



## Covid 2019-21 Impacts Dental Perspective: Nation Wide Online Survey

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### Abstract

The highly contagious nature of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV2), besides the fact that dental procedures commonly generate blood and saliva droplets that could lead to the contamination have resulted in the closure of many dental clinics. In the present study, we aimed to evaluate the impact of coronavirus disease 2019 (COVID-19) pandemic on dental practice by conducting an online questionnaire among the Indian dental practitioners and finding their perspectives on the subject. The survey included questions that evaluate the dentists' perceptions and attitudes toward the COVID-19 pandemic and its effect on their personal life and the quality of dental services for patients. Overall 292 Indian dentists participated in this study wherein, the main factors associated to the perception to the impact of the COVID-19 pandemic on clinical practice were increased use of mouthwash, disinfection protocol, use of specific questionnaire and temperature measurements as a precaution and increased use of tele-communication skills to reduce the spread of the disease.

**Keywords:** COVID-19; dentistry; dental practice

### INTRODUCTION

Coronavirus disease 2019, also called COVID-19, is the highly infectious disease to rapidly develop worldwide. Signs and symptoms of COVID-19 are fever, dry cough, dyspnea, fatigue, and lymphopenia. Human infections may lead to complications such as pneumonia, severe acute respiratory syndrome (SARS), and even death [1][2]. The potential transmission of the virus through dental procedures and in dental settings has attracted much attention leading to either mandatory or voluntary suspension of routine dental care [3][4].

SARS-CoV-2 shows evidence of transmission by direct contact, droplets and fomites [5][6], with increasing emerging evidence suggesting airborne transmission [7][8]. So, commonly used dental instruments, including dental handpieces, airwater syringes, and ultrasonic scalers which generates a large volume of splatter and aerosols, are derived

from patient fluids (blood and saliva droplets) and coolant water, may become a major reason to increase the risk to dental professionals and patients [9][10][11] and hence, the American Dental Association (ADA) to suggest dental practitioners limit their interventions to emergency treatments during pandemic [12].

The major objectives of the present study was to evaluate the changes adapted by the dental professionals in clinical routine as well as the dental procedures, use of precautionary measures and remote assistance during the pandemic and also to create an awareness for the same.

In the present study, we aimed to evaluate the impact of the COVID-19 pandemic on dental practice in India by conducting an online questionnaire among dentists and finding their perspectives on the subject.

**METHODS:**

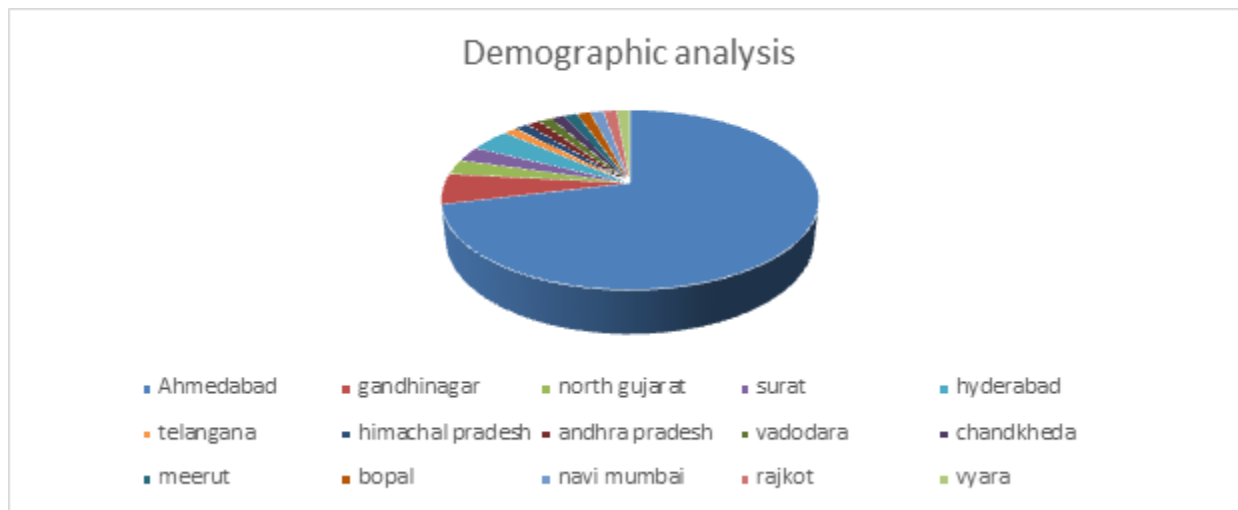
1. *Study design and population:* This online survey was questionnaire based conducted on a survey population of Indian dentists between April - August 2021. The total number of dentists in India was estimated to more than 2 lakh dentists that work in public, private, and nonprofit organizations [13]. We conducted the chain-referral sampling method as most of the participants were hard to find. Our study population consists of specialists and general dentists who work in India regardless of their city and work place. We asked the dentists to participate in the study via the internet (e-mail or social media) and asked them to distribute the survey among the other colleagues at their convenience. The study protocol was ethically and clinically approved in Ahmedabad Dental College and Hospital, Ahmedabad, Gujarat. The participants who voluntarily involved in this study, they were assured that no personal information was required, and their filled data would be kept confidential. An online questionnaire using Google Forms was used to collect the data.
2. *Questionnaire:* The preliminary draft of the questionnaire was designed for the present

