Summary Report

Inuit Oral Health Survey
2008 - 2009
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Everyone is affected by their oral health. Good oral health is important to a healthy life because it affects how we eat, speak and how we relate to each other with confidence in our healthy smiles.

Pain and infection from tooth and gum diseases (oral diseases) can affect our capacity to function as full members of the community. For example, if children cannot go to school, or if parents cannot get a job because of the condition of their teeth and mouth, then it may have economic and social impacts in everyone’s life in the family. In some extreme cases, oral diseases can cause severe disability or even death, as is the potential with oral cancer.

While oral conditions are important in and of themselves, there is an increasing awareness regarding their contribution to the incidence and severity of other diseases. Conditions that may be affected by poor oral health include such diseases as diabetes, respiratory diseases and cardiovascular health.

For all of these reasons, it is important that Inuit and professional policy makers become informed as to the extent and severity of oral health conditions in the Inuit Nunangat.
Thank You

This report would not have been realized without the help of many individuals and organizations. I would like to take a moment to thank and acknowledge all those who have provided their time, assistance and experience to the Inuit Oral Health Survey.

To begin with, I would like to acknowledge the immense support provided by the Inuit organizations. The National Inuit Committee on Health (NICoH), within Inuit Tapiriit Kanatami (ITK) helped to draft the interview questions, found the recipients for the contribution agreements to hire the community survey staff, and brought their support and expertise to draft the participant’s consent form, information brochure and poster.

Special thanks must go to the various ethics boards such as Health Canada, Aurora Research Institute, the Nunavut Research Institute and the Nunatsiavut Department of Health and Social Development who have ensured that privacy and confidentiality of the Survey participants was respected.

The Inuit Oral Health Survey was built on the Oral Health Component of the Canadian Health Measures Survey and therefore, I would like to extend my appreciation to the Oral Health Steering Committee who helped draft the survey tools and the examiner manual.

The survey would not have been possible without the dedicated efforts of the First Nations and Inuit Health Branch of Health Canada which allowed Regional Dental Officers to participate in the survey as dentist examiners.

We are grateful to Dr. Harry Ames who calibrated the examiner dentists to World Health Organization (WHO) standards and who also analyzed the data collected from the survey with the help of Ms. Suzelle Giroux from Statistics Canada.
A special word of thanks must go to all those at Health Canada for their contributions to the report, to Dr. James Leake for his enormous contribution to the final report and to Dr. Roger Bélanger, Public Health Dentist Advisor, Nunavik Regional Board of Health and Social Services.

I am especially grateful to my staff in the Office of the Chief Dental Officer and in particular to Valerie Malazdrewicz, Lisette Dufour and Amanda Gillis.

Finally, I would like to thank all those who participated in the calibration sessions and give a special note of thanks to the participating communities and the 1216 Inuit, who by participating in the survey, made all of this possible.

Sincerely,

Dr. Peter Cooney, BDS, LDM, DDPH, MSc, FRCD(C)
Chief Dental Officer, Health Canada
Executive Summary

This report provides the results of the Inuit Oral Health Survey, 2008-2009. This survey was conducted by the Office of the Chief Dental Officer of Canada in conjunction with the Inuit Tapiriit Kanatami and the Government of Nunatsiavut, Department of Health and Social Development (Newfoundland and Labrador); Nunavut Tunngavik Incorporated (Nunavut); and the Inuvialuit Region Corporation (Northwest Territories).

The Inuit Oral Health Survey provides estimates of tooth decay and gum disease as of 2008-09 across areas of Canada’s Arctic, except Nunavik. Although the Region of Nunavik chose not to participate in the survey, it is important to mention that they are in full support of the results of the Inuit Oral Health Survey 2008-2009. Following the standards and methodology of the oral health module/component of the Canadian Health Measures Survey (OHM-CHMS), trained dentist-examiners examined 1216 Inuit ranging in age from 3 to 40+ years.

Compared to Canadians examined for the Canadian Oral Health Measures Survey, living south of the 60th parallel, more Inuit reported poor oral health and higher frequency of food avoidance and oral pain. Half of the Inuit surveyed made a visit for dental care. Very few reported that costs were a factor in avoiding visiting or accepting recommended treatment.

