



## Covid-19 Impact on Dental Practice- A Questionnaire Based Report

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Type of Publication: Original Research Paper

Conflicts of Interest: Nil

### Abstract

**Context:** The coronavirus disease is caused by the SARS-CoV-2 virus. This virus is now the cause of a global pandemic. This pandemic has put enormous pressure and burden on the health care fraternity around the world. Dental professionals are considered by the Occupational Safety and Health Administration to be at a high-risk for COVID-19.

**Aim:** The aim of this study was to evaluate the impact of the COVID-19 pandemic on dental practice.

**Materials and Methods:** This report is based on a questionnaire that was circulated online. The survey included questions that evaluated the dentist's perception towards the COVID-19 pandemic and its effect on their personal life, financial status and quality of dental treatment.

**Statistical analysis used:** The data was statistically evaluated using ANOVA and Multinomial logistic regression analysis.

**Results:** 250 Indian dentists participated in this survey. 57.2% of dentists declared that they had performed only emergency treatments during this period. To questions on ways of reducing the risk of infection, dental practitioners suggested the use of PPE (88%), disinfection protocols like fumigation and UVC (82.8%) and good hand hygiene (83.6%). About 48.8% dentists felt that guidelines for dental practice will change in future.

**Conclusion:** Dental health care workers are at a high risk of contracting COVID-19. Thus, dental practitioners have to adhere to the standard protocols more zealously during the pandemic.

**Keywords:** Covid-19, Dental practice, Pandemic

### Introduction

The COVID-19 is an ongoing global pandemic of Corona virus disease caused by severe acute respiratory syndrome Coronavirus 2 (SARS-CoV-2).<sup>1</sup> In December 2019, there was an outburst in cases of pneumonia, caused due to this coronavirus - which is a  $\beta$ -variant, in Wuhan, China. The World Health Organization on 12<sup>th</sup> January 2020, christened this virus as the 2019- novel coronavirus (2019-CoV) and later, on February 11<sup>th</sup> 2020, named the disease as COVID-19 (Coronavirus disease 2019). Subsequently, in consensus with the Coronavirus

Study Group of the International Committee the new coronavirus was renamed as SARS-CoV-2.<sup>2</sup>

There has been an enormous burden on the health care fraternity all over the world due to the COVID-19 pandemic. OSHA (Occupational Safety and Health Association) considers dentists/dental professionals to be at very high-risk for COVID-19 infection.<sup>1</sup> As a result, on March 25<sup>th</sup>2020, it was advised that all non-emergency dental care procedures be suspended until further notice. Similarly, hospitals were advised to cancel all elective surgical procedures because of the highly

contagious nature of this virus and to reduce the risk of disease spread.<sup>4</sup>

The SARS-CoV-2 is a  $\beta$ -coronavirus, which is an enveloped, non-segmented RNA virus belonging to subgenus Sarbecovirus and subfamily Orthocoronavirinae. CoV is divided into 4 genera namely  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$ . The  $\alpha$  and  $\beta$  variants have the ability to infect mammals, while  $\gamma$  and  $\delta$  variants infect birds. Initially, many CoV variants were identified as capable of infecting humans, of which  $\alpha$  CoV HCoV- 229E and HCoV-NL63,  $\beta$ -CoV HCoV-HKU1 and HCoV-OC43, with low pathogenicity, were reported to cause mild respiratory symptoms similar to common cold. It was observed that the genome sequence of SARS-CoV-2 is 96% identical to a bat CoV. Based on this genome sequencing, the bat has been considered as the natural host, and SARS-CoV-2 might have been transmitted to humans from bats via an unknown intermediate host. SARS-CoV-2 infects humans by using angiotensin-converting enzyme 2 (ACE-2) as a receptor.<sup>2</sup>

The transmission of SARS-CoV-2 from person to person occurs between family members, relatives and friends who have contacted a symptomatic patient or a carrier. The transmission of this virus is mainly through nosocomial transmission.<sup>2</sup> Considering the possibility of transmission during dental treatment, the DCI (Dental Council of India) issued a notice to discontinue all dental procedures except emergency dental treatments. Following this advisory, many dental professionals chose to temporarily shut down their practice so as to avoid the risk of transmission.<sup>1</sup>

After the lockdown, new guidelines were put forth by the WHO and DCI, to enable the reopening of dental practices. Dentists had to revisit their practice protocols in order to reduce or prevent the risk of transmission and also avoid cross contamination.<sup>1</sup>

The aim of the present study was to evaluate the impact of COVID-19 pandemic on dental practice.

