Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

The incidence of COVID-19 among dentists practicing in the community in Canada

A prospective cohort study over a 6-month period

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Supplemental material is available online.

ABSTRACT

Background. Oral health care settings carry a potentially high risk of causing cross-infection between dentists and patients and among dental staff members due to close contact and use of aerosol-generating procedures. The authors aimed to estimate COVID-19 incidence rates among Canadian dentists over a 6-month period.

Methods. The authors conducted a prospective cohort study of 644 licensed dentists across Canada from July 29, 2020, through February 12, 2021. An online questionnaire, adapted from the World Health Organization's Unity Studies protocols for assessment of COVID-19 risk among health care workers, was used to collect data on self-reported severe acute respiratory syndrome coronavirus 2 infections every 4 weeks. A bayesian Poisson model was used to estimate the incidence rate and corresponding 95% credible intervals (CIs).

Results. Median age of participants was 47 years; most participants were women (56.4%) and general practitioners (90.8%). Median follow-up time was 188 days. Six participants reported COVID-19 infections during the study period, giving an incidence rate of 5.10 per 100,000 person-days (95% CI, 1.86 to 9.91 per 100,000 person-days). The incidence proportion was estimated to be 1,084 per 100,000 dentists (95% CI, 438 to 2,011 per 100,000 dentists) and 1,864 per 100,000 people (95% CI, 1,859 to 1,868 per 100,000 people) in the Canadian population during the same period.

Conclusions. The low infection rate observed among Canadian dentists from July 29, 2020, through February 12, 2021, should be reassuring to the dental and general community.

Practical Implications. Although the infection rates were low among Canadian dentists, it is important to continue to collect disease surveillance data.

Key Words. COVID-19; dentists; Canada; incidence; personal protective equipment.

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Evidence indicates an increased incidence of COVID-19 among health care providers (HCPs) compared with the general population.[1-4] In a systematic review of COVID-19 infection rates and deaths among HCPs, using data collected through May 8, 2020, researchers reported 3.9% of cases and 0.5% of COVID-19–related deaths globally were among HCPs.[2] Researchers investigating a cohort of HCPs in New York, New York, found a seroprevalence of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) antibodies of 13.7%.[3] Using data available through July 23, 2020, the Canadian Institute of Health Information reported that 19.4% of cases in Canada were among HCPs,[1] although cases varied considerably across provinces, from 5.4% in Saskatchewan to 24.1% in Quebec.[1] Dentists, a high-risk group of HCPs, were not included or at least not identified as a group in these studies. The available data concerning COVID-19 infections in dentists and dental care professionals come from studies in the United States,[5,6] United Kingdom,[7] and France,[8] as well as a retrospective case series report of 31 infected oral health care professionals from China.[9] Investigators from the US study reported a prevalence of 0.9% for confirmed or probable cases of COVID-19 infection among 2,195 dentists who responded to a

survey sent to 5,479 dentists across all states in June 2020.[5] The 6-month cumulative prevalence from this study remained low at 2.6%.[6] Investigators from the French study covered an earlier period (April 2020) and reported a higher prevalence of 1.9% among dentists and 0.8% among dental hygienists.[8] Researchers with the study from the United Kingdom, however, reported a 16.3% seroprevalence in May 2020 among oral health care professionals, which included dentists and other support staff members.[7] These reports highlight the geographical heterogeneity in the disease burden and the need to estimate the same among Canadian dentists.

