



## Dentists' Experiences and Dental Care in the COVID-19 Pandemic: Insights from Nova Scotia, Canada

**Nioushah Noushi**, MSc; **Afisu Oladega**, BDS, FMCDS; **Michael Glogauer**, DDS, PhD; **David Chvartzaid**, DDS, MSc, FRCD(C); **Christophe Bedos**, DDS, PhD; **Paul J. Allison**, BDS, FDSRCS(Eng), PhD

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### ABSTRACT

**Background:** This study aimed to describe dental care provision and the perceptions of dentists in Nova Scotia, Canada, during 1 week of the COVID-19 pandemic, shortly after the closing down of non-emergency, in-person care.

**Methods:** A survey was distributed to all 542 registered dentists in Nova Scotia, asking about dental care provision during 19–25 April 2020. Most answers were categorical, and descriptive analyses of these were performed. Data from the 1 open-ended question were analyzed using an inductive approach to identify themes.

**Results:** The response rate was 43% ( $n = 235$ ). Most dentists (181) provided care but only 13 provided in-person care. From the open-ended question, 4 concerns emerged: communication from the regulatory authority; respondents' health and that of their staff; the health of and access to care for patients; and the future of their business.

**Conclusions:** Most respondents remained engaged in non-in-person dental care using various modes. They expressed concerns about their health and that of their staff and patients as well as about the future of their practice.

**Practical Implications:** Dentists and dental regulatory authorities should engage in discussions to promote the health of dental staff and patients and quality of care during the chronic phase of the pandemic.

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The COVID-19 pandemic has resulted in the closure of dental clinics to prevent the spread of the disease. Many national and regional jurisdictions mandated that only “essential services” should continue. In May 2020, about 45% of countries reported that dental services had been either partly or completely impacted.<sup>1</sup> With the spread of COVID-19 across Canada in early to mid-March 2020, dental regulatory authorities, including the Provincial Dental Board of Nova Scotia (PDBNS), ordered temporary cessation of dental care except for emergency care in identified clinics.<sup>2</sup> This mandate in Nova Scotia and similar ones elsewhere caused massive disruption of dental services, although many jurisdictions provided dentists with guidance.<sup>3,4</sup> In this context, it is important to understand the care provided and the problems experienced by dentists in providing that care so as to plan for dental care in a post-pandemic era.

In the 2016 census,<sup>5</sup> Nova Scotia had a population of 923 598 and, in 2018, the province had 565 dentists for a dentist-to-population ratio of 58.3 dentists per 100 000 population.<sup>6</sup> In mid-April 2020, at the time of the survey reported in this paper, there were approximately 600 cases of COVID-19 in Nova Scotia.<sup>7</sup>

Our goal was to describe dental care provision and problems experienced by Nova Scotia dentists at the height of the COVID-19 pandemic's first wave. The specific aims were to describe the experiences and perceptions of dentists, including the nature of the problems patients presented with; the means dentists used to provide care; what treatments were provided by dentists; and what challenges the dentists were facing.

## Methods

We designed an electronic questionnaire (Survey Monkey, San Mateo, Calif., USA), which was distributed by the PDBNS to all its 542 registrants on 27 April 2020. The questionnaire focused on dental care delivery during 19–25 April 2020 only. It comprised 31 questions, of which 30 had categorical responses and 1 was open-ended, asking, “Please provide any observations you have concerning the provision of dental care during the COVID-19 pandemic.” The quantitative data were analyzed using a descriptive approach only. Responses to the open-ended question were analyzed using an inductive thematic approach to identify themes and subthemes.<sup>8</sup> Ethical approval for this project was provided through the University of Toronto (protocol number 39218).

## Results

### Quantitative Results

Of the 542 dentists registered with the PDBNS in April 2020, 235 (43.4%) responded to the survey. **Table 1** shows the demographics of

the sample, which compared well with the overall demographics of dentists in Nova Scotia in terms of gender and generalist/specialist ratios.

Most participants (181) provided some form of in-person or virtual dental care during the specified week (**Table 2**). In this group, 87.6% saw or consulted with < 20 patients. Among the 28 participants (note: 26 participants did not respond) who did not provide any care during the specified week, 35.7% stated that none of their patients requested care. However, 70.4% of these 28 participants stated that they would not be able to provide dental care in the near future even if a patient required urgent dental care because of a lack of necessary infection-control equipment and protocols. Beyond the data demonstrating patient complaints and care provided, 78.8% (185/235) of respondents stated that the provincial licencing body provided sufficient guidance during COVID-19.