Based on data from Inuit Oral Health Survey, the prevalence of coronal caries was very high. Over 85% of preschoolers had experienced dental caries, with an average of 8.22 primary (baby) teeth affected. By the time of adolescence, 97.7% of Inuit surveyed had been affected. Among the oldest adults, the disease had affected everyone.
Counts of decayed, missing, or filled permanent teeth (DMFT) increased at every age - from 2 at age six to eleven years, to 9.5 for adolescents, to 15 at age twenty to thirty-nine years, and over 19 DMFT among older adults. The prevalence and average DMFT counts greatly exceeded similar counts for southern Canadians.

Further, results from the survey indicate that much of the disease remained untreated. As an example, the proportion of affected teeth that remained decayed for adolescents and young adults was 38.1% and 16.7% respectively, compared to 14.9% and 12.6% among southern Canadians. In addition, more of the disease is treated by extractions among Inuit. Among adolescents results showed there were 20.3 extractions per 100 teeth filled. The Oral Health Module-Canadian Health Measures Survey (OHM-CHMS) found that among adolescents in the general population for Canada as a whole, only 1.0 tooth had been extracted per 100 filled.

Root cavities were also more prevalent and less were treated compared to the findings of the OHM-CHMS. On the other hand, periodontal conditions, as demonstrated by the Community Periodontal Index Treatment Needs (CPITN Index), seemed less prevalent and less severe among Inuit compared to the findings of the OHM-CHMS and to the Alaskan Native patients.

Given that, according to the results, more extractions were provided to Inuit surveyed, more of the oldest Inuit population (21.3%) than the southern population (4.4% to 21.7%) were found to be edentulous (no natural teeth remaining). Previous research in the Keewatin Region suggests that the edentulous rate among adult Inuit has decreased. However, the finding that 21.3% of older Inuit, aged 40 years+, were edentulous, is demonstrably lower (better) than both Galan et al. (1993) and Rea et al., (1993) found when they surveyed just the Keewatin Region.

The finding that Inuit had more dental disease (except for periodontal conditions) than their southern counterparts is consistent with international studies that indicate that indigenous people have a poorer oral health status compared to that of the dominant cultures in their countries.
The prevalence and severity of dental caries has decreased among 6 year-olds. The proportion of decayed teeth successfully treated among that same age-group has improved from 20% reported in 1991/92 to 55% in the present survey.

Still, the oral health conditions cannot be treated away even if more resources could be applied. More emphasis on community-based primary preventive measures backed up by early detection and prompt basic treatment would appear to be the best course to make a difference. However, these two strategies cannot do the job by themselves. The threats to health such as high rates of tobacco use, crowded housing and food insecurity which have been identified in earlier studies need to be addressed for the preventive dental efforts to have maximum effect.
Highlights

The results from the Inuit Oral Health Survey demonstrate that:

- 65% of Inuit reported good to excellent oral health;
- 30% of Inuit reported staying away from certain types of food because of problems with their mouth;
- 30% of Inuit reported they had ongoing pain in their mouth;
- Half of Inuit in the survey reported they had made a visit to a dental professional within the last year. Children tended to have the highest visit rates (58%) and oldest adults, the lowest (33%).

Some of the tooth decay results from the Inuit Oral Health Survey are as follows:

- 85% of 3-5 year olds have or have had a cavity.
- 93% of 6-11 year olds have or have had a cavity.
- 97% of 12-19 year olds have or have had a cavity.
- 99% of 20-39 year olds have or have had a cavity.
- 100% of 40 year olds and up have or have had a cavity.
- One Inuk out of 5 in the 40 year olds and up category have lost all of their teeth.
Background

By collecting information related to the health of the mouth, teeth and gums, this survey will help:

- Identify future oral health and oral health care challenges;
- Provide essential information to those involved in making important decisions about oral health care policies and programs for the Inuit population; and
- Provide a baseline for noting any improvement that may occur as a result of new oral health promotion and disease prevention initiatives such as the Children’s Oral Health Initiative (COHI).

The survey was conducted in six sites across the country. The interviews and examinations occurred over a period of 8 months from November 2008 to June 2009. The survey teams visited each community for approximately two weeks.

Staff from Health Canada trained interviewers and recorders from each participating community to help with the collection of the IOHS interview and examination phases.

Specially trained dentists performed the oral health clinical examinations to the same standards as the Oral Health Component of the Canadian Health Measures Survey that was administered to participants from the rest of Canada.
Cavities

Even if tooth decay can be prevented, it remains the number one chronic disease among the Inuit population.