Oral health care settings carry a potentially high risk of causing cross-infection between dentists and patients and among dental staff members due to their close contact and aerosol-generating procedures (AGPs).[10-12] Common instruments used for oral health care (for example, high-speed handpieces) can splash patient saliva or blood directly onto dental staff members and patients and aerosolize these fluids, potentially suspending them in the air for several hours.[10-13] Consequentially, March 15-23, 2020, as the COVID-19 pandemic emerged in Canada, dental regulatory authorities across Canada obliged dentists to close their offices to routine care and provide emergency care only.[14-16]

On May 4, 2020, the Saskatchewan and Manitoba provincial governments permitted dentists to open their offices for routine oral health care after guidelines issued from the relevant dental regulatory authorities.[17,18] This was followed by the other Canadian provinces and territories. Since this reopening, there have not been any jurisdictional shutdowns of oral health care in Canada. Early in the reopening phase (May 4-15, 2020), dental regulatory authorities published detailed infection control and prevention protocols for providing oral health care, and these varied across provinces. However, the level of evidence supporting the use of particular personal protective equipment (PPE) or the use of AGPs and the risk of experiencing contamination with SARS-CoV-2 and contracting COVID-19 remains poor.[19] In this context, we initiated a study in July 29, 2020 to August 12, 2020 with the aim of documenting the incidence of COVID-19 among community-based dentists in Canada over a 12-month period. Here we report our findings after 6 months.

METHODS

Study design

We used data from an ongoing, prospective cohort study of Canadian dentists. Eligibility criteria included being licensed to practice general or specialty dentistry in Canada during the study period; being SARS-CoV-2—negative at recruitment; and having no history of COVID-19. Potential participants, identified through rosters of 9 provincial dental licensing bodies or dental associations (Newfoundland and Labrador, Nova Scotia, Prince Edward Island, Quebec, Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia), were invited to participate through the associations' email lists. Regular email reminders were sent until we reached the required sample size. The ethics review boards of the leading institutions (Faculty of Medicine Institutional Review Board, McGill University, Biomedical Research Ethics Board, University of Saskatchewan) approved our study.

The sample size for our cohort study was calculated on the basis of estimates of infection rates in May 2020 in Canada. We calculated a sample size of 380 participants to be followed for 1 year to estimate an incidence proportion of 1%, with a margin of error of 1%. At least 200 participants were required in a subcohort to estimate an incidence proportion of 0.5% for nonsymptomatic COVID-19, with a margin of error of 0.9%.[20-22]

Recruitment

Invitations to participate were sent to dentists registered across 9 participating dental licensing bodies or associations in late July 29, 2020. Of 702 participants who consented to participate in our study, 651 completed the baseline survey. Excluding participants who stopped working before November 2019 (n = 2) and prevalent COVID-19 cases, 644 participants were invited to the longitudinal phase. We invited 226 participants randomly from this group to provide saliva samples every 4 weeks to test for asymptomatic cases of infection. Of these, 2 participants were later excluded owing to logistical challenges in shipping samples from their location, resulting in a final sample size of 224 for the subcohort.

ABBREVIATION KEY

AGP:	Aerosol-generating procedure.
HCP:	Health care provider.
PPE:	Personal protective equipment.
RT-PCR:	Reverse transcriptase polymerase chain reaction.
SARS-CoV-2:	Severe acute respiratory syndrome coronavirus 2.

Data collection

After providing informed consent, participants completed a baseline survey online. The following 3 domains of information were collected at this stage: demographics and comorbidities, details of oral health care provided to patients in the previous 2 weeks (for example, number of AGPs performed, N95 respirator use, and ventilation in clinics [clinical activity form]), and symptoms and infection status (for example, fever 38° C or higher, respiratory and other symptoms related to COVID-19, whether the participant has tested positive for SARS-CoV-2, and date and type of test [outcome form]). Questionnaires were adapted from World Health Organization's Unity Studies protocols for assessment of COVID-19 risk among health care workers[23] and were available in both official languages, English and French.

Participants who were negative for SAR-CoV-2 at baseline were invited to the longitudinal phase of our study and to provide their contact information (for example, telephone number and email and postal addresses). Every 4 weeks after baseline, participants completed an online questionnaire through the LimeSurvey platform.[24] These follow-up questionnaires included the clinical activity and outcome forms. In addition to questionnaire data, the participants included in the subcohort self-collected saliva samples every 4 weeks after baseline (as described below) and mailed them to the relevant laboratory for analyses.