### Qualitative Results

Of the 235 respondents who completed the survey, 111 answered the open-ended question. Through an inductive thematic analysis of this information, 4 themes emerged pertaining to dentists' perceptions (see **Table 3** for supporting quotes from dentists):

#### 1. Communication from the local dental regulatory authority:

Dentists identified inconsistent communication from the PDBNS during the closures resulting from the pandemic. They questioned why their medical counterparts could continue to work while dental offices had to close. This made dentists feel that they were not trusted to maintain proper infection-control measures. Furthermore, it was unclear to respondents why so few clinics were designated for emergency care, significantly limiting access to care. Dentists expressed concern with what they perceived as the unjustified prohibition of non-aerosol-generating procedures, such as smoothing fractures and dealing with orthodontic wires. Dentists felt undervalued members of the health care profession during a global health crisis.

#### 2. Dentists' concerns for their health and the health of their staff:

Dentists expressed a great need for but limited access to high-quality PPE. The variability of regulatory requirements and limited evidence concerning specific PPE was confusing to them. Furthermore, availability was low and costs were high for some items, such as N95 masks.

Clinicians worried about exposure to the virus that they, their staff, their patients and their family will face once clinics open. This was partly a result of unclear guidelines from regulatory bodies, but also of insufficient access to PPE. Some clinicians expressed concern over high-risk patients. This concern was particularly vivid because of the absence of vaccine or effective therapies to treat COVID-19. This situation led some to consider early retirement from the profession.

**Table 1:** Characteristics of the 235 registered dentists in Nova Scotia (of 542) who responded to the survey..

Variable	Categories	Respondents n (%)	Non-respondents n (%)
Primary practice	Private independent office	163 (69.4)	24 (10.2)
	Private office owned by company	36 (15.3)	
	Public dental clinic	2 (0.9)	
	Hospital dental clinic	3 (1.2)	
	Other	7 (3.0)	
Location	Metropolitan	47 (20.0)	24 (10.2)
	Urban	45 (19.1)	
	Suburban	42 (17.9)	
	Rural	77 (32.8)	
	Remote community	0 (0.0)	
Role in primary practice	Office owner	129 (54.9)	24 (10.2)
	Associate	64 (27.2)	
	Practitioner in a public clinic	3 (1.3)	
	Practitioner in a hospital clinic	4 (1.7)	
	Other	11 (4.7)	
Specialty	General dental practitioner	180 (76.6)	29 (12.3)
Specialist	26 (11.1)		
Gender	Male	104 (44.3)	26 (11.0)
	Female	104 (44.3)	
	Prefer not to disclose	1 (0.4)	
Age range, years	< 30	9 (3.8)	25 (10.7)
	30–39	51 (21.7)	
	40–49	55 (23.4)	
	50–59	63 (26.8)	
	> 59	32 (13.6)	

**Table 2:** Mode of care, reasons for seeking treatment and the types of treatment offered by the 181 respondents who provided care.\*

Reason for care (presenting complaint)	Mode of care n (%)			
	Telephone 172 (95.0)	Email 54 (29.8)	Video conference 14 (7.7)	In-person care 13 (7.2)
Advice only	120 (69.8)	44 (81.5)	6 (42.9)	2 (15.4)
Pain	159 (92.4)	48 (88.9)	10 (71.4)	11 (84.6)
Swelling	138 (80.2)	37 (68.5)	8 (57.1)	12 (92.3)
Trauma	30 (17.4)	10 (18.5)	2 (14.3)	5 (38.5)
Bleeding	11 (6.4)	8 (14.8)	3 (21.4)	3 (23.1)
Fractured tooth	125 (72.7)	35 (64.8)	4 (28.6)	7 (53.9)
Restoration or prosthesis	59 (34.3)	16 (29.6)	2 (14.3)	2 (15.4)
Medically prescribed, pre-intervention dental care (e.g., before heart surgery)	—	—	—	4 (30.8)

