Immigrants vs. Settled residents.
- Aboriginal Status → Aboriginal vs. Non-Aboriginal.
- Dental Visits → History of Dental Office Visit vs. No History of Dental Office Visit.
- Dental Insurance → With Dental Coverage vs. Without Dental Coverage. The data is also further analyzed based on the different types of Insurance namely 1) Private 2) Family Health and 3) First Nation and Inuit Branch.

**Location; Urban vs. Rural Schools:**

The schools located in Saskatoon were considered "Urban" and the rest were categorized as "Rural" in this comparative analysis. Hence, 4659 (70.47%) students attended Urban schools and 1952 (29.53%) attended Rural schools.

Generally, the oral health of the children in Rural schools was found to be better than the oral health of children in Urban schools. Out of the 16 oral health indicators examined in the two populations, 13 of them had better measurements in Rural locations and 9 out of them were statistically significant as well ( as the p-value is less than 0.05 = $\alpha$).

The measures of *DMFT, Caries Free- Permanent Dentition* and *NDE* show slightly better results in Urban students health, however, it is statistically insignificant.

**Table-33** illustrates the comparative analysis based on location in detail.**Figure-35 (A)** and **Figure-35 (B)** further elaborates on the table content in detail.

**Table-33:**Comparative analysis; Urban vs. Rural

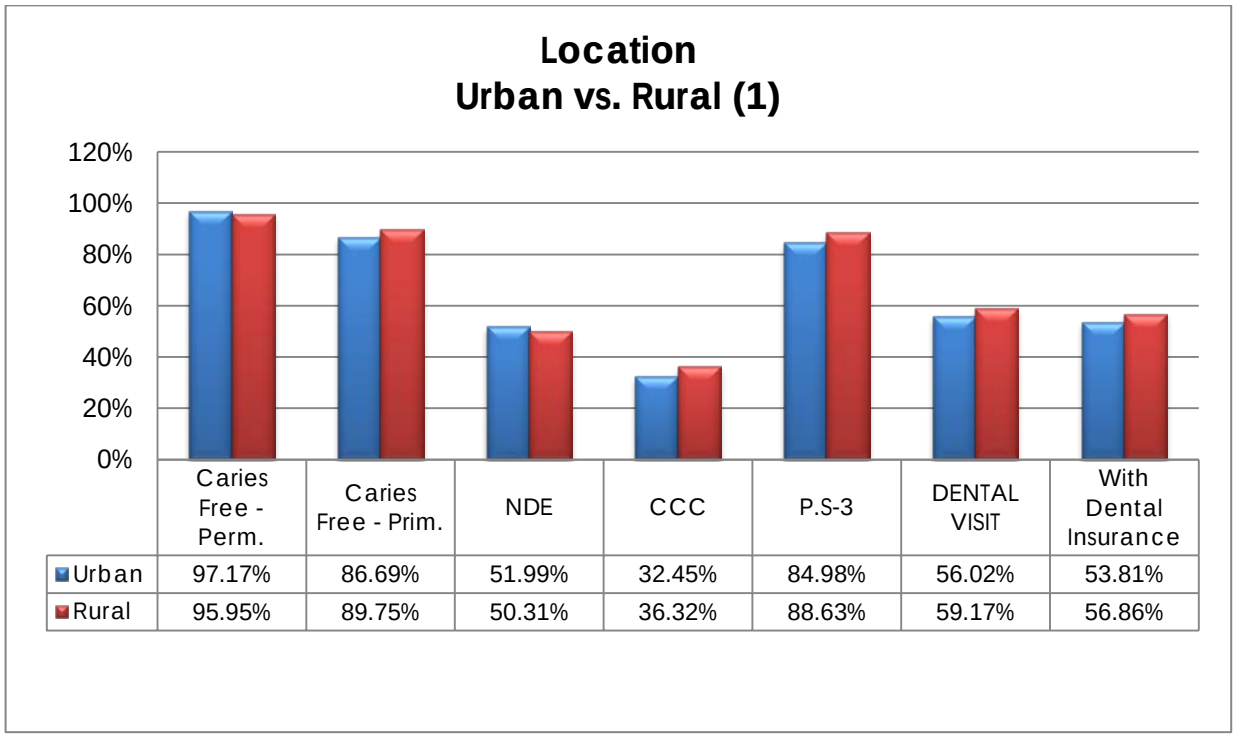
| | | School Location | | |
|---|---|---|---|---|
| | | Urban | Rural | p-value |
| DMFT Score[a] | | 0.44 | 0.47 | 0.267 |
| deft Score[a] | | 1.69 | 1.59 | 0.194 |
| Caries Free - Permanent Dentition[b] | | 4527 (97.17%) | 1873 (95.95%) | 0.01 |
| Caries Free - Primary Dentition[b] | | 4039 (86.69%) | 1752 (89.75%) | 0.001 |
| Childhood Tooth Decay[b] | ECTD | 134 (2.88%) | 30 (1.54%) | 0.001 |
| | S-ECTD | 56 (1.20%) | 8 (0.41%) | 0.003 |
| Oral Health Status[b] | NDE | 2422 (51.99%) | 982 (50.31%) | 0.213 |
| | CCC | 1512 (32.45%) | 709 (36.32%) | 0.002 |
| | NEC | 384 (8.24%) | 133 (6.81%) | 0.048 |
| Priority Scores[b] | 1 | 56 (1.20%) | 24 (1.23%) | 0.926 |
| | 2 | 644 (13.82%) | 198 (10.14%) | < 0.001 |
| | 3 | 3959 (84.98%) | 1730 (88.63%) | < 0.001 |
| Dental Visit[b] | Yes | 2610 (56.02%) | 1155 (59.17%) | 0.018 |
| Existing Pain[b] | Yes | 64 (1.37%) | 24 (1.23%) | 0.641 |
| Have Dental Insurance[b] | Yes | 2507 (53.81%) | 1110 (56.86%) | 0.023 |
| Tobacco Usage[c] | Yes | 7 (0.15%) | 2 (0.10%) | 0.113 |

[a] Independent two sample T-test.

[b] Chi-square test.

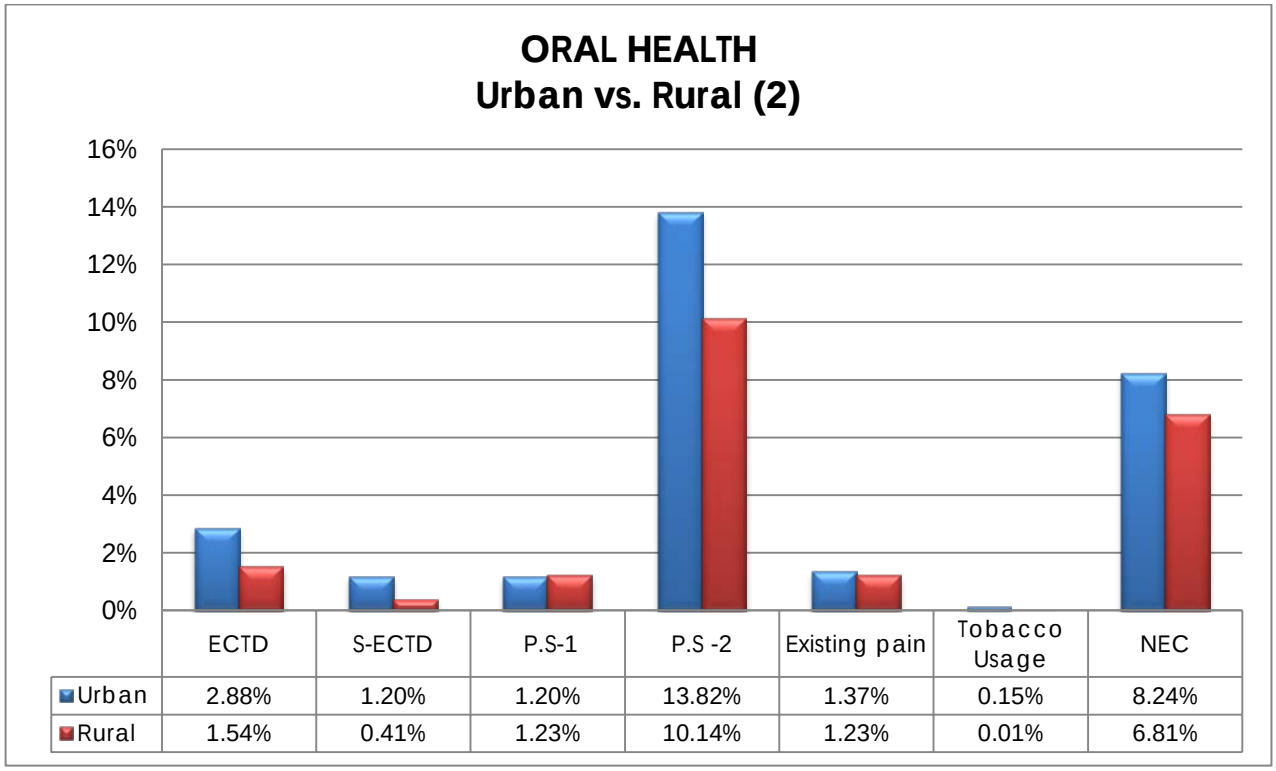
[c] Fisher's Exact test.

**Figure-35 (A):** Comparative analysis; Urban vs. Rural (1)




| | Caries Free - Perm. | Caries Free - Prim. | NDE | CCC | P.S-3 | DENTAL VISIT | With Dental Insurance |
|---|---|---|---|---|---|---|---|
| Urban | 97.17% | 86.69% | 51.99% | 32.45% | 84.98% | 56.02% | 53.81% |
| Rural | 95.95% | 89.75% | 50.31% | 36.32% | 88.63% | 59.17% | 56.86% |

**Figure-35 (B):** Comparative analysis; Urban vs. Rural (2)




| | ECTD | S-ECTD | P.S-1 | P.S -2 | Existing pain | Tobacco Usage | NEC |
|---|---|---|---|---|---|---|---|
| Urban | 2.88% | 1.20% | 1.20% | 13.82% | 1.37% | 0.15% | 8.24% |
| Rural | 1.54% | 0.41% | 1.23% | 10.14% | 1.23% | 0.01% | 6.81% |

*(P.S = Priority Score)*

**Neighborhood Income Status; LIM vs. Non-LIM:**

According to Statistics Canada, a neighborhood is defined as Low Income when more than 30% of the families in the neighborhood meet the definition of Low Income Measure (LIM).[1]To simplify, "the LIM is a fixed percentage (50%) of median adjusted economic family income, where "adjusted" indicates that family needs are taken into account". [13]

On the basis of the above definition, the students were categorized as the group who belonged to LIM neighborhoods and the other group from Non-LIM neighborhoods. The LIM information was available for 4156 students and unavailable for 2455 who were not included in this comparative analysis. Out of 4156, 606 (14.58%) met the definition of LIM neighborhood and the remaining 3550 ( 85.42%) were assessed as from a Non-Lim neighborhood.

Overall, the oral health of the children from Non-LIM neighborhoods was found to be better than the children from LIM neighborhoods. Out of the 16 oral health indicators examined in the two populations, all of them had better measurements with regard to better oral health in Non-LIM and 11 out of them were statistically significant as well ( as the p-value is less than 0.05 = $\alpha$). To summarize, the income status has a significant effect on oral health.

**Table-34** illustrates the comparative analysis based on Neighborhood Income Status in detail.**Figure-36 (A)** and **Figure-36 (B)** further elaborates on the table content in detail.

**Table-34:**Comparative analysis; LIM vs. Non-LIM

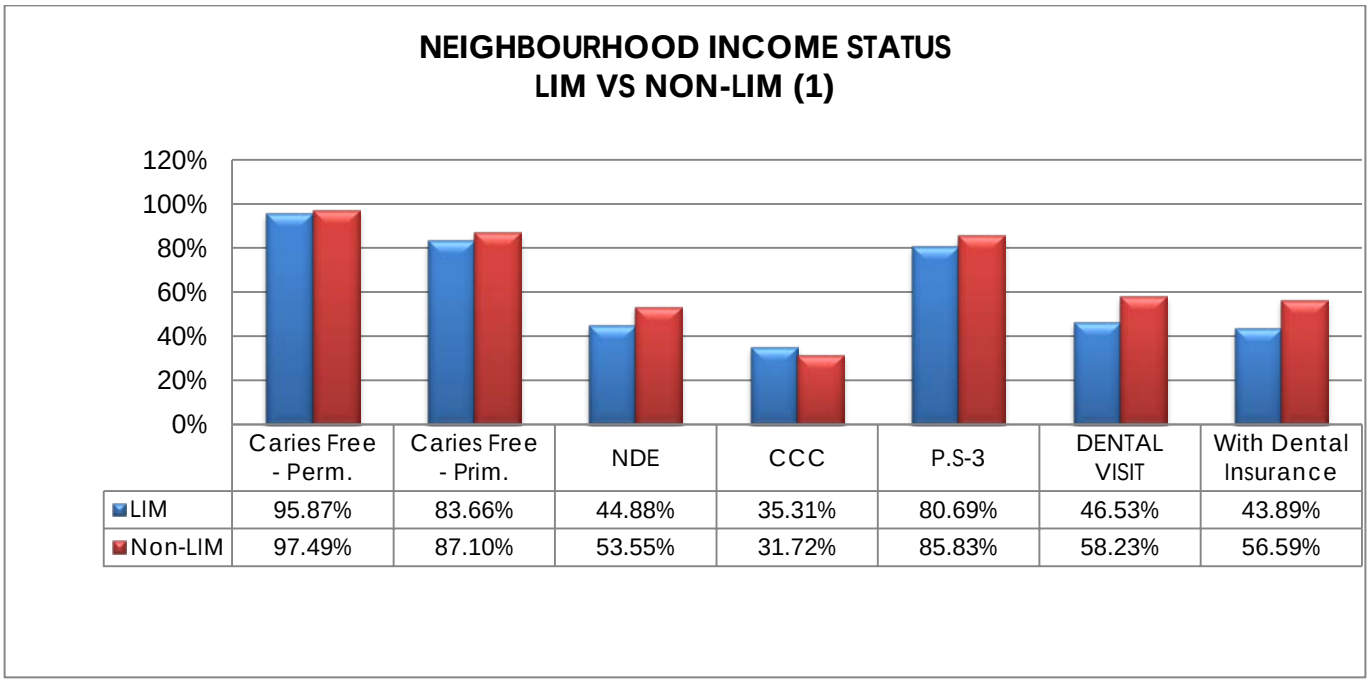
| | | Neighborhood Income Status | | |
|---|---|---|---|---|
| | | LIM | Non-LIM | p-value |
| DMFT Score[a] | | 0.55 | 0.40 | 0.011 |
| deft Score[a] | | 2.11 | 1.65 | 0.003 |
| Caries Free - Permanent Dentition[b] | | 581 (95.87%) | 3461 (97.49%) | 0.024 |
| Caries Free - Primary Dentition[b] | | 507 (83.66%) | 3092 (87.10%) | 0.022 |
| Childhood Tooth Decay[b] | ECTD | 20 (3.30%) | 88 (2.48%) | 0.240 |
| | S-ECTD | 10 (1.65%) | 45 (1.27%) | 0.446 |
| Oral Health Status[b] | NDE | 272 (44.88%) | 1901 (53.55%) | < 0.001 |
| | CCC | 214 (35.31%) | 1126 (31.72%) | 0.080 |
| | NEC | 72 (11.88%) | 267 (7.52%) | < 0.001 |
| Priority Scores[b] | 1 | 14 (2.31%) | 34 (0.96%) | 0.004 |
| | 2 | 103 (17.00%) | 469 13.21%) | 0.012 |
| | 3 | 489 (80.69%) | 3047 (85.83%) | 0.001 |
| Dental Visit[b] | Yes | 282 (46.53%) | 2067 (58.23%) | < 0.001 |
| Existing Pain[b] | Yes | 16 (2.64%) | 40 (1.13%) | 0.003 |
| Have Dental Insur.[b] | Yes | 266 (43.89%) | 2009 (56.59%) | < 0.001 |
| Tobacco Usage[c] | Yes | 1 (0.17%) | 4 (0.11%) | 0.545 |

[a] Independent two sample T-test.

[b] Chi-square test.

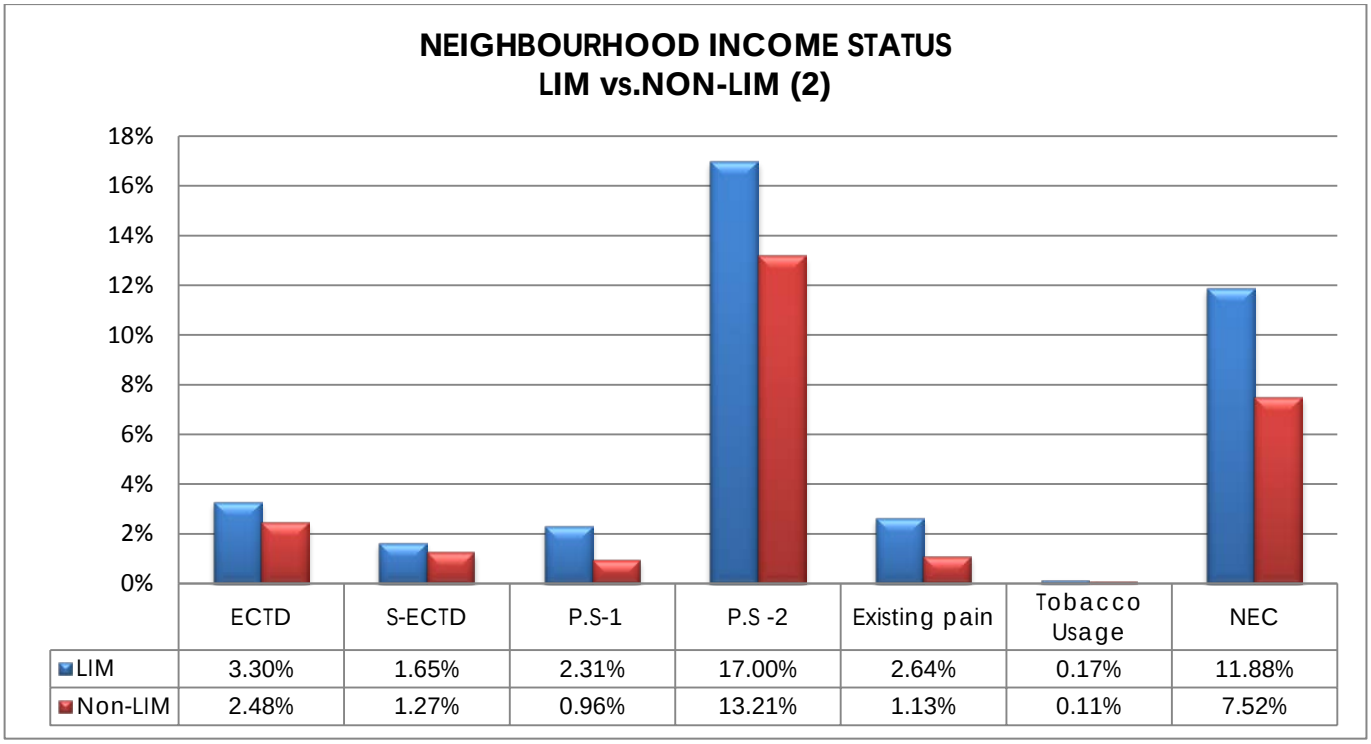
[c] Fisher's Exact test.