The end of participant follow-up was defined as the earliest event among the following: self-reported diagnosis of COVID-19 infection, detection of SARS-CoV-2 RNA in saliva, death, leave of absence from practice (retirement or parental leave > 3 months), or administrative end for interim analysis (February 12, 2021).

Saliva sample collection and analysis

Saliva samples were self-collected using a saliva collection kit (Super•SAL universal saliva collection kit, Oasis Diagnostics) containing RNA stabilizer (RNAlater, Sigma) and proteinase inhibitors following the instructions for saliva collection that we prepared. The Super•SAL universal saliva collection kit is a swab device designed for saliva collection that allows the collection of protein, DNA, and RNA from human and microorganism sources. A total of 1.5 mL of saliva was collected at each follow-up.

Immediately after collection, saliva samples were shipped to the Salivary Proteomics Research Laboratory, College of Dentistry, University of Saskatchewan. At the Salivary Proteomics Research Laboratory, samples were centrifuged at 14,000*g* for 30 minutes at 4° C to separate pellets containing microorganisms, host cells, and other debris, from saliva supernatant containing the host and viral proteins and peptides.[25] Saliva supernatant was concentrated to one-half its volume using a centrifugal concentrator. Then, total RNA was extracted from 220 μL of saliva supernatant using QIAamp Viral RNA Mini Kit (Qiagen) according to the manufacturer's instructions. Extracted RNA was used for the qualitative detection of SARS-CoV-2—specific RNA in saliva samples with the RealStar SARS-CoV-2 RT-PCR Kit 1.0 (Altona Diagnostics) and real-time reverse transcriptase polymerase chain reaction (RT-PCR) technology using a CFX96 Touch Real-Time PCR Detection System (Bio-Rad). Our primary method for identifying COVID-19 cases using saliva samples was real-time RT-PCR, which is considered the reference standard method for detection of SARS-CoV-2 RNA in different biofluids.[26]

Statistical analysis

Longitudinal patterns of in-person oral health care provided by participants and types of PPE used were summarized using descriptive statistics. We used a bayesian Poisson model to estimate the incidence rate. Analyses were conducted using data collected from July 29, 2020, through February 12, 2021. To account for the uncertainty in the date of infection due to time lapse between infection and test dates, we implemented the proposed single random point imputation technique, which has been reported to be superior to other standard techniques.[27-29] The technique imputes a value for the follow-up duration from the interval from the date of the last reported negative result through the date of the sample that led to a positive result. This approach is based on the assumption that the infection could have happened at any point between these 2 visits. A non-informative prior (Gamma 0.0001, 0.0001) was used for the rate parameter. The model was fit in JAGS[30] using 4 parallel Markov chain Monte Carlo chains with 25,000 burn-in and 25,000 samples each (see the Appendix, available online at the end of this article, for details of the model). The

Table 1. Baseline characteristics, including demographic and professional information, of the participants in the cohort (n = 644).

CHARACTERISTIC	DATA
Age, Y	
Median (25%, 75%)	48 (38, 56)
≤ 30, no. (%)	30 (4.7)
31-59, no. (%)	514 (79.8)
≥ 60, no. (%)	100 (15.5)
Sex, No. (%)	
Female	363 (56.4)
Male	281 (43.6)
Province of Primary Practice, No. (%)	
Alberta	27 (4.2)
British Columbia	109 (16.9)
Manitoba	26 (4.0)
Newfoundland and Labrador	2 (0.3)
Nova Scotia	34 (5.3)
Ontario	241 (37.4)
Prince Edward Island	11 (1.7)
Quebec	164 (25.5)
Saskatchewan	29 (4.5)
Yukon	1 (0.2)
Type of Primary Practice, No. (%)	
General practice	585 (90.8)
Specialist practice	59 (9.2)
Community Mainly Served, No. (%)	
Metropolitan	147 (22.8)
Urban	220 (34.2)
Suburban	167 (25.9)
Rural	103 (16.0)
Remote	5 (0.8)
Missing	2 (0.3)
No. of Primary Offices per Week, No. (%)	
1	537 (83.4)
2	83 (12.9)
3	13 (2.0)
> 3	10 (1.6)
Missing	1 (0.2)
Follow-Up, d	
Median (25%, 75%)	188 (183, 191)
Mean (standard deviation)	182.8 (25.5)

convergence of Markov chain Monte Carlo chains was assessed using trace plots and Gelman-Rubin Rhat value.[31,32] Incidence rates and corresponding 95% credible intervals (CIs) were reported.

