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Prevalence and correlates of self-reported fair or poor oral health in Canada

by Michelle Rotermann and Kellie Murphy

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Prevalence and correlates of self-reported fair or poor oral health in Canada

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ABSTRACT

Background

Oral health (OH) is an important part of overall health and quality of life. OH conditions are mostly preventable or treatable. Some subpopulations have worse OH than others. Detailed and up-to-date data about the OH of Canada's population are essential for improving care; reducing inequities; and guiding recent policy initiatives, such as the Canadian Dental Care Plan, and measuring their impact.

Methods

Self-reported data from the 2023/2024 Canadian Oral Health Survey were used to estimate the prevalence of fair or poor OH across other OH-related conditions, oral self-care practices, and sociodemographic characteristics. Multivariable logistic regression models examined associations between reporting fair or poor OH, while controlling for sociodemographic characteristics and other covariates.

Results

About 17% of adults in Canada reported having fair or poor OH. Bivariate cross-tabulations and unadjusted regression suggested that self-reported fair or poor OH was positively associated with other OH-related conditions. Multivariable logistic regression also showed the odds of reporting fair or poor OH remained higher for people who had other OH-related conditions, including whether the person had teeth and dentures; being dissatisfied with the appearance of their teeth or dentures; having mouth pain; having untreated mouth problems; and avoiding certain foods because of mouth problems. Not having had an annual dental visit or failing to brush twice daily also increased the risk, as did being a man, a racialized person, or from a lower-income household, as well as having a lower general health status.

Interpretation

This study found associations between self-reported fair or poor OH, other OH-related conditions, several sociodemographic characteristics, and oral self-care (hygiene) practices, reaffirming that self-reported OH continues to be useful for OH monitoring in Canada.

Keywords

Periodontal disease, dental survey, untreated mouth problems, mouth pain, dry mouth, oral hygiene, oral health status, tooth loss, single-item

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What is already known on this subject?

- Oral health (OH) includes the ability to speak, smile, chew, swallow, and communicate nonverbally through facial expressions without pain or discomfort, or disease of the head and face. It is an important component of well-being and quality of life.
- While most Canadians report high levels of OH, many others do not and instead live with missing or damaged teeth, mouth pain, and chewing difficulties.
- Financial barriers that prevent many people from accessing OH care in Canada are expected to decrease with eligibility to the Canadian Dental Care Plan (CDCP). Monitoring of OH-related changes after the CDCP's introduction is required to capture progress.

What does this study add?

- As the number of self-reported OH conditions (including mouth pain, untreated mouth problems, needing to avoid certain foods because of mouth problems, and persistent dry mouth) increased, so too did reporting of fair or poor OH—from a prevalence rate of 5.7% when no other OH conditions were reported to 65.0% when four OH conditions were reported. Satisfaction with the appearance of teeth or dentures also played a role. People who were satisfied or very satisfied with their teeth or dentures had lower rates of fair or poor OH (ranging from 1.9% to 27.8%, depending on the number of OH conditions), while those who were dissatisfied had higher fair or poor OH rates (23.1% to 85.7%). Overall, 17.1% of Canadian adults self-reported their OH as fair or poor.
- Following recommended dental self-care—including brushing twice daily and having annual dental check-ups—was associated with better self-reported OH, even after taking account of confounders.
- Some populations were found to be at higher risk of fair or poor OH, including men, racialized (and non-Indigenous) people, people from lower-income households, and people who reported having a lower general health status.

Oral health (OH) is an important component of overall health and quality of life.¹⁻⁵ Poor OH can affect eating, drinking, speaking, sleep quality, social functioning, and self-confidence.^{1,6} Conversely, good OH is associated with a lower risk of cardiovascular disease⁷ and some cancers,⁸⁻⁹ and with longevity.¹⁰ By contrast, tooth loss and periodontal disease are linked to higher risks of hospitalization¹¹ and disability.¹²

Population-level OH monitoring has traditionally relied on costly, periodic clinical examination surveys in Canada¹³ and elsewhere, including the United States,¹⁴⁻¹⁵ Australia,¹⁶ Scotland,¹⁷ Finland,¹⁸ and the United Kingdom.^{1,19}

Interest in less resource-intensive and more affordable monitoring approaches is not new,²⁰⁻²² although interest grew during the COVID-19 pandemic.²³ While some clinical indicators, such as deep periodontal pockets and gingival recession, require professional examination,²⁴ validation studies show that indicators such as number of teeth or denture use can be accurately self-reported.²⁵⁻²⁷

Benefits of self-reported OH monitoring include low cost, ease of integration into existing health surveys, potential for early identification of those needing follow-up, improved timeliness through more frequent surveys, and wider geographic

coverage.²⁰ At minimum, self-reported OH provides a subjective, non-clinical indication of potential demand for services and treatment.¹

Single-item self-ratings are well established in health research. Self-perceived health, for example, is a reliable and valid predictor of survival, functional ability, and service use.²⁸⁻³⁰ Statistics Canada also routinely relies on other self-reported health behaviours and characteristics.³¹

This study contributes to the understanding of how well self-rated OH reflects other self-reported measures of Canadians' OH and clarifies relationships among OH-related factors, oral self-care, and sociodemographic characteristics, some of which are not traditionally available simultaneously in national surveys.

The two main objectives of this study were to : 1) calculate the prevalence of adults in Canada who reported their OH as fair or poor, and 2) examine sociodemographic characteristics, other OH-related conditions, and oral self-care practices among those who rated their OH as fair or poor.

Methods

Data source

Data are from the 2023/2024 Canadian Oral Health Survey (COHS), a voluntary, nationally representative household survey conducted by Statistics Canada, in partnership with Health Canada, that collects self-reported information from Canadian households with adults aged 18 years or older living in the 10 provinces.³² Respondents living with children younger than 18 provided information about the household, children, and themselves. People living in the territories or on First Nations reserves and other Indigenous settlements in the provinces, the institutionalized population, and residents of collective dwellings were excluded (about 3% of the Canadian population). Data were collected from November 27, 2023, to March 13, 2024, and the survey had a response rate of 52.2%, corresponding to 27,039 respondents aged 18 or older. Most respondents completed the survey online; a minority participated with the aid of trained interviewers.

More information about the COHS, including sampling, questionnaires, and quality assurance, is available elsewhere.³²

Analytical sample

To be included in this study, respondents were required to have provided non-missing (valid) answers to three questions about their self-perceived OH, natural teeth, and use of false teeth (including dentures, bridges, or partials). Because the perceived OH question was asked to respondents aged 18 or older only, the main study sample was limited to adults and included 26,752 people (representing 31.2 million people). Missing values for perceived OH ($n=84$), natural teeth ($n=78$), denture use ($n=154$), and most other covariates were low (ranging from no missing values for income, age group, and gender to $n=788$ for insurance). Missing values for immigrant status were the exception ($n=3,382$).

Definitions

Outcomes

Perceived OH was based on answers to the question “In general, how would you rate the health of your mouth?” Answer choices were excellent, very good, good, fair, or poor. The mouth includes teeth or dentures, gums, the tongue, lips, and jaw joints. Responses were collapsed into two categories: fair or poor OH versus excellent, very good, or good OH.

Covariates

The selection of covariates was guided by availability in the COHS and related literature about OH.

Gender was divided into men+ and women+. The category men+ includes men, as well as some non-binary people, while the category women+ includes women, as well as some non-

binary people. Because the non-binary population was small, the use of the two-category gender variable was necessary.

There were three age groups: 18 to 34, 35 to 64, and 65 or older. The age groups aligned with the survey’s sampling strategy.