### Subjects & Methods:

This study was based on an online questionnaire survey, which was circulated among the dental practitioners in India. 250 dentists, including specialists and general dental practitioners, participated in the study. The main objective of this study was to understand the perception of dentists towards the COVID-19 pandemic and its effects on

their personal life, financial status and quality of dental treatment.

This survey included 25 questions which were categorized into 5 sections: demographics; COVID-19 transmission risk in dental practice; Dentists reconciled their practice to the pandemic; protective protocols for infection control in dentistry and dentists' experiences during the pandemic. The data was statistically evaluated using ANOVA and Multinomial logistic regression analysis.

### Results:

#### Demographics:

The results showed that 51.2% of dentists were in the age group of 31-40 years, followed by 20.4% >50 years, 20% aged 41-50 years and 8.4% aged 21-30 years. Of the 250 participating dentists 65.2% were males and 34.8% were females. About 50% dentists experienced symptoms of anxiety and depression during the pandemic. (Table-1)

#### COVID-19 transmission risk in dental practice:

94.4% of participants agreed that dentists were at higher risk of contacting COVID-19 than other healthcare workers. 47.6% of dentists felt it was not safe practicing dentistry during this pandemic time. 94.4% of dentists felt all those personnel working in the dental clinic need to update themselves regarding infection control protocol. (Table-2)

#### Dentists reconciled their practice to the pandemic:

76% of the respondents implemented the latest guidelines of COVID-19 in their dental practice. Majority of respondents (57%) felt it was mandatory to test their patients for COVID-19 before any treatments. More than 50% of participants felt that it was good practice to assess for the signs and symptoms of COVID-19 infection prior to commencing treatment. Data collected showed that 18.9% of all practitioners cancelled all treatments till the end of the lockdown for COVID-19, 55.9% performed only emergency treatments, and 25.2% followed the advisories of the regulatory bodies and continued all treatments.

Post lockdown, 14% of dentists performed only outpatient check-up, 29.5% performed only non-aerosol generating procedures, and 36.5% provided all treatments as before COVID-19. (Table-3)

### Protective protocols for infection control dentistry:

Data regarding infection control in dentistry showed that a large number of clinicians (82.5%) believed that fumigation/ fogging/ UVC disinfection protocols should be adapted in dental practice. 83.6% thought that good hand hygiene is one of the best ways to prevent the spread of COVID-19. Most of the respondents (80%) agreed that the use of pre procedural mouth rinses such as povidine iodine and 0.12% chlorhexidine gluconate reduced the load of corona virus in saliva. 71.2% participants felt it was mandatory to change PPE for every new patient as they felt it was effective in preventing virus transmission. Regarding the use of rubber dam for aerosol generating procedures, 58% participants did not use it as they opined that such procedures cause aerosol spread over a wide area and this spread cannot be minimized just by using rubber dam. 40.6% of dentists choose to display the visual alert icons about hand hygiene, respiratory, and cough etiquette in the work area, reception and lab as it can help in the education and motivation of clinic personnel and patients in following precautionary measures. (Table-4)

86.8% of the respondents agreed that COVID-19 pandemic has impacted dentistry as a career and 84.4% agreed that their financial income had decreased due to this pandemic. Though 29.5% of participants felt tele dentistry could be of great assistance in current pandemic situation, 31.5% felt it could be useful only in situations of medical emergency. 42% of dentists disagreed with the opinion that reopening of the dental clinics has resulted in the spread of virus. Finally, 89.6% of dental practitioners agreed that the guidelines towards dental practice during COVID-19 will change in the future. (Table-5)

### Discussion

The challenge posed by the COVID-19 pandemic has prompted the field of dentistry to adapt rapidly. All dental procedures will have to be carefully performed so as to prevent the risk of virus transmission between dentist and patient.<sup>4</sup>

In December 2019, there was an outbreak of a novel beta coronavirus in Wuhan, China's Hubei province. Till date the virus has spread all around the world by mutating itself and has negatively impacted human

life in all aspects.<sup>2</sup> Peng et al., (2020) conducted a study and concluded that respiratory viruses can be transmitted either from person to person or by direct contact through saliva.<sup>5</sup> On the other hand, Rothe C et al argued that transmission of 2019-nCoV infection from asymptomatic individuals could also be a possibility. Dental professionals have been considered to be at a high risk of contacting SARS-CoV-2 as they are constantly exposed to saliva, blood and aerosol during dental treatment.<sup>6,10,11</sup> Hence, this online survey was done to evaluate the COVID-19 impact on dental practice.