study based on experts’ opinions (staff of department of periodontology, Ahmedabad dental college and hospital) and guidance from relevant literature [14][15]. The experts above and a skilled statistician evaluated the face and content validity of the questionnaire. The content of the survey was also verified in terms of the topic concepts. Therefore, the biased, confusing, guiding, and double questions were omitted. The survey included 15 questions.

3. *Data gathering and statistical analysis:* A trained person who was unaware of the names and degrees of the participants has gathered the result. Microsoft Excel sheets have been used to create tables and figures. Two members of the research group reviewed the extracted data for accuracy. Items in the investigation were described by descriptive statistical analysis

**RESULTS:**

Data from 292 dentists from all over India were collected and analyzed for this study. Out of 292 dentists 104 responses were from dentist with < 1 year of clinical experience, 112 with 1-5 year clinical experience and 76 with > 5 years of clinical experience.



**Figure 1 Demographic analysis**

Figure 1 shows demographic distribution of the dentists across India who willingly participated in this study.

**Table 1 Average % changes adapted in clinical routine**

	<1 year						1-5 years						>5 years					
	0	1	2	3	4	5	0	1	2	3	4	5	0	1	2	3	4	5
Adjustment of working environment	-	11.54	23.07	23.07	19.23	23.07	-	3.57	10.71	39.29	28.57	17.85	5.26	5.26	5.26	10.52	42.10	31.38
Disinfection	-	3.85	19.23	30.77	23.07	23.07	-	-	10.71	25	32.14	32.14	-	5.26	-	10.52	36.84	47.37
Increased use of PPE	-	3.85	11.54	34.61	7.70	42.30	-	7.14	7.14	10.71	42.86	32.14	10.52	-	15.79	-	26.31	47.37
Incorporation of preliminary remote patient screening	-	15.38	3.85	42.30	19.23	19.23	-	7.14	21.43	14.29	42.86	14.28	10.52	-	10.52	21.05	31.38	26.31
Enhanced personal hygiene	3.85	3.85	7.70	26.92	23.07	34.61	-	-	10.71	14.29	25	50	5.26	5.26	-	21.05	21.05	47.37
Adjustment of clinical procedures	-	11.54	3.85	42.30	15.38	26.92	-	3.57	14.29	14.29	35.71	32.14	5.26	5.26	5.26	26.31	21.05	36.84
Reduction of working hours	-	7.70	3.85	34.61	7.70	46.14	7.14	3.75	16.07	23.20	32.14	17.70	-	-	15.79	15.79	21.05	47.37
Incorporation of tele-dentistry	19.23	3.85	15.38	26.92	7.70	26.92	10.71	7.14	14.29	32.14	17.85	17.85	5.26	10.52	5.26	21.05	21.05	36.84