Respondents were asked whether they were First Nations (regardless of status), Métis, or Inuk (Inuit), and, if not, whether they belonged to one or more cultural or racialized groups, including White, South Asian, Chinese, Black, Filipino, Latin American, Arab, Southeast Asian, West Asian, Korean, Japanese, or other. This information was used to create a population group variable with three categories: Indigenous (First Nations [regardless of status], Métis, or Inuk [Inuit]), non-Indigenous and non-racialized (White), or non-Indigenous and racialized (South Asian, Chinese, Black, Filipino, Latin American, Arab, Southeast Asian, West Asian, Korean, Japanese, or other).

COHS respondents were not asked about their citizenship or place of birth. Instead, information was obtained through linkage to the Longitudinal Immigration Database (IMDB).³³ Immigrant status was categorized as non-immigrant (citizen by birth, potentially containing immigrants who arrived before 1952), immigrant (landed immigrant or non-permanent resident), or missing. A missing category was included in the analysis because 13.9% of the weighted analytical sample could not be linked to the IMDB.

Similarly, COHS respondents were not asked about income. Instead, linkage to Statistics Canada’s Administrative Personal Income Masterfile was conducted.³⁴ Most respondents (84.5%) were linked, and for the 15.5% who were not, income data were imputed. Adjusted family net income (AFNI) was calculated based on net family income (comprising net family income minus allowable deductions, such as the Canada child benefit) according to tax data for 2022. AFNI quintiles were created by dividing the AFNI ordered from lowest to highest into five categories: Quintile 1 (\$0 to \$25,295), Quintile 2 (\$25,300 to \$57,395), Quintile 3 (\$57,397 to \$95,723), Quintile 4 (\$95,736 to \$145,629), and Quintile 5 (\$145,645 or more).

Dental insurance coverage was determined based on answers to the question “Are all or part of your dental expenses covered by an insurance plan or government program?”

Self-perceived health and self-perceived mental health were based on responses to the questions “In general, how is your health?” and “In general, how is your mental health?” Responses to each question were recoded into three categories: excellent or very good, good, and fair or poor.

The composite variable for tooth loss and denture status was derived from responses to the questions “Do you have at least one of your own natural teeth?” and “Do you wear dentures, dental prosthesis, or false teeth?” The variable included three categories: teeth only, no teeth with or without dentures (edentulous), and teeth and dentures.

Persistent mouth pain was coded as yes (often or sometimes) or no (rarely or never), based on responses to the question “In the

past 12 months, how often have you had any persistent or on-going mouth pain?" This includes pain in the teeth, gums, tongue, jaw, and jaw joints.

Untreated mouth problems were coded as yes or no based on the question "Do you have any untreated mouth problems?" In the COHS, mouth problems were described as conditions that cause pain or discomfort, including abscesses, gum issues, untreated cavities, fillings needing to be replaced, tooth pain, injuries, or mouth sores.

Avoiding eating particular foods because of problems with the mouth was coded as yes (often or sometimes) or no (rarely or never) based on responses to the question "In the past 12 months, how often have you avoided eating particular foods because of problems with your mouth?" This excludes avoidance because of allergies or orthodontic treatments.

Persistent dry mouth was coded as yes (often or sometimes) or no (rarely or never) based on responses to the question "In the past 12 months, how often have you had persistent dry mouth?"

Dissatisfaction with the appearance of teeth or dentures was coded as yes (dissatisfied or very dissatisfied), no (very satisfied

or satisfied), or neither satisfied nor dissatisfied based on responses to the question "How satisfied are you with the appearance of your teeth or dentures?" An attempt was made to further collapse the responses into two categories instead of three to facilitate counting of OH-related conditions. However, preliminary analysis found that the "neither" category was indeed distinct from both the satisfied and dissatisfied categories, and therefore, the intermediate "neither" response category was retained.

Brushing teeth at least twice daily was based on responses to the question "How often do you usually brush your teeth or dentures?" Valid responses were collapsed into two categories: two or more times per day, or less than twice per day.

Flossing regularly was defined as five or more times per week, compared with less than five times per week and was based on responses to the question "How often do you usually clean between your teeth with dental floss or any flossing aid?" Respondents who reported not having teeth or dentures were not asked this question; to retain these respondents (n=198) in the analysis, they were included in the less than five times per week category.

Table 1
Prevalence of self-reporting fair or poor oral health by selected characteristics, overall and by gender,
population aged 18 or older, Canada excluding territories

Characteristic	Total			Men+			Women+		
	%	95% confidence interval		%	95% confidence interval		%	95% confidence interval	
		from	to		from	to		from	to
Total	17.1	15.9	18.3	18.5 [†]	16.7	20.5	15.6	14.3	17.0
Age group									
18 to 34 years [†]	15.1	12.2	18.4	17.5	13.0	23.2	12.4	9.5	16.1
35 to 64 years	15.5	14.1	16.9	16.5	14.5	18.8	14.4	12.7	16.4
65 years or older	22.7 *	21.2	24.3	24.3 *	21.9	26.8	21.4 *	19.5	23.4
Population group									
Non-racialized, non-Indigenous [†]	14.3	13.3	15.4	15.7 [†]	14.0	17.6	13.0	11.9	14.3
Racialized, non-Indigenous	24.3 *	21.2	27.6	24.5 *	20.1	29.5	24.0 *	20.0	28.4
Indigenous	20.4	12.5	31.5	23.0 [‡]	10.3	43.9	17.7	11.9	25.5
Adjusted family net income									
Quintile 1 (lowest)	23.5 *	20.3	27.1	25.5 *	20.2	31.7	21.6 *	18.1	25.6
Quintile 2	23.6 *	21.0	26.3	26.5 [†]	22.1	31.5	20.9 *	18.4	23.7
Quintile 3	17.9 *	15.7	20.4	21.1 [†]	17.4	25.2	14.8 *	12.4	17.6
Quintile 4	12.7 *	10.5	15.2	14.1 *	11.0	18.0	11.4	8.7	14.7
Quintile 5 (highest) [†]	7.6	5.9	9.8	6.8	5.1	9.2	8.6	5.7	12.7
Dental coverage (insurance)									
No [†]	25.3	23.2	27.4	27.1	23.8	30.6	23.6	21.2	26.1
Yes	12.1 *	10.8	13.6	13.3 *	11.1	15.8	11.0 *	9.6	12.7
Immigrant status									
Non-immigrant (citizen by birth) [†]	14.2	13.0	15.5	15.8 [†]	13.8	18.0	12.9	11.5	14.4
Immigrant or non-permanent resident	24.4 *	21.5	27.6	25.3 *	21.0	30.1	23.3 *	19.6	27.5
Missing	18.7 *	15.4	22.5	18.9	13.9	25.1	18.4	14.7	22.8
Self-perceived general health									
Excellent or very good [†]	6.8	5.6	8.2	7.7	5.8	10.2	5.8	4.7	7.2
Good	20.1 *	18.1	22.2	22.6 [†]	19.3	26.3	17.6 *	15.4	20.1
Fair or poor	54.5 *	50.4	58.6	58.4 *	52.1	64.5	51.2 *	45.9	56.5
Self-perceived mental health									
Excellent or very good [†]	11.2	9.9	12.7	12.6 [†]	10.5	15.1	9.7	8.3	11.3
Good	20.2 *	18.0	22.5	22.6 *	19.1	26.4	18.1 *	15.6	21.0
Fair or poor	33.1 *	29.1	37.4	37.6 [†]	30.9	44.9	29.6 *	25.4	34.2

[†] reference category

* significantly different from reference category (p < 0.05)

[‡] significantly different from corresponding estimate for women+ (p < 0.05)

[§] use with caution (coefficient of variation >= 25% and < 50%)

Notes: The category "men+" includes men, as well as some non-binary people, while the category "women+" includes women, as well as some non-binary people. A pan-Indigenous approach was used for this part of the analysis, because the sample size was insufficient to disaggregate results by Indigenous identity. Information about Indigenous status was not available.