**Figure-36 (A):** Comparative analysis; LIM vs. Non-LIM (1)




| | Caries Free - Perm. | Caries Free - Prim. | NDE | CCC | P.S-3 | DENTAL VISIT | With Dental Insurance |
|---|---|---|---|---|---|---|---|
| LIM | 95.87% | 83.66% | 44.88% | 35.31% | 80.69% | 46.53% | 43.89% |
| Non-LIM | 97.49% | 87.10% | 53.55% | 31.72% | 85.83% | 58.23% | 56.59% |

**Figure-36 (B):** Comparative analysis; LIM vs. Non-LIM (2)




| | ECTD | S-ECTD | P.S-1 | P.S -2 | Existing pain | Tobacco Usage | NEC |
|---|---|---|---|---|---|---|---|
| LIM | 3.30% | 1.65% | 2.31% | 17.00% | 2.64% | 0.17% | 11.88% |
| Non-LIM | 2.48% | 1.27% | 0.96% | 13.21% | 1.13% | 0.11% | 7.52% |

*(P.S = Priority Score)*

**Community Water Fluoridation; Fluoridated vs. Non-Fluoridated:**

According to the *Saskatchewan Community Fluoride Data 2010* document, for a dental benefit the fluoride level needs to be adjusted to 0.7 mg/L. There are 24 communities with adjusted fluoride in Saskatoon Health Region are 24.[4] Out of these, 21 communities were part of the Dental Screening 2013-2014. Furthermore, 88.78% (5869) students screened resided in the communities with water fluoridation. Additionally, amongst the 148 Schools, 114 (77.03%) Schools were located in these communities. Refer to **Appendix-D** for the list of communities with adjusted fluoride and **Appendix-E** for the SHR communities with access to Water Fluoridation. **Appendix-F** further illustrates the communities where the water is fluoridated at the optimum level of 0.7mg/L.

A comparative analysis was carried out between students from Fluoridated and Non-Fluoridated communities. Out of the 13 oral health indicators examined in the two populations, the difference of measures due to fluoridation effect is statistically insignificant in 10 of them( as the p-value is less than 0.05 = $\alpha$). This implies that the fluoridated water did not affect those 10 oral health measures significantly.

The percentage of children from fluoridated communities had better oral health in 7 of the measures. Out of these, the difference in Priority Score 1 and Existing Pain in water fluoridated communities is statistically significant. On the other hand, children from Non-Fluoridated communities had better oral health in 6 of the measures. Out of these, the measure of ECTD is better and statistically significant in Non-Fluoridated communities.

As compared to the past screening 2003-2004 and 2008-2009 where the children from fluoridated communities had significantly better oral health, the Dental Health Screening results 2013-2014 exhibited different outcomes.[5] To summarize, fluoridation did not have a huge impact on the oral health of the children in 2013-2014 screening results in Saskatoon Health Region.

**Table-35** illustrates the comparative analysis based on Water Fluoridation in detail.**Figure-37 (A)** and **Figure-37 (B)** further elaborates on the table content in detail.

**Table-35:**Comparative analysis; Fluoridated vs. Non-Fluoridated

| | | Community Water Supply | | |
|---|---|---|---|---|
| | | Fluoridated | Non-Fluoridated | p-value |
| DMFT Score[a] | | 0.44 | 0.48 | 0.420 |
| deft Score[a] | | 1.65 | 1.75 | 0.446 |
| Caries Free - Permanent Dentition[b] | | 5694 (97.02%) | 706 (95.15%) | 0.060 |
| Caries Free - Primary Dentition[b] | | 5137 (87.53%) | 654 (88.14%) | 0.060 |
| Childhood Tooth Decay[b] | ECTD | 155 (2.64%) | 9 (1.21%) | 0.018 |
| | S-ECTD | 58 (0.99%) | 6 (0.81%) | 0.638 |
| Oral Health Status[b] | NDE | 3036 (51.73%) | 368 (49.60%) | 0.273 |
| | CCC | 1968 (33.53%) | 255 (34.37%) | 0.650 |
| | NEC | 456 (7.77%) | 61 (8.22%) | 0.666 |
| Priority Scores[b] | 1 | 63 (1.07%) | 17 (2.29%) | 0.004 |
| | 2 | 760 (12.95%) | 82 (11.05%) | 0.144 |
| | 3 | 5046 (85.98%) | 643 (86.66%) | 0.614 |
| Existing Pain[b] | Yes | 71 (1.21%) | 17 (2.29%) | 0.015 |

[a] Independent two sample T-test.

[b] Chi-square test.

**Figure-37 (A):**Comparative analysis; Fluoridated vs. Non-Fluoridated (1)

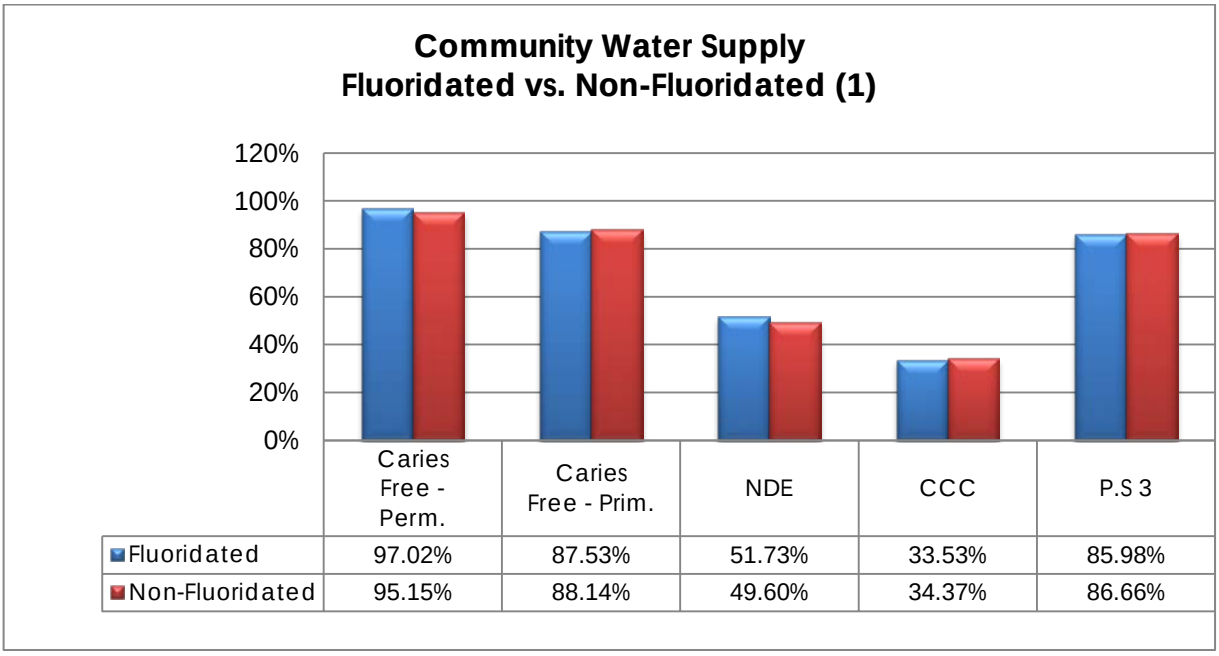
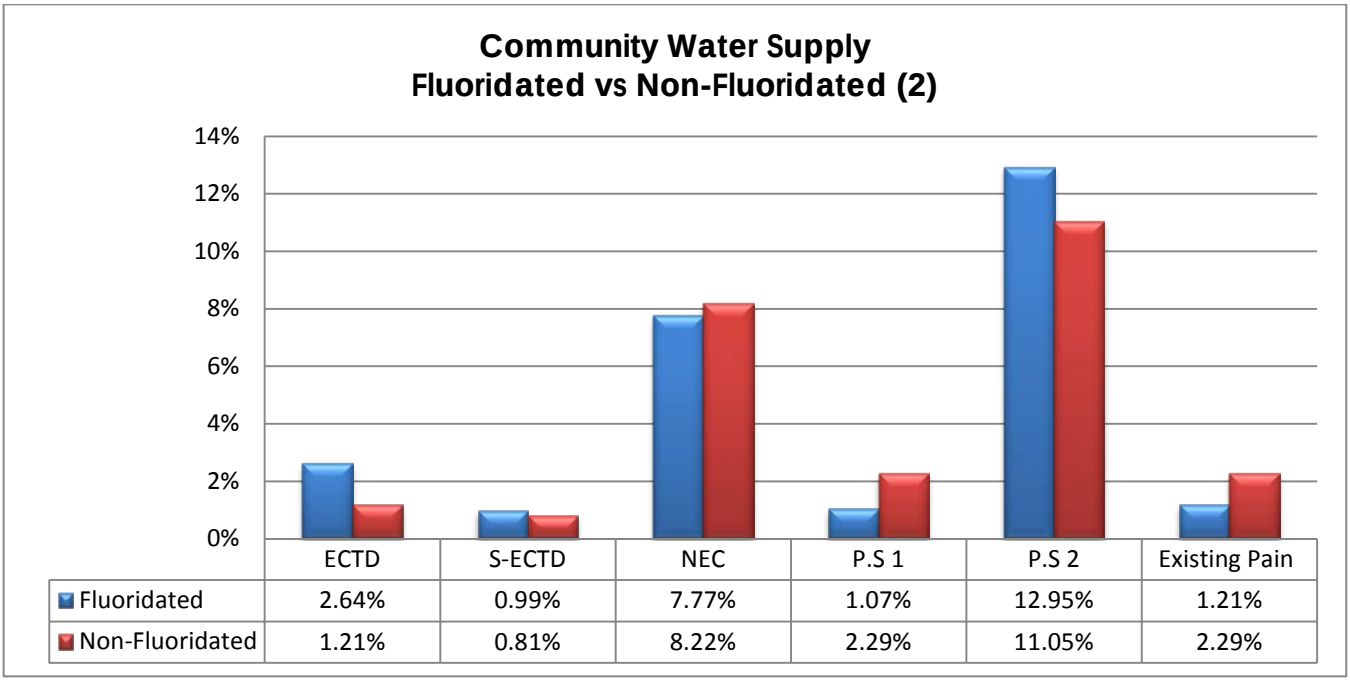


**Figure-37 (B):**Comparative analysis; Fluoridated vs. Non-Fluoridated (2)




| | ECTD | S-ECTD | NEC | P.S 1 | P.S 2 | Existing Pain |
|---|---|---|---|---|---|---|
| Fluoridated | 2.64% | 0.99% | 7.77% | 1.07% | 12.95% | 1.21% |
| Non-Fluoridated | 1.21% | 0.81% | 8.22% | 2.29% | 11.05% | 2.29% |

*(P.S = Priority Score)*

**Immigration Status; New Immigrants vs. Settled Residents:**

As mentioned earlier, every student screened was given a form to be completed by their Parent or Guardian. Apart from inquiring about the demographics and consent, the form included a few optional questions. One of the optional questions was " Has your child immigrated to Canada in the past 2 years? and if "Yes", from what country?". On the basis of this information, new immigrant students were identified. As the question was optional, a small sample ( n= 94) was recognized as New Immigrants.

Though the sample was small, it was utilized in this report for the comparative analysis of new immigrants with the settled residents. The analysis allowed a snapshot into the oral health status of students who had recently migrated to Canada within a 2 year time frame.

The identified new immigrant students came from 27 different countries. The top 7 countries with the highest number of new immigrants are mentioned in **Table-36** below.

**Table-36:** Country of citizenship of new immigrants

| Country | Number (%) |
|---|---|
| Philippines | 33 (35.11%) |
| Bangladesh | 8 (8.51%) |
| China | 7 (7.45%) |
| Pakistan | 7 (7.45%) |
| Ukraine | 6 (6.38%) |
| India | 4 (4.26%) |
| El Salvador | 3 (3.19%) |

By and large, the oral health of the children who were settled residents was found to be better than the new immigrant children. Out of the 13 oral health indicators examined in the two populations, 12 of them had better measurements in settled residents and 6 out of them were statistically significant as well ( as the p-value is less than 0.05 = $\alpha$).

The severe difference in measures of *NEC, Priority Scores* and *Caries Free- Primary dentition* between the two population, clearly indicates the poor oral health of new immigrants when compared to the rest. However, 44 (46.81%) of new immigrants responded "Yes" on having dental insurance with 14 (14.89%) affiliated with Family Health Benefits and 30 (31.91%) students had Private Insurance according to their responses.

**Table-37** illustrates the comparative analysis based on Location in detail.**Figure-38 (A)** and **Figure-38 (B)** further elaborates on the table content in detail.

**Table-37:** Comparative Analysis; New Immigrants vs. Settled Residents:

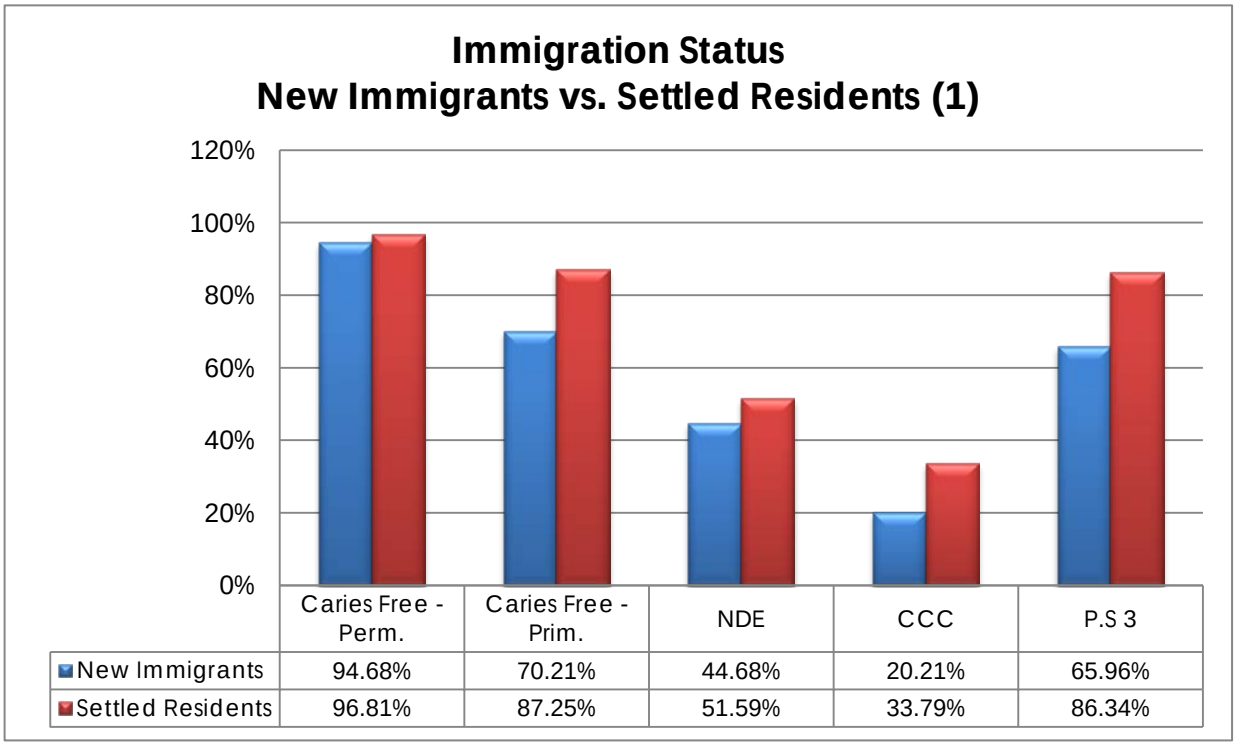
| | | Immigration Status | | |
|---|---|---|---|---|
| | | New Immigrants | Settled Residents | p-value |
| DMFT Score[a] | | 0.41 | 0.45 | 0.782 |
| deft Score[a] | | 2.04 | 1.66 | 0.242 |
| Caries Free - Permanent Dentition[c] | | 89 (94.68%) | 6311 (96.84%) | 0.227 |
| Caries Free - Primary Dentition[b] | | 66 (70.21%) | 5725 (87.25%) | < 0.001 |
| Childhood Tooth Decay[c] | ECTD | 3 (3.19%) | 161 (2.47%) | 0.507 |
| | S-ECTD | 1 (1.06%) | 63 (0.97%) | 0.602 |
| Oral Health[b] Status | NDE | 42 (44.68%) | 3362 (51.59%) | 0.183 |
| | CCC | 19 (20.21%) | 2202 (33.79%) | 0.006 |
| | NEC | 19 (20.21%) | 497 (7.63%) | <0.001 |
| Priority Scores | 1[c] | 6 (6.38%) | 74 (1.14%) | 0.001 |
| | 2[b] | 26 (27.66%) | 816 (12.52%) | <0.001 |
| | 3[b] | 62 (65.96%) | 5627 (86.34%) | <0.001 |
| Existing Pain[c] | Yes | 7(7.44%) | 81(1.24%) | <0.001 |

[a] Independent two sample T-test.

[b] Chi-square test.

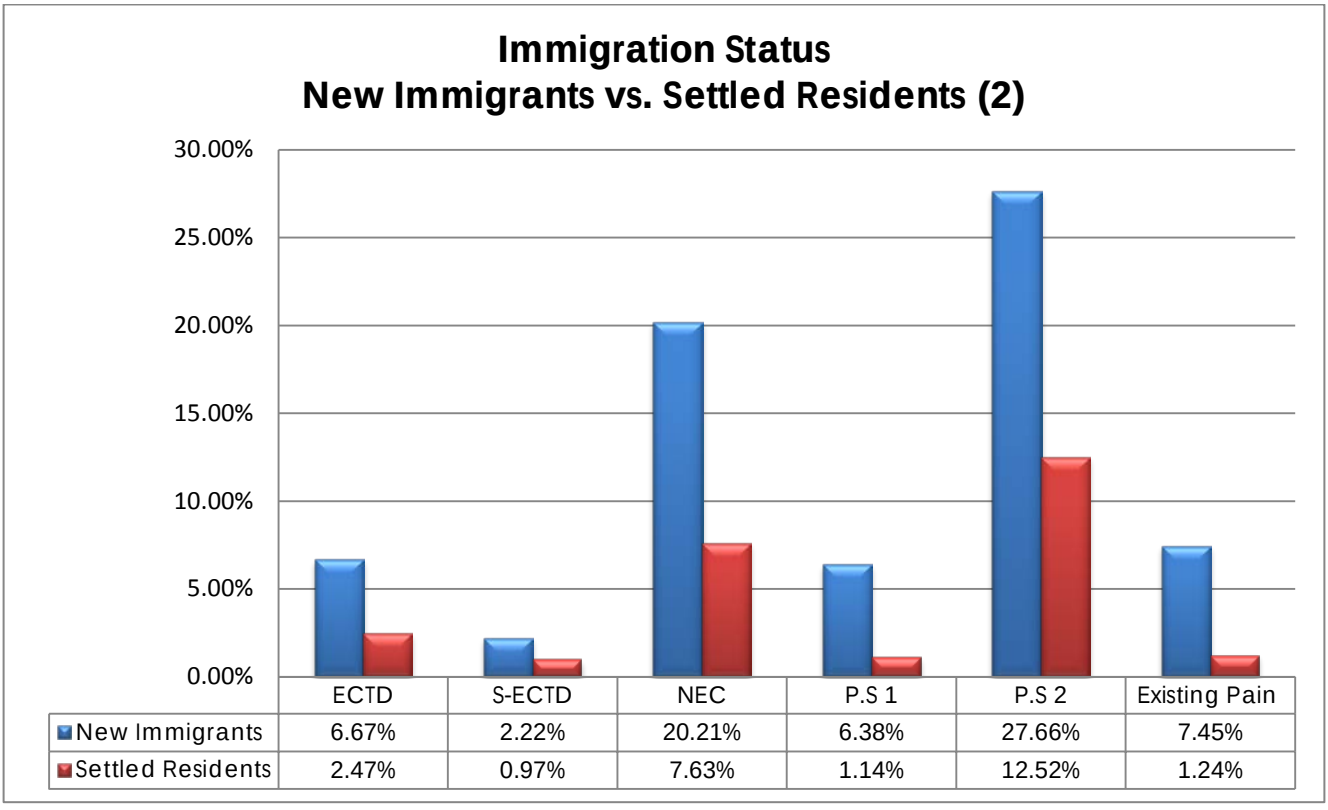
[c] Fisher's Exact test.