Table 2 continued ►

Reason for care (presenting complaint)	Mode of care n (%)			
	Telephone 172 (95.0)	Email 54 (29.8)	Video conference 14 (7.7)	In-person care 13 (7.2)
<b>Treatment offered</b>				
Advice only	132 (76.5)	47 (87.0)	8 (57.1)	4 (30.8)
Triage to determine if in-person care was necessary	128 (74.4)	27 (50.0)	9 (64.3)	—
Referral to an in-person care setting	81 (47.1)	16 (29.6)	3 (21.4)	—
Prescription for painkiller	102 (59.3)	16 (29.6)	4 (28.6)	6 (46.2)
Prescription for antibiotic	148 (86.1)	22 (40.7)	7 (50.0)	7 (53.9)
Prescription for other medication	16 (9.3)	5 (9.3)	2 (14.3)	3 (23.1)
Tooth extraction	—	—	—	13 (100)
Radiographs	—	—	—	11 (84.6)
Abscess drainage	—	—	—	6 (46.2)
Mineralized tissue removal with handpiece	—	—	—	1 (7.7)
Adjustment of prosthesis or ortho appliance	—	—	—	2 (15.4)
Pulp removal	—	—	—	1 (7.7)
Other form of care	18 (10.5)	8 (14.8)	5 (35.7)	6 (46.2)

Note: — = not applicable.  
\*Respondents could respond yes to the use of more than 1 mode; thus, numbers and percentages total more than 181 and 100%, respectively. Similarly, respondents could respond yes to more than 1 reason for care and treatment offered; percentages are of number of respondents for each mode of care.  
†Not applicable.

**Table 3:** Sample responses, by theme, from the 111 dentists, who answered the question: "Please provide any observations you have concerning the provision of dental care during the COVID-19 pandemic."

Themes	Subthemes	Supporting comments
Communication from the local dental regulatory authority		<p>I find it intriguing that medical offices can remain open, while dental offices are mandated to be closed. It is to say dental healthcare providers are incapable of making appropriate healthcare decisions that protect both themselves and their patients, and that the treatment we provide is inconsequential. I for one am deeply perturbed by this. [Participant 76]</p> <p>I think non-emergent care could have safely been provided by dentists, such as repairing a fractured denture or bonding over a sensitive/fractured tooth, without significant risk using standard PPE and protocols, once trained. I think many patients suffered. [Participant 12]</p>

Table 3 continued ►

Themes	Subthemes	Supporting comments
<b>Dentists' concerns for their health and the health of their staff</b>	<b>Lack of personal protective equipment</b>	<i>Interim guidelines were provided that did not follow scientific evidence. When asked about the rationale for use of certain PPE, the question was in large part ignored. [Participant 25]</i>
	<b>Fear of exposure</b>	<p><i>Very worrisome that we will be providing dental care without a vaccine being available and/or on the spot viral testing. [Participant 56]</i></p> <p><i>As a person with a pre-existing health issue/high risk for covid-19, I do have concerns with the asymptomatic positive patients... this virus is different and information regarding this virus, is still evolving on a day to day basis. Until a vaccine is available, it makes me wonder if I will ever return to private practice. [Participant 47]</i></p>
	<b>Affected mental health</b>	<p><i>As we attempt to provide "dental care" during this pandemic, I think the most stressful issue for dentists is the unknown... especially when it comes to thinking about returning to "practice"... It takes a great deal of time to explain to people that their problem does not qualify as a true emergency, even though in their mind it is. This is emotionally exhausting... With the pandemic I find I am apologizing for not being able to do more. [Participant 27]</i></p> <p><i>Stress of not enough PPE for AGPs, worrying about patients who aren't being taken care of when they need,... and worries regarding the uncertainty of when we are getting back to work. Not enough explanation to the public about the regulations surrounding dental care in NS at this time. [Participant 18]</i></p>
<b>Dentists fear for the present and the future of their practice</b>		<p><i>They are currently trying to figure out what changes need to be made to our offices structurally to allow us to go back to work safely, as well as what new PPE would be required. [Participant 75]</i></p> <p><i>We were not given any billing number or code that we could use to get paid for our services while our physician colleagues do get paid for their services... dentistry is what I do for a living and I feel insulted and frustrated that I am being mandated to help people and not get paid for it. [Participant 4]</i></p>
<b>Dentists' concerns for their patients</b>	<b>Concerns for the quality of patient care</b>	<p><i>The mandatory shut down has created real hardship for my patients, many of whom have no practical (financial or physical) means of accessing emergency care in urban referral centres... Prohibitions on physical examination and very limited access to emergency clinics mean that I am definitely prescribing antibiotics and NSAIDS (no narcotics) more frequently than I generally do. I rely on patients texting photos to me and narrative descriptions to aid in diagnosis, but I do not have the level of confidence that I usually have when advising them. [Participant 51]</i></p> <p><i>The inability to examine patients also makes correct diagnosis impossible. I feel forced into a situation where I am overprescribing and improperly treating my patients. [Participant 50]</i></p>
	<b>Concerns for the access to dental care</b>	<p><i>There are many grey areas in emergency coverage. A lot of the reason I have not referred to the emergency clinics in Nova Scotia is that the closest one is over 2-hour drive away. And we are supposed to be staying close to home. That is an issue. People are not comfortable traveling or financially at this time it is difficult. [Participant 69]</i></p> <p><i>I think our profession needs to assimilate data to protect us and the public in the future. We are an important part of the health care team. Oral health is the gateway to overall health. Research and evidence-based decision-making has to support this, moving forward. [Participant 27]</i></p>
<p><i>Note: AGP = aerosol generating procedure, PPE = personal protective equipment,</i></p>		