Source: Statistics Canada, Canadian Oral Health Survey, 2023/2024.

Visiting a dental professional less than one year ago was coded as less than one year ago, or one year ago or longer. Services may have been provided in any setting where the OH professional is licensed to practice; professionals include dentists, denturists, dental hygienists, or any other dental specialist.

Nicotine user status had two categories: current non-user, if use occurred in the past or never, and daily or occasional user, when products containing nicotine (including cigarettes, cigars, vaping products, and chewing tobacco) were being used daily or occasionally.

Analytical techniques

Weighted cross-tabulations were calculated to examine prevalence estimates of reported fair or poor OH by selected characteristics.

Associations between fair or poor OH and covariates were also presented as odds ratios using unadjusted and adjusted multivariable logistic regression to account for the potential

confounding of the other factors. Because sex or gender differences in OH and related behaviours have been found previously, analyses and models were also stratified by gender.³⁵⁻³⁸

Given that people can experience multiple OH problems at one time, two additional tables are presented. One includes different combinations of the four dichotomous OH-related conditions (persistent mouth pain, untreated mouth problems, avoidance of eating particular foods because of mouth problems, and persistent dry mouth). The other table includes a zero-to-four counter of the subset of four OH-related conditions by two other OH-related variables: dissatisfaction with the appearance of teeth or dentures, and tooth loss and denture use status.

Bootstrap weights were applied using SAS 9.4 and SUDAAN 11.0.3 to account for the underestimation of standard errors resulting from the complex survey design.³⁹ Differences between genders, OH groups, and reference categories were calculated with t-tests and considered statistically significant at $p < 0.05$.

Table 2
Prevalence of self-reporting fair or poor oral health by other oral health-related problems and oral self-care practices, overall and by gender, population aged 18 or older, Canada excluding territories

Characteristic	Total			Men+			Women+		
	%	95% confidence interval		%	95% confidence interval		%	95% confidence interval	
		from	to		from	to		from	to
Tooth loss and denture status									
Natural teeth only [†]	14.1	12.8	15.6	16.1 [‡]	13.8	18.6	12.2	10.7	13.8
No teeth (with or without dentures)	20.6 *	16.6	25.3	19.4	13.1	27.9	21.5 *	16.7	27.2
Teeth and dentures	25.1 *	23.0	27.5	26.2 *	23.0	29.7	24.2 *	21.3	27.2
Persistent or ongoing mouth pain									
No (rarely or never) [†]	10.0	8.8	11.3	11.1	9.3	13.3	8.8	7.6	10.2
Yes (often or sometimes)	39.7 *	36.9	42.7	45.6 * [‡]	41.0	50.2	35.1 *	31.6	38.7
Untreated mouth problems									
No [†]	8.4	7.3	9.5	9.8 [‡]	8.1	11.9	6.9	5.9	8.2
Yes	46.6 *	43.5	49.6	51.2 * [‡]	46.6	55.9	42.7 *	38.9	46.5
Avoidance of eating particular foods because of mouth problems									
No (rarely or never) [†]	10.8	9.7	12.0	12.6 [‡]	10.7	14.7	9.0	7.8	10.4
Yes (often or sometimes)	45.8 *	42.6	49.1	50.5 * [‡]	45.6	55.5	42.3 *	38.2	46.5
Persistent dry mouth									
No (rarely or never) [†]	12.5	11.2	13.9	13.8 [‡]	11.8	16.1	11.1	9.7	12.6
Yes (often or sometimes)	31.1 *	28.5	33.7	34.9 * [‡]	30.8	39.3	27.9 *	25.0	31.0
Dissatisfaction with appearance of teeth or dentures									
No (very satisfied or satisfied) [†]	4.5	3.8	5.4	4.5	3.3	6.0	4.6	3.6	5.8
Neither satisfied nor dissatisfied	28.2 *	25.4	31.2	32.8 * [‡]	28.4	37.5	22.8 *	19.8	26.0
Yes (dissatisfied or very dissatisfied)	57.2 *	53.3	61.1	59.2 *	53.1	65.0	55.6 *	50.3	60.7
Visited a dental professional recently (less than one year ago)									
Yes [†]	11.2	10.2	12.3	11.7	10.1	13.4	10.8	9.5	12.2
No	31.4 *	28.7	34.2	33.3 *	29.3	37.6	29.2 *	26.0	32.7
Brushed teeth at least twice per day									
Yes [†]	13.4	12.3	14.6	13.1	11.3	15.2	13.6	12.2	15.1
No	25.4 *	22.8	28.2	27.4 *	23.7	31.5	22.3 *	19.2	25.8
Flossed regularly (at least five times per week)									
Yes [†]	13.5	12.1	15.0	14.2	11.9	16.8	12.9	11.2	14.8
No	18.7 *	17.1	20.4	20.0 *	17.5	22.6	17.3 *	15.5	19.2
Nicotine user status									
Current non-user [†]	15.9	14.8	17.1	17.2	15.3	19.2	14.8	13.4	16.3
Daily or occasional user	24.1 *	20.5	28.0	24.6 *	19.7	30.2	23.1 *	19.4	27.3

[†] reference category

* significantly different from reference category ($p < 0.05$)

[‡] significantly different from corresponding estimate for women+ ($p < 0.05$)

Note: The category "men+" includes men, as well as some non-binary people, while the category "women+" includes women, as well as some non-binary people.

Source: Statistics Canada, Canadian Oral Health Survey, 2023/2024.

Table 3

Prevalence of self-reporting fair or poor oral health by number of other oral health-related problems, dissatisfaction or satisfaction with appearance of teeth or dentures, or tooth loss and denture use, population aged 18 or older, Canada excluding territories

	No other oral health-related problems [†]			One other oral health-related problem			Two other oral health-related problems			Three other oral health-related problems			Four other oral health-related problems		
	95% confidence interval			95% confidence interval			95% confidence interval			95% confidence interval			95% confidence interval		
	%	from	to	%	from	to	%	from	to	%	from	to	%	from	to
Total	5.7	4.5	7.2	14.8 *	12.7	17.3	28.4 *	24.5	32.7	50.8 *	45.7	55.9	65.0 *	58.9	70.7
Dissatisfaction or satisfaction with appearance of teeth or dentures															
No (very satisfied or satisfied)	1.9	1.2	3.0	5.3 *	3.4	8.1	11.7 *	8.1	16.6	18.6 *	13.6	24.8	27.8 *	18.0	40.2
Neither satisfied nor dissatisfied	16.6 ‡	12.0	22.6	22.0 ‡	17.8	26.9	36.0 *‡	27.6	45.4	57.1 *‡	48.4	65.5	54.3 *‡	43.6	64.6
Yes (dissatisfied or very dissatisfied)	23.1 ‡	16.2	31.8	45.8 *‡	36.8	55.2	53.2 *‡	44.1	62.0	76.2 *‡	68.6	82.4	85.7 *‡	78.8	90.7
Tooth loss and denture use															
Natural teeth only	5.7	4.2	7.6	12.6 *	10.0	15.7	24.3 *	19.4	30.0	47.7 *	41.1	54.5	61.2 *	53.0	68.9
No teeth (with or without dentures)	3.5	2.2	5.5	17.7 *	12.2	24.9	40.8 *	25.0	58.8	61.7 *	46.0	75.3	54.8 *	35.5	72.7
Teeth and dentures	6.1	4.6	8.2	20.2 *§	16.1	25.2	35.5 *§	29.7	41.8	55.3 *	47.8	62.5	70.9 *	60.6	79.5

[†] reference category

* significantly different from reference category ($p < 0.05$)

‡ significantly different from corresponding estimate for satisfied or very satisfied ($p < 0.05$)

§ significantly different from corresponding estimate for natural teeth only ($p < 0.05$)

Source: Statistics Canada, Canadian Oral Health Survey, 2023/2024.