Tooth decay (or what is commonly referred to as cavities) is a disease that damages the tooth. The decay starts by attacking the tooth’s protective coating, also known as enamel, and causes a hole (cavity) to occur. If the cavity is not repaired, it can get bigger, may cause pain, and may also lead to the loss of the tooth.

The Inuit Oral Health Survey collected information on cavities in two ways:

First, it collected information on the average number of baby teeth that were either decayed (d), missing (m), or filled (f). This is known as the dmft count*. The dmft is an indicator of the severity of the disease. For example, a dmft of 7 means that there are 7 teeth that are either decayed, missing or filled in the same mouth.

Second, the survey looked at the percentage of Inuit who have a dmft of at least 1. A dmft score that is bigger than 1 means that active decay is, or was, present in the mouth.

*NOTE: dmft (small letters) is used to refer to baby teeth and DMFT (big letters) is used to refer to adult teeth.

Young children, 3-5 years of age

Children who are between the ages of 3 to 5 years of age should only have baby teeth. Therefore, the score of decay is demonstrated in dmft (small letters).

- The survey found that 85% of Inuit children aged 3-5 years of age have a dmft count of at least 1.
- The average number of baby teeth that were decayed, missing, or filled in this age category was 8.22.
- Half of these teeth were still decayed at the time of the survey.
Children 6-11 years of age

Children who are between the ages of 6 and 11 have a mix of baby teeth and adult teeth in their mouth. Therefore, dmft and DMFT scores were collected on both sets of teeth and then a combined dmft + DMFT score was determined.

Baby teeth

- The survey found that 71% of Inuit children aged 6-11 years of age had a dmft count of at least 1.
- The average number of baby teeth that were decayed, missing, or filled was 5.08.

Permanent (or adult) teeth

- Nearly 60% of Inuit children aged 6–11 years of age had a DMFT count of at least 1.
- The average number of permanent teeth that were decayed, missing, or filled is 2.01 teeth.

Combined primary and permanent teeth

- 93% of Inuit children aged 6 - 11 years of age had a combined dmft + DMFT count of at least 1.
- The average number of teeth that had a dmft + DMFT was 7.08 primary or permanent teeth.
- At the time of the survey, 32.1% of teeth in this age category still had cavities.

Adolescents (12-19 years of age)

The Decayed Missing Filled Teeth (DMFT) scores for an adolescent are calculated on the permanent teeth. The survey found:

- 97% of Inuit adolescents aged 12 to 19 years of age had a DMFT count of at least 1.
- The average number of DMFT was 9.49 teeth in adolescents.
Edentulism

(Complete loss of all natural teeth)

The edentulous rate of Inuit refers to the percentage of people in the three Inuit Regions represented in this survey who no longer have any of their natural teeth. Inuit who do not have any of their own teeth, have usually lost them due to extensive cavities or as a result of very bad problems with the gums around their teeth.

Not having any natural teeth can cause eating problems, which can affect how many nutrients a person gets in their body. Edentulism can also affect the way a person talks.

The survey found that:

- Almost 10% of Inuit adults (20 years of age and up) no longer have any of their natural teeth.
- 22% of Inuit adults from the ages of 40 and up were found to be edentulous.

Adults still get cavities

Adults (aged 20 years of age and up) can develop two different types of cavities.

The first type is called a coronal cavity. A coronal cavity is a cavity that develops anywhere on the tooth except on the root.

- 99% of adults aged 20 to 39 (who have teeth) had a coronal DMFT of at least 1 with an average number of coronal DMFT of 16.8 teeth.
- 100% of adults aged 40 years and up had a coronal DMFT of at least 1 with an average number of coronal DMFT of 19.5.

The second type of cavity that an adult can develop is called a root cavity. A root cavity is a cavity that is found along the root (or the part of the tooth that is usually hidden by the gums) of a tooth. A root cavity is difficult to find on the tooth and can be more difficult to treat as well.

- 44% of Inuit adults (20 years of age and up) had at least 1 decayed or filled root cavity.
Periodontal Conditions

Periodontal refers to the structures that surround teeth to keep them in place, such as gums, bone and the tissue (called the periodontal ligament) that attach the teeth to the bone. These periodontal structures can be affected by disease which can affect the health of affected teeth and surrounding tissue. The information collected as part of the survey included debris, calculus, gingivitis, pocket depth and Loss of Attachment (LOA).