COVID-19 prevalence at baseline and incidence proportion were estimated using a bayesian binomial model with noninformative $\beta(1,1)$ prior distribution. We also compared the incidence proportion estimate with the national estimate during the study period, which we obtained from the Government of Canada's COVID-19 outbreak update.[33]

Table 2. Details of oral health care provided by participants with at least 1 in-person care provision in past 2 weeks.

VARIABLE	BASELINE	FOLLOW-UP			
		1	2	3	4	5
Participants, No.	612	617	612	604	552	588
No. of Patients Who Required an Aerosol-Generating Procedure per Week, No. (%)						
None	12 (2.0)	7 (1.1)	5 (0.8)	6 (1.0)	12 (2.2)	8 (1.4)
< 7	310 (50.7)	302 (48.9)	300 (49.0)	275 (45.5)	286 (51.8)	253 (43.0)
≥ 7	290 (47.4)	308 (49.9)	305 (49.8)	320 (53.0)	254 (46.0)	325 (55.3)
Missing	0 (0.0)	0 (0.0)	2 (0.3)	3 (0.5)	0 (0.0)	2 (0.3)
Provided Oral Health Care for Any COVID-19–Positive Patients, No. (%)						
No	610 (99.7)	616 (99.8)	601 (98.2)	595 (98.5)	546 (98.9)	579 (98.5)
Yes	2 (0.3)	1 (0.2)	9 (1.5)	7 (1.2)	6 (1.1)	7 (1.2)
Missing	0 (0.0)	0 (0.0)	2 (0.3)	2 (0.3)	0 (0.0)	2 (0.3)
Cared for Any Patients Suspected of Having COVID-19, No. (%)						
No	605 (98.9)	599 (97.1)	601 (98.2)	591 (97.8)	544 (98.6)	578 (98.3)
Yes	7 (1.1)	18 (2.9)	9 (1.5)	11 (1.8)	8 (1.4)	8 (1.4)
Missing	0 (0.0)	0 (0.0)	2 (0.3)	2 (0.3)	0 (0.0)	2 (0.3)

RESULTS

The mean age of participants was 47.3 years (range, 24-79 years); most participants were women (56.4%) and general practitioners (90.8%). As expected, given the general population distribution in Canada, most of our sample had their primary practices in Quebec and Ontario (62.9%), were serving a metropolitan or urban community (57%), and practiced in only 1 office per week (83.4%) (Table 1). The data collection period was from July 29, 2020 through February 12, 2021. Median follow-up was 188 days (interquartile range, 183-191 days). Eighteen participants (2.7%) were lost to follow-up during the study period.

Longitudinal patterns of in-person oral health care provision and PPE use

Most participants (≥ 80%) continued to provide in-person oral health care across the baseline and follow-up visits. Among this subgroup of participants, most performed AGPs for at least 1 patient during the study period. However, a low proportion of participants provided care for patients who were known to be COVID-19–positive or who were suspected of having COVID-19 (Table 2).

During the follow-up period, use of N95 respirators or higher-specification respirators increased from approximately 40% through 60% (Table 3 and Figure 1). Furthermore, the proportion of participants using both N95 respirators or higher-specification respirators and visors for all in-person oral health care procedures doubled during the follow-up period (9.3%-19.6%). Most participants (> 90%) used goggles or eyeglasses during all types of dental procedures throughout the follow-up period.