Results

According to the 2023/2024 COHS, 17.1% of Canadians aged 18 or older reported their OH as fair or poor (Table 1).

Bivariate results showed that self-reported fair or poor OH was more common among men (18.5%) than women (15.6%). A higher percentage of people aged 65 or older (22.7%) described their OH as fair or poor than younger people aged 18 to 34 (15.1%).

Nearly one-quarter (24.3%) of the racialized population described their OH as fair or poor, which was higher than the 14.3% observed for the non-racialized population (excluding Indigenous people). Fair or poor OH estimates followed the same pattern for immigrants (24.4%) versus non-immigrants (14.2%).

An income gradient was found, whereby a smaller percentage of individuals in the highest income quintile rated their OH as fair or poor compared with individuals in each of the lower income quintiles. For example, fair or poor OH was about three times less common among people in the highest income quintile (7.6%) compared with those in the lowest (23.5%). Fair or poor OH was also more prevalent among people who reported not having dental insurance (25.3%) than it was among those who had at least some coverage (12.1%).

In addition, bivariate analyses found that OH was correlated with general and mental health. Over half (54.5%) of people who described their general health as fair or poor and one-third (33.1%) who described their mental health as fair or poor also considered their OH to be fair or poor. Conversely, the percentages reporting fair or poor OH were lower among those rating their general or mental health more favourably (e.g., 6.8% for those with very good or excellent general health and 11.2% for those with very good or excellent mental health).

Most adults (95.6%) in Canada had at least one natural tooth, and 4.4% had none, a condition known as edentulism (data not

shown). More than one-quarter (27.6%) of adults replaced missing teeth with dental prostheses (false teeth, plates, bridges, etc.), with or without remaining natural teeth (data not shown).

As might be expected, the prevalence of fair or poor OH varied depending on whether the person had some or total tooth loss or wore dentures. For example, fair or poor OH was more prevalent among denture wearers with some teeth (25.1%) and among edentulous people regardless of denture use (20.6%) than it was for people with natural teeth only (14.1%) (Table 2).

Reporting fair or poor OH was also more common among individuals who were dissatisfied with the appearance of their teeth or dentures (57.2%), while only 4.5% of those who were satisfied or very satisfied reported their oral health as fair or poor. Additionally, 28.2% of those who reported being neither satisfied nor dissatisfied with the appearance of their teeth or dentures considered their OH fair or poor.

The prevalence of fair or poor OH was also higher for people experiencing four other types of OH-related conditions or problems. Specifically, in the presence of each condition, fair or poor OH prevalence increased three or four times compared with when the condition was absent (or rarely experienced): 39.7% of those with mouth pain vs. 10.0% of those without, 46.6% of those with untreated mouth problems vs. 8.4% of those without, 45.8% of those needing to avoid certain foods because of mouth problems vs. 10.8% of those who did not, and 31.1% of those with persistent dry mouth vs. 12.5% of those without (Table 2).

As the number of OH conditions increased, so did reporting of fair or poor OH—from 5.7% of people with no conditions to 14.8% with one, 28.4% with two, 50.8% with three, and 65.0% with four (Table 3). Certain combinations of conditions had an even bigger impact (Table 4). For instance, among people with two OH conditions, the percentages reporting fair or poor OH ranged from a low of 10.9% when they had mouth pain and food avoidance to a high of 40.4% when they had untreated mouth problems and food avoidance.

Table 4
Prevalence of self-reporting fair or poor oral health by combination of other oral health-related problems, population aged 18 or older, Canada excluding territories

	Number of conditions	%	95% confidence interval	
			from	to
None [†]	0	5.7	4.5	7.2
Mouth pain only	1	12.0 *	8.1	17.5
Mouth problems only	1	27.9 *	21.6	35.2
Food avoidance only	1	15.5 *	10.8	21.8
Dry mouth only	1	10.3 *	8.0	13.3
Mouth pain and mouth problems	2	35.7 *	26.8	45.7
Mouth pain and food avoidance	2	10.9 *	7.1	16.4
Mouth pain and dry mouth	2	17.6 *	11.8	25.5
Mouth problems and food avoidance	2	40.4 *	29.9	52.0
Mouth problems and dry mouth	2	33.7 *	25.3	43.2
Food avoidance and dry mouth	2	34.2 *	23.4	47.0
Mouth pain, mouth problems, and food avoidance	3	57.5 *	50.0	64.6
Mouth pain, mouth problems, and dry mouth	3	47.0 *	35.9	58.5
Mouth pain, food avoidance, and dry mouth	3	38.6 *	29.0	49.1
Mouth problems, food avoidance, and dry mouth	3	47.6 *	33.3	62.4
Mouth pain, mouth problems, food avoidance, and dry mouth	4	65.0 *	58.9	70.7

[†] reference category

* significantly different from reference category ($p < 0.05$)

Source: Statistics Canada, Canadian Oral Health Survey, 2023/2024.

Satisfaction with the appearance of teeth or dentures also played a role. People who were satisfied or very satisfied with their teeth or dentures had lower rates of fair or poor OH (ranging from 1.9% to 27.8%, depending on the number of OH conditions) (Table 3). In contrast, those who were dissatisfied with the appearance of teeth or dentures reported higher rates of fair or poor OH (23.1% to 85.7%), and even those who felt neutral (neither satisfied nor dissatisfied) had increased rates (16.6% to 54.3%). However, the impact of tooth loss and denture use, in addition to other OH conditions, on fair or poor OH prevalence was less consistent, with few statistically significant differences between people with differing levels of tooth loss and denture use profiles (Table 3).

Bivariate analyses showed that not following recommended oral self-care (hygiene) practices—brushing twice daily, flossing five or more times per week, having annual dental check-ups, and avoiding nicotine products—were each associated with worse self-ratings of OH (Table 2). For example, more than 3 in 10 adults who had not seen a dental professional in the past year (31.4%) rated their OH as fair or poor, nearly triple the percentage of those who had had an annual dental visit (11.2%).

Because sociodemographic characteristics, other OH-related conditions, and OH self-care are not independent of each other, multivariable logistic regression analysis was performed to account for the simultaneous effects of these factors on self-reported fair or poor OH. Dissatisfaction with the appearance of teeth or dentures, lower general health, and untreated mouth problems were the most strongly associated with fair or poor OH (Table 5). Other significant factors for fair or poor OH included being a man, being a racialized person, having a lower household income (bottom 40%), having dentures with some natural teeth, having mouth pain, avoiding food because of mouth problems, not brushing twice daily, and not having had an annual dental visit (Table 5).

Gender-specific logistic models showed fairly similar results, with three exceptions: lower income and twice-daily brushing

remained significant only for men, while the difference between racialized and non-racialized population groups remained statistically significant for women (Table 6). In other words, racialized women had statistically significant higher odds of rating their OH as fair or poor than non-racialized women, while racialized men did not have statistically significant higher odds of rating their OH as fair or poor than non-racialized men.