Table 1 summarizes the changes in the clinical routine adapted by a dentist because of the varying grades of the impact of COVID -19 pandemic on the dental practice. The grade 0 shows no impact, grade 1 shows very low impact, grade 2 shows low impact, grade 3 shows moderate impact, grade 4 shows significant impact and grade 5 shows very significant impact. The average percentage of changes adapted are shown as per the years of experience (i.e. <1 year, 1-5 years, >5 years).

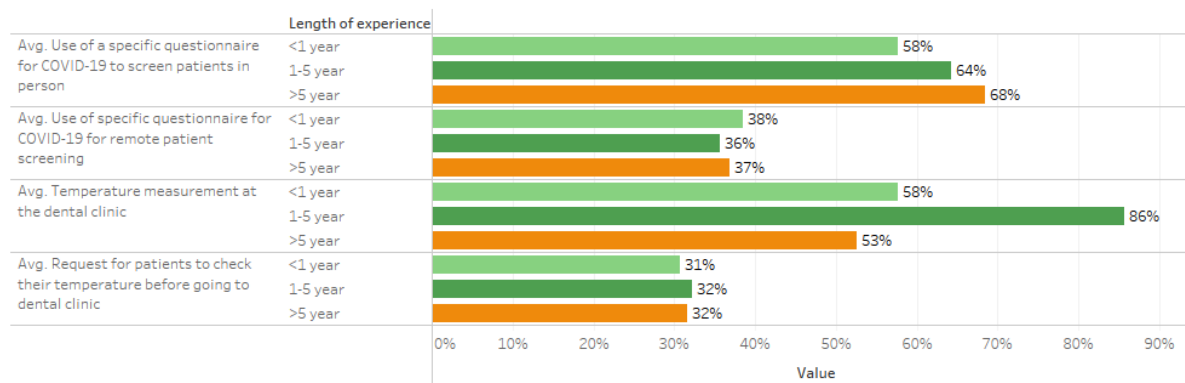


Figure 2 describes average % of precautionary measures taken as per the length of experience by the dentist. The pandemic has made the use of specific questionnaires as well as temperature measurements either in person or before going to the clinic necessary as a precautionary measures for patient and the dentist.