Incidence of COVID-19

During the follow-up period, 6 participants reported receiving a diagnosis of COVID-19, resulting in an incidence rate of 5.10 per 100,000 person-days (95% CI, 1.86 to 9.91 per 100,000 person-days). The cumulative incidence curve is presented in Figure 2. The incidence proportion was estimated to be 1,084 per 100,000 dentists (95% CI, 438 to 2,011 per 100,000 dentists). In other words, we estimated that 1.08% (95% CI, 0.44% to 2.01%) of Canadian dentists were COVID-19–positive during the study period from July 29, 2020, through February 12, 2021. The incidence proportion among the general population during the same period was 1,864 per 100,000 people (95% CI, 1,859 to 1,868 per 100,000 people).

None of the participants in the subcohort who provided saliva reported ever testing positive for COVID-19 during the study period. As expected, no SARS-CoV-2 was detected in any of the saliva samples from 224 participants during the study period.

Table 3. Pattern of use of facial coverings during in-person oral health care provision* during past 2 weeks.

VARIABLE	BASELINE	FOLLOW-UP				
		1	2	3	4	5
Providers, No.	612	617	612	604	552	588
Routine Use of Surgical Masks, No. (%)						
None	50 (8.2)	50 (8.1)	76 (12.4)	91 (15.1)	105 (19.0)	121 (20.6)
For all procedures	471 (77.0)	488 (79.1)	448 (73.2)	412 (68.2)	357 (64.7)	371 (63.1)
For AGPs only	11 (1.8)	6 (1.0)	3 (0.5)	5 (0.8)	5 (0.9)	3 (0.5)
For non-AGPs only	80 (13.1)	73 (11.8)	83 (13.6)	94 (15.6)	85 (15.4)	91 (15.5)
Missing	0 (0.0)	0 (0.0)	2 (0.3)	2 (0.3)	0 (0.0)	2 (0.3)
Use of N95 Respirators or Higher-Specification Respirators, No. (%)						
None	372 (60.8)	388 (62.9)	329 (53.8)	290 (48.0)	225 (40.8)	218 (37.1)
For all procedures	100 (16.3)	105 (17.0)	141 (23.0)	165 (27.3)	189 (34.2)	211 (35.9)
For AGPs only	139 (22.7)	124 (20.1)	139 (22.7)	146 (24.2)	138 (25.0)	157 (26.7)
For non-AGPs only	1 (0.2)	0 (0.0)	1 (0.2)	1 (0.2)	0 (0.0)	0 (0.0)
Missing	0 (0.0)	0 (0.0)	2 (0.3)	2 (0.3)	0 (0.0)	2 (0.3)
Use of Goggles or Eyeglasses, No. (%)						
None	23 (3.8)	18 (2.9)	24 (3.9)	20 (3.3)	18 (3.3)	23 (3.9)
For all procedures	552 (90.2)	569 (92.2)	558 (91.2)	554 (91.7)	512 (92.8)	542 (92.2)
For AGPs only	27 (4.4)	19 (3.1)	13 (2.1)	16 (2.6)	12 (2.2)	11 (1.9)
For non-AGPs only	10 (1.6)	11 (1.8)	15 (2.5)	12 (2.0)	10 (1.8)	10 (1.7)
Missing	0 (0.0)	0 (0.0)	2 (0.3)	2 (0.3)	0 (0.0)	2 (0.3)
Use of Visors (Face Shields), No. (%)						
None	161 (26.3)	178 (28.8)	154 (25.2)	150 (24.8)	127 (23.0)	129 (21.9)
For all procedures	242 (39.5)	217 (35.2)	245 (40.0)	245 (40.6)	243 (44.0)	246 (41.8)
For AGPs only	204 (33.3)	220 (35.7)	209 (34.2)	206 (34.1)	177 (32.1)	210 (35.7)
For non-AGPs only	5 (0.8)	2 (0.3)	2 (0.3)	1 (0.2)	5 (0.9)	1 (0.2)
Missing	0 (0.0)	0 (0.0)	2 (0.3)	2 (0.3)	0 (0.0)	2 (0.3)

* Aerosol-generating procedure (AGP).