Discussion

This analysis of 2023/2024 COHS data provides recent, nationally representative estimates of self-reported fair or poor OH for Canadian adults overall and across sociodemographic characteristics, OH-related problems, and preventive oral self-care practices. The study also establishes OH-related benchmarks using data collected largely before the launch of the Canadian Dental Care Plan (CDCP).

Fair or poor OH was positively associated with all four dichotomous OH-related conditions—mouth pain, untreated mouth problems, avoidance of certain foods, and dry mouth—and two other (non-dichotomous) conditions: tooth loss and denture use, and dissatisfaction with the appearance of teeth or dentures. Multiple OH problems were also common among the fair or poor OH group.

High levels of agreement between self-reported fair or poor OH and the other OH measures are important because they provide support for using self-rated OH as a single-item indicator for population-level OH monitoring. This result is not all that surprising given that most people consider their current OH conditions, such as mouth pain, tooth loss and denture use, functional problems (such as needing to avoid certain foods because of mouth problems), treatment needs, and OH self-care (hygiene) practices,^{40,41} when evaluating the current state of their mouth and teeth; all elements of which were available in the COHS and included in this analysis.

Table 5

Unadjusted and adjusted odds ratios relating self-reported oral health-related problems, oral self-care practices, and sociodemographic characteristics to self-reporting fair or poor oral health, population aged 18 or older, Canada excluding territories

Characteristic	Unadjusted			Adjusted		
	OR	95% confidence interval		AOR	95% confidence interval	
Gender						
Men [†]	1.2 *	1.1	1.5	1.3 *	1.1	1.7
Women [†]	1.0	...	...	1.0	...	...
Age group						
18 to 34 years [†]	1.0	...	...	1.0	...	...
35 to 64 years	1.0	0.8	1.4	0.9	0.6	1.3
65 years or older	1.7 *	1.3	2.1	1.0	0.7	1.5
Population group						
Non-racialized, non-Indigenous [†]	1.0	...	...	1.0	...	...
Racialized, non-Indigenous	1.9 *	1.6	2.3	1.7 *	1.2	2.5
Indigenous	1.5	0.8	2.8	1.8	0.7	4.5
Immigrant status						
Non-immigrant (citizen by birth) [†]	1.0	...	...	1.0	...	...
Immigrant or non-permanent resident	1.9 *	1.6	2.4	1.2	0.8	1.7
Missing	1.4 *	1.1	1.8	1.1	0.8	1.6
Adjusted family net income						
Quintile 1 (lowest)	3.7 *	2.7	5.2	1.9 *	1.2	2.8
Quintile 2	3.7 *	2.8	5.0	1.6 *	1.1	2.3
Quintile 3	2.6 *	1.9	3.6	1.5	1.0	2.2
Quintile 4	1.8 *	1.3	2.5	1.4	1.0	2.1
Quintile 5 (highest) [†]	1.0	...	...	1.0	...	...
Dental coverage (insurance)						
No [†]	1.0	...	...	1.0	...	...
Yes	0.4 *	0.3	0.5	0.8	0.6	1.0
Self-perceived general health						
Excellent or very good [†]	1.0	...	...	1.0	...	...
Good	3.5 *	2.7	4.4	1.8 *	1.3	2.5
Fair or poor	16.5 *	12.6	21.6	6.9 *	4.9	9.8
Self-perceived mental health						
Excellent or very good [†]	1.0	...	...	1.0	...	...
Good	2.0 *	1.6	2.4	1.0	0.7	1.3
Fair or poor	3.9 *	3.1	5.0	0.7	0.5	1.0
Tooth loss and denture status						
Natural teeth only [†]	1.0	...	...	1.0	...	...
No teeth (with or without dentures)	1.6 *	1.2	2.1	0.8	0.5	1.2
Teeth and dentures	2.0 *	1.7	2.4	1.6 *	1.3	2.0
Persistent or ongoing mouth pain						
No (rarely or never) [†]	1.0	...	...	1.0	...	...
Yes (often or sometimes)	6.0 *	5.0	7.1	1.6 *	1.3	2.1
Untreated mouth problems						
No [†]	1.0	...	...	1.0	...	...
Yes	9.5 *	7.9	11.5	3.0 *	2.3	3.9
Avoidance of eating particular foods because of mouth problems						
No (rarely or never) [†]	1.0	...	...	1.0	...	...
Yes (often or sometimes)	7.0 *	5.8	8.4	1.6 *	1.3	2.1
Persistent dry mouth						
No (rarely or never) [†]	1.0	...	...	1.0	...	...
Yes (often or sometimes)	3.2 *	2.7	3.8	1.1	0.9	1.4
Dissatisfaction with appearance of teeth or dentures						
No (very satisfied or satisfied) [†]	1.0	...	...	1.0	...	...
Neither satisfied nor dissatisfied	8.3 *	6.6	10.4	5.1 *	3.9	6.8
Yes (dissatisfied or very dissatisfied)	28.3 *	22.0	36.3	11.7 *	8.4	16.3
Visited a dental professional recently (less than one year ago)						
Yes [†]	1.0	...	...	1.0	...	...
No	3.6 *	3.1	4.2	2.2 *	1.7	2.8
Brushed teeth at least twice per day						
Yes [†]	1.0	...	...	1.0	...	...
No	2.2 *	1.9	2.6	1.5 *	1.1	1.9
Flossed regularly (at least five times per week)						
Yes [†]	1.0	...	...	1.0	...	...
No	1.5	1.3	1.8	1.2	1.0	1.5
Nicotine user status						
Current non-user [†]	1.0	...	...	1.0	...	...
Daily or occasional user	1.7 *	1.3	2.1	1.2	0.9	1.7

... not applicable

[†] reference category

* significantly different from reference category (p < 0.05)

Notes: OR = odds ratio; AOR = adjusted odds ratio. The category "men+" includes men, as well as some non-binary people, while the category "women+" includes women, as well as some non-binary people. A pan-Indigenous approach was used for this part of the analysis, because the sample size was insufficient to disaggregate results by Indigenous identity. Information about Indigenous status was not available. Regression models automatically exclude respondent records with missing data on considered covariates. Unadjusted models had sample sizes from 26,073 to 26,752. The adjusted model used 24,330 records.

Source: Statistics Canada, Canadian Oral Health Survey, 2023/2024.