Debris and Calculus

Debris is the soft, cream-coloured build-up, or stains, that can be found on teeth.

Calculus is the hard material that can develop on the tooth (also known as tartar).

- 20% of Inuit adults in the survey were found to have calculus scores in the highest range.

Both of these conditions can be prevented by brushing or flossing, but calculus can only be removed by a dental professional. Neither debris nor calculus is a measure of disease, but they can increase the risk for the development of gingivitis.

Older Adults

- Older Inuit adults (40 year of age and up) had more root cavities (53%) than adults 20 to 39 years of age (39%).

Untreated Coronal and Root Cavities

- 3 Inuit adults out of 5 (60%) had cavities that needed a filling.
- 44% of Inuit adults (20 years of age and up) had a root cavity that needed a filling.

Periodontal

Inuit adults had an average of 1.52 Root, Decayed or Filled teeth (RDFT).

 Older Adults

Older Inuit adults (40 year of age and up) had more root cavities (53%) than adults 20 to 39 years of age (39%).

Untreated Coronal and Root Cavities

- 3 Inuit adults out of 5 (60%) had cavities that needed a filling.
- 44% of Inuit adults (20 years of age and up) had a root cavity that needed a filling.
Gingivitis

Gingivitis is a reversible form of gum disease and refers to inflammation of the gum tissue. Gingivitis begins with the build-up of plaque on the teeth. The bacteria in plaque produce materials that can make the gums swell and bleed.

- Over 30% of Inuit adults (20 years of age and up) have moderate to severe gingivitis.
Loss of attachment (LOA) is the distance (in millimetres) between the point where the enamel of the tooth meets the root, and the bottom of the pocket between the gum tissue and the tooth. LOA is considered the true measure of the effects of disease on the periodontal structures.

A person with an LOA of 3mm or less is considered to be healthy.

A person with an LOA of 4 – 5mm is considered to have, or have had, moderate disease.

A person’s ability to chew can be affected at an LOA of 5mm or greater.

A person with an LOA of 6mm or more is considered to have, or to have had, severe disease.

A person is at risk of losing their tooth if the LOA is 6 mm or greater.

Age is an important factor when looking at loss of attachment. For example, a 70 year old with an LOA of 4mm may be considered to have aged successfully, but a 20 year old with an LOA of 4mm would seem to be at increased risk for losing the tooth.

- The survey found that 83.5% of Inuit adults (who have teeth) are considered to be healthy in terms of LOA (LOA = 0-3mm)

- 3.9% of Inuit dentate adults have had severe disease (LOA of 6mm or more).

It is important to note that LOA is usually not reversible, but can be prevented through good oral hygiene habits including brushing and flossing, professional care, and avoiding tobacco.

Oral lesions are any open sores, lumps, bumps, or red or white patches in the mouth. Oral lesions can develop on the lips, tongue, cheeks or gums. An oral lesion could be minor or could be a sign of larger health issues. It is important to have any oral lesions checked by a dental professional.

- 9.9% of Inuit adults have at least one oral lesion.
Brushing your teeth twice a day and flossing once a day are two key recommended actions to maintain a healthy mouth.

According to the Inuit Oral Health Survey results:

- 42% of Inuit aged 3 and up said they brush twice a day
- 36% of Inuit aged 3 and up said they floss at least 5 times a week

Sealants are clear or tinted plastic coverings placed on the chewing surfaces of permanent molar (back) teeth. A sealant provides a barrier and keeps food from getting stuck in the grooves and pits of a tooth. This helps to keep teeth free from decay. Sealants can be applied to a tooth by a dental professional as soon as the tooth appears in the mouth.

The use of sealants was too low to be reported.
At the end of each dental examination, the dentist recorded whether the respondent/patient needed care and, if so, what kind. It was also noted if the case was urgent (i.e. treatment necessary within a week).

From the assessments and evaluation of the dentists, a priority list was created ranging from most severe, such as a life-threatening conditions (i.e. severe infection or suspected oral cancer) and severe pain; to lower priorities, such as a required filling or improvements to oral health regimes. The latter conditions could be dealt with over a longer period of time.

More specifically, the priority list included: urgent needs; surgical needs; root canals; fillings; crown and bridge work; gum care; braces, a group of services including problems with the jaw, aesthetics and soft tissues.