DISCUSSION

Authors of several articles have highlighted oral health care professionals as being at high risk of becoming infected with SARS-CoV-2.[34-37] Previous reports on COVID-19 risk among HCPs in general also pointed toward this direction.[38-40] Results of studies from the United States and France conducted during the early phase of the pandemic showed low prevalence compared with the general population. However, to our knowledge, no researchers have reported the incidence rates of SARS-CoV-2 infections among Canadian dentists. We presented results from an ongoing, prospective cohort study of COVID-19 incidence rates in Canadian dentists working in the community.

After the initial phase of the pandemic and the reopening of dental offices to routine oral health care across the country in the spring of 2020, most participating dentists provided some form of in-person oral health care to patients during the study period. We found that infection rates in our study were lower than those documented for the general population, according to provincial and federal surveillance data during the study period (July 29, 2020-February 12, 2021).[33] However, due to the relatively short follow-up period, dynamic nature of the infection rates among the general population, and the fact that dentists are included in the data available from the public domain, this comparison must be interpreted with caution.

Notwithstanding the need to be cautious in interpreting the apparently lower infection rates in our sample compared with the general population, a lower rate may have been a reflection of an array of interacting factors, including but not limited to preprocedure screening of patients,

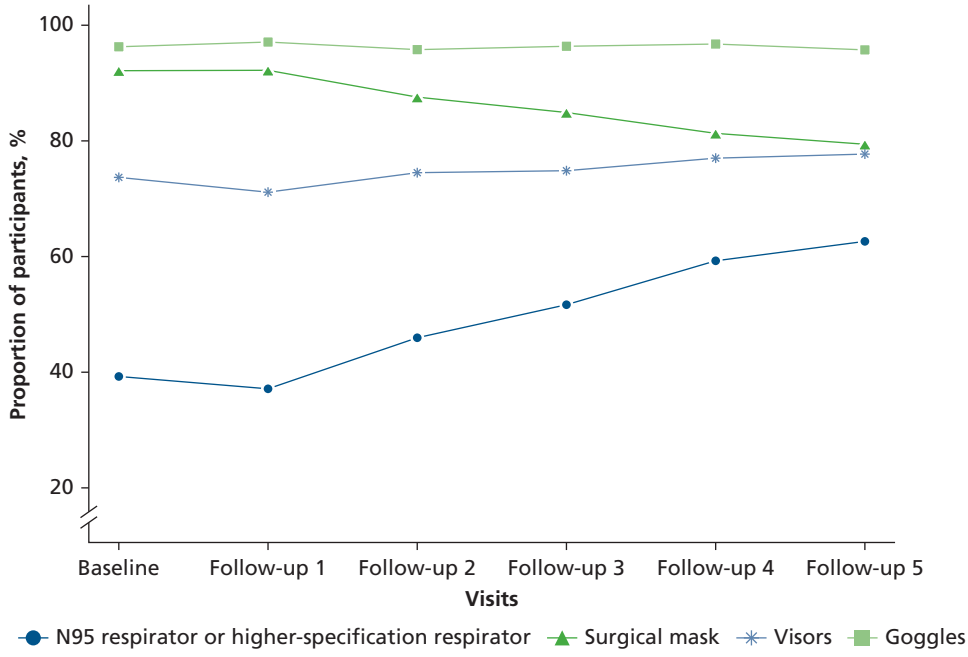

Figure 1. Longitudinal trends in the use of different facial coverings for any in-person oral health care procedures during the past 2 weeks. The change over time in use of 4 major types of face coverings.

