
Tooth Decay

Description

- Prevalence of tooth decay:
 - Prevalence of tooth decay is the proportion of children identified with decayed or missing/filled teeth due to decay among those examined at school screening
 - Prevalence of untreated tooth decay is the proportion of children who have untreated dental caries among those examined at school screening
- Severity of tooth decay:
 - Proportion of untreated dental caries is the proportion of decayed (untreated) teeth among teeth affected by caries (i.e. decayed, missing due to decay, or filled due to decay)
 - Average deft/DMFT per person is the average number of teeth which are decayed (untreated), missing/extracted (due to decay) or filled due to decay per child examined at school screening
 - Average d/D per person is the average number of untreated decayed teeth per child examined at school screening
 - Average e/M per person is the average number of teeth which are missing or extracted due to decay per child examined at school screening
 - Average f/F per person is the average number of filled teeth (due to decay) per child examined at school screening

Specific Indicators and Method of Calculation

Prevalence of Tooth Decay:

Prevalence of Tooth Decay

$$\frac{\text{Number of children with one or more teeth which are decayed, missing/extracted or filled due to decay}}{\text{Total number of children screened}} * 100$$

Prevalence of Untreated Tooth Decay

$$\frac{\text{Number of children with one or more teeth which are decayed (active decay - unextracted and unfilled)}}{\text{Total number of children screened}} * 100$$

Severity of Tooth Decay:

Proportion of untreated dental caries:

$$\frac{\text{Total number of decayed teeth}}{\text{Total number of teeth which are decayed, missing/extracted and filled due to decay}} * 100$$

Average deft/DMFT per person:

$$\frac{\text{Total number of teeth which are decayed, missing/extracted and filled due to decay}}{\text{Total number of children screened}}$$

Average d/D per person:

$$\frac{\text{Total number of decayed teeth}}{\text{Total number of children screened}}$$

Average e/M per person

$$\frac{\text{Total number of missing or extracted teeth (due to decay)}}{\text{Total number of children screened}}$$

Average f/F per person

$$\frac{\text{Total number of filled teeth (due to decay)}}{\text{Total number of children screened}}$$

Basic Categories

- Age groups:
 - Junior Kindergarten (JK), Senior Kindergarten (SK), Grade 2, or any grade for which the sampling methodology of the health unit allows
- Geographic areas:
 - E.g., public health unit, school board, municipality, communities classified by fluoridation status
 - "Planning areas" in OHISS can be used to filter by custom geography

Data Sources

Numerator and Denominator: Oral Health Information Support System (OHISS)

Original source: OHISS [Public Health Unit]

Distributed by: Public Health Unit, Ontario Ministry of Health and Long-Term Care (MOHLTC)

Suggested citation: OHISS [years], Data Extracted: [date]

Analysis Check List

- Determine what sampling methodology was used within a health unit before making comparisons over time or with other health units:
 - Ensure that decayed, missing/extracted and filled information is collected at your health unit. Decay is a mandatory field, however missing/extracted and filled are optional and subject to individual health unit's choices
 - The OPHS mandates that at a minimum, all children in JK, SK, and Grade 2 of publically funded schools are offered screenings; however, other grades may be screened depending on screening intensity and individual health unit's choices.
- Determine the data collection method. Screening data can be entered into OHISS on an individual level, or aggregated by class – deft/DMFT information is only available in OHISS for screening records entered individually in OHISS or OHISS mobile. Therefore, health units entering aggregate screening data by class will not be able to use OHISS screening reports to calculate the tooth decay indicator in this document.
- Report customization – (*please see Appendix 1 for screenshot of OHISS report customization options*):
 - Planning areas:
 - Planning areas can be set up to create custom geography or administrative filters (i.e. by school board, schools, clinics, etc). Health units must define these themselves. Refer to the OHISS user manual for instructions on the set up of planning areas – this manual is hosted on the OHISS Collaboration website. Contact your Oral Health Program if you do not have access to this website.
 - Facility type:
 - This filter controls which dropdowns will be available in the Facility dropdown menu . For example, choosing "School" will only display facilities coded as a "School" in OHISS.
 - If a facility type is selected from the dropdown menu, all other dropdowns (i.e. Facility Board and Facility) are mandatory, and therefore the report can only be run for a single facility. Leaving "Facility Type" dropdown menu blank (as well as Facility Board and Facility) allows the report to run for multiple facilities.
 - Report display:
 - Changes the level of aggregation in the report
 - Changing the report display to "Grade" or "Facility and Grade" will run a report that displays the results aggregated by grade, or by facility and grade.
- Appropriate software is needed to convert certain PDF reports to spreadsheet format for further manipulation – however, the success of this conversion depends on your computer set-up and complexity of request, including the version of Acrobat installed and the amount of information in the report being converted.
- The screening reports for the tooth decay indicators should be run to include school screenings only.
 - For health units which enter screening results for other settings (i.e. community or clinic screenings), use planning areas to filter the facilities appearing on the report, or run the report for all facilities in the PHU and remove the results for non-school screenings.
- The table below provides a guide to which values can be obtained from which OHISS Screening Report:

Value Needed	Report Name	Report Field Name	Notes
Number of children with one or more decayed, missing/extracted or filled teeth due to decay	DMF Report	DMF >= 1	Please note that OHISS screening reports, with the exception of the Accountability Indicator Report, all count screening results, and not children (therefore, if a child is screened twice within the date range of the report, their result will be counted twice in that report). Public health units are cautioned to examine the extent of any multiple screenings when interpreting these indicators.
Number of children with one or more teeth which are decayed (active decay - unextracted and unfilled)	DMF Report	Student Count DMF > 0 Decay #	
Total number of children screened	DMF Report	Total Screened	
Total number of decayed, missing/extracted and filled teeth due to decay	DMF Details Report	DMF Total (#)	
Total number of (untreated) decayed teeth	DMF Details Report	Decay #	
Total number of missing or extracted teeth (due to decay)	DMF Details Report	Missing #	
Total number of filled teeth (due to decay)	DMF Details Report	Filled #	

Indicator Comments

- The average deft/DMFT per population is also referred to as the deft/DMFT Index. It is a general indicator of dental health status of the population (particularly among children), and is considered reliable.
- If a child has no teeth which are decayed, missing (due to decay) or filled, this does not mean that the child is "caries-resistant" – they merely had no observable decay at the time of survey.
- The average deft/DMFT per person, as well as the prevalence of tooth decay, are generally understood as conservative estimates – the child may have early stage caries not visible to the naked eye, or may have had decay or restorations in the primary teeth which have now exfoliated.

Ontario Public Health Standards (OPHS)¹

The Ontario Public Health Standards (OPHS) establish requirements for the fundamental public health programs and services carried out by boards of health, which include assessment and surveillance, health promotion and policy development, disease and injury prevention, and health protection.

The OPHS consist of one Foundational Standard and 13 Program Standards that articulate broad societal goals that result from the activities undertaken by boards of health and many others, including community partners, non-governmental organizations, and governmental bodies. These results have been expressed

in terms of two levels of outcomes: societal outcomes and board of health outcomes. Societal outcomes entail changes in health status, organizations, systems, norms, policies, environments, and practices and result from the work of many sectors of society, including boards of health, for the improvement of the overall health of the population. Board of health outcomes are the results of endeavours by boards of health and often focus on changes in awareness, knowledge, attitudes, skills, practices, environments, and policies. Boards of health are accountable for these outcomes. The standards also outline the requirements that boards of health must implement to achieve the stated results.

Outcomes Related to this Indicator

- Societal Outcome (Child health): An increased proportion of children have optimal oral health.
- Board of Health Outcome (Child health): The board of health achieves timely and effective detection and identification of children at risk of poor oral health outcomes, their associated risk factors, and emerging trends.