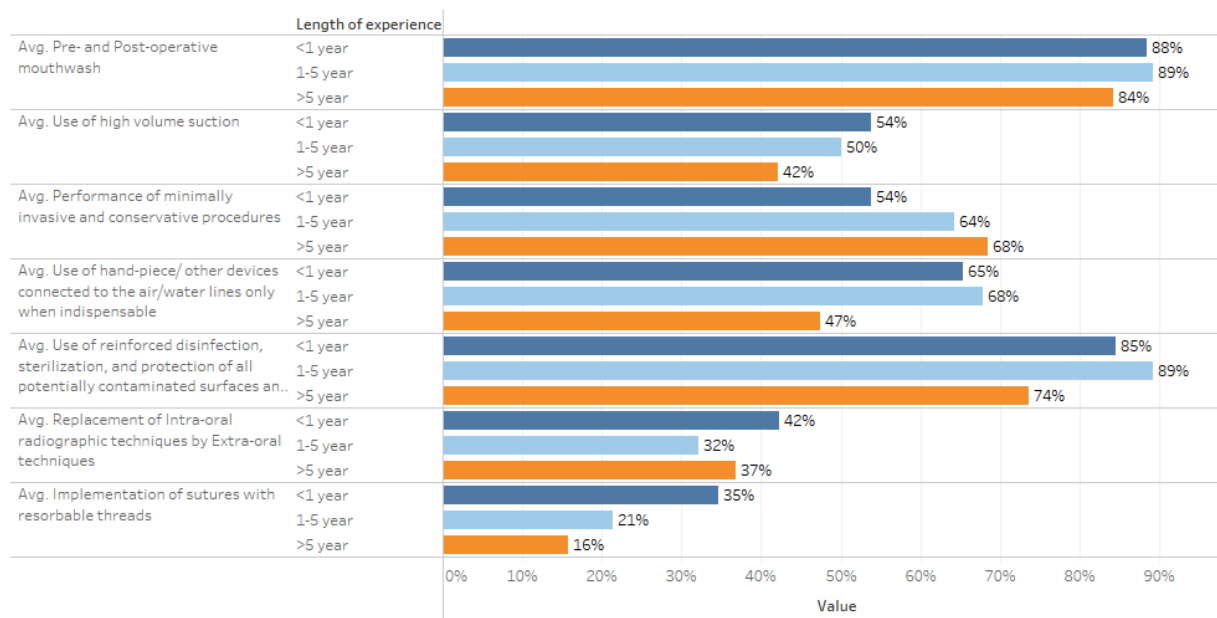


Figure 3 shows average % of changes in dental procedures adapted by the dentists as per their length of experience during the pandemic. Several changes adapted includes use of pre and post- operative mouth wash, use of high volume suction, use of various sterilization and disinfection protocols, replacement of intra-oral radiographic techniques with the extra-oral techniques etc.

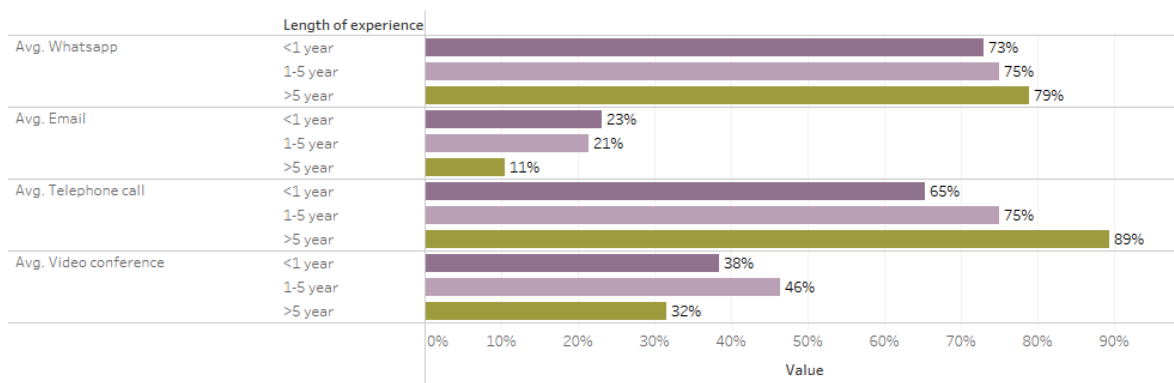


Figure 4 suggests the increased use of remote assistance during the pandemic. Average % of the use of Whatsapp, E-mail, Telephone call and Video-conference are shown in the figure according to the length of experience of the dentist.

In light of COVID-19 pandemic, health professionals, especially dentists, have adapted new approaches to patient care. Adjustments made by dental practices world-wide were necessary to

contain the spread of the virus and protect both clinicians and patients similarly from possible contamination in the work place (Ather et al., 2020), leading to a significant impact on the routine of the dentists. The present study demonstrates a significant impact reported by the dentists which was directly associated with the number of changes that occurred in their clinical practice in response to the pandemic.

It is important to mention that there has been no effective control of spread of SARS-CoV-2 attained in the country examined up to the date and prolonged interruption of services may generate an economic crisis for the dental professionals. This finding was supported by a study carried out by Farooq and Ali; Nicola et al. in 2020 where in they proved social distancing, self-isolation and travel restrictions leads to a reduced workforce across various economic sectors. However, during the time of our survey, most states had resumed routine dental activities due to decrease in case counts with specific provisions and adaptations made in place. The increased rate of confirm cases of COVID-19 in the region of residence (71.2%), the inclusion of the measures of social distancing (vertical/horizontal, complete lockdown) and the fear of contamination may lead a decrease demand for dental care by the population, which may negatively impact both the short and long term financial stability of the dental practice in the quality of life of health care workers.