**Figure-38 (A):**Comparative analysis; New Immigrants vs. Settled Residents (1)




| | Caries Free - Perm. | Caries Free - Prim. | NDE | CCC | P.S 3 |
|---|---|---|---|---|---|
| New Immigrants | 94.68% | 70.21% | 44.68% | 20.21% | 65.96% |
| Settled Residents | 96.81% | 87.25% | 51.59% | 33.79% | 86.34% |

**Figure-38 (B):**Comparative analysis; New Immigrants vs. Settled Residents (2)




| | ECTD | S-ECTD | NEC | P.S 1 | P.S 2 | Existing Pain |
|---|---|---|---|---|---|---|
| New Immigrants | 6.67% | 2.22% | 20.21% | 6.38% | 27.66% | 7.45% |
| Settled Residents | 2.47% | 0.97% | 7.63% | 1.14% | 12.52% | 1.24% |

*(P.S = Priority Score)*

**Dental Visit; History of Dental Visit vs. Not Visited Dental Office :**

Another optional question was "Has your child been to the dentist in the past year?". There were 5029 (76.07%) responses to the question. Out of these, 3765 (56.95%) responded " Yes"; 904 (13.67%) responded " No"; and 360 (5.44%) were not sure whether they visited the dental office in the past year. **Table-38** shows the numbers and percentages grade-wise regarding this information.

**Table-38:** Dental Visit: Grade1 and Grade 7 data.

| Dental Visit | Yes | No | Not Sure | Not responded |
|---|---|---|---|---|
| Grade 1 | 1895 (52.095%) | 481 (13.22%) | 216 (5.94%) | 1046 (28.75%) |
| Grade 7 | 1870 ( 62.90%) | 423 ( 14.23%) | 144 (4.84%) | 536 (18.03% |
| Total | 3765 ( 56.95%) | 904 (13.67%) | 360 (5.44%) | 1582 (23.93%) |

Hence, a comparative analysis was carried out between the students who visited a Dental Office ( n = 3765) and those who did not ( n = 904). **Table-39** illustrates the comparative analysis based on this information.**Figure-39 (A)** and **Figure-39 (B)** further elaborate on the table content in detail**.**

Overall, the oral health of the children who visited the Dental office in the past year was found to be better than the children who did not. Out of the 14 oral health indicators examined in the two populations, 11 of them had better measurements in children who visited dental office and 10 of them were statistically significant (as the p-value is less than 0.05 = $\alpha$).
The difference in measures of *Caries Free-Primary Dentition, No Evidence of Dental Care* and *Priority Score 3* were noticeably very prominent between the two populations.
To summarize, the students who visited a dental office had better oral health than those who did not. Additionally, almost 90% of the children with dental health coverage , visited a dental office in the past year indicating the importance of having a dental insurance plan.

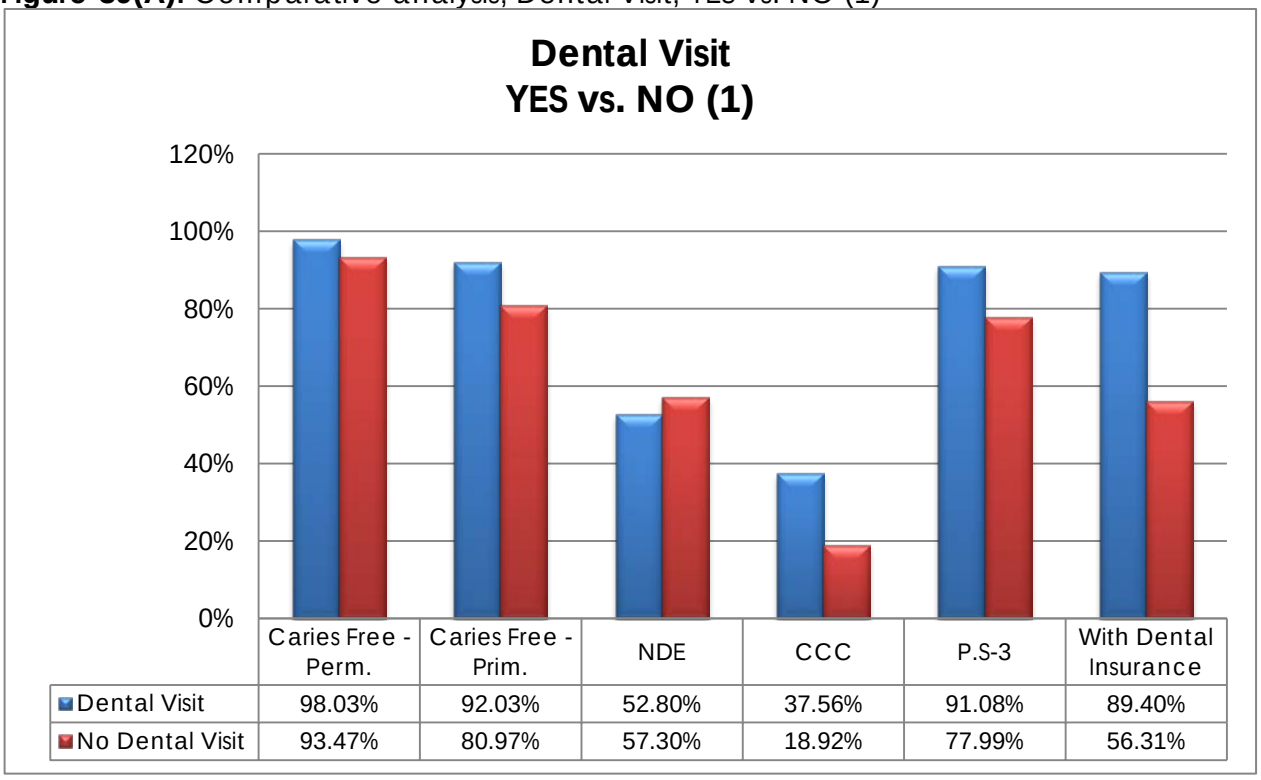
**Table-39:** Comparative analysis; Dental Visit; YES vs. NO

| | | Dental Visit | | |
|---|---|---|---|---|
| | | Yes | No | p-value |
| DMFT Score[a] | | 0.48 | 0.41 | 0.097 |
| deft Score[a] | | 1.42 | 1.28 | 0.166 |
| Caries Free - Permanent Dentition[b] | | 3691 (98.03%) | 845 (93.47%) | <0.001 |
| Caries Free - Primary Dentition[b] | | 3465 (92.03%) | 732 (80.97%) | <0.001 |
| Childhood Tooth Decay[b] | ECTD | 65 (1.73%) | 28 (3.10%) | 0.008 |
| | S-ECTD | 33 (0.88%) | 9 (1.00%) | 0.733 |
| Oral Health Status[b] | NDE | 1988 (52.80) | 518 (57.30%) | 0.015 |
| | CCC | 1414 (37.56%) | 171 (18.92%) | <0.001 |
| | NEC | 141 (3.75%) | 155 (17.15%) | <0.001 |
| Priority Scores[b] | 1 | 23 (0.61%) | 22 (2.43%) | <0.001 |
| | 2 | 313 (8.31%) | 177 19.58%) | <0.001 |
| | 3 | 3429 (91.08%) | 705 (77.99%) | <0.001 |
| Existing Pain[b] | Yes | 24 (0.64%) | 25 (2.77%) | <0.001 |
| Dental Insurance[b] | Yes | 3366 (89.40%) | 509 (56.31%) | <0.001 |

[a] Independent two sample T-test.

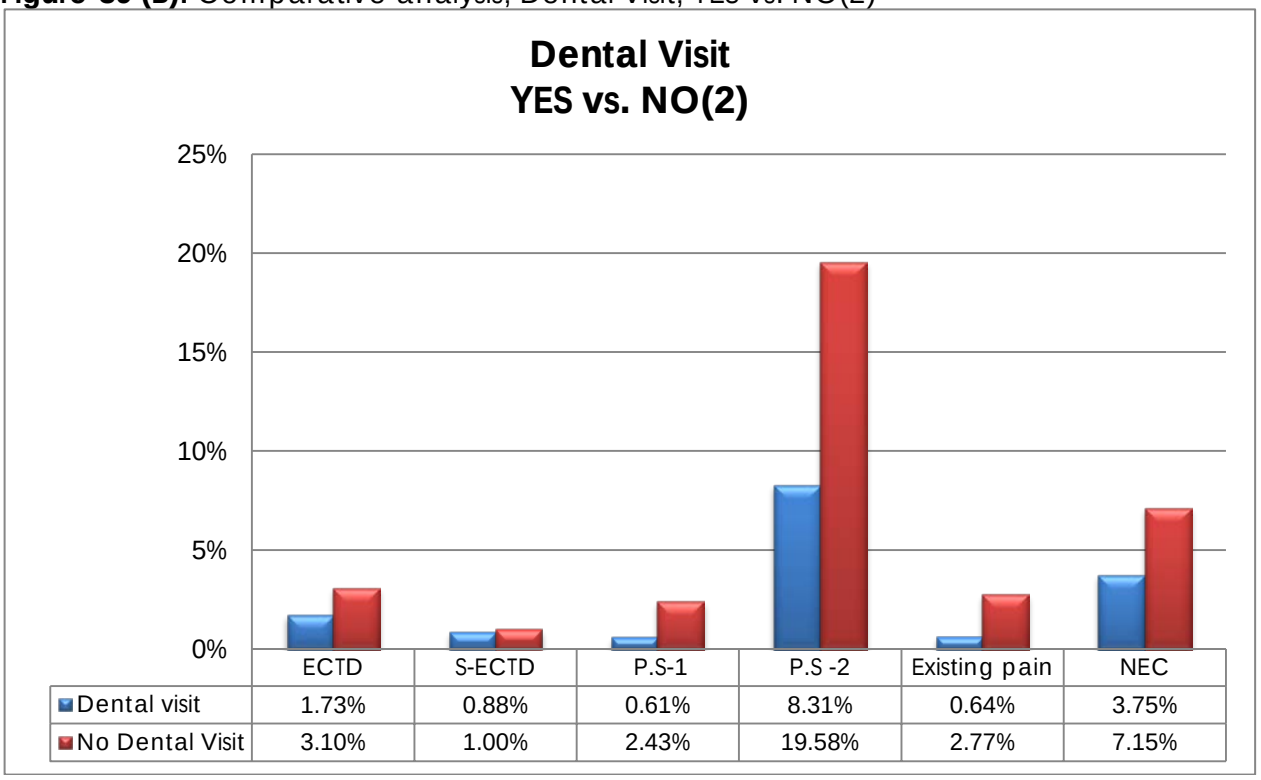
[b] Chi-square test.

**Figure-39(A):** Comparative analysis; Dental Visit; YES vs. NO (1)




| | Caries Free - Perm. | Caries Free - Prim. | NDE | CCC | P.S-3 | With Dental Insurance |
|---|---|---|---|---|---|---|
| Dental Visit | 98.03% | 92.03% | 52.80% | 37.56% | 91.08% | 89.40% |
| No Dental Visit | 93.47% | 80.97% | 57.30% | 18.92% | 77.99% | 56.31% |

**Figure-39 (B):** Comparative analysis; Dental Visit; YES vs. NO(2)




| | ECTD | S-ECTD | P.S-1 | P.S -2 | Existing pain | NEC |
|---|---|---|---|---|---|---|
| Dental visit | 1.73% | 0.88% | 0.61% | 8.31% | 0.64% | 3.75% |
| No Dental Visit | 3.10% | 1.00% | 2.43% | 19.58% | 2.77% | 7.15% |

*(P.S = Priority Score)*

- Family dentist Information:

Apart from the inquiry about dental visits, one of the optional questions in the *"Dear Parent or Guardian"* letter was "Does your child have a regular dentist?." There were 5029 (76.07%) responses to the question. Out of these, 3697 (55.92%) responded " Yes"; 943 (14.26%) responded " No"; and 389 (5.88%) were not sure whether they visited the dental office in the past year. **Table-40** shows the numbers and percentages grade-wise regarding this information

**Table-40:** Family dentist information; Grade 1 and 7 data.

| | Family Dentist Information | | | | |
|---|---|---|---|---|---|
| | **Yes** | **No** | **Not sure** | **Not recorded** | **Total** |
| **Grade 1** | 1844 (50.69%) | 512 (14.07%) | 236 (6.49%) | 1046 28.75%) | 3638 |
| **Grade7** | 1853 (62.33%) | 431 (14.50%) | 153 (5.15%) | 536 (18.03%) | 2973 |
| **Total** | 3697 (55.92%) | 943 (14.26%) | 389 (5.88%) | 1582 (23.93%) | 6611 |

**Table-41** further illustrates the comparative analysis of students who had a family dentist and those who did not. By far, the oral health of children who had a family dentist was superior to those children who did not. Out of the 15 oral health indicators examined in the two populations, all of them had better measurements for children with a dental home. The difference in 14 of them was highly significant as well.
The result clearly signifies the importance of having a family dentist in order to achieve better oral health.

**Table-41:** Comparative Analysis; Family Dentist; Yes vs. No

| | | Family Dentist | | |
|---|---|---|---|---|
| | | Yes | No | p-value |
| DMFT Score | | 0.46 | 0.49 | 0.52[(a)] |
| deft Score | | 1.33 | 1.58 | 0.012[(a)] |
| Caries Free - Permanent Dentition | | 3627 (98.11%) | 882 (93.53%) | <0.001[(b)] |
| Caries Free - Primary Dentition | | 3443 (93.13%) | 740 (78.47%) | <0.001[(b)] |
| Childhood Tooth Decay | ECTD | 52 (1.41%) | 38 (4.03%) | <0.001[(b)] |
| | S-ECTD | 24 (0.65%) | 17 (1.80%) | 0.001[(b)] |
| Oral Health Status | NDE | 2021 (54.67%) | 489 (51.86%) | 0.12[(b)] |
| | CCC | 1363 (36.87%) | 206 (21.85%) | <0.001[(b)] |
| | NEC | 114 (3.08%) | 174 (18.45%) | <0.001[(b)] |
| Priority Scores | 1 | 20 ( 0.54%) | 25 (2.65%) | <0.001[(b)] |
| | 2 | 271 (7.33%) | 202 (21.42%) | <0.001[(b)] |
| | 3 | 3406 (92.13%) | 716 (75.93%) | <0.001[(b)] |
| Dental Visit | Yes | 3366 (91.05%) | 336 (35.63%) | <0.001[(b)] |
| Have Dental Insurance | Yes | 3095 (83.72%) | 461 (48.89%) | <0.001[(b)] |
| Existing Pain | Yes | 21 (0.57%) | 27 (2.86%) | <0.001[(b)] |

[(a)] Independent two sample T-test.

[(b)] Chi-square test.

**Dental Insurance: YES vs. NO :**

One of the optional questions was " Does your child have dental Insurance/coverage?". A total of 5029 (76.07%) responded to the question. Out of these, 3617 (54.17%) responded " Yes"; 536 (8.10%) responded " No"; and 876 (13.25%) were not sure about their dental coverage. **Table-42** shows the numbers and percentages grade-wise regarding this information. **Figure-40(A)** and **Figure-40(B)** also illustrate Grade 1 and Grade 7 results in a pie-chart form respectively.

**Table-42:**Dental Insurance; grade 1 and 7 data.

| Dental Insurance Information | | | | |
|---|---|---|---|---|
| | Yes | No | Not Sure | Not Responded |
| Grade 1 | 1998 (54.92%) | 312 (8.58%) | 282 (7.75%) | 1046 (28.75%) |
| Grade 7 | 1619 (54.56%) | 224 ( 7.53%) | 594 (19.98%) | 536 (18.03%) |
| Total | 3617 (54.17%) | 536 (8.10%) | 876 (13.25%) | 1582 (23.93%) |

**Figure-40 (A):** Dental Insurance; Grade 1

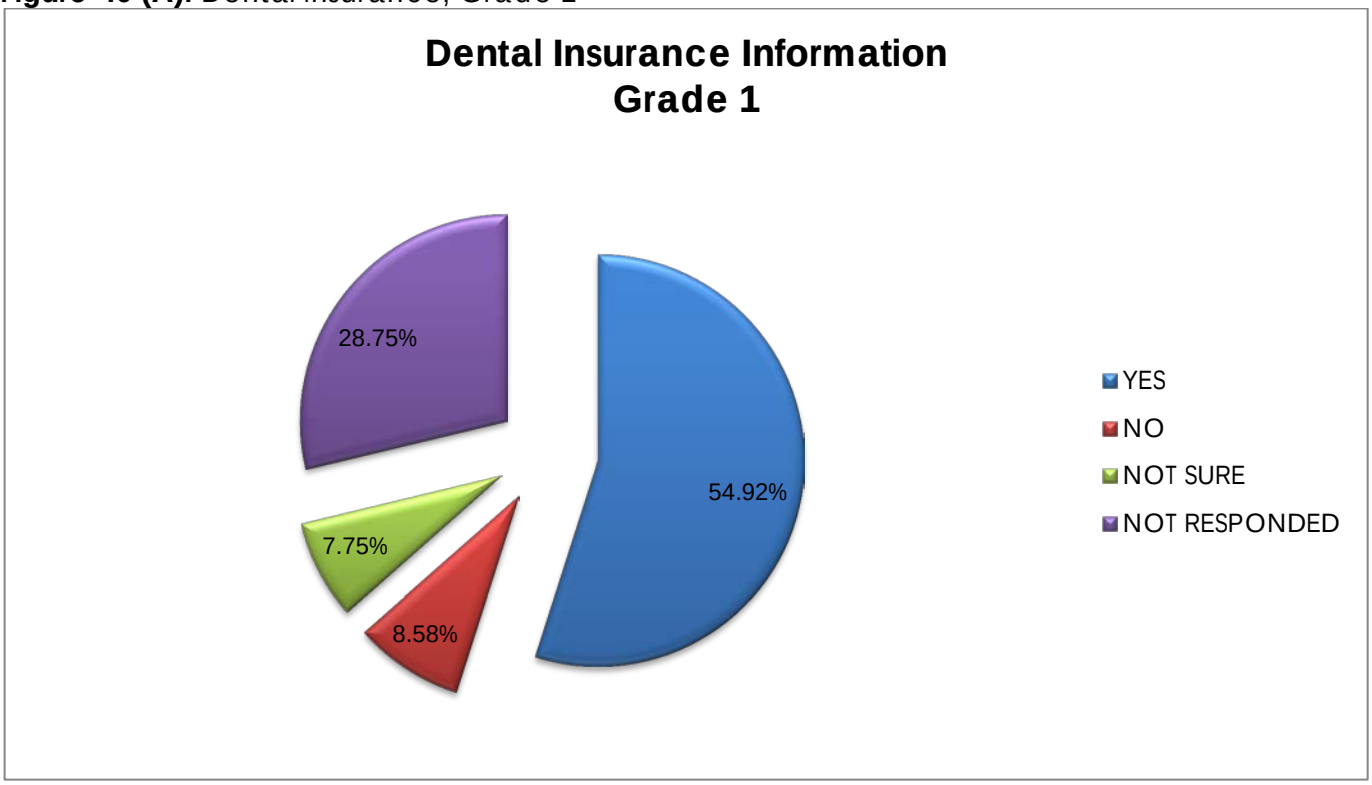
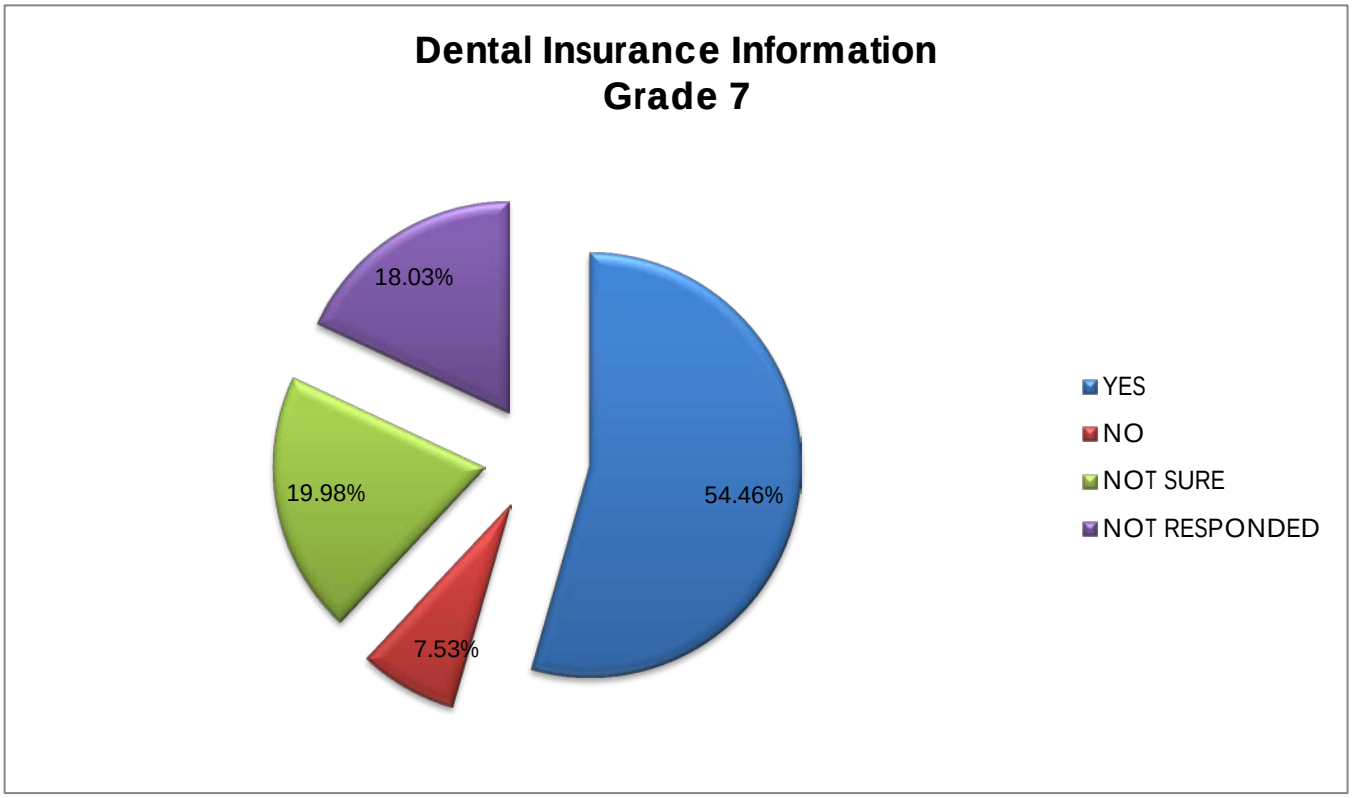