In this present survey, majority of the participants firmly believed that dentists are at a higher risk of contacting COVID-19 than other healthcare workers because of the aerosol generating procedures used in the dental practice, where most of the work is done in the oral cavity. In this context, the participants felt it was mandatory to assess for the signs and symptoms of covid-19 infection and also bring about changes in the treatment plans during this pandemic as it could avoid the risk of cross-contamination.

With the global health care system being overwhelmed with infectious and potentially infectious patients, majority of participants followed strict infection control protocol in their dental clinic.<sup>3,7</sup> Results of the present survey showed that a large number of participants (82.5%) believed that fumigation/fogging/UVC disinfection protocols should be adapted in dental practice. 83.6% thought that good hand hygiene is one of the best ways to prevent the spread of COVID-19. Most of the respondents (80%) agreed that the use of pre procedural mouth rinses such as povidine iodine and 0.12% chlorhexidine gluconate reduced the load of corona virus in saliva. 71.2% participants felt it was mandatory to change PPE for every new patient as they felt it was effective in preventing virus transmission. Some of the participants felt that reopening of dental clinics might increase the transmission of covid-19 infection; hence they preferred not to reopen their dental clinic till the end of pandemic.

To often guidance for dental practitioners during the present pandemic, some organizations like Centers for Disease Control and Prevention (CDC), British Dental Association (ADA) and National Health Services have offered some advisories.<sup>3,8</sup> During the

initial days of pandemic, the guidelines recommended that only emergency dental procedures should be performed by using PPE as a precautionary measure. Later, non-emergency treatments were allowed to be carried out by following all the precautionary measures to prevent the further spread of virus. Most of the participants in the present survey followed and implemented the latest guidelines for dental treatments.

During the present pandemic, health care workers experienced tremendous emotional stress compared to the general population.<sup>9</sup> This is borne out by this study in which the participating dentists experienced symptoms of anxiety and depression. This could be

because of constant changes in the treatment guidelines, financial problems due to reduced working hours and restricted dental treatments and for fear of getting infected despite of following all the infection control protocols.

**Conclusion:**

According to the present survey, dentists preferred to limit their practice only to emergency treatment during the pandemic. The dentist faced financial problems and experienced anxiety and depression during this pandemic. Overall, this survey confirmed that the COVID-19 pandemic caused a considerable amount of worry among the dentists.

**Tables:**

**Table 1: Demographics**

QUESTIONS	RESPONSE	N	%
Age	21-30yrs	21	8.4
	31-40yrs	128	51.2
	41-50yrs	50	20.0
	>50yrs	51	20.4
Gender	Male	163	65.2
	female	87	34.8
Did your patients have symptoms of anxiety and depression due to covid-19 pandemic?	Agree	109	43.6
	Disagree	35	14.0
	Neutral	84	33.6
	Strongly agree	22	8.8
Did you experience the symptoms of anxiety and depression during the covid-19 pandemic?	Yes	125	50.0
	No	125	50.0

**Table 2: COVID-19 transmission risk in dental practice**

QUESTIONS	RESPONSE	N	%
Dentists are at higher risk of contacting COVID-19	Agree	66	26.4

than any other healthcare workers.	Disagree	3	1.2
	Neutral	11	4.4
	Strongly agree	170	68.0
Dentists can transmit COVID-19 infection to patients.	Never	8	3.2
	Sometimes	139	55.6
	Often	63	25.2
	Always	40	16.0
Practicing dentistry in COVID-19 times is safe.	Don't know	21	8.4
	Maybe	75	30.0
	No	119	47.6
	Yes	35	14.0
Personnel requiring updating themselves regarding infection control in COVID times.	Chair side assistant	2	.8
	Clinic assistant	3	1.2
	Dentist	9	3.6
	All of the above	236	94.4