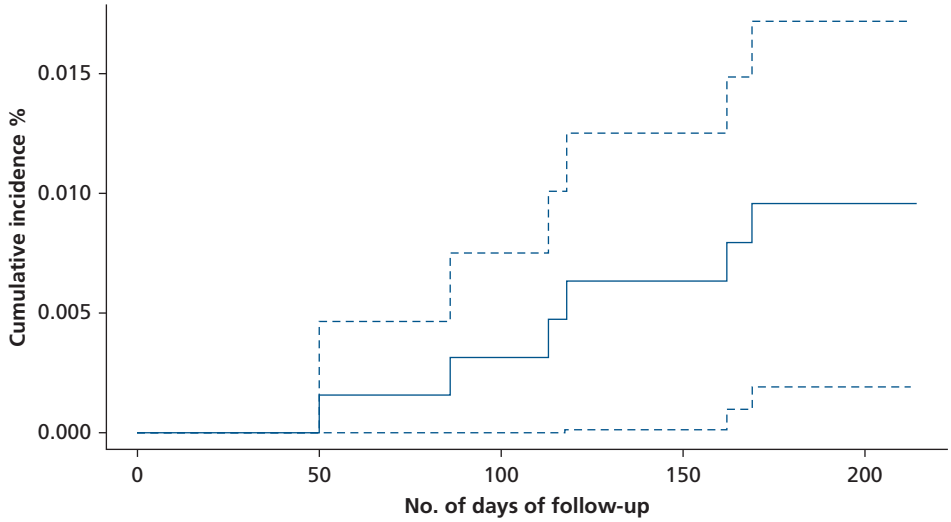

Figure 2. Cumulative incidence of self-reported COVID-19 infection among participants during the study period. The solid line represents the point estimate and the dashed lines represent the 95% confidence limits.

adherence to rigorous infection prevention and control protocols used during these procedures, public health measures (for example, physical distancing and masking), and increased awareness and precautionary behavior of dentists in general and outside their work place. For example, the follow-up period of the study primarily spanned the second wave of COVID-19 in Canada when, although more cases were reported than in the first wave, more stringent social distancing measures were imposed (for example, curfews and restriction on interregional travel). Also, only a few participants provided oral health care to patients who had confirmed cases of COVID-19 or were suspected of having COVID-19, so this may be an initial signal that the event rates are driven mainly by means of community contacts rather than any in-clinic transmission. In addition, most participants in the study used multiple face coverings during most procedures. Although the use of N95 respirators or higher-specification respirators was low during the initial follow-up, it has increased over time, which may reflect an increase in the availability of this PPE.

Uptake of vaccinations could be a possible explanation for low infection rates. However, our study accumulated more than 4 months of follow-up at the time the COVID-19 vaccination campaign began in Canada. At the time of our interim analysis (February 12, 2021), the proportion of participants who had received at least 1 dose of the COVID-19 vaccine was low ($\approx$ 5%) and cannot explain the low infection rates.

The cumulative incidence curve (Figure 2) indicates the speed at which infections were reported in the study population. A rapid increase in the slope of this curve during the study period may reflect a cluster of infections or is possibly an outbreak. Figure 2 illustrates that the infection rate is stable, although with wide confidence intervals.

Saliva samples were analyzed using RT-PCR, with the aim of detecting asymptomatic COVID-19 cases among the participants. We did not detect any SARS-CoV-2 RNA in any of the monthly samples analyzed from the 224 participants who provided saliva samples during the study period. We cautiously conclude that there were no symptom-free cases of COVID-19 infection in our sample during the study period. However, we acknowledge the limitations of our technique. Nasopharyngeal swabs are standard for population-wide screening for SARS-CoV-2; however, saliva samples are logistically more feasible and have been reported to have similar sensitivity to the former.[41] The time gap between consecutive saliva samples may have played a role in null detection. For example, if a participant was infected immediately after providing a saliva sample and never developed any symptoms, the viral RNA may be reduced to a nondetectable level at the time of the next saliva sample 1 month later. More frequent sample collection schedules might have caught such infections, but they would have been logistically challenging and may have burdened participants.