**Figure-40 (B):** Dental Insurance; Grade 7




Hence, a comparative analysis was carried out between the students who had dental health coverage ( n = 3617) and those who did not ( n = 536). **Table-43** illustrates the comparative analysis based on this information. **Figure-41 (A)** and **Figure-41 (B)** elaborate on the table content in detail**.**

Overall, the oral health of the children who had dental insurance was better than the children who did not. Out of the 14 oral health indicators examined in the two populations, 12 of them had better measurements with regard to oral health in children who had dental insurance and 7 out of them were statistically significant as well ( as the p-value is less than 0.05 = $\alpha$).

The difference in measures of *Caries Free-Primary Dentition, CCC, NEC, Priority Scores* and *Dental Visits* were prominent between the two populations.

To summarize, the students who had dental insurance had better oral health than those who did not.

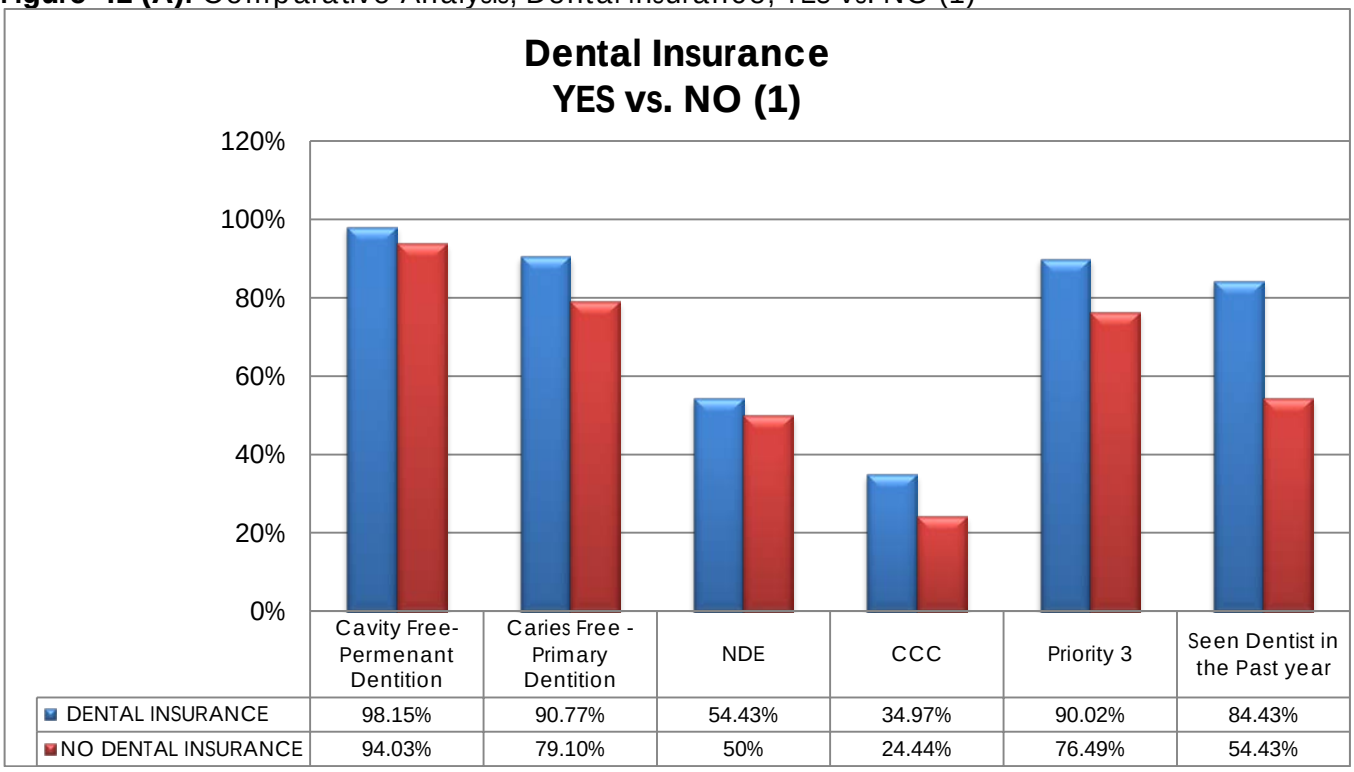
**Table-43:** Comparative Analysis; Dental Insurance; YES vs. NO

| | | Dental Insurance | | |
|---|---|---|---|---|
| | | **Yes** | **No** | **p-value** |
| **DMFT Score[a]** | | 0.41 | 0.41 | 0.948 |
| **deft Score[a]** | | 1.46 | 1.66 | 0.123 |
| **Caries Free - Permanent Dentition[b]** | | 3550 ( 98.15%) | 504 (94.03%) | < 0.001 |
| **Caries Free - Primary Dentition[b]** | | 3283 ( 90.77%) | 424 (79.10%) | < 0.001 |
| **Childhood Tooth Decay[b]** | **ECTD** | 74 (2.05%) | 18 (3.36%) | 0.054 |
| | **S-ECTD** | 34 (0.94%) | 3 (0.56%) | 0.382 |
| **Oral Health Status[b]** | **NDE** | 1966 (54.35%) | 268 (50.00%) | 0.059 |
| | **CCC** | 1265 (34.97%) | 131 (24.44%) | < 0.001 |
| | **NEC** | 176 (4.87%) | 81 (15.11%) | < 0.001 |
| **Priority Scores[b]** | **1** | 31 (0.86%) | 8 (1.49%) | 0.155 |
| | **2** | 330 (9.12%) | 118 (22.01%) | < 0.001 |
| | **3** | 3256 (90.025) | 410 (76.49%) | < 0.001 |
| **Dental Visit[b]** | **Yes** | 3054 (84.43%) | 293 (54.66%) | < 0.001 |
| **Existing Pain[b]** | **Yes** | 32 (0.88%) | 8 (1.49%) | 0.179 |

[a] Independent two sample T-test.

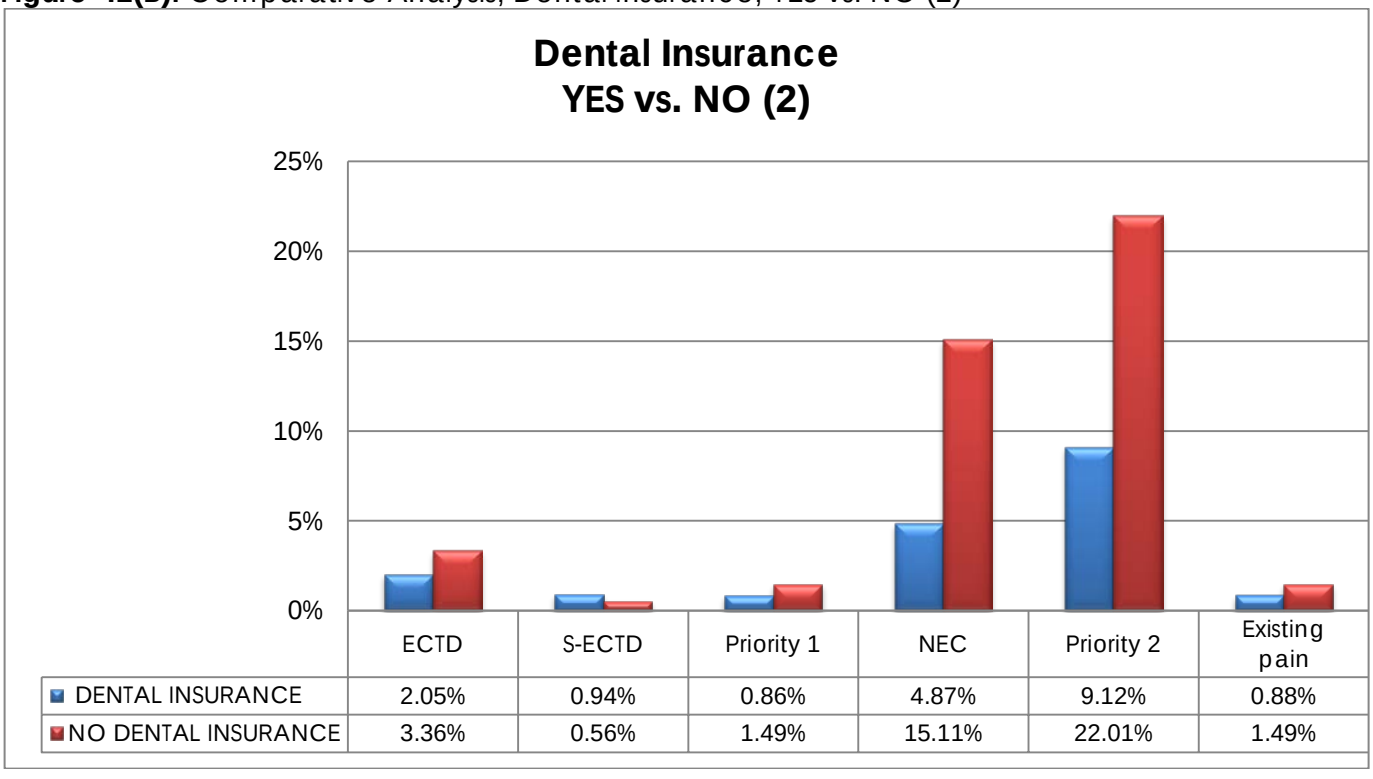
[b] Chi-square test.

**Figure-41 (A):** Comparative Analysis; Dental Insurance; YES vs. NO (1)




| | Cavity Free-Permenant Dentition | Caries Free - Primary Dentition | NDE | CCC | Priority 3 | Seen Dentist in the Past year |
|---|---|---|---|---|---|---|
| DENTAL INSURANCE | 98.15% | 90.77% | 54.43% | 34.97% | 90.02% | 84.43% |
| NO DENTAL INSURANCE | 94.03% | 79.10% | 50% | 24.44% | 76.49% | 54.43% |

**Figure-41(B):** Comparative Analysis; Dental Insurance; YES vs. NO (2)

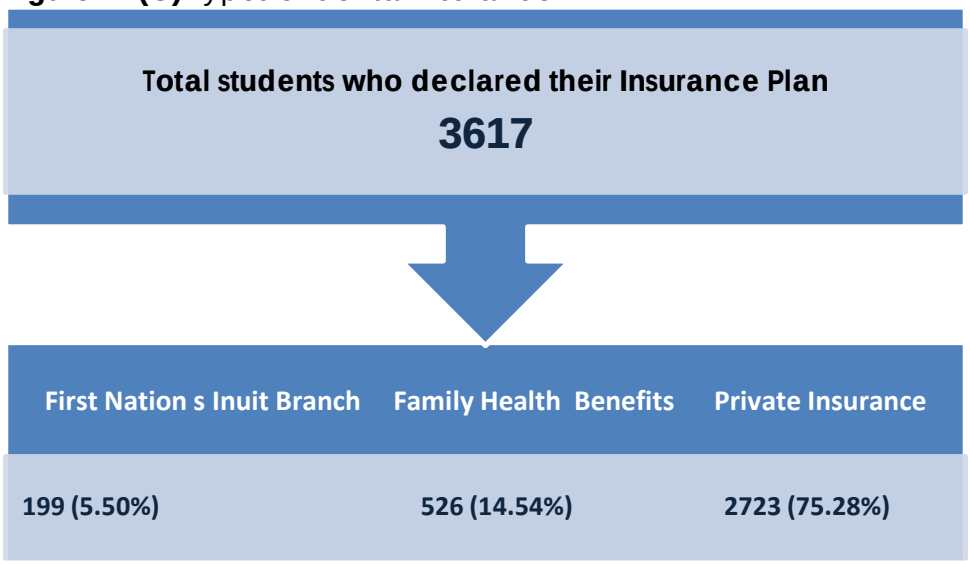



| | ECTD | S-ECTD | Priority 1 | NEC | Priority 2 | Existing pain |
|---|---|---|---|---|---|---|
| DENTAL INSURANCE | 2.05% | 0.94% | 0.86% | 4.87% | 9.12% | 0.88% |
| NO DENTAL INSURANCE | 3.36% | 0.56% | 1.49% | 15.11% | 22.01% | 1.49% |

*(P.S = Priority Score)*

The students who responded "YES" to the question about Dental Insurance, were further asked about the type of insurance they were affiliated with. **The Figure-41(C)** mentions the numbers and percentages associated with the 3 different types of insurance coverage.

**Figure-41(C):**Types of dental Insurance.




The First Nations and Inuit Health Branch is a branch of Health Canada which provides health services to the Aboriginal community.[14] Similarly Family Health Benefits/ Supplementary Health is "a range of health benefits available for low-income working families who meet the standards of an income test or are receiving the Saskatchewan Employment Supplement or the Saskatchewan Rental Housing Supplement. Eligibility for these benefits is determined by the Ministry of Social Services".[15] Private Insurance is the health coverage which is availed by people who can afford it either independently or through their work plan.

Generally, the students on three different insurance plans can roughly be categorized as Aboriginal (First Nations Inuit Health Branch), Low Income (Family Health Benefits/Supplemental Health) and Affluent/employed (Private Insurance). These categories should be kept in consideration while viewing the comparison of oral health measures between the types of insurance in **Table-44**.

**Table-44:**Types of dental insurance.

| | | Private Insurance | Family Health/ Supplementary Insurance | First Nations Insurance |
|---|---|---|---|---|
| DMFT Score | | 0.37 | 0.34 | 0.96 |
| deft Score | | 1.36 | 1.85 | 2.91 |
| Caries Free - Permanent Dentition | | 2687 (98.68%) | 516 (98.10%) | 183 (91.96%) |
| Caries Free - Primary Dentition | | 2493 (91.55%) | 457 (86.88%) | 168 (84.22%) |
| Childhood Tooth Decay | ECTD | 49 (1.80%) | 15 (2.85%) | 5 (2.51%) |
| | S-ECTD | 17 (0.62%) | 5 (0.95%) | 10 (5.02%) |
| Oral Health Status | NDE | 1538 (56.48%) | 266 (50.57%) | 58 (29.14%) |
| | CCC | 929 (34.12%) | 183 (34.79%) | 94 (47.24%) |
| | NEC | 120 (4.41%) | 37 (7.03%) | 14 (7.04%) |
| Priority Scores | 1 | 19 (0.70%) | 3 (0.57%) | 8 (4.02%) |
| | 2 | 219 (8.04%) | 67 (12.74%) | 36 (18.09%) |
| | 3 | 2485 (91.26%) | 456 (86.69%) | 155 (77.89%) |
| Dental Visit | Yes | 2361 (86.71%) | 399 (75.86%) | 137 (68.84%) |
| Existing Pain | Yes | 19 (0.70%) | 3 (0.57%) | 9 (4.52%) |
| Family Dentist | Yes | 2445 (89.79%) | 370 (70.34%) | 129 (64.82&) |
| Tobacco Usage | Yes | 1 (0.04%) | 0 (0%) | 2 ( 1.01%) |

Generally, the oral health of the children who had Private Insurance were found to be better followed by children on the Family Health Benefits, while the First Nations and Inuit Branch ones had the poorest oral health. Subsequently, we could conclude that the Aboriginal children had the poorest oral health, followed by Low Income. The relative high income population had better scores with regard to good oral health. This trend was found in 9 of the oral health measures. However, students on Family Health Benefits scored better in *DMFT, Priority Score 1, Pain* and *Tobacco usage* measures compared to the rest. Undoubtedly, the children on First Nations and Inuit Health Branch insurance measured the lowest with regard to oral health which were noticeably prominent in *S-ECTD,NDE, Priority Score 3, Dental Visit, Existing Pain* and *having a family dentist*.

This implies that there are also other factors involved in acquiring good oral health apart from just having dental insurance. **Figure-42(A)** and **Figure-42 (B)** illustrates the above mentioned information.