**Table 3: Dentists reconciled their practice to the pandemic**

QUESTIONS	RESPONSE	N	%
Have you implemented latest guidelines during COVID-19 in your dental practice?	No	11	4.4
	Not aware of the guidelines	38	15.2
	Not all	11	4.4
	Yes	190	76.0
What is your strategy of choice regarding the reopening of dental clinics?	I do not intend to work until the end of pandemic	13	5.2
	COVID-19 screening form	37	14.7
	Mandatory COVID-19 test for patients	143	57.0
	Using PPE	58	23.1
What measures would you consider running your dental practice from economic point of view?	Depend on alternative source of income	78	31.1
	Increase the price of treatments	84	33.5
	Reduce number of co-workers	79	31.5
	Reduce the salary of co-workers	10	4.0
Is it mandatory to asses for the signs	Always	167	66.5



and symptoms of COVID-19 infection?	No	4	1.6
	Only if patient is symptomatic	43	17.1
	When in doubt	37	14.7
How have you changed your treatment plans during the COVID-19 pandemic?	Cancelled all treatments until the end	48	18.9
	Followed advisories and continued all	64	25.2
	Performed emergency treatments only	142	55.9
	Cancelled all treatments until the end	48	18.9
If you have opened your dental practice post-lock down, which among the following treatments are being performed in your clinic?	All treatments as before COVID-19	99	36.5
	Both aerosol and non-aerosol generating	54	19.9
	Non-aerosol generating procedures	80	29.5
	Only out-patient check-up	38	14.0

**Table 4: Protective protocols for infection control dentistry**

QUESTIONS	RESPONSE	N	%
According to you what are the disinfection protocols you think should be adapted in dental practice?	Air purifier and adequate ventilation	9	3.6
	Fumigation/Fogging/UVC disinfection	207	82.5
	High vacuum intra oral suction	7	2.8
	Surface disinfection with wipes	28	11.2
Good hand hygiene is one of the best ways to prevent the spread of COVID-19 infection?	Don't know	3	1.2
	Maybe	33	13.2
	No	5	2.0
	Yes	209	83.6
The use of pre procedural mouth rinses such as Povidine Iodine and 0.12% Chlorhexidine gluconate reduces the load of corona virus in saliva?	Agree	114	45.6
	Disagree	10	4.0
	Neutral	40	16.0
	Strongly agree	86	34.4
It is mandatory to change PPE for every new patient	Agree	83	33.2
	Disagree	22	8.8
	Neutral	50	20.0
	Strongly agree	95	38.0

Do you use rubber dam when performing aerosol-generating procedures?	No	145	58.0
	Yes	105	42.0
PPE is effective in preventing virus transmission.	Agree	154	61.6
	Disagree	3	1.2
	Neutral	30	12.0
	Strongly agree	63	25.2
Have you displayed visual alert icons about hand hygiene, respiratory hygiene, and cough etiquette in your dental clinic?	In the work area and reception	93	37.1
	In the work area only	15	6.0
	In the work area, reception and lab	102	40.6
	No	41	16.3

**Table 5: Dentist’s experiences during the pandemic**

QUESTIONS	RESPONSE	N	%
COVID-19 pandemic has impacted dentistry as a career.	Agree	116	46.4
	Disagree	13	5.2
	Neutral	20	8.0
	Strongly agree	101	40.4
COVID-19 pandemic has decreased your financial income.	Agree	110	44.0
	Disagree	10	4.0
	Neutral	29	11.6
	Strongly agree	101	40.4
Tele dentistry can be of great assistance in the current pandemic situation?	For medically compromised people	50	19.9
	In medical emergencies	79	31.5
	No	48	19.1
	Yes	74	29.5
Which of the following has been a scare item during this pandemic?	Disinfectant solution	74	15.8
	Gloves	118	25.2
	Medical gown/PPE	113	24.1
	N-95 mask	164	35.0
Do you feel that reopening the dental clinics	Agree	38	15.2

has resulted in the spreading of virus?	Disagree	105	42.0
	Neutral	97	38.8
	Strongly agree	10	4.0
The guidelines towards dental practice during COVID-19 will change in the future	Agree	121	48.4
	Disagree	7	2.8
	Neutral	19	7.6
	Strongly agree	103	41.2

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