The list ended with those requiring no dental help.

Some patients have several conditions of varying urgency to be treated.

Distribution of Needs

<table>
<thead>
<tr>
<th>Treatment Needs</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restorations</td>
<td>39.3%</td>
</tr>
<tr>
<td>No treatment</td>
<td>27.4%</td>
</tr>
<tr>
<td>Surgery</td>
<td>22.9%</td>
</tr>
<tr>
<td>Prosthodontics</td>
<td>5.7%</td>
</tr>
<tr>
<td>Endodontics</td>
<td>2.0%</td>
</tr>
</tbody>
</table>

Of the needs identified, half were for fillings (restoration), one quarter were for surgical services and the other quarter were for other services such as dentures, gum care, root canals, etc.

- 27.4% of dentate Inuit ages 3 and up needed no treatment.
- Nearly 40% of dentate Inuit ages 3 and up required some kind of fillings.
- 22.9% of dentate Inuit ages 3 and up required some type of surgical services, such as a tooth extraction.
- 5.7% of Inuit aged 40 years old and up need some kind of prosthodontic services such as dentures.
How do we compare with people from Southern Canada?

The results of the Inuit Oral Health Survey indicate that in the Inuit population, tooth decay, a chronic disease which is preventable, is 2 to 3 times worse than that of the average Canadian.
Here are some comparisons:

<table>
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<tbody>
<tr>
<td>Visiting the Oral Health Professional in the last year</td>
<td>74%</td>
<td>50%</td>
</tr>
<tr>
<td>% children 6-11 years of age who have or had at least one cavity (dmft/DMFT)</td>
<td>57%</td>
<td>93%</td>
</tr>
<tr>
<td>Average number of Decayed, Missing, Filled teeth (dmft/DMFT) on children (6-11 years of age)</td>
<td>2.48</td>
<td>9.05</td>
</tr>
<tr>
<td>% teenagers (12-19 years of age) who have or had at least one cavity (DMFT)</td>
<td>58.8%</td>
<td>96.7%</td>
</tr>
<tr>
<td>Average number of Decayed, Missing, Filled teeth (DMFT) on teenagers (12-19 years of age)</td>
<td>2.49</td>
<td>9.49</td>
</tr>
<tr>
<td>% of adults (who have teeth) who have or had at least one cavity</td>
<td>95.9%</td>
<td>99.4%</td>
</tr>
<tr>
<td>Average number of Decayed Missing Filled Teeth (DMFT) in adults who have teeth</td>
<td>10.7</td>
<td>16.8</td>
</tr>
<tr>
<td>% adults with root decayed or filled</td>
<td>20.3%</td>
<td>44.3%</td>
</tr>
<tr>
<td>Edentulism: % of adults who have lost all their teeth</td>
<td>6.4%</td>
<td>9.7%</td>
</tr>
</tbody>
</table>
The rate of edentulism on Inuit aged 40 years old and up is lower (improved) than measured in 1993.

The closest comparison may be with results of the 1990-91 survey of Canada’s Aboriginal children, using the numbers found for the Northwest Territories (NWT). At that time, the NWT included the Nunavut territory and 84% of the examined 6 year-old children were Inuit. In the 1990-91 survey, 95% of 6 year-olds had one or more dmft+DMFT compared to 86% in the current report. Mean counts of teeth affected were also lower: 8.9 in 1990-91 compared with 8.3 in 2009. In 2009, 4.5 or 55% of the teeth were successfully restored compared to 1.8 or 20% of the affected teeth in 1990/91.

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<tr>
<td>% children aged 6 only who have or had at least one cavity (dmft/DMFT)</td>
<td>95%</td>
<td>86%</td>
<td>86%</td>
</tr>
<tr>
<td>Teeth affected by decay on children aged 6 only</td>
<td>8.9</td>
<td>8.3</td>
<td>8.3</td>
</tr>
<tr>
<td>Decay teeth filled on children aged 6 only</td>
<td>1.8</td>
<td>4.5</td>
<td>4.5</td>
</tr>
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</table>
Preventative programs are effective, but work remains to reduce the decay rate. Greater emphasis on community-based preventive measures, early detection, and quick basic treatment seem the best way to make a difference. However, these strategies aren’t enough. Health threats -- from tobacco use, overcrowding, and food insecurity -- must also be addressed for oral health prevention to have maximal effect.