**Figure-42 (A):** Dental Insurance data.

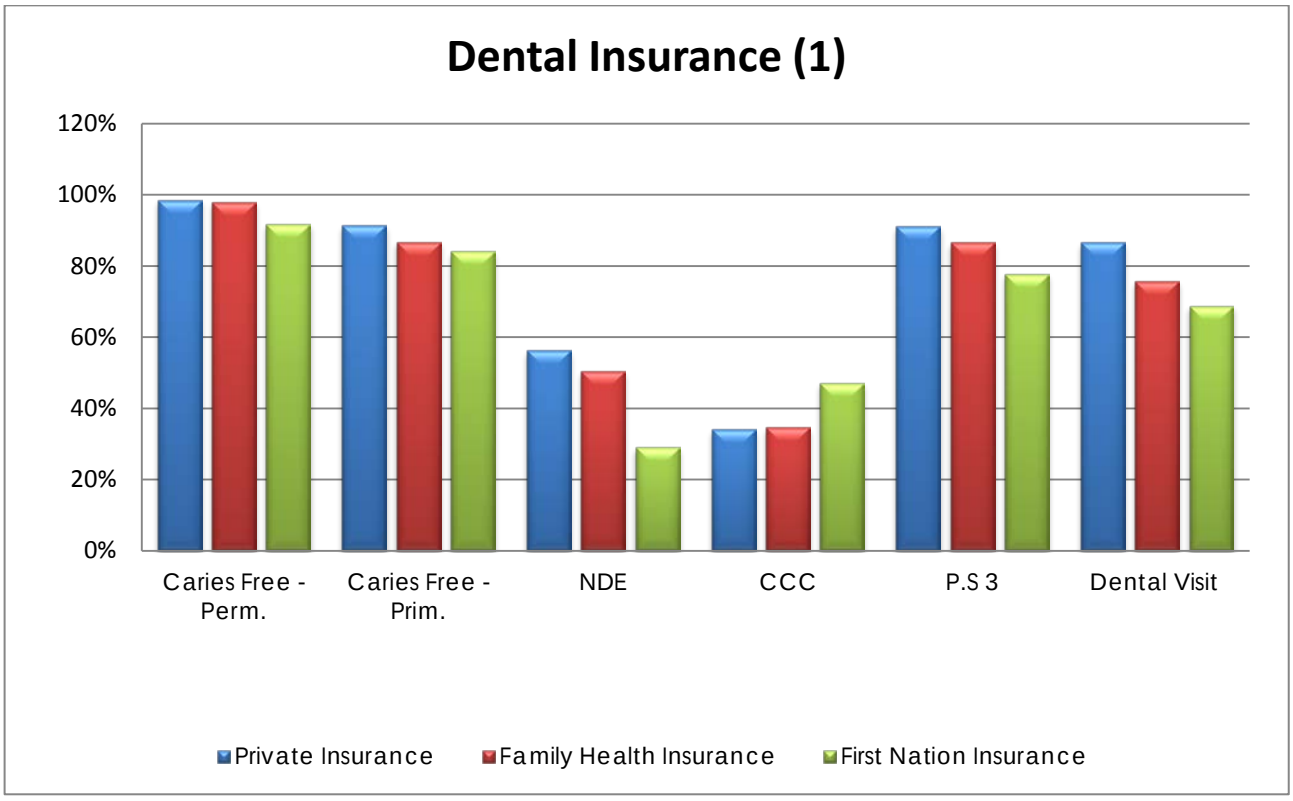
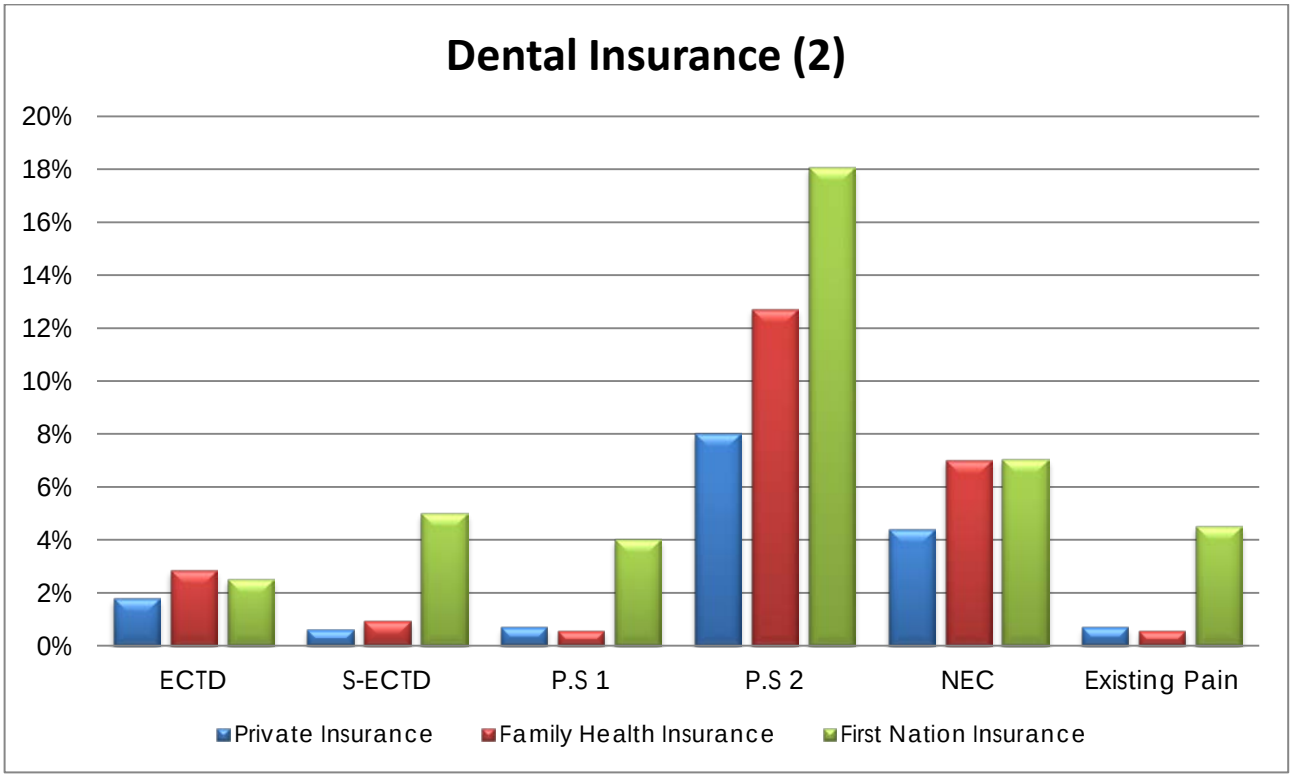



**Figure-42 (B):** Dental Insurance data.




*(P.S = Priority Score)*

**Aboriginal Status; Aboriginal vs. Non-Aboriginal:**

As mentioned earlier, on the basis of optional questions, children who declared their affiliation with First Nations and Inuit Health Branch Insurance were categorized as Aboriginal. Though the sample size was small (n=199), it was utilized for the comparative analysis between Aboriginal and Non-Aboriginal regarding their oral health.

Overall, the oral health of the Non-Aboriginal children were found to be better than the Aboriginal children. Out of the 15 oral health indicators examined in the two populations, 13 of them had better measurements with regard to oral health in Non-Aboriginal and 9 of them were statistically significant as well ( as the p-value is less than 0.05 = $\alpha$).

However, the Aboriginal students showed better measurements in CCC and NEC but the difference in measures of *deft score, S-ECTD, NDE, Priority Scores and Dental Visit* were prominent between the two populations indicating the better health of Non-Aboriginal children with statistically significant results.

**Table-45** illustrates the comparative analysis based on Aboriginal Status in detail.**Figure-43 (A)** and **Figure-43 (B)** further elaborates on the table content in detail.

**Table-45:** Comparative Analysis; Aboriginal vs. Non-Aboriginal.

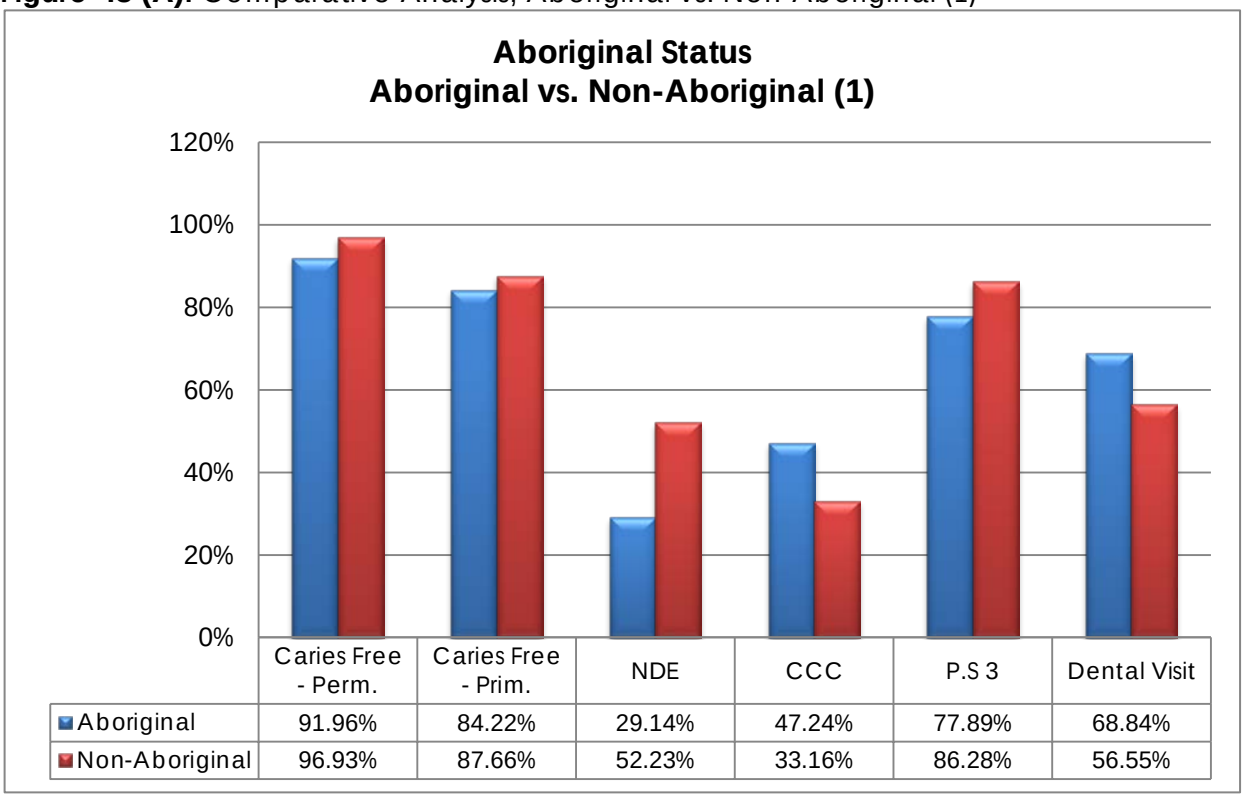
| | | Aboriginal Status | | |
|---|---|---|---|---|
| | | Aboriginal | Non-Aboriginal | p-value |
| DMFT Score[a] | | 0.96 | 0.43 | < 0.001 |
| deft Score[a] | | 2.91 | 1.6 | < 0.001 |
| Caries Free - Permanent Dentition[b] | | 183 (91.96%) | 6215 (96.93%) | < 0.001 |
| Caries Free - Primary Dentition[b] | | 168 (84.22%) | 5621 (87.66%) | 0.172 |
| Childhood Tooth Decay | ECTD[c] | 5 (2.51%) | 159 (2.46%) | 0.819 |
| | S-ECTD[b] | 10 (10.42%) | 54 (0.84%) | < 0.001 |
| Oral Health[b] Status | NDE | 58 (29.14%) | 3346 (52.23%) | < 0.001 |
| | CCC | 94 (47.24%) | 2124 (33.16%) | < 0.001 |
| | NEC | 14 (7.04%) | 502 (7.84%) | 0.681 |
| Priority Scores | 1[c] | 8 (4.02%) | 72 (1.12%) | 0.003 |
| | 2[b] | 36 (18.09%) | 805 (12.55%) | 0.021 |
| | 3[b] | 155 (77.89%) | 5532 (86.28%) | 0.001 |
| Dental Visit[b] | Yes | 137 (68.84%) | 3626 (56.55%) | 0.001 |
| Existing Pain[c] | Yes | 9 (4.52%) | 79 (1.23%) | 0.001 |
| Tobacco Usage[c] | Yes | 2 (1.94%) | 8 (0.12%) | 0.035 |

[a] Independent two sample T-test.

[b] Chi-square test.

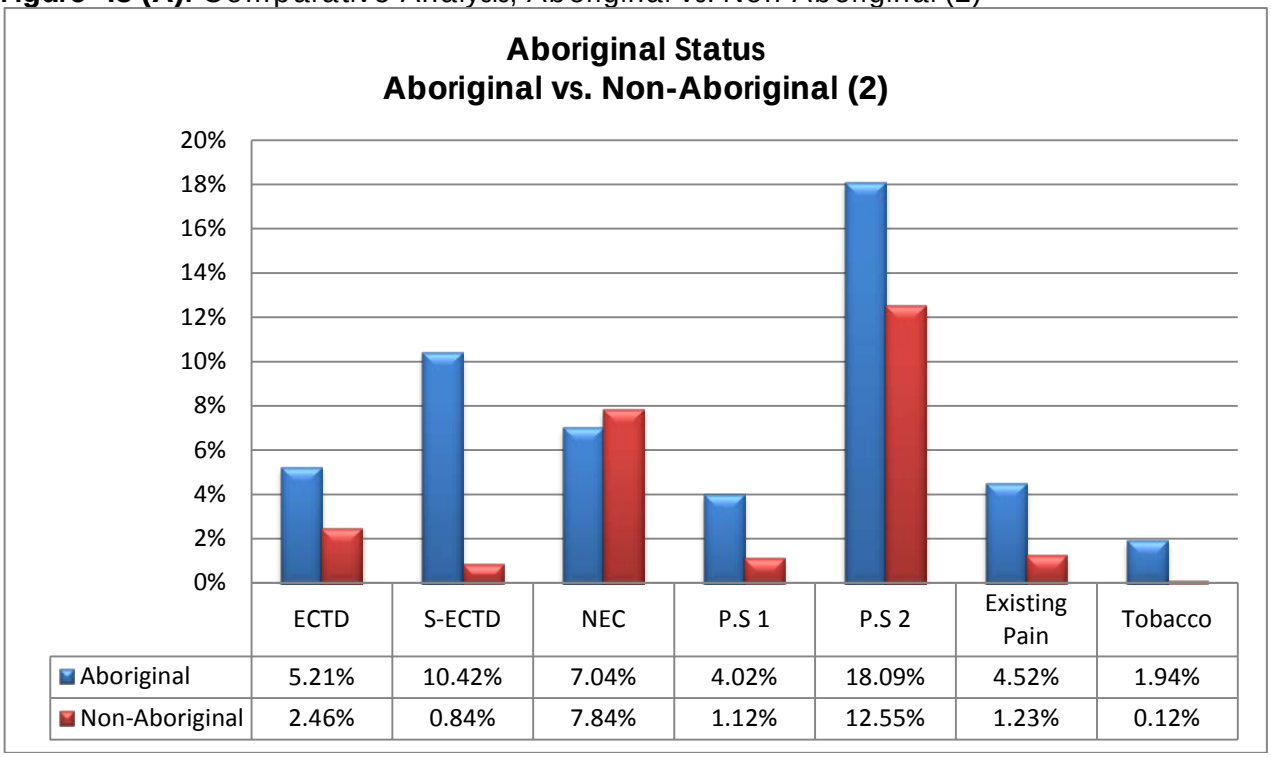
[c] Fisher's Exact test.

**Figure-43 (A):** Comparative Analysis; Aboriginal vs. Non-Aboriginal (1)




| | Caries Free - Perm. | Caries Free - Prim. | NDE | CCC | P.S 3 | Dental Visit |
|---|---|---|---|---|---|---|
| Aboriginal | 91.96% | 84.22% | 29.14% | 47.24% | 77.89% | 68.84% |
| Non-Aboriginal | 96.93% | 87.66% | 52.23% | 33.16% | 86.28% | 56.55% |

**Figure-43 (A):** Comparative Analysis; Aboriginal vs. Non-Aboriginal (2)




| | ECTD | S-ECTD | NEC | P.S 1 | P.S 2 | Existing Pain | Tobacco |
|---|---|---|---|---|---|---|---|
| Aboriginal | 5.21% | 10.42% | 7.04% | 4.02% | 18.09% | 4.52% | 1.94% |
| Non-Aboriginal | 2.46% | 0.84% | 7.84% | 1.12% | 12.55% | 1.23% | 0.12% |

*(P.S = Priority Score)*

## Epidemiological Studies:

An odds ratio (OR) is a measure of association between an exposure and an outcome. The OR represents that an outcome will occur given a particular exposure, compared to the odds of the outcome occurring in the absence of that exposure.[16]

In all of the following Odds Ratio measures, the outcome is "Dental Decay" and the exposures tested for an association with that outcome are:

1) Low Income Measure (LIM) Neighborhoods.
2) Location of the School.
3) Community Water Fluoridation.

**1) Low Income Measure (LIM) Neighborhood:**

**Table-46** provides the data for the calculation of odds ratio to examine the association of Low Income Measure (LIM)and Dental Decay.

**Table-46:** Calculation of Odds Ratio (OR); LIM neighborhoods.

| ODDS RATIO | Dental Decay | Decay free | Total |
|---|---|---|---|
| LIM | 338 | 268 | 606 |
| Non-LIM | 1669 | 1881 | 3550 |
| Total | 2007 | 2149 | 4156 |

Odds Ratio: **1.4** ( p-value = < 0.001)

Therefore, the students residing in LIM neighborhoods are 1.4 times more likely to have "Dental Decay"(Caries) than the students residing in Non-LIM neighborhoods in the city of Saskatoon. Odds Ratio of 1.4 showed that there was a weak to moderate association between the exposure and the outcome.

it was found that 44.24% of the students in LIM neighborhoods were cavity free, compared to Non-LIM neighborhood where the cavity free percentage was 52.98%. This association between the LIM neighborhoods and Dental Decay was found to be statistically significant as the p-value was < 0.001*( which is lower than the significance level = $\alpha = 0.05$) .*

**2) Location of School:**

**Table-47** provides the data for the calculation of odds ratio to examine the association of Location of School (Rural vs. Urban) and Dental Decay.

**Table-47:** Calculation of Odds Ratio (OR); Location.

| ODDS RATIO | Dental Decay | Decay free | Total |
|---|---|---|---|
| Rural | 976 | 976 | 1952 |
| Urban | 2263 | 2396 | 4659 |
| Total | 3239 | 3372 | 6611 |

Odds Ratio: **1.1** ( p-value = 0.29)

The students residing in Rural communities are almost as likely to have "Dental Decay"(Caries) than the students residing in Urban communities in the Saskatoon Health Region. Odds Ratio (OR) of 1.1 implies no association between the exposure and the outcome. To summarize, there was no association found between dental decay and residing in Urban or Rural communities.

In rural communities, 50% of the students were cavity free, compared to Urban locations where the cavity free percentage was 51.98%. This association between the Location and Dental Decay was found to be statistically *insignificant* as the p-value was 0.29 *( which is greater than the significance level = $\alpha = 0.05$).*

**3) Community Water Fluoridation:**

**Table-48** provides the data for the calculation of odds ratio to examine the association of Community Water Fluoridation (CWF) and Dental Decay.

**Table-48:** Calculation of Odds Ratio (OR); CWF.

| ODDS RATIO | Dental Decay | Decay free | Total |
|---|---|---|---|
| Non-Fluoridated | 378 | 364 | 742 |
| Fluoridated | 2861 | 3008 | 5869 |
| Total | 3239 | 3372 | 6611 |

Odds Ratio: **1.1** ( p-value = 0.29)

The students that *did not* have access to Community Water Fluoridation are almost as likely to have "Dental Decay"(Caries) than the students who had access to Community Water Fluoridation in the Saskatoon Health Region. Odds Ratio (OR) of 1.1 implies no association between the exposure and the outcome. To summarize, there was no association found between dental decay and Community Water Fluoridation.

49.05% of the students in Non-Fluoridated communities were cavity free, compared to Fluoridated communities where the cavity free percentage was 51.25%. This association

between the Water Fluoridation and Dental Decay was found out to be statistically *insignificant* as the p-value was 0.29 *( which is greater than the significance level = $\alpha$ = 0.05).*
The above calculation regarding CWF is in contrast to the Dental Health Screening 2008-2009 results where 60.02% of children were cavity free in Fluoridated communities. The Odds Ratio and the p-value both suggested an insignificant association between Water Fluoridation and Dental Decay in Saskatoon Health Region (2008-2009).

## Discussion

The oral health of Grade 1 and Grade 7 students in Saskatoon Health Region has gradually declined over the past two decades. It was the first time that caries-free students were less than 50% in age 6/ Grade 1 in 2013-2014. Overall the caries-free children in both grades combined were 51.43% which places SHR in an international comparison.[17] However, on the basis of national standards, except for one , all the Canadian Oral Health Framework (COHF) 2013-2018 guidelines related to age 6 and age 12 were not met. All the COHF guidelines related to improvement in Aboriginal oral health were met.