Table 6

Unadjusted and adjusted gender-specific odds ratios relating self-reported oral health-related problems, oral self-care practices, and sociodemographic characteristics to self-reporting fair or poor oral health, population aged 18 or older, Canada excluding territories

Characteristic	Men+						Women+					
	Unadjusted			Adjusted			Unadjusted			Adjusted		
	OR	95% confidence interval		AOR	95% confidence interval		OR	95% confidence interval		AOR	95% confidence interval	
		from	to		from	to		from	to		from	to
Age group												
18 to 34 years [†]	1.0	...	...	1.0	...	...	1.0	...	...	1.0	...	...
35 to 64 years	0.9	0.6	1.4	0.8	0.4	1.4	1.2	0.8	1.7	1.0	0.6	1.7
65 years or older	1.5 *	1.0	2.2	0.8	0.4	1.4	1.9 *	1.4	2.7	1.3	0.8	2.2
Population group												
Non-racialized, non-Indigenous [†]	1.0	...	...	1.0	...	...	1.0	...	...	1.0	...	...
Racialized, non-Indigenous	1.7 *	1.3	2.3	1.2	0.8	2.0	2.1 *	1.6	2.7	2.4 *	1.4	4.2
Indigenous	1.6	0.5	4.8	2.2	0.5	9.7	1.4	0.9	2.3	1.1	0.5	2.5
Immigrant status												
Non-immigrant (citizen by birth) [†]	1.0	...	...	1.0	...	...	1.0	...	...	1.0	...	...
Immigrant or non-permanent resident	1.8 *	1.4	2.4	1.4	0.8	2.3	2.1 *	1.6	2.7	1.0	0.6	1.7
Missing	1.2	0.8	1.9	0.9	0.6	1.5	1.5 *	1.1	2.1	1.3	0.8	2.1
Adjusted family net income												
Quintile 1 (lowest)	4.7 *	2.9	7.4	2.5 *	1.3	5.0	2.9 *	1.8	4.8	1.2	0.7	2.1
Quintile 2	4.9 *	3.3	7.3	2.0 *	1.1	3.6	2.8 *	1.8	4.5	1.2	0.7	2.0
Quintile 3	3.6 *	2.4	5.4	2.1 *	1.2	3.8	1.9 *	1.2	3.0	0.9	0.6	1.5
Quintile 4	2.2 *	1.5	3.5	1.9 *	1.1	3.4	1.4	0.8	2.3	1.0	0.6	1.8
Quintile 5 (highest) [†]	1.0	...	...	1.0	...	...	1.0	...	...	1.0	...	...
Dental coverage (insurance)												
No [†]	1.0	...	...	1.0	...	...	1.0	...	...	1.0	...	...
Yes	0.4 *	0.3	0.5	0.8	0.5	1.2	0.4 *	0.3	0.5	0.7	0.5	1.0
Self-perceived general health												
Excellent or very good [†]	1.0	...	...	1.0	...	...	1.0	...	...	1.0	...	...
Good	3.5 *	2.4	5.1	1.9 *	1.2	3.1	3.5 *	2.6	4.5	5.7 *	3.6	8.9
Fair or poor	16.8 *	11.1	25.4	8.9 *	5.2	15.1	16.9 *	12.3	23.3	5.7 *	3.6	8.9
Self-perceived mental health												
Excellent or very good [†]	1.0	...	...	1.0	...	...	1.0	...	...	1.0	...	...
Good	2.0 *	1.5	2.7	0.9	0.6	1.4	2.1 *	1.6	2.6	1.0	0.7	1.4
Fair or poor	4.2 *	2.9	6.0	0.7	0.4	1.2	3.9 *	3.0	5.2	0.8	0.5	1.2
Tooth loss and denture status												
Natural teeth only [†]	1.0	...	...	1.0	...	...	1.0	...	...	1.0	...	...
No teeth (with or without dentures)	1.3	0.8	2.1	0.5	0.3	1.0	2.0 *	1.4	2.8	1.1	0.7	1.7
Teeth and dentures	1.9 *	1.5	2.4	1.6 *	1.1	2.3	2.3 *	1.8	2.9	1.7 *	1.2	2.3
Persistent or ongoing mouth pain												
No (rarely or never) [†]	1.0	...	...	1.0	...	...	1.0	...	...	1.0	...	...
Yes (often or sometimes)	6.7 *	5.1	8.8	1.8 *	1.2	2.6	5.6 *	4.5	7.0	1.5 *	1.1	2.1
Untreated mouth problems												
No [†]	1.0	...	...	1.0	...	...	1.0	...	...	1.0	...	...
Yes	9.7 *	7.3	12.9	2.7 *	1.8	4.0	10.0 *	7.9	12.7	3.5 *	2.5	5.0
Avoidance of eating particular foods because of mouth problems												
No (rarely or never) [†]	1.0	...	...	1.0	...	...	1.0	...	...	1.0	...	...
Yes (often or sometimes)	7.1 *	5.4	9.3	1.7 *	1.1	2.5	7.4 *	5.8	9.4	1.6 *	1.2	2.2
Persistent dry mouth												
No (rarely or never) [†]	1.0	...	...	1.0	...	...	1.0	...	...	1.0	...	...
Yes (often or sometimes)	3.3 *	2.6	4.3	1.2	0.8	1.8	3.1 *	2.5	3.9	1.1	0.8	1.5
Dissatisfaction with appearance of teeth or dentures												
No (very satisfied or satisfied) [†]	1.0	...	...	1.0	...	...	1.0	...	...	1.0	...	...
Neither satisfied nor dissatisfied	10.5 *	7.3	15.0	6.9 *	4.5	10.7	6.1 *	4.6	8.3	3.6 *	2.6	5.2
Yes (dissatisfied or very dissatisfied)	31.2 *	21.0	46.4	14.2 *	8.5	23.9	26.1 *	18.7	36.4	10.1 *	6.8	15.0
Visited a dental professional recently (less than one year ago)												
Yes [†]	1.0	...	...	1.0	...	...	1.0	...	...	1.0	...	...
No	3.8 *	3.0	4.8	2.6 *	1.8	3.7	3.4 *	2.7	4.2	1.8 *	1.3	2.4
Brushed teeth at least twice per day												
Yes [†]	1.0	...	...	1.0	...	...	1.0	...	...	1.0	...	...
No	2.5 *	1.9	3.2	1.8 *	1.2	2.6	1.8 *	1.5	2.3	1.1	0.8	1.5
Flossed regularly (at least five times per week)												
Yes [†]	1.0	...	...	1.0	...	...	1.0	...	...	1.0	...	...
No	1.5 *	1.2	2.0	1.2	0.8	1.6	1.4 *	1.2	1.7	1.3	1.0	1.7
Nicotine user status												
Current non-user [†]	1.0	...	...	1.0	...	...	1.0	...	...	1.0	...	...
Daily or occasional user	1.6 *	1.2	2.2	1.2	0.7	1.9	1.7 *	1.4	2.2	1.3	0.9	1.9

... not applicable

[†] reference category

* significantly different from reference category (p < 0.05)

Notes: OR = odds ratio; AOR = adjusted odds ratio. The category "men+" includes men, as well as some non-binary people, while the category "women+" includes women, as well as some non-binary people. A pan-Indigenous approach was used for this part of the analysis, because the sample size was insufficient to disaggregate results by Indigenous identity. Information about Indigenous status was not available. Regression models automatically exclude respondent records with missing data on considered covariates. Unadjusted models had sample sizes from 11,042 to 11,355 for men+ and from 15,031 to 15,397 for women+. The adjusted men+ model used 10,192 records; the corresponding sample size for the adjusted women+ model was 14,138.

Source: Statistics Canada, Canadian Oral Health Survey, 2023/2024.

Many sociodemographic patterns were also consistent with the existing literature. For instance, in this study, fair or poor OH was more prevalent among men than women. This is an established pattern thought to be attributed to men's poorer oral hygiene habits, higher levels of tooth decay, dental trauma rates, and fewer dental visits, while women's better hygiene, higher OH literacy, and more positive attitudes toward dental care contribute to their better ratings.^{1,37,38,42,43}

The odds of reporting fair or poor OH were 1.7 times higher for racialized, non-Indigenous adults compared with non-racialized, non-Indigenous adults. Many studies have also found OH, tooth decay, and dental care access differences between racialized and non-racialized people,^{1,36,42,44} with some exceptions.³⁷ However, when the results were stratified by gender, this disparity persisted only among women, possibly reflecting the intersection of racialized and gender-based inequities in dental care access. Among men, poorer OH behaviours may have overshadowed differences by racialized status.