Respondents reported an increase in stress and anxiety among their staff, patients and themselves. This was associated with many factors, including the unpredictability of the situation, inability to help their patients and loss of work for their staff. Moreover, there was noticeable confusion and frustration because of lack of communication regarding the reopening of clinics, access to required PPE and what constituted a dental emergency.

### 3. Dentists' fear for the present and the future of their practice:

Dentists were concerned about the increase in costs related to adapting their clinic. They mentioned that forced, immediate closures without contingency plans had been expensive for them. In addition, dentists were troubled by imposed emergency triaging, prescribing and tele-dentistry without any financial compensation. They thought they deserved some remuneration for the care they were providing, as well as access to more financial support programs.

**4. Dentists' concerns for their patients:** In terms of quality of patient care, dentists felt that their patients generally understood the circumstances, but they were uncomfortable about overprescribing medications. The care that could be provided was not sufficient, and dentists feared that closures and limited diagnostic abilities may have caused undue harm to their patients, especially in the case of non-aerosol-generating procedures, which they believed could have been performed safely. Dentists were afraid of causing harm by adhering to the restrictions imposed by provincial regulatory authorities.

In terms of access to care, dentists considered that the limited number of emergency care clinics paired with the distance many patients had to travel was problematic. Dentists' financial losses in addition to the costly adaptations of their clinics and acquisition of PPE would likely lead to increased costs and, thus, reduced access to dental care. Clinicians were concerned that this would impact their patients' health.

## Discussion

This survey highlights some perceptions and implications of COVID-19 for the dentists registered in Nova Scotia during the pandemic-induced lockdown. Most respondents were general practitioners who work in private practice, and there was an equal distribution between urban and rural areas.

Almost all the participants in our study used telephone calls or messages to offer dental care. During telephone consultations, dental advice and prescription of antibiotics were the most common treatments provided. The increased prescription of medications to mitigate dental pain and discomfort for cases that did not qualify as "emergency dental care" could have many negative effects. The strict limitation of dental care during clinic closures has led to many untreated cases that could worsen while the person is waiting to

access care. This gap in access could have negative implications for patients' oral and general health, a concern that will be compounded as unemployment rates increase and people lose private dental insurance coverage.<sup>9-11</sup> Some analysts have also identified a sharp decrease in consumer and business spending as a result of social and fiscal uncertainties surrounding the pandemic,<sup>12</sup> further affecting the priority given to oral health care and access to costly dental care services.

Overall, although 78.8% (185/235) of respondents stated that the PDBNS provided sufficient information and guidance on approaches during the pandemic, dentists clearly had some concerns about communication and support from their regulatory body. That said, it is important to note that the PDBNS and Nova Scotia Dental Association websites indicated near daily communications with clinicians during the start of the pandemic, although the frequency decreased over time as the pandemic was more controlled.