Accuracy of RT-PCR—based detection of SARS-CoV-2 RNA in saliva samples may have also played a role in our results. However, results from several systematic reviews have shown that saliva sample—based tests have comparable sensitivity and specificity to nasopharyngeal swab sample tests and offer a cost-effective alternative for screening.[41-43] Furthermore, results from a study comparing nasopharyngeal swab and saliva samples among asymptomatic participants showed more than 99% specificity for saliva samples and high concordance with results from nasopharyngeal swab samples.[44]

Saliva samples were only collected from a subcohort of the participants who consented to provide samples every month. This subsampling may have resulted in a selection bias if the participants who consented to provide saliva systematically had a lower risk than the rest of the study population. However, given that most (> 80%) of the participants at baseline consented to provide saliva and we randomly selected participants from this consenting group, the possibility of selection bias in our results was reduced.

Owing to low event rates to date, we were not able to investigate factors such as demographics and PPE use, which could be associated with COVID-19 infections, in the analyses we reported. Future follow-up data and additional analysis from the project will explore these factors. Furthermore, comparing infection rates among different oral health care professionals (that is, dental hygienists and dental assistants) with other HCPs is also warranted.

Finally, it is important to recognize the nature of the sample, which, although it included participants from multiple provinces, is a convenience sample of dentists who voluntarily responded to an invitation to participate. Invitations were sent to most of the dentists in the country, but only a small proportion responded. However, the distribution of demographic characteristics among the study population was comparable with national data on Canadian dentists obtained from the Canadian Dental Association as of July 30, 2020 (eTable, available online at the end of this article) (Department of Clinical and Scientific Affairs, Canadian Dental Association, unpublished data, April 2021).

CONCLUSIONS

To our knowledge, this is the first report on COVID-19 risk among Canadian dentists. The low infection rate observed during the 6-month follow-up period should be reassuring to the dental and general community. By means of providing the disease surveillance data, the results of our study may help decision makers adapt and optimize clinical guidelines for infection prevention and control during this pandemic and potentially future waves. ■

SUPPLEMENTAL DATA

Supplemental data related to this article can be found at: https://doi.org/10.1016/j.adaj.2021.10.006.

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Data availability statement. The data pertinent to the article will be available on reasonable request for collaborative research.

Ethics statement. This study received ethical approval through the McGill University Faculty of Medicine and Health Sciences Institutional Review Board (A06-M49-20A [20-06-018]).

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APPENDIX

Bayesian model to estimate incidence rate

```
# Inputs
# Ncase: Number of events
# start: length of follow-up till the second last date of follow-up (for each participant with an event)
# stop: length of follow-up till the last date of follow-up (For each participant with an event)
# py_deno: Person-time accumulated among the participants without an event
model{
for(i in 1:Ncase){
py[i] ~ dunif(start[i],stop[i]) # Uniform distribution for imputation
}
py_case <- sum(py[1:Ncase])
py_total <- py_case + py_deno # Person-time
Ncase ~ dpois(py_total*lambda) # Poisson likelihood
lambda ~ dgamma(0.0001,0.0001) # Non-informative prior
}
```

eTable. Comparing participant characteristics with overall Canadian dentist population.

CHARACTERISTIC	OUR STUDY, %	CANADIAN DENTAL ASSOCIATION,%*
Age, Y		
< 30	4.7	5.1
31-59	79.8	74.2
≥ 60	15.5	20.7
Sex		
Male	43.6	59.8
Female	56.4	40.2
Type of Primary Practice		
General dentistry	90.8	87.9
Speciality dentistry	9.2	12.1
Province of Primary Practice		
Alberta	4.2	11.0
British Columbia	16.9	14.7
Manitoba	4.0	3.0
Newfoundland and Labrador	0.3	0.9
Nova Scotia	5.3	2.3
Ontario	37.4	43.0
Prince Edward Island	1.7	0.3
Quebec	25.5	21.1
Saskatchewan	4.5	2.1
Yukon	0.2	0.1
New Brunswick	0	0.1
Northwest territories	0	0.1
Nunavut	0	1.3

* Data as of July 2020.