Assessment and/or Surveillance Requirements Related to this Indicator

1. The board of health shall conduct epidemiological analysis of surveillance data, including monitoring of trends over time, emerging trends, and priority populations in accordance with the *Population Health Assessment and Surveillance Protocol, 2008* (or as current), in the areas of oral health
2. The board of health shall conduct surveillance of children in schools and refer individuals who may be at risk of poor oral health outcomes in accordance with *the Oral Health Assessment and Surveillance Protocol, 2008* (or as current), and the *Population Health Assessment and Surveillance Protocol, 2008* (or as current).
3. The board of health shall report oral health data elements in accordance with the *Oral Health Assessment and Surveillance Protocol, 2008* (or as current).

http://www.health.gov.on.ca/en/pro/programs/publichealth/oph_standards/docs/ophs_2008.pdf

Protocol Requirements Related to this Indicator

DISEASE PREVENTION:

#10: The board of health shall conduct oral screening in accordance with the *Oral Health Assessment and Surveillance Protocol, 2008* (or as current).

http://www.health.gov.on.ca/en/pro/programs/publichealth/oph_standards/docs/oral_health_assess.pdf

HEALTH PROMOTION AND POLICY DEVELOPMENT:

#4: The board of health shall work with community partners, using a comprehensive health promotion approach, to influence the development and implementation of healthy policies and the creation or enhancement of supportive environments to address: Oral health

#5: The board of health shall increase public awareness of: Oral health

#7: The board of health shall provide advice and information to link people to community programs and services on the following topics: Oral health.

DISEASE PREVENTION:

#13: The board of health shall provide or ensure the provision of the essential clinical preventive oral health services at least annually in accordance with the *Preventive Oral Health Services Protocol, 2008* (or as current).

Corresponding Health Indicator(s) in Public Practice

Corresponding Health Indicator(s) from Statistics Canada and CIHI

(None)

Corresponding Indicator(s) from Other Sources

Health Canada – Canadian Health Measures Survey²

- Prevalence and severity of dental caries in primary teeth: dmft – sum of teeth with codes listed (Table 15)
- Prevalence and severity of dental caries in permanent teeth: DMFT – sum of teeth with codes listed (Table 16)
- Prevalence and severity of dental caries in primary and permanent teeth: deft/DMFT – sum of teeth with codes listed (Table 17)
- Percent of Carious Teeth Decayed or Filled: Proportion of dt/dmft (or ft/dmft) calculated as a ratio of weighted sums (Table 18)

World Health Organization³

- Caries prevalence: Mean number of decayed, missing or filled teeth (DMFT) or surfaces (DMFS)

Definitions

- DMFT refers to permanent teeth: D = Decayed, M = Missing due to decay (not from trauma, orthodontic extraction, congenitally missing, etc.), F = Filled due to decay, T = Teeth.
- deft refers to primary (baby) teeth: d = decayed, e=extracted/missing due to decay (not from trauma, orthodontic extraction, congenitally missing, etc.) , f = filled due to decay, t = teeth.
- Hygienists use their clinical judgment to determine if a tooth is missing due to decay, or if it is missing for any other reason (i.e., natural exfoliation, trauma, etc.). Part of this assessment is a knowledge of typical age related exfoliation patterns (i.e., if a hygienist sees a tooth which is missing from a child who is too young to have had that tooth fall out naturally, this tooth may be assessed as missing due to decay).

Cited References

1. Ontario. Ministry of Health and Long-Term Care. Ontario public health standards. Toronto, ON: Queen's Printer for Ontario; 2008. Available from: http://www.health.gov.on.ca/en/pro/programs/publichealth/oph_standards/docs/ophs_2008.pdf.
2. Health Canada. Summary report on the findings of the oral health component of the Canadian Health Measures Survey, 2007-2009. Ottawa (ON): Health Canada; 2010. Available from: http://publications.gc.ca/collections/collection_2010/sc-hc/H34-221-2010-eng.pdf
3. WHO Collaboration Centre for Education Training and Research in Oral Health, Oral Health

County/Area Profile Project (CAPP). Methods and indices: caries prevalence and calculation. Malmö, SE: Malmö University; [cited 2015 Nov 2]. Available from: <http://www.mah.se/CAPP/Methods-and-Indices/for-Caries-prevalence/>

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Changes made

Date	Type of Review- Formal Review or Ad Hoc?	Changes made by	Changes
December 4, 2015	Formal Review	Oral Health Task Group of the Child and Adolescent Health Indicators Subgroup	All sections have been updated to reflect changes to the oral health screening protocol from the Dental Indices Survey to the Ontario

March 2016	Formal Review	APHEO Child and Adolescent Data working group	Public Health Standards, and the corresponding shift to OHISS software.
August 2016	Formal Review		