Income also shaped outcomes. Adults in the lowest 40% of household income were more likely to report fair or poor OH than those in the highest quintile. When stratified by gender, significant differences were observed among all lower quintiles for men. Among women, income was not associated with reporting fair or poor OH. Several studies have found worse OH among lower-income people.^{1,3,19,23,36,37,41,43-47} Explanations of differences by gender are likely complex. Since women tend to maintain better oral hygiene and can be more likely to seek preventive dental care, even when resources are limited, the impacts of lower income on their OH may have been minimized. Alternatively, men's OH might be more sensitive to functional problems (such as chewing difficulties) or visible deterioration, which are more likely when income is lower and care is delayed.

Self-reported general health was also strongly related to self-reported perceptions of OH: adults who did not report excellent or very good general health were more likely to report fair or poor OH, consistent with other research showing that the two are intertwined and at least in part related to shared risk factors (e.g., diet, smoking, systemic inflammation).^{7,12,23,47} While unadjusted analyses also initially found associations with self-reported mental health, these associations were lost after adjustment; this has been observed before.⁴⁸

Despite a considerable literature showing that OH (variously measured) deteriorates with age,^{3,16,43} this association, while observed in the bivariate results, lost statistical significance after adjustment. This suggests that age effects were explained by other factors, although there might be further considerations. For instance, research into the criteria people use when assessing their OH has found that older adults can use different frames of reference than younger people.⁴⁰

An unexpected finding was that edentulism was not a significant predictor of fair or poor OH. While prior research links tooth loss and denture wearing with lower self-rated OH, other research has found that some adults define good OH less

by physical status (i.e., being dentate) than by freedom from pain, ability to function, or feeling confident.^{36,45} Thus, some people, particularly older people, have been found to give favourable ratings to their OH despite no longer having any of their own, natural teeth. Given that the loss of all teeth is more typically considered an indication of dental impairment, since people with no natural teeth have limited oral function, future research with a larger sample of edentulous individuals would be beneficial to enable study of this apparent contradiction.

Strengths and limitations

Among this study's strengths is the use of Canada's first national OH survey, with a large cross-sectional sample of about 27,000 adults and wide-ranging self-reported information about the mouth, teeth, and OH care access. The COHS is distinct from the annual Canadian Community Health Survey,⁴⁹ which is a general health survey featuring varied health topics, of which only selected OH questions have been included occasionally and not always for residents of all geographies.

The COHS also has limitations. Despite the large sample, broader definitions (combining categories) were sometimes required to ensure estimates were reportable. Estimates for specific racialized groups and for First Nations people, Métis, and Inuit were not possible. The survey was further limited to provincial residents, excluding Indigenous reserves or settlements, the unhoused, and institutionalized populations. Despite the importance of children's OH, children were also excluded from this study because self-reported OH was not available for this age group.

Some covariates of interest (e.g., number or condition of teeth, functional dentition) were excluded, while some lacked detail. For example, the reason for dental consultation was not collected. For other covariates, preferred response categories were missing, such as current and lifetime combustible tobacco use instead of "any nicotine product."⁵⁰

Bleeding gums when brushing teeth, a key periodontal indicator, could not be used since it was not asked to all respondents. Preliminary analyses suggested under-reporting among infrequent brushers, who had fewer opportunities to notice bleeding.

COHS data were self-reported and therefore susceptible to social desirability bias, where individuals report perceived correct or desirable behaviours rather than actual ones.

Although survey weights minimized non-response bias, residual bias is possible if participants differed on characteristics not included in the development of survey weights.

Concluding remarks

A detailed understanding of people who self-reported having fair or poor OH, along with information about specific OH-related conditions and OH self-care practices by sociodemographic characteristics collected largely in the year before CDGP, is important for supporting future surveillance of

potential impacts. Understanding who has fair or poor OH with and without the presence of other OH-related conditions is essential for identifying people at risk of additional or

worsening oral disease. Self-reported OH is useful, despite the potential for some over- and under-estimation of OH status.

References

- Office for Health Improvement & Disparities. Accredited official statistics: Adult oral health survey 2021: Self-reported health and oral impacts. Available from: <https://www.gov.uk/government/statistics/adult-oral-health-survey-2021/adult-oral-health-survey-2021-self-reported-health-and-oral-impacts>.
- FDI World Dental Federation. FDI's definition of oral health. Available at: <https://www.fdiworlddental.org/fdis-definition-oral-health>, accessed on November 18, 2025.
- Health Canada. Report on the findings of the oral health component of the Canadian Health Measures Survey 2007–2009. 2010. Available from: https://publications.gc.ca/site/archivée-archived.html?url=https://publications.gc.ca/collections/collection_2010/s-c-hc/H34-221-2010-eng.pdf.
- Reissmann DR, John MT, Schierz O, et al. Association between perceived oral and general health. *J Dent* 2013;41(7):581-9. DOI: 10.1016/j.jdent.2013.05.007.
- Glick M, Williams DM, Kleinman DV, et al. A new definition for oral health developed by the FDI World Dental Federation opens the door to a universal definition of oral health. *J Am Dent Assoc* 2016;147(12):915-7. DOI: 10.1016/j.adaj.2016.10.001.
- Canadian Dental Association. The State of Oral Health in Canada. March 2017. Available from: https://www.cda-adc.ca/stateoforalhealth/_files/thestateoforalhealthincanada.pdf.
- Dietrich T, Webb I, Stenhouse L, et al. Evidence summary: The relationship between oral and cardiovascular disease. *Br Dent J* 2017;222:381-5. DOI: 10.1038/sj.bdj.2017.224.
- Bui TC, Markham CM, Ross MW, et al. Examining the association between oral health and oral HPV infection. *Cancer Prev Res (Phila)* 2013;6(9):917-24. DOI: 10.1158/1940-6207.CAPR-13-0081.
- Lo C-H, Kwon S, Wang L, et al. Periodontal disease, tooth loss, and risk of oesophageal and gastric adenocarcinoma: A prospective study. *Gut* 2021;70(3):620-1. DOI: 10.1136/gutjnl-2020-321949.
- Paganini-Hill A, White SC, Atchison KA. Dental health behaviors, dentition, and mortality in the elderly: The leisure world cohort study. *J Aging Res* 2011;2011:156061. DOI: 10.4061/2011/156061.
- Hu XF, Moharrami M, Murphy K, Clarke J. Missing teeth, mortality, and hospitalization: A population-based cohort analysis from the Canadian Health Measures Survey and linkages. *Health Rep* 2025;36(10):1-14.
- Kotronia E, Brown H, Papacosta AO, et al. Oral health and all-cause, cardiovascular disease, and respiratory mortality in older people in the UK and USA. *Sci Rep* 2021;11(1):16452. DOI: 10.1038/s41598-021-95865-z.
- Statistics Canada. Canadian Health Measures Survey, Cycle 1. Available from: <https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&Id=10263>.
- Akinbami LJ, Chen T-C, Davy O, et al. National Health and Nutrition Examination Survey, 2017–March 2020 prepandemic file: Sample design, estimation, and analytic guidelines. *Vital Health Stat* 1. 2022;190:1-36.
- Lin M, Griffin SO, Gooch BF, et al. Oral Health Surveillance Report: Trends in Dental Caries and Sealants, Tooth Retention, and Edentulism, United States, 1999–2004 to 2011–2016. National Center for Chronic Disease Prevention and Health Promotion (U.S.). Division of Oral Health 2019. Available from: <https://stacks.cdc.gov/view/cdc/82756>.
- Australian Research Centre for Population Oral Health, The University of Adelaide. Australia's Oral Health – National Study of Adult Oral Health 2017-18. Adelaide: The University of Adelaide, South Australia; 2019. Available from: <https://health.adelaide.edu.au/arcpop/ua/media/821/australias-oral-health-2017-18.pdf>.
- National Services Scotland. Scottish Adult Oral Health Survey 2016-2018. Available from: <https://www.scottishdental.nhs.scot/wp-content/uploads/2019/04/2019-04-30-SAOHS-Report.pdf>.
- Sääksjärvi K, Elomäki HM, Ikonen J, et al. Cohort Profile: Healthy Finland Survey. *Int J Epidemiol* 2025;54(1):dyae166. DOI: 10.1093/ije/dyae166.
- National Public Dental Health Team (NPDHT) (England). National Dental Epidemiology Programme for England. Oral health survey of adults attending general dental practices 2018. Public Health England 2020. Available from: https://assets.publishing.service.gov.uk/media/5ee0abb0d3bf7f1eb9646438/AiP_survey_for_England_2018.pdf.
- Eke PI, Genco RJ. CDC Periodontal Disease Surveillance Project: Background, objectives, and progress report. *J Periodontol* 2007;78(7 Suppl):1366-71. DOI: 10.1902/jop.2007.070134.
- Tomar SL. Public health perspectives on surveillance for periodontal diseases. *J Periodontol* 2007;78(7 Suppl):1380-6. DOI: 10.1902/jop.2007.060340.
- Taylor GW, Borgnakke WS. Self-reported periodontal disease: Validation in an epidemiological survey. *J Periodontol* 2007;78 Suppl 7S:1407-20. DOI: 10.1902/jop.2007.060481.
- Australian Institute for Health and Wealth. Oral health and dental care in Australia - Web report [updated October 4, 2024]. Available from: <https://www.aihw.gov.au/getmedia/54eca525-8a32-4ec4-96cb-f3c8aa551f8c/oral-health-and-dental-care-in-australia.pdf?v=20250513133628&inline=true>.
- Do L, Luzzi L. Chapter 4 (pp 38-96): Oral health status. In: ARCPPOH. Australia's Oral Health: National Study of Adult Oral Health 2017–18. Adelaide: The University of Adelaide, South Australia; 2019.
- Pitiphat W, Garcia RI, Douglass CW, et al. Validation of self-reported oral health measures. *J Public Health Dent* 2002;62(2):122-8. DOI: 10.1111/j.1752-7325.2002.tb03432.x.