In order to provide dental care safely with increased case count even though a vaccine is readily available and administered to an adequate degree of population, health professionals must be firm about following new protocols, including the use of personal protective equipment, establishing the changes in the clinical work routine and intensifying the precautionary measures. In 2010 during the outbreak of Swine-origin H1N1 influenza, Poramate Pitak-Arnop et al. in their review suggested and showed increased use of personal protective equipment in order to prevent the spread and communication of the virus among the healthcare workers.

The introduction and the changes adapted in the clinical routine were reported by most of the dentists who responded to the survey throughout the country (Table-1). It is supposed that difficulty in attaining common personal protective equipment due to its

scarcity and high cost on the market, as described by Chamorro-Petronacci et al. and Consolo et al. in 2020 was reported as significant to very significant impact on the increased use of personal protective equipment (42.30% for dentist with < 1 year of experience, 42.86% with 1-5 years of experience and 47.37% with >5 years of experience) in this study, is another negative factor which has to be considered in securing the clinical routine practice after the pandemic. According to our results, adjustments made by the dentist in their routine after the start of pandemic was consistent enough with those reported by other studies given by Ather et al. and Farooq and Ali in 2020 and followed guidelines proposed by various health organizations (Barabari and Moharamzadeh, 2020) to avoid the spread of the disease with increased disinfection showing a very significant impact of 47.37% in >5 years of experience and also to minimize the risk of contamination of health professionals and patients with the enhancement in personal hygiene (significant impact with 1-5 years of experience, 42.86% ).

Certain recommendations made by various health organizations to adapt and follow specific precautionary measures (Figure-2) include conducting of screening of patients through a questionnaire showing a significance of 68% with >5 years of experience when performed in person, performing temperature readings at the dental clinic was highly significant with 86% in dentists with 1-5 years of experience. Several changes were made in the clinical dental procedures in the time of the pandemic (Figure-3) of which the use of pre and post-operative mouthwash; use of reinforced disinfection, sterilization protocol and protection of potentially contaminated surfaces showed the higher significance of 87% and 82.67% respectively. The use of high vacuum suction and hand-piece/other devices connected to the air/water lines used only when inevitable showed the significance of 42% and 47% in dentists with >5 years of experience. Figure 4 shows a relative higher significance of 75.67% and 76.33% in the use of Whatsapp and Telephone call respectively among the dentists through the country. A similar study was carried out by Jamaal et al. and Maret et al. in 2020 wherein they came to a conclusion with similar findings.

Despite the relevance of the findings there were certain lacunae in this study should be highlighted. One such limitation is the use of self-applied online questionnaire and a possible degree of bias in recruitment of participants. Despite the ease in distribution of the questionnaire due to the recent benefits of virtual technology, the response rate was low and a sample size was smaller than expected. The impact and outcome were identified even though the sample size was small. Moreover in this study a casual relationship between the length of experience of the dentists and the changes in clinical practice as well as precautions adapted by the dentists during the pandemic is evaluated. Finally considering in a broad way, unfortunately it is not known whether the demographic data of the population that responded to the survey is representative of the general population of the dentists throughout the country. Hence a long team work needs to be done to extrapolate the results on masses.

#### CONCLUSION:

The COVID-19 pandemic has brought noteworthy changes to occur in the routine of dentists of India. The main factors associated to the perception of dentists to the impact of the COVID-19 pandemic on clinical practice were increased use of mouthwash, disinfection protocol, use of specific questionnaire and temperature measurements as a precaution and increased use of tele-communication skills to reduce the spread of the disease.

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