In 2013-2014, the past and the present dental caries were experienced more in Grade 1 students. The combined deft + DMFT for Grade 1 students was 2.79 compared to 1.25 in Grade 7. This clearly suggests that the age 12/ Grade 7 had better oral health. However, in comparison to the Dental Screening Report 2008-2009 where the average "deft" score of Grade 1 was 2.31, the Saskatoon Health Region has experienced a slight increase in the "deft" score of Grade 1 in 2013-2014. Nevertheless, the data suggests that the major contributor to the increased deft score of Grade 1 is due to the increased number of deciduous filled (f) teeth rather than decay (d) and extracted (e) teeth. The students of Grade 1 who had more than 7 filled (f) teeth in 2008-2009 were 226 (7.95%) compared to 413 (11.35%) in 2013-2014. This definitely indicates improved access and provision of dental treatment for Grade 1 students. However to analyze from the other perspective, 39.39% of Grade 1 students had fillings but 20.15% had current caries which reasonably concludes the success of treatment provision but indicates that more emphasis is required on caries prevention before age 6.

Early Childhood Caries (ECC) which was re-defined now as Early Childhood Tooth Decay (ECTD) is a destructive disease affecting the primary dentition of children under the age of 6 (Refer to **Appendix-C**). Overall, the Dental Screening 2013-2014 observed relatively lower cases of the disease. A total of 72 children were affected from ECTD and S-ECTD. However, no particular trend or factor was found affecting its incidence and hence, ECTD was evenly distributed amongst the population in a relative term.

Despite the high rate of dental decay observed in 2013-2014, the burden of poor dental health was not equally distributed amongst the students. In contrast to the total average deft+DMFT score of 2.05, the high deft+DMFT score was found in students from Low Income Neighborhoods (2.66), New Immigrants (2.45) and First nation (3.87. This demands for more attention towards these marginalized populations.

Similarly, poor oral health was observed in children who did not have Dental Insurance and did not visit the Dental office in the past year. Furthermore, 89.40% of the students who visited a Dental office had dental insurance. As there is no universal dental coverage, the Public Health dental services should be expanded to provide better access for children without insurance.

On the basis of Dental Insurance, apart from Private insurance, children on Family Health Benefits (FHB) and First Nations Inuit Health Branch (FNIB) were identified. As the low income children utilize FHB and Aboriginals are served by FNIB, both populations who are relatively underprivileged with low oral health awareness, still visited the dental office in higher

percentages compared to uninsured children where the percentage was 54.66%. This clearly indicates the significance of a universal dental health care system which has the capacity to overcome the factors and barriers. As advocated in *Healthy Family + Health Community = Healthy Children-2012:* "aligning with the provincial children's oral health strategy to improve oral health outcomes.....At a regional level this should include promotion of a universal dental care program."[(11)]

With regard to the School Location, the trends have changed since 2003-2004. In 2003-2004 Dental Health Program Screening observed better health in children from Urban Schools. However, in 2008-2009 and now in 2013-2014 the students from Rural locations exhibited relatively better oral health measures. This indicates the equality of services being provided to Rural communities over the past decade. On the contrary , it might also indicate the changes in lifestyle and habits in Urban locations which demands more oral health promotion and preventive services. However, it seems being a child from a rural or an urban location as a factor does not have a significant influence on the oral health. This is further concluded by the Odds Ratio which showed no association between the location and dental decay.

As mentioned earlier, the insignificant result regarding the effect of Fluoridation on oral health was the most striking dissimilarity from the past screening results. The children showed no significant difference in oral health measures when they were analyzed as being from Fluoridated and Non-Fluoridated communities. The major reason appears to be the fluoridation of water supply under the recommended optimal level of 0.7 mg/L. The Health Status Report 2008 states that "Saskatoon's level of water fluoridation has decreased steadily over the last 10 years and sits below optimal levels recommended by Health Canada".[(18)] As per the *Annual Water Quality Report of 2012* by the City of Saskatoon , the fluoride level was measured at 0.25 mg/L .[(7)] Multiple other measurements showed the same result. The fluoride can only provide dental benefit when it is adjusted to the optimal level. Hence, the communities where the water supplies were fluoridated, failed to receive the protection from decay despite being categorized as fluoridated. **Appendix-F** clearly shows that no community in SHR is fluoridating water at an optimum level except Quill Lake. Community water fluoridation has been advocated as the most effective public health measures of the 20th Century[(19)] and provides substantial protection against dental caries. [(20)] Hence, Community Water Fluoridation, which is the most cost effective means of preventing tooth decay, should not only be implemented at an extensive level but also to the optimum level of 0.7mg/L so that the it could effectively prevent dental decay as described by Health Canada in April 2008.[(6)]

As children are the most vulnerable population and the oral health issues are multi-factorial, engaging parents/guardians is key in improving the oral health. The dental hygiene and health before the age when children reach school is most critical in developing habits towards better oral health in the future. Involving the parents in counseling and oral health promotion can also play a huge role in achieving the guidelines to improve oral the health of children.[(5)]

## Recommendations

- Targeted dental insurance/coverage for vulnerable populations with implementation and/or expansion of dental public health clinics in health regions. Treatment targeted to vulnerable populations and provided free or at no charge.

- Healthy Public Policy to support adequate Community Water Fluoridation at the optimum level of 0.7mg/L.

- Expand the model of Population and Public Health Dental Clinic services and its promotion at the community and organizational level. Measures should be taken to make the Dental Clinic services more accessible to the community for basic dental treatment inclusive of adults.

- Establish partnerships with health providers for necessary referrals to the dental public health services.

- Emphasize oral health education and promotion at the community level.

- Develop oral health counseling and education programs to engage parents and extended families.

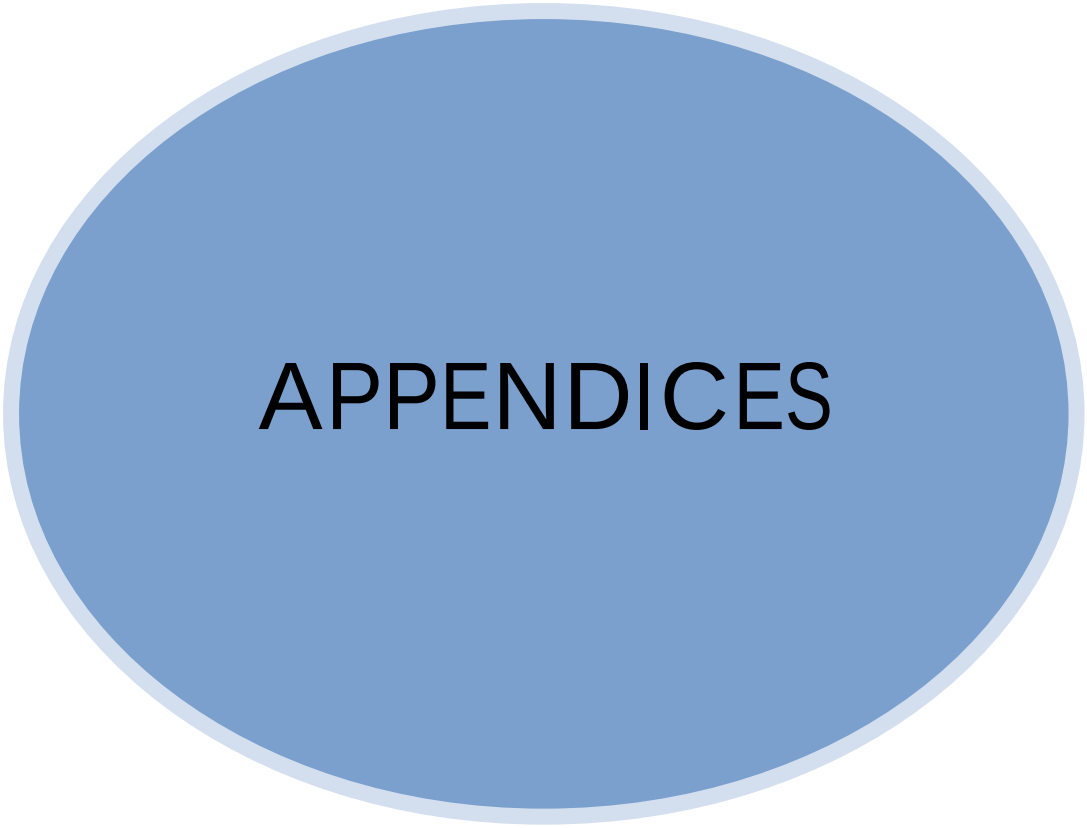
- Promotion of the message of "dental decay as a transmissible disease" by linking with pre and post-natal health providers.

- Provision of oral health prevention and treatment for vulnerable pregnant women and their families.

- Continue with the on-going oral health surveillance.

- Continue provision of preventive oral health services to children below the age of 6 through fluoride varnish and dental surveillance of high risk Pre-schoolers, Pre-Kindergarten and day cares in core communities.

- Continue with the combination of fluoride varnish and sealant programs to reduce dental decay for children in Kindergarten to Grade 8, especially in high risk areas.


APPENDICES

**Appendix-A : Dental Health by School (Grade One Students), Saskatoon Health Region, 2013-2014.**

| School Name | COHF 2013-2018 Guidelines | | | % ECTD | % NEC |
|---|---|---|---|---|---|
| | Average deft + DMFT | % Cavity free | % Current Caries | | |
| Aberdeen Composite School | 2.3 | 36.67 | 13.33 | 6.67 | 13.33 |
| Allan Composite School | 3.48 | 38.46 | 38.46 | 0 | 23.08 |
| Allegro Montessori School Inc. | 4.43 | 16.67 | 16.67 | 16.67 | 16.67 |
| Alvin Buckwold School | 2.65 | 54.72 | 24.53 | 11.32 | 9.43 |
| Annaheim School | 4.85 | 37.5 | 62.5 | 0 | 12.5 |
| Bishop Filevich School | 3.98 | 24 | 52 | 28 | 36 |
| Bishop Klein School | 3.5 | 36 | 28 | 16 | 20 |
| Bishop Pocock School | 3.82 | 44.44 | 11.11 | 5.56 | 0 |
| Bishop Roborecki School | 6.51 | 23.53 | 35.29 | 2.94 | 17.65 |
| Borden School | 2.73 | 37.5 | 25 | 0 | 12.5 |
| Brevoort Park School | 3.49 | 35.19 | 37.04 | 12.96 | 12.96 |
| Brownell School | 1.21 | 61.11 | 16.67 | 11.11 | 11.11 |
| Bruno School | 2.99 | 44.44 | 22.22 | 11.11 | 11.11 |
| Brunskill School | 1.73 | 51.16 | 20.93 | 0 | 13.95 |
| Buena Vista School | 4.55 | 36.36 | 31.82 | 13.64 | 18.18 |
| Bulyea Elementary | 1.88 | 55.56 | 22.22 | 11.11 | 11.11 |
| Cardinal Leger School | 1.86 | 58.73 | 14.29 | 0 | 6.35 |
| Caroline Robins School | 2.87 | 42.86 | 22.86 | 2.86 | 8.57 |
| Caswell Community School | 4.21 | 26.32 | 52.63 | 0 | 31.58 |
| Christian Centre Academy | 0.1 | 100 | 0 | 0 | 0 |
| Clavet Composite School | 1.88 | 58.33 | 16.67 | 0 | 8.33 |
| Clear Springs Hutterite School | 5.1 | 0 | 100 | 0 | 0 |

| School name | COHF 2013-2018 Guidelines | | | % ECTD | % NEC |
|---|---|---|---|---|---|
| | Average deft + DMFT | % Cavity free | % Current Caries | | |
| College Park School | 4.02 | 34.18 | 35.44 | 3.8 | 10.13 |
| Colonsay School | 3.1 | 60 | 40 | 0 | 30 |
| Confederation Park Community School | 6.04 | 21.28 | 42.55 | 6.38 | 19.15 |
| Cudworth School | 3.71 | 30.43 | 21.74 | 0 | 8.7 |
| Delisle Elementary School | 2.43 | 57.14 | 23.81 | 0 | 0 |
| Dr. John G. Egnatoff School | 2.48 | 53.16 | 16.46 | 5.06 | 7.59 |
| Drake School | 2.2 | 60 | 10 | 0 | 0 |
| Dundonald School | 2.53 | 51.25 | 22.5 | 5 | 11.25 |
| Dundurn School | 2.32 | 61.11 | 11.11 | 0 | 0 |
| Ecole canadienne-francaise | 0.56 | 82.86 | 8.57 | 2.86 | 5.71 |
| Ecole Providence | 2.21 | 44.44 | 11.11 | 0 | 11.11 |
| Ecole St. Isidore | 1.43 | 83.33 | 0 | 0 | 0 |
| Englefeld School | 7.73 | 0 | 75 | 25 | 62.5 |
| Fairhaven School | 2.88 | 34.15 | 29.27 | 0 | 19.51 |
| Father Robinson School | 2.55 | 57.14 | 8.93 | 5.36 | 1.79 |
| Father Vachon School | 4.87 | 22.73 | 22.73 | 0 | 18.18 |
| Forest Grove School | 2.52 | 51.92 | 17.31 | 5.77 | 5.77 |
| Georges Vanier School | 1.34 | 68 | 4 | 0 | 4 |
| Greystone Heights School | 1.93 | 52.5 | 30 | 5 | 20 |
| Hague Elementary School | 2.64 | 42.31 | 26.92 | 0 | 11.54 |
| Hanley Composite School | 3.27 | 16.67 | 16.67 | 0 | 0 |
| Henry Kelsey School | 2.37 | 40.91 | 20.45 | 9.09 | 11.36 |

| School name | COHF 2013-2018 Guidelines | | | % ECTD | % NEC |
|---|---|---|---|---|---|
| | Average deft + DMFT | % Cavity free | % Current Caries | | |
| Hepburn School | 1.46 | 72 | 12 | 0 | 12 |
| Hillcrest Hutterite School | 6.43 | 33.33 | 0 | 0 | 0 |
| Holliston School | 6 | 50 | 50 | 22.22 | 16.67 |
| Howard Coad School | 3.67 | 28.57 | 25 | 0 | 17.86 |
| Hugh Cairns VC School | 2.26 | 53.13 | 12.5 | 15.63 | 6.25 |
| Humboldt Public School | 3.68 | 31.58 | 36.84 | 0 | 21.05 |
| James L. Alexander School | 2.77 | 57.14 | 9.52 | 0 | 0 |
| John Dolan School | 2.77 | 66.67 | 0 | 0 | 0 |
| John Lake School | 1.62 | 56 | 20 | 0 | 12 |
| King George Community School | 5.43 | 25 | 41.67 | 0 | 25 |
| Laird School | 1.18 | 75 | 8.33 | 8.33 | 0 |
| Lake Lenore School | 2.1 | 50 | 37.5 | 0 | 25 |
| Lakeridge School | 2.16 | 64.15 | 15.09 | 0 | 7.55 |
| Lakeside Colony School | 3.96 | 14.29 | 14.29 | 14.29 | 0 |
| Lakeview School | 2.28 | 46.77 | 16.13 | 4.84 | 8.06 |
| Langham Elementary School | 2.2 | 54.84 | 19.35 | 0 | 16.13 |
| Lanigan Elementary School | 2.73 | 46.51 | 30.23 | 4.65 | 20.93 |
| Lawson Heights School | 2.97 | 26.67 | 46.67 | 0 | 46.67 |
| Leroy School | 0.6 | 75 | 0 | 0 | 0 |
| Lester B. Pearson School | 3.98 | 32 | 24 | 0 | 8 |
| Lord Asquith School | 2.1 | 62.5 | 18.75 | 6.25 | 12.5 |
| Lost River Hutterite Colony School | 2.77 | 66.67 | 0 | 0 | 0 |

| School name | COHF 2013-2018 Guidelines | | | % ECTD | % NEC |
|---|---|---|---|---|---|
| | Average deft + DMFT | % Cavity free | % Current Caries | | |
| Mayfair Community School | 4.52 | 26.32 | 21.05 | 0 | 10.53 |
| Montgomery School | 2.58 | 52.17 | 4.35 | 4.35 | 4.35 |
| Muenster School | 2.9 | 46.67 | 26.67 | 0 | 26.67 |
| Nokomis School | 2.57 | 35.29 | 17.65 | 0 | 11.76 |
| North Park Wilson School | 3.41 | 38.46 | 19.23 | 3.85 | 3.85 |
| Osler School | 2.1 | 42.86 | 9.52 | 0 | 9.52 |
| Pike Lake School | 1.77 | 66.67 | 0 | 0 | 0 |
| Pleasant Hill Community School | 6.55 | 13.64 | 59.09 | 13.64 | 27.27 |
| Pope John Paul II School | 2.2 | 52.5 | 20 | 0 | 12.5 |
| Prairie View Elementary School | 2.93 | 55.56 | 11.11 | 0 | 2.78 |
| Prince Philip School | 1.61 | 67.8 | 11.86 | 1.69 | 6.78 |
| Princess Alexandra Community School | 6.52 | 12.5 | 37.5 | 0 | 29.17 |
| Queen Elizabeth School | 4.51 | 35.29 | 35.29 | 11.76 | 17.65 |
| Quill Lake School | 3.77 | 33.33 | 66.67 | 33.33 | 33.33 |
| River Heights School | 1.18 | 78.38 | 8.11 | 8.11 | 2.7 |
| Riverbend Hutterite Colony School | 4.43 | 16.67 | 0 | 8.33 | 0 |
| Riverview Hutterite School | 4.35 | 50 | 25 | 0 | 0 |
| Roland Michener School | 3.13 | 37.5 | 22.5 | 0 | 10 |
| Rosthern Elementary School | 3.4 | 50 | 25 | 0 | 0 |
| Sask. Central Hutterite School | 4.1 | 0 | 0 | 0 | 0 |

| School name | COHF 2013-2018 Guidelines | | | % ECTD | % NEC |
|---|---|---|---|---|---|
| | Average deft + DMFT | % Cavity free | % Current Caries | | |
| Saskatoon Christian School | 1.28 | 72.73 | 22.73 | 0 | 13.64 |
| Saskatoon French School | 3.2 | 41.67 | 16.67 | 8.33 | 10.42 |
| Saskatoon Misbah School | 3.82 | 44.44 | 16.67 | 0 | 5.56 |
| Seventh-day Adventist Christian | 2.96 | 28.57 | 42.86 | 14.29 | 28.57 |
| Silverspring Elementary | 2.49 | 57.63 | 18.64 | 3.39 | 5.08 |
| Silverwood Heights School | 2.37 | 36.36 | 36.36 | 0 | 27.27 |
| Sister O'Brien School | 1.92 | 60.53 | 18.42 | 0 | 5.26 |
| South Corman Park School | 1.39 | 58.82 | 5.88 | 0 | 0 |
| St. Angela School | 2.77 | 53.33 | 13.33 | 0 | 6.67 |
| St. Anne School | 2.79 | 53.85 | 23.08 | 0 | 0 |
| St. Augustine School - Humboldt | 2.08 | 44.44 | 30.16 | 6.35 | 20.63 |
| St. Augustine School - Saskatoon | 1.95 | 55 | 20 | 5 | 15 |
| St. Bernard School | 2.35 | 53.57 | 17.86 | 0 | 7.14 |
| St. Dominic School - Humboldt | 1.46 | 70.21 | 12.77 | 2.13 | 8.51 |
| St. Dominic School - Saskatoon | 1.18 | 66.67 | 16.67 | 0 | 16.67 |
| St. Edward School | 4.41 | 50 | 31.25 | 0 | 6.25 |
| St. Frances School | 6.16 | 14.71 | 50 | 20.59 | 17.65 |
| St. George School | 3.43 | 36.67 | 16.67 | 3.33 | 6.67 |
| St. Gerard School | 3.6 | 37.84 | 33.78 | 4.05 | 16.22 |
| St. Goretti School | 3.06 | 39.13 | 30.43 | 8.7 | 26.09 |
| St. John School | 3.39 | 32.26 | 45.16 | 3.23 | 22.58 |
| St. Luke School | 1.98 | 56.25 | 3.13 | 0 | 0 |
| St. Marguerite School | 1.55 | 68.09 | 12.77 | 0 | 8.51 |
| St. Mark School | 3.63 | 33.33 | 33.33 | 0 | 20 |
| St. Mary Community School | 6.84 | 13.16 | 47.37 | 2.63 | 7.89 |