Dentists were also concerned over their health and that of their staff, over the present and future of their practice and over their patients' access to care. Throughout the COVID-19 pandemic, there has been a race toward fabricating more PPE,<sup>13,14</sup> and dentists were concerned about access to good-quality PPE, in addition to the use of other necessary infection-control innovations.<sup>15</sup> Some clinical studies have identified the dangerous nature of generating potentially infectious aerosols and droplets through the use of various dental instruments, such as rotary handpieces.<sup>15-18</sup> Therefore, the risk of exposure to COVID-19 in a dental setting is of particular concern based on its transmission through respiratory droplets and fomites, its incubation period of 7-14 days and its spread through asymptomatic individuals.<sup>15,19-21</sup>

It is important to note this survey's limitations. Although the response rate was strong, the results are not necessarily representative of all dentists in Nova Scotia. Furthermore, we have reported the results of 1 question posed at the end of the survey, which may not have supported an in-depth discussion of the experiences of dentists during the COVID-19 pandemic. However, the fact that 111 participants shared their perspectives and that there were clear consistencies and some differences among their experiences indicate the value of these data. Indeed, the experiences of dentists in Nova Scotia may have differed from those of dentists in other jurisdictions, but it is clear that dentists across Canada and beyond face similar concerns about their practices.<sup>22-24</sup>

Our findings echo the preliminary results of studies that also demonstrated the nefarious impact of the COVID-19 pandemic on the mental health of populations including dentists.<sup>7,15,25-28</sup> The psychological impacts are a result, in part, of the very high-risk profession that dentists work in; the *New York Times* magazine published an article that ranked dental professionals as the health profession most at risk of COVID-19 infection.<sup>15,29</sup> As such, it is

imperative that regulatory bodies and dental care advocates facilitate the availability and accessibility of mental health services for dentists.

Considering the closure of dental clinics over the last few months, most private clinics have had no revenue, but still pay rent and other overhead costs. Moreover, there may be a need for costly office space adaptations along with more stringent infection-control procedures. The reduction in the number of patients who can be treated over a given time will also add to the financial burden on dentistry during the COVID-19 era. These economic implications could lead to further uncertainty for the profession because of reduced income, possible job loss and early retirement based on individual risk assessment.<sup>15</sup>

To address the financial burden, some governments have implemented economic relief funds for small business owners, including oral health professionals.<sup>9,22</sup> Such funds include the CARES Act in the United States, as well as Canada's Emergency Wage Subsidy, the Temporary Wage Subsidy for Employers and

the Canada Emergency Business Account.<sup>9,22</sup> Each Canadian province also rolled out funding methods to support their businesses. For example, small business owners, including Nova Scotian dentists, were able to apply for a \$5 000 grant in support of their reopening.<sup>30</sup> Nevertheless, there should be clearer and more inclusive provision of support for private practice dental health professionals.

## Conclusions

This survey highlights the experiences of Nova Scotia dentists at the height of the pandemic-related closure of dental clinics to all but emergency care. Many dentists resorted to providing care via telephone or text messaging. Despite the large majority who stated that they were satisfied with direction from the PDBNS, survey respondents expressed significant frustration over guidelines and PPE and concerns about the health of their staff, patients and themselves and the future of their practices.

## THE AUTHORS



**Ms. Noushi**  
is a PhD Candidate, Faculty of Dentistry, McGill University, Montréal, Quebec.



**Dr. Bedos**  
is an Associate Professor, Faculty of Dentistry, McGill University, Montréal, Quebec; and Co-Director of the RSBO (Réseau de recherche en santé buccodentaire et osseuse du Québec).



**Dr. Oladega**  
is a Research Associate, Department of Dental Oncology and Maxillofacial Prosthetics, Princess Margaret Cancer Centre, Toronto, Ontario.



**Dr. Allison**  
is a Professor, Faculty of Dentistry, McGill University, Montréal, Quebec.



**Dr. Glogauer**  
is Head of Dental Oncology, Department of Dental Oncology and Maxillofacial Prosthetics, Princess Margaret Cancer Centre; and Professor, Faculty of Dentistry, University of Toronto, Toronto, Ontario.

**Correspondence to:** Dr. Paul Allison, Faculty of Dentistry, McGill University, 500—2001, av McGill Collège, Montréal QC H3A 1G1. Email: paul.allison@mcgill.ca



**Dr. Chvartzaid**  
is an Assistant Professor, Faculty of Dentistry, University of Toronto, Toronto, Ontario; and Dentist-in-Chief, Department of Dentistry, AO Dental Clinic, Baycrest Health Sciences, University of Toronto, Toronto, Ontario.

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