26. Blicher B, Joshipura K, Eke P. Validation of self-reported periodontal disease: A systematic review. *J Dent Res* 2005;84(10):881-90. DOI: 10.1177/154405910508401003.
27. Atala-Acevedo C, McGrath R, Glenister K, et al. Self-rated oral health as a valid measure of oral health status in adults living in rural Australia. *Healthcare (Basel)* 2023;11(12):1721. DOI: 10.3390/healthcare11121721.
28. Schnittker J, Bacak V. The increasing predictive validity of self-rated health. *PLoS One* 2014;9(1):e84933. DOI: 10.1371/journal.pone.0084933.
29. Bond J, Dickinson HO, Matthews F, et al. Self-rated health status as a predictor of death, functional and cognitive impairment: A longitudinal cohort study. *Eur J Ageing* 2006;3(4):193-206. DOI: 10.1007/s10433-006-0039-8.
30. Shields M, Shooshtari S. Determinants of self-perceived health. *Health Rep* 2001;13(1):35-52. Available from: <https://www150.statcan.gc.ca/n1/pub/82-003-x/2001001/article/6023-eng.pdf>.
31. Statistics Canada. Health indicator statistics, annual estimates. Table 13-10-0905-01. Available from: <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1310090501>.
32. Statistics Canada. Canadian Oral Health Survey (COHS). Available at: <https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=5399>.
33. Statistics Canada. Longitudinal Immigration Database (IMDB). Available at: <https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=5057>.
34. Statistics Canada. Administrative Personal Income Masterfile (APIM). Available from: <https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=5384>.
35. Statistics Canada. Disaggregated Data Action Plan. Available at: <https://www.statcan.gc.ca/en/trust/modernization/disaggregated-data>.
36. Farmer J, Phillips RC, Singhal S, et al. Inequalities in oral health: Understanding the contributions of education and income. *Can J Public Health* 2017;108(3):e240-5. DOI: 10.17269/CJPH.108.5929.
37. Finlayson TL, Williams DR, Siefert K, et al. Oral health disparities and psychosocial correlates of self-rated oral health in the National Survey of American Life. *Am J Public Health* 2010;100 Suppl 1(Suppl 1):S246-55. DOI: 10.2105/AJPH.2009.167783.
38. Su S, Lipsky MS, Licari FW, et al. Comparing oral health behaviours of men and women in the United States. *J Dent* 2022;122:104157. DOI: 10.1016/j.jdent.2022.104157.
39. Rust KF, Rao JNK. Variance estimation for complex surveys using replication techniques. *Stat Methods Med Res* 1996;5(3):281-310. DOI: 10.1177/096228029600500305.
40. Locker D, Maggias J, Wexler E. What frames of reference underlie self-ratings of oral health? *J Public Health Dent* 2009;69(2):78-89. DOI: 10.1111/j.1752-7325.2008.00103.x.
41. Matthias RE, Atchison KA, Lubben JE, et al. Factors affecting self-ratings of oral health. *J Public Health Dent* 1995;55(4):197-204. DOI: 10.1111/j.1752-7325.1995.tb02370.x.
42. Lipsky MS, Su S, Crespo CJ, et al. Men and oral health: A review of sex and gender differences. *Am J Mens Health* 2021;15(3):15579883211016361. DOI: 10.1177/15579883211016361.
43. Stevens C. Chapter 3 (pp 111-135): Dental Health. In: *Scottish Health Survey 2017 – Volume one: main report*. 2018. Available from: <https://www.gov.scot/publications/scottish-health-survey-2017-volume-1-main-report/pages/42/>.
44. U.S. Department of Health and Human Services. Oral Health in America: A Report of the Surgeon General. Rockville, MD: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health, 2000. Available from: <https://www.nidcr.nih.gov/sites/default/files/2017-10/hck1ocv.%40www.surgeon.fullrpt.pdf>.
45. Locker D. Self-esteem and socioeconomic disparities in self-perceived oral health. *J Public Health Dent* 2009;69(1):1-8. DOI: 10.1111/j.1752-7325.2008.00087.x.
46. Lyshol H, Grøtvedt L, Fagerhaug TN, et al. A study of socio-economic inequalities in self-reported oral and general health in South-East Norway. *Sci Rep* 2022;12(1):13721. DOI: 10.1038/s41598-022-18055-5.
47. Brennan DS, Singh KA. General health and oral health self-ratings, and impact of oral problems among older adults. *Eur J Oral Sci* 2011;119(6):469-73. DOI: 10.1111/j.1600-0722.2011.00873.x.
48. Palomer T, Ramírez V, Ortuño D. Relationship between oral health and depression: Data from the National Health Survey 2016–2017. *BMC Oral Health* 2024;24(1):188. DOI: 10.1186/s12903-024-03950-2.
49. Statistics Canada. Canadian Community Health Survey – Annual Component (CCHS). Available at: <https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=3226>.
50. Holliday R, Chaffee BW, Jakubovics NS, et al. Electronic cigarettes and oral health. *J Dent Res* 2021;100(9):906-13. DOI: 10.1177/00220345211002116.