| School name | COHF 2013-2018 Guidelines | | | % ECTD | % NEC |
|---|---|---|---|---|---|
| | Average deft + DMFT | % Cavity free | % Current Caries | | |
| Saskatoon Christian School | 1.28 | 72.73 | 22.73 | 0 | 13.64 |
| Saskatoon French School | 3.2 | 41.67 | 16.67 | 8.33 | 10.42 |
| Saskatoon Misbah School | 3.82 | 44.44 | 16.67 | 0 | 5.56 |
| Seventh-day Adventist Christian | 2.96 | 28.57 | 42.86 | 14.29 | 28.57 |
| Silverspring Elementary | 2.49 | 57.63 | 18.64 | 3.39 | 5.08 |
| Silverwood Heights School | 2.37 | 36.36 | 36.36 | 0 | 27.27 |
| Sister O'Brien School | 1.92 | 60.53 | 18.42 | 0 | 5.26 |
| South Corman Park School | 1.39 | 58.82 | 5.88 | 0 | 0 |
| St. Angela School | 2.77 | 53.33 | 13.33 | 0 | 6.67 |
| St. Anne School | 2.79 | 53.85 | 23.08 | 0 | 0 |
| St. Augustine School - Humboldt | 2.08 | 44.44 | 30.16 | 6.35 | 20.63 |
| St. Augustine School - Saskatoon | 1.95 | 55 | 20 | 5 | 15 |
| St. Bernard School | 2.35 | 53.57 | 17.86 | 0 | 7.14 |
| St. Dominic School - Humboldt | 1.46 | 70.21 | 12.77 | 2.13 | 8.51 |
| St. Dominic School - Saskatoon | 1.18 | 66.67 | 16.67 | 0 | 16.67 |
| St. Edward School | 4.41 | 50 | 31.25 | 0 | 6.25 |
| St. Frances School | 6.16 | 14.71 | 50 | 20.59 | 17.65 |
| St. George School | 3.43 | 36.67 | 16.67 | 3.33 | 6.67 |
| St. Gerard School | 3.6 | 37.84 | 33.78 | 4.05 | 16.22 |
| St. Goretti School | 3.06 | 39.13 | 30.43 | 8.7 | 26.09 |
| St. John School | 3.39 | 32.26 | 45.16 | 3.23 | 22.58 |
| St. Luke School | 1.98 | 56.25 | 3.13 | 0 | 0 |
| St. Marguerite School | 1.55 | 68.09 | 12.77 | 0 | 8.51 |
| St. Mark School | 3.63 | 33.33 | 33.33 | 0 | 20 |
| St. Mary Community School | 6.84 | 13.16 | 47.37 | 2.63 | 7.89 |

| School name | COHF 2013-2018 Guidelines | | | % ECTD | % NEC |
|---|---|---|---|---|---|
| | Average deft + DMFT | % Cavity free | % Current Caries | | |
| St. Matthew School | 1.67 | 65.91 | 4.55 | 0 | 2.27 |
| St. Michael School | 5.1 | 19.35 | 58.06 | 3.23 | 29.03 |
| St. Paul School | 1.31 | 73.68 | 5.26 | 0 | 0 |
| St. Peter School | 2.43 | 45 | 18.33 | 6.67 | 8.33 |
| St. Philip School | 1.21 | 57.89 | 15.79 | 5.26 | 15.79 |
| St. Volodymyr School | 2.03 | 52.73 | 21.82 | 0 | 16.36 |
| Stobart Elementary Community School | 6.29 | 23.08 | 30.77 | 0 | 7.69 |
| Sutherland School | 3.38 | 46.15 | 28.21 | 5.13 | 17.95 |
| Swanson Christian School | 2.9 | 40 | 0 | 0 | 0 |
| Three Lakes School | 2.43 | 16.67 | 50 | 0 | 16.67 |
| Valley Christian Academy | 1.55 | 54.55 | 4.55 | 0 | 4.55 |
| Valley Manor Elementary School | 2.05 | 51.65 | 6.59 | 0 | 3.3 |
| Vanscoy School | 3.39 | 42.86 | 14.29 | 0 | 7.14 |
| Venture Heights Elementary School | 2.65 | 41.94 | 16.13 | 4.84 | 8.06 |
| Victoria School | 2.11 | 58.82 | 17.65 | 7.35 | 14.71 |
| Vincent Massey School | 4.1 | 30.77 | 34.62 | 3.85 | 19.23 |
| Viscount Central School | 4.85 | 37.5 | 37.5 | 0 | 0 |
| W.P. Bate Community School | 4.91 | 25 | 47.22 | 0 | 25 |
| Wadena Elementary | 5.73 | 9.38 | 53.13 | 12.5 | 21.88 |
| Wakaw School | 1.86 | 52.94 | 11.76 | 0 | 11.76 |
| Waldheim School | 2.27 | 58.62 | 10.34 | 0 | 3.45 |
| Warman Elementary School | 2.32 | 53.38 | 6.76 | 2.7 | 3.38 |
| Watrous Elementary | 3.52 | 28.81 | 20.34 | 3.39 | 13.56 |
| Watson Elementary School | 1.56 | 46.15 | 7.69 | 0 | 7.69 |
| Westmount Community School | 5.51 | 29.41 | 47.06 | 0 | 29.41 |
| Wildwood School | 4.51 | 13.64 | 50 | 18.18 | 36.36 |
| William Derby School | 4.16 | 50 | 37.5 | 0 | 6.25 |
| Wynyard Elementary | 2.21 | 51.85 | 18.52 | 0 | 14.81 |

**Miscellaneous: (Health Clinics and Offices);**

| School name | COHF 2013-2018 Guidelines | | | % ECTD | % NEC |
|---|---|---|---|---|---|
| | Average deft + DMFT | % Cavity free | % Current Caries | | |
| Humboldt Public Health Office | 4.1 | 0 | 100 | 100 | 0 |
| Mayfair Community Health Clinic | 1.1 | 0 | 100 | 0 | 100 |
| Public Health Services Dental Clinic | 13.48 | 0 | 100 | 0 | 68.75 |
| Riversdale Child Health Clinic | 6.1 | 0 | 100 | 100 | 100 |
| West Winds Primary Health Centre | 10.35 | 25 | 75 | 0 | 75 |
| White Buffalo Youth Lodge Dental | 8.1 | 0 | 100 | 0 | 0 |

**Note: Red font** in *Average deft + DMFT*, *% Cavity free* and *% Current Caries* indicates those schools that did not meet and **green** font indicates the schools that met the Canadian Oral Health Framework 2013-2018 Guidelines for age 6/ Grade 1 students regarding those specific measures.

COHF 2013-2018 Guidelines require:

- Average deft + DMFT to be < 2.5.
- % Cavity free to be ≥ 55%.
- % Current Caries to be < 15%.

**Appendix-B : Dental Health by School (Grade Seven Students), Saskatoon Health Region, 2013-2014**

| School Name | COHF 2013-2018 Guidelines | | % Unmet Dental needs | % NEC |
|---|---|---|---|---|
| | Average DMFT | % DMFT = 0 | | |
| Aberdeen Composite School | 1.82 | 40.91 | 13.64 | 0 |
| Allan Composite School | 2.14 | 42.86 | 42.86 | 28.57 |
| Alvin Buckwold School | 0.84 | 60 | 20 | 12 |
| Annaheim School | 1.43 | 57.14 | 0 | 0 |
| Bishop Filevich School | 1.41 | 48.15 | 18.52 | 7.41 |
| Bishop Klein School | 1.79 | 39.29 | 17.86 | 0 |
| Bishop Pocock School | 0.81 | 66.67 | 23.81 | 9.52 |
| Bishop Roborecki School | 1.58 | 57.5 | 7.5 | 5 |
| Borden School | 0.6 | 80 | 0 | 0 |
| Brevoort Park School | 0.79 | 79.17 | 4.17 | 0 |
| Brownell School | 0.9 | 61.9 | 4.76 | 4.76 |
| Bruno School | 0.33 | 66.67 | 0 | 0 |
| Brunskill School | 0.76 | 71.43 | 7.14 | 2.38 |
| Buena Vista School | 0.21 | 78.95 | 15.79 | 15.79 |
| Cardinal Leger School | 0.38 | 76.47 | 2.94 | 0 |
| Caroline Robins School | 1.67 | 42.86 | 4.76 | 4.76 |
| Caswell Community School | 0.9 | 59.52 | 2.38 | 0 |
| Christian Centre Academy | 0 | 100 | 0 | 0 |
| Clavet Composite School | 1.87 | 41.94 | 12.9 | 6.45 |
| Clear Springs Hutterite School | 0.5 | 50 | 0 | 0 |
| College Park School | 0.43 | 81.82 | 6.82 | 0 |
| Colonsay School | 0.2 | 80 | 0 | 0 |
| Confederation Park | 1.88 | 34.15 | 9.76 | 4.88 |
| Cudworth School | 1.26 | 43.48 | 17.39 | 8.7 |

| School Name | COHF 2013-2018 Guidelines | | % Unmet Dental needs | % NEC |
|---|---|---|---|---|
| | Average DMFT | % DMFT = 0 | | |
| Dalmeny High School | 0.76 | 65.52 | 0 | 0 |
| Delisle Composite School | 1 | 46.15 | 3.85 | 0 |
| Dr. John G. Egnatoff School | 0.38 | 78.26 | 7.25 | 2.9 |
| Drake School | 0.33 | 66.67 | 16.67 | 16.67 |
| Dundonald School | 0.79 | 61.4 | 7.02 | 3.51 |
| Ecole canadienne-francaise | 0.24 | 86.21 | 0 | 0 |
| Ecole Providence | 0.4 | 80 | 0 | 0 |
| Ecole St. Isidore | 1 | 75 | 0 | 0 |
| Englefeld School | 0.23 | 76.92 | 23.08 | 23.08 |
| Fairhaven School | 1.07 | 57.14 | 0 | 0 |
| Father Robinson School | 0.38 | 84.91 | 5.66 | 1.89 |
| Father Vachon School | 1 | 30 | 0 | 10 |
| Forest Grove School | 0.69 | 69.23 | 2.56 | 7.69 |
| Georges Vanier School | 0.51 | 77.14 | 2.86 | 0 |
| Greystone Heights School | 0.34 | 79.55 | 4.55 | 2.27 |
| Hague High School | 0.95 | 60 | 0 | 0 |
| Hanley Composite School | 0.45 | 80 | 0 | 0 |
| Henry Kelsey School | 0.81 | 66.67 | 3.7 | 0 |
| Hepburn School | 0.86 | 66.67 | 4.76 | 0 |
| Hillcrest Hutterite School | 0 | 100 | 0 | 0 |
| Holliston School | 0.41 | 88.24 | 23.53 | 17.65 |
| Howard Coad School | 2.06 | 66.67 | 5.56 | 5.56 |
| Hugh Cairns VC School | 1.08 | 66.67 | 8.33 | 8.33 |
| Humboldt Public School | 0.77 | 61.54 | 0 | 3.85 |

| School Name | COHF 2013-2018 Guidelines | | % Unmet Dental needs | % NEC |
|---|---|---|---|---|
| | Average DMFT | % DMFT = 0 | | |
| James L. Alexander School | 1.68 | 52 | 4 | 0 |
| John Dolan School | 0.25 | 75 | 0 | 0 |
| John Lake School | 0.76 | 76.47 | 11.76 | 5.88 |
| King George Community | 1.06 | 50 | 25 | 12.5 |
| Laird School | 2.6 | 20 | 0 | 0 |
| Lake Lenore School | 1.6 | 55 | 5 | 0 |
| Lakeridge School | 0.51 | 62.26 | 5.66 | 3.77 |
| Lakeside Colony School | 1.67 | 33.33 | 33.33 | 0 |
| Lakeview School | 0.79 | 59.02 | 3.28 | 3.28 |
| Lanigan Elementary School | 0.82 | 65.79 | 7.89 | 2.63 |
| Lawson Heights School | 0.55 | 75 | 5 | 5 |
| Leroy School | 2.89 | 11.11 | 44.44 | 11.11 |
| Lester B. Pearson School | 1.34 | 51.72 | 3.45 | 3.45 |
| Lord Asquith School | 0.63 | 63.16 | 15.79 | 10.53 |
| Lost River Hutterite Colony | 0 | 100 | 0 | 0 |
| Mayfair Community School | 1.14 | 42.86 | 0 | 0 |
| Montgomery School | 0.96 | 60.87 | 0 | 0 |
| Muenster School | 1.59 | 47.06 | 11.76 | 0 |
| Nokomis School | 0 | 100 | 0 | 0 |
| North Park Wilson School | 2 | 43.48 | 17.39 | 4.35 |
| Osler School | 1 | 65.22 | 0 | 0 |
| Pleasant Hill Community | 3.88 | 17.65 | 29.41 | 17.65 |
| Pope John Paul II School | 0.3 | 69.57 | 4.35 | 8.7 |
| Prince Philip School | 0.69 | 65.52 | 3.45 | 3.45 |

| School Name | COHF 2013-2018 Guidelines | | % Unmet Dental needs | % NEC |
|---|---|---|---|---|
| | Average DMFT | % DMFT = 0 | | |
| Princess Alexandra | 3.36 | 36.36 | 9.09 | 0 |
| Queen Elizabeth School | 2 | 50 | 0 | 0 |
| Quill Lake School | 0.5 | 66.67 | 33.33 | 33.33 |
| River Heights School | 1 | 58.82 | 0 | 0 |
| Riverbend Hutterite Colony | 1.33 | 66.67 | 0 | 0 |
| Roland Michener School | 1 | 64.52 | 6.45 | 3.23 |
| Rosthern High School | 2.63 | 40 | 20 | 3.33 |
| Sask. Central Hutterite School | 2 | 50 | 50 | 0 |
| Saskatoon Christian School | 0.86 | 62.07 | 3.45 | 3.45 |
| Saskatoon French School | 0.7 | 60 | 0 | 0 |
| Saskatoon Misbah School | 1.64 | 50 | 0 | 0 |
| Seventh-day Adventist Christian | 1 | 0 | 0 | 0 |
| Silverspring Elementary | 0.84 | 61.82 | 0 | 0 |
| Silverwood Heights School | 0.82 | 68.18 | 9.09 | 4.55 |
| Sister O'Brien School | 0.19 | 87.5 | 0 | 0 |
| St. Angela School | 1.23 | 48.39 | 0 | 0 |
| St. Anne School | 0.74 | 65.22 | 4.35 | 4.35 |
| St. Augustine School - Humboldt | 1.4 | 55.56 | 24.44 | 8.89 |
| St. Augustine School - Saskatoon | 1.08 | 65.38 | 3.85 | 0 |
| St. Bernard School | 0.8 | 72 | 0 | 0 |
| St. Dominic School - Humboldt | 0.68 | 77.5 | 5 | 5 |
| St. Dominic School - Saskatoon | 1.38 | 68.75 | 0 | 0 |
| St. Edward School | 0.67 | 72.22 | 16.67 | 11.11 |

| School Name | COHF 2013-2018 Guidelines | | % Unmet Dental needs | % NEC |
|---|---|---|---|---|
| | Average DMFT | % DMFT = 0 | | |
| St. Frances School | 2.2 | 50 | 40 | 20 |
| St. George School | 0.5 | 77.78 | 11.11 | 5.56 |
| St. Gerard School | 1.15 | 66.67 | 7.41 | 3.7 |
| St. Goretti School | 0.86 | 58.62 | 10.34 | 6.9 |
| St. John School | 0.36 | 85.71 | 14.29 | 14.29 |
| St. Luke School | 0.89 | 60.87 | 4.35 | 4.35 |
| St. Marguerite School | 0.9 | 60.78 | 5.88 | 0 |
| St. Mark School | 0.82 | 65.79 | 13.16 | 7.89 |
| St. Mary Community School | 4.61 | 12.12 | 60.61 | 18.18 |
| St. Matthew School | 0.54 | 82.05 | 2.56 | 0 |
| St. Michael School | 5.38 | 15.38 | 38.46 | 0 |
| St. Paul School | 0.64 | 63.64 | 0 | 0 |
| St. Peter School | 1 | 59.42 | 7.25 | 4.35 |
| St. Philip School | 1.09 | 50 | 9.09 | 4.55 |
| St. Volodymyr School | 0.53 | 83.33 | 2.78 | 2.78 |
| Stobart Community High | 1.06 | 50 | 22.22 | 11.11 |
| Sutherland School | 0.91 | 65.63 | 25 | 18.75 |
| Swanson Christian School | 0.25 | 75 | 0 | 0 |
| Three Lakes School | 1.1 | 50 | 10 | 10 |
| Valley Christian Academy | 0.73 | 69.23 | 0 | 0 |
| Valley Manor Elementary | 0.85 | 70.73 | 4.88 | 2.44 |
| Vanscoy School | 0.91 | 63.64 | 0 | 0 |
| Venture Heights Elementary | 0.91 | 63.04 | 2.17 | 4.35 |
| Victoria School | 0.58 | 75 | 4.17 | 0 |

| School Name | COHF 2013-2018 Guidelines | | % Unmet Dental needs | % NEC |
|---|---|---|---|---|
| | Average DMFT | % DMFT = 0 | | |
| Vincent Massey School | 2.09 | 56.52 | 17.39 | 8.7 |
| Viscount Central School | 0.3 | 80 | 0 | 0 |
| W.P. Bate Community School | 0.86 | 59.09 | 13.64 | 4.55 |
| Wadena Composite School | 2.13 | 43.33 | 26.67 | 13.33 |
| Wakaw School | 0.84 | 52.63 | 15.79 | 15.79 |
| Waldheim School | 0.32 | 81.82 | 4.55 | 4.55 |
| Walter W. Brown High School | 0.77 | 69.23 | 7.69 | 3.85 |
| Warman Community Middle | 0.61 | 73.08 | 1.92 | 1.92 |
| Watrous Elementary | 1.22 | 67.35 | 6.12 | 2.04 |
| Watson Elementary School | 1.83 | 50 | 0 | 0 |
| Westmount Community | 1.6 | 60 | 20 | 10 |
| Wildwood School | 0.11 | 94.74 | 0 | 0 |
| William Derby School | 0.78 | 52.17 | 13.04 | 8.7 |
| Wynyard Composite High | 1.55 | 55 | 0 | 0 |

**Note:** **Red font** in *Average DMFT* and *% DMFT = 0 Caries* indicates those schools that did not meet and **green** font indicates the schools that met the Canadian Oral Health Framework 2013-2018 Guidelines for age 12/ Grade 7 students regarding those specific measures.

COHF 2013-2018 Guidelines require:

- Average DMFT to be < 1
- % DMFT = 0 to be > 70%

## Appendix-C : Dental Screening Program Definitions 2013-2014.

**deft/DMFT:**

- index used to measure disease experience. It is the count of the number of decayed, extracted (due to caries), and filled **deciduous** teeth of an individual and the number of decayed, missing and filled (due to caries) **permanent** teeth of an individual.

**deft:**

**decay:**

- visual or obvious decay of primary teeth
- discoloration or loss of translucency typical of undermined or de-mineralized enamel
- the tooth may or may not be restorable.

**extracted:**

- the primary teeth that have been extracted because of dental caries. Teeth missing for other reasons (i.e.: ortho, trauma, heredity) are not recorded.

**filled:**

- a primary tooth with a permanent or temporary restoration as a result of caries
- if the tooth has a defective restoration without evidence of decay. (**Note**: Record as broken/fractured/lost).

DMFT:

**Decay:**

- visual or obvious decay of permanent teeth
- discoloration or loss of translucency typical of undermined or de-mineralized enamel
- the tooth may or may not be restorable.

**Missing:**

- the permanent teeth that have been extracted as a result of dental caries. Teeth lost for other reasons (i.e.: ortho, trauma, heredity) are not recorded.

**Filled:**

- a permanent tooth with a permanent or temporary restoration as a result of caries
- if the tooth has a defective restoration without evidence of decay. (**Note**: Record as broken/fractured/lost).

**Note - Recurrent decay:**

- when a tooth has visible recurrent decay (around a filling) then the tooth is marked as **decayed** even though it may have a restoration in place.
- when a tooth has a restoration in place with **no** visible recurrent decay (around a filling) but decay is visible on another surface (e.g. mesial, distal) record the tooth as **decayed.**

**Pain:**

- pain as a result of tooth decay, injury, periodontal disease, or over retention.

**Infection:**

- infection visible (abscess).

**Broken/Fractured/Lost:**

- a tooth that has been restored where the restoration (i.e.: crown, amalgam) has failed and there is **no obvious decay**.

**Restored/Fractured:**

- fracture of the crown involving the dentin. The tooth is restored.

**Non-restored/Fractured:**

- fracture of the crown involving the dentin. The tooth is not restored or the restoration has been lost.

**ECTD*:**

- is the presence of one or more decayed (noncavitated or cavitated lesions), missing (due to caries), or filled tooth surfaces in any primary tooth in a child 71 months of age or younger. (American Academy of Pediatric Dentistry, 2008)
  *Dental Screening Database has formula set to calculate this automatically.

**S-ECTD*:**

- is any sign of smooth-surface caries in children younger than 3 years of age. From ages 3 through 5, one or more cavitated, missing (due to caries), or filled smooth surfaces in primary maxillary anterior teeth or a decayed, missing or filled score of ≥4 (age 3), ≥5 (age 4), or ≥6 (age 5) surfaces constitutes S-ECC. (American Academy of Pediatric Dentistry, 2008).
  *Dental Screening Database has formula set to calculate this automatically.

**Notes:**

- **Supernumerary Teeth:**
  - supernumerary teeth are not counted. You must decide which tooth is the legitimate occupant of the space.
- **Overretained:**
  - where both primary and permanent teeth occupy the same tooth space only the permanent tooth is considered.
- **Non-vital Teeth:**
  - are to be scored as if they are vital.

**Priority 1:**

- pain and/or infection present
- **urgent**, requires immediate attention

**Priority 2:**

- ECC or S-ECC
- visible decay in 1-4 quadrants
- treatment required as soon as possible

**Priority 3:**

- no visible decay

**Note:** Suspicious areas recorded that **may** be decay as **"stained".**

**Status:**

**No Decay Experience (NDE):**

- indicates that no decay, fillings or extractions are evident.

**Complete Caries Care (CCC):**

- indicates that all decayed teeth appear to have been treated

**Partial Caries Care (PCC):**

- indicates that some teeth have been treated, but decay is still evident

**No Evidence Care/Neglect (NEC):**

- indicates that there is decay but no evidence of past or present dental treatment

## Formulas:

**Priority 1:**
Pain
Infection

**Priority 2:**
Quadrants 1-4 marked
d/D = 1 or more
ECC or S-ECC

**Priority 3:**
Blank – Pain
Blank - Infection
Blank – Quadrants 1-4
Blank – ECC+
d/D = 0
☉ Neither is marked

**NDE**:
deft/DMFT = 0

**CCC:**
d, D = 0; e, f, M & F = 1 or more

**PCC:**
d/D = 1 or more **and** e, f, M, F = 1 or more

**NEC:**
d/D = 1 or more **and** e, f, M, F = 0

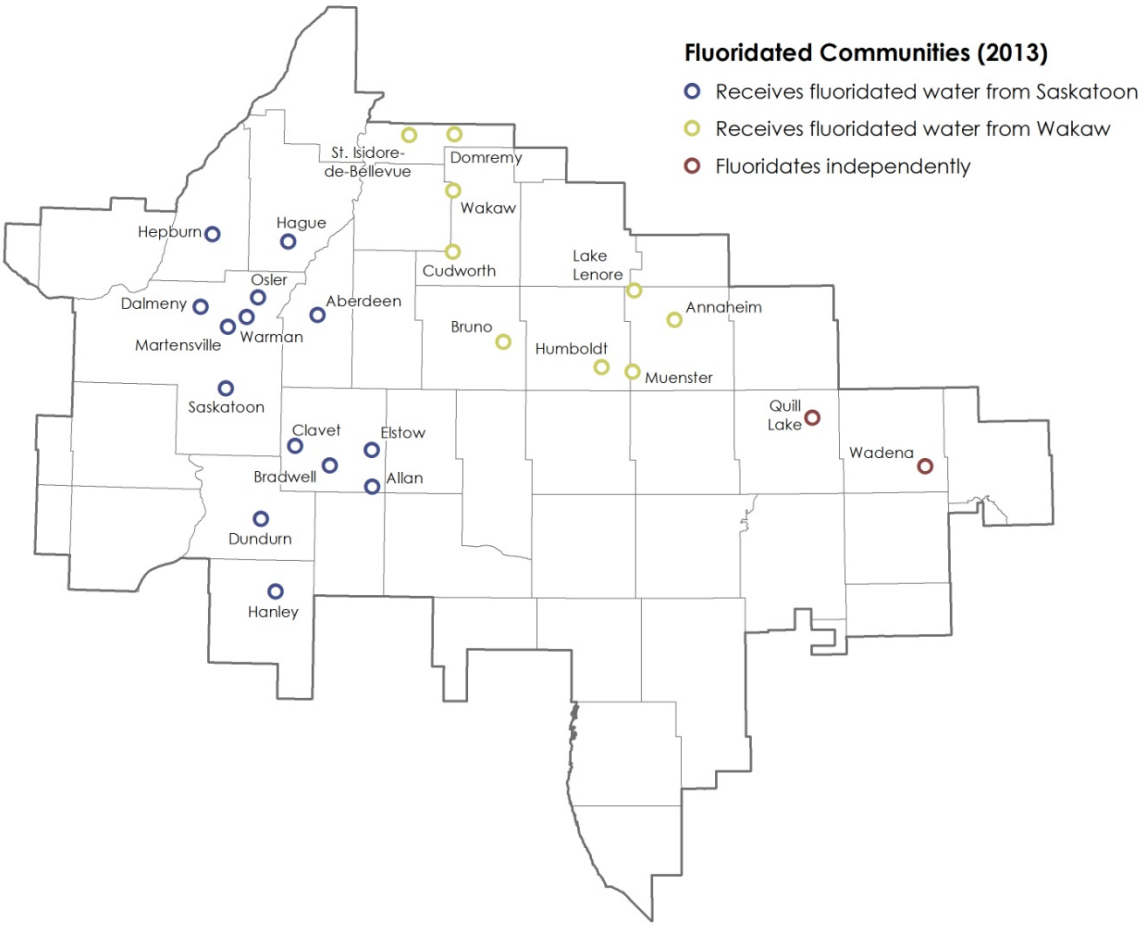
**Appendix-D : List of Fluoridated Communities in Saskatoon Health Region '2013-2014.**

| Water Fluoridated Communities |
|---|
| Aberdeen * |
| Allan* |
| Annaheim** |
| St. Isidore Bellevue** |
| Bradwell* |
| Bruno** |
| Clavet* |
| Cudworth** |
| Domremy** |
| Dalmeny* |
| Elstow* |
| Dundurn* |
| Hague* |
| Hanley* |
| Hepburn* |
| Humboldt** |
| Lake Lenore** |
| Martensville* |
| Muenster** |
| Osler* |
| Quill Lake |
| Saskatoon |
| Wadena |
| Wakaw |
| Warman * |

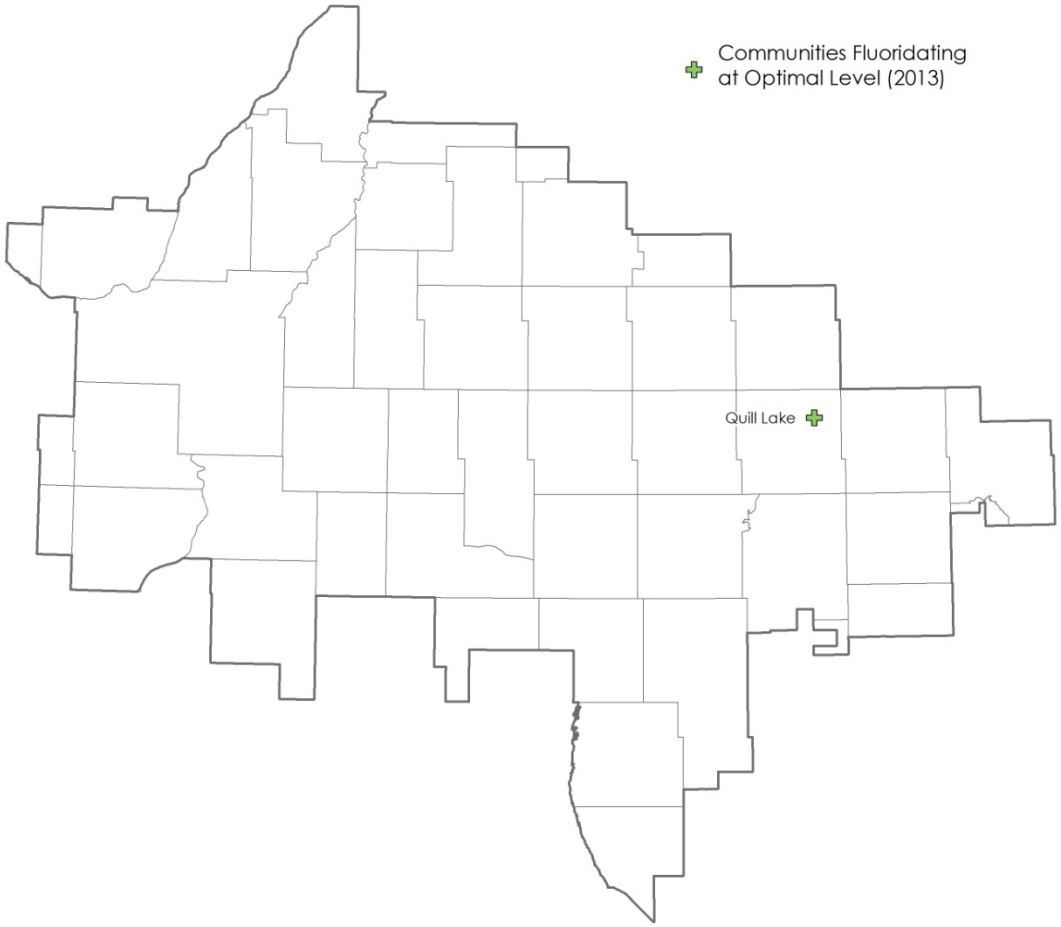
* Receive fluoridated water from the City of Saskatoon Water Treatment Plant.

** Receive fluoridated water from the Town of Wakaw Water Treatment Plant.

**Appendix-E:** **Map of SHR Communities with Access to Water Fluoridation.**



**Appendix-F:** Map of SHR Communities with Water Fluoridation at optimum level.




**Note:** None of the Water Fluoridated Communities have access to optimal level of fluoride (0.7 mg/L) except Quill Lake.

| Saskatoon Water Plant - Annual Fluoride Level (mg/L) | | | | | |
|---|---|---|---|---|---|
| 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| 0.48 | 0.52 | 0.63 | 0.25 | 0.16 | 0.61 |

| Wakaw Water Plant- Annual Fluoride Level (mg/L) | | | | | |
|---|---|---|---|---|---|
| 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| 0.65 | 0.57 | 0.60 | 0.42 | 0.48 | 0.61 |

| Quill Lake Water Plant - Annual Fluoride Level (mg/L) | | | | |
|---|---|---|---|---|
| 2010 | 2011 | 2012 | 2013 | 2014 |
| 0.78 | 0.79 | 0.73 | 0.80 | 0.80 |

| Wadena Water Plant - Annual Fluoride Level (mg/L) | | | | | | |
|---|---|---|---|---|---|---|
| 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
| 0.64 | 0.54 | 0.51 | 0.54 | 0.47 | 0.58 | 0.34 |

**Appendix-G: Dental Screening Information Letter'2013-2014**

Government of Saskatchewan
Ministry of Health

# Dental Screening Program Grade 1 and 7 Students

Dear Parent or Guardian,

A licensed oral health professional will provide a dental screening for your child on _____.

The dental screening will include the use of a small flashlight and tongue depressor or a sterilized mouth mirror. After the dental screening has been done, a letter will be sent home with your child. This screening does not replace regular checkups at your dental office.

The information collected from the screening will be used to plan and develop preventive program services based on the needs of your community.

Your child will receive a dental screening unless you contact: _____.

Your child's Personal Health Services number is required for statistical purposes.
Complete the bottom portion of this letter and return to the school by: _____.

**Dental Screening Program**

**Enter your child's Personal Health Services Number here** →

**Saskatchewan Health Services**
☐☐☐ ☐☐☐ ☐☐☐

**Health Region:** _____

**School:** _____ **Grade:** _____

**Child's Name:** _____
(Last) (First)

**Birthdate:** _____/_____/_____ **Male:** ☐ **Female:** ☐
(day) (month) (year)

**Address:** _____
Street Town/City Postal Code

**Home Phone:** _____ **Cell phone:** _____ **Email:** _____

**Answer the following questions (optional):**

1. Does your child have a family dentist that they see regularly? ☐ Yes ☐ No ☐ Not sure
2. Has your child been to the dentist in the past year? ☐ Yes ☐ No ☐ Not sure
3. Does your child have dental insurance/coverage? ☐ Yes ☐ No ☐ Not sure
   **If Yes to question 3**, what type of insurance does your child have?
   - ☐ First Nations Inuit Branch (Non-insured Health Benefits Program)
   - ☐ Family Health Benefits/Supplementary Health
   - ☐ Private Insurance (example: insurance through work plan)
4. Has your child immigrated to Canada in the past 2 years? ☐ Yes ☐ No ☐ Not sure
   **If yes to question 4**, from what country? _____

**August 2013**
**DH 276**

**Dental Health**

**Office Use Only**

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17 | 16 | 15 | 14 | 13 | 12 | 11 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| | | 55 | 54 | 53 | 52 | 51 | 61 | 62 | 63 | 64 | 65 | | |
| | | 85 | 84 | 83 | 82 | 81 | 71 | 72 | 73 | 74 | 75 | | |
| 47 | 46 | 45 | 44 | 43 | 42 | 41 | 31 | 32 | 33 | 34 | 35 | 36 | 37 |

- ☐ Existing Pain
- ☐ Infection
- ☐ Caries requiring tx
- ☐ Stain/material alba/ supra cal
- ☐ Gingivitis
- ☐ ECTD
- ☐ Tobacco (smoke/chew)
- ☐ Non-Restored fractures
- ☐ Broken/ lost/ redecayed fillings
- ☐ Malocclusion
- ☐ S-EDTD

**Comments/Recommendations/Observations:**

**Appendix-H: Dental Screening Results Letter'2013-2014 ( Ministry of Health, Govt. of SK)**

Saskatchewan Ministry of Health

Dental Health

# Dental Screening Results

Dear Parent/Guardian:

Date:

Today I did a dental screening for _____ at _____.
(Name of Site)

If you have questions, call _____ at _____.
(Oral Health Professional) (Phone Number)

_____.
(Address)

- ❑ No obvious cavities seen. If your dentist takes x-rays, hidden cavities between the teeth may be seen.
- ❑ Pain and/or infection is present. Your child needs to see a dentist **urgently**.
- ❑ Cavity/cavities on _____side(s) of your child's mouth. Your child needs to see a dentist **soon**.
- ❑ Cavity/cavities seen on your child's front **baby** teeth. These teeth will fall out around age 6, but if there is pain or infection see a dentist immediately.
- ❑ Broken or lost filling, or lost crown. Your child needs to see a dentist **soon**.
- ❑ Suspicious areas on your child's teeth may be cavities. Your child needs to see a dentist.
- ❑ Space maintainer/appliance/retainer requires attention. Your child needs to see a dentist.
- ❑ Dental sealants are needed, if not already done. Dental sealants are plastic coatings that are applied to the chewing surfaces of permanent molars to prevent cavities. See a dentist if your child is not receiving dental sealants at school.
- ❑ Early signs of gum disease (gingivitis/bleeding gums). Your child needs to see a dentist.
- ❑ Crooked or crowded teeth and/or poor bite. You may already know about this. Your child needs to see a dentist.
- ❑ Tartar or stains on the teeth. Your child needs to see a dentist.
- ❑ Daily flossing and brushing: Brush two times a day with a fluoride toothpaste and floss once a day. (see back)
- ❑ **Fluoride varnish application provided today.**

**Comments:**

**Note to Parents: If your child needs dental treatment, take this letter with you to the dental office. The dental office will return the letter to the oral health professional named above. The follow-up for your child will then be complete and you will help your child's smile last a lifetime!**

September 2012
DH 003

Population Health
3475 Albert St
Regina, SK S4S 6X6

1-800-667-7766
(306) 787-0146

www.health.gov.sk.ca
HealthLine 1-877-800-0002
www.healthlineonline.ca

## Dental Health

**If your child needs dental treatment you can:**

- Visit your family dentist, at your own expense.
  - If you do not have a family dentist, you can visit a dentist in your area. You can call the College of Dental Surgeons of Saskatchewan at **(306) 244-5072** for more information about dentists in your area.
- Dental students at the following locations can provide treatment at reduced rates:
  - **Saskatchewan Institute of Applied Science & Technology**
    Dental Clinic, Regina
    Tel: **(306) 775-7531**
  - **University of Saskatchewan**
    College of Dentistry Dental Clinic,
    Saskatoon
    Tel: **(306) 966-5056**
  - **Saskatoon West Dental – Westside Community Clinic**
    College of Dentistry
    1528 20th Street West, Saskatoon
    Tel: **(306) 384-6363**

**Dental Coverage**

- **Supplementary Health Program:** Children automatically qualify for full benefits. The initial dental coverage for adults is limited to pain relief and controlling infection. If you are an employable adult receiving Supplementary Health benefits, you and your spouse are eligible for emergency dental benefits **only** for the first six months. After six months, you are eligible for full dental benefits. For more information call **1-888-488-6385**.
- **Family Health Benefits Program**: Dental coverage is provided for children 0-17. The program is available to families that receive the Saskatchewan Child Benefit, Employment Supplement, Provincial Training Allowance, or Social Services Allowance. For more information call **1-888-488-6385.**
- **Non-insured Health Benefits Program:** Health Canada provides eligible First Nations and Inuit people with a range of dental care when they are **not** covered through private insurance plans or provincial/territorial health programs. For more information call **1-800-267-1245.**
- **Private Insurance:** You may have dental coverage through your employment benefit plan. Call your employer for more information.
- **Personal Insurance:** You can purchase other dental insurance. Ask your dental office for more information.

**Brush twice a day – In the morning and at bedtime –**
**Children need help brushing until about the age of 8.**

**Outside**

Angle brush, place half on teeth, half on gums, vibrate side to side

**Inside**

Brush the inside surfaces of the front and the back teeth

**Chewing surfaces**

Vibrate back and forth

**Floss once a day - Children younger than 9 will need a parent's help.**

Wrap floss around middle fingers (about ½ meter or 18 inches)

Gently guide floss between teeth

Move floss up and down, sliding under gumline, on both adjacent teeth

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## Appendix-I: List of SHR Community Schools 2013-2014

**Saskatoon Health Region**

**Community Schools 2013-2014**

| Urban |
|---|
| Caroline Robins Community School |
| Caswell Community School |
| Confederation Park Community School |
| King George Community School |
| Mayfair Community School |
| Pleasant Hill Community School |
| Princess Alexandra Community School |
| Vincent Massey Community School |
| Westmount Community School |
| W.P. Bate Community School |
| St. Frances |
| St. Goretti Community School |
| St. John Community School |
| St. Mark Community School |
| St. Mary Community School |
| St. Michael Community School |
| **Rural** |
| Stobart Community School (Duck Lake) |

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