

A Questionnaire-based Evaluation of Changes Adapted by Dentist in their Practice during COVID-19 Pandemic

Yash Bafna, Kavya Shah, Shoba Fernandes*, Dharati Patel, Harsh Mistry, Heli Shah

Department of Pediatric and Preventive Dentistry, Sankalchand Patel University, Visnagar, Gujarat, India.

Abstract

Background: The world encountered a pandemic crisis due to coronavirus disease-2019 (COVID-19). This mandated the dental professionals toward modifications in the treatment protocols to provide relief to suffering patients and avoid transmission of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). The aim of the study was to evaluate how dentists changed their practices during the COVID-19 outbreak. **Material and Methods:** Convenience based snowball sampling was utilized for this online survey through Google forms among 150 dental practitioners of Gujarat and Tamil Nadu. Questions pertained to modifications in practices adapted by dentists and training imparted to dental care teams for safety precautions during COVID-19. **Results:** Overall response rate was 58%. Out of which, 66% were specialist dentists, and 34% were general dentists. About 69% dentists experienced increase in teledentistry. 66.6% used N95 mask and 96.5% used PPE kits. About 98.8% responders confirmed hand hygiene practices and 81.6% dentist imparted training to their dental team. **Conclusion:** The most significant changes carried out by dentists were increased usage of PPE and the adaption of biosafety measures along with a reduction in workload. Dental practitioners are more susceptible to SAR-CoV-2 infection, necessitating the implementation of stringent preventive measures.

Keywords: Coronavirus disease-2019, Dental practices, Hygiene, Patient safety, Preventive dentistry.

INTRODUCTION

The most recent threat to global health is the ongoing outbreak of the respiratory disease that was named coronavirus disease-2019 (COVID-19).^[1] COVID-19 was initially discovered in Wuhan, China in the year 2019 and it rapidly spread worldwide which lead to its recognition as pandemic, as announced by the World Health Organization (WHO) and the Public Health Emergency of International Concern.^[2] It leads to death rates, particularly among people with comorbidity.

Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) is caused by COVID-19. It mostly affects the upper respiratory tract, with a minor impact on the gastrointestinal tract.^[3]

Inhalation, ingestion, and direct mucosal contact with saliva droplets are the most common modes of viral transmission. In addition, the virus can remain viable on different objects or surfaces for 24–72 h.^[4,5] It can spread through asymptomatic, symptomatic, and even pre-symptomatic transmission. It can also spread from patients in the convalescence stage (Izzetti *et al.* 2020).^[6]

Whether it is an elective procedure, a medical emergency, or a pandemic like COVID-19, healthcare workers (HCWs) are always on the front lines.^[7]

SARS-CoV-2 transmission can thus occur during dental treatments through inhalation of infected patients' aerosol/droplets or direct contact with mucosal membranes, oral secretions, and contaminated tools and surfaces.^[8]

Dental practitioners are at high risk of infection due to short working distances, direct and indirect frequent exposition to saliva, blood, and other body fluids and due to use of aerators, ultrasonic devices, etc. This virus may remain in the saliva of a contaminated individual for up to 24 days and the patient remains asymptomatic.^[9]

Address for correspondence: Shoba Fernandes,
Department of Pediatric and Preventive Dentistry, Sankalchand Patel
University, Visnagar, Gujarat, India.
Email: vshobaf@gmail.com

Received: Mar 23, 2022; **Accepted:** Apr 18, 2022; **Published:** May 09, 2022

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

How to cite this article: Bafna Y, Shah K, Fernandes S, Patel D, Mistry H, Shah H. A Questionnaire-based Evaluation of Changes Adapted by Dentist in their Practice during COVID-19 Pandemic. *J Res Adv Dent* 2022;13(4):41–46.

Access this article online

Website:
www.jrad.co.in

DOI:
<https://doi.org/10.53064/jrad.2022.13.4.198>

Table 1: Questionnaire regarding dentist attitude during pandemic and changes made

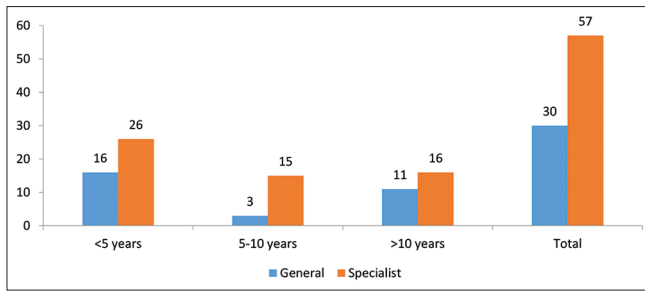
(1) Dentist Name	
(2) E-Mail Address	
(3) Field of practice	General dentist Specialist dentist (please specify below) Other
(4) Health Sector	Public/Government Private Academician
(5) Age of dentist (years)	24–35 36–54 >55
(6) Years of experience	<5 years 5–10 years >10 years
(1) Have you trained your team about COVID-19?	Clinical and non-clinical protocol Clinical protocol Non-clinical protocol
(2) Do all the health staff members wear protective clothing/PPE kit?	Whole day Only while treating/assisting any patients Not using
(3) How often hand hygiene is being performed?	Performed after seeing every patient After removing face mask or respirator Both of the above
(4) What kind of hand sanitizer is used in your practice?	Alcohol based sanitizer Non-alcohol based sanitizer Plain water and soap
(5) Have you displayed any COVID-19 related precautionary measures at the entrance of your clinic?	Yes No
(6) How often is fumigation of clinic/work area carried out in this pandemic?	Once/more than once in a day Once in a week Once in few days After every patient Twice a day
(7) How often the dental chair is being disinfected?	More than twice a day Cleaned and disinfected between every patient HEPA filters Air purifiers Others
(8) What methods were utilized to purify air?	Sodium hypochlorite Plain water with detergent Others
(9) What kind of chemicals were utilized to clean the floor?	

(Contd...)

Table 1: (Continued)

(10) Did you experience an increase in telephonic communication in this pandemic?	Yes No Initially during lockdown period Yes
(11) Is virtual consultation an effective way to resolve patient's dental problem?	No Somewhat Thermal check
(12) What measures are taken towards every patient who enter clinic/hospital?	Oxygen saturation check Hand sanitizer All of the above Mask
(13) What are the disposable Personal Protective Equipment (PPE) given to patients on their every visit ?	Gloves Shoe cover All of the above Yes to all patients
(14) Do you record COVID-19 related exposure and symptoms of every patients who visits?	No Given only to patients who has symptoms Visits are strictly appointment based No patients in waiting room Patient wait in their respective vehicle till called in Yes
(15) How is social distancing maintained in such times?	No Betadine mouthwash Chlorine dioxide mouthwash Chlorhexidine mouthwash Others Nothing has changed
(16) Was any mouthwash given before the treatment?	1–2 patients/day 3–4 patients/day Others Aerosol treatment Non-aerosol treatment Only consultation and medication 3 M half face mask respirator
(17) What type of mouthwash you prefer?	N-95 respirator mask N-95 with/without valve Others
(18) Have you changed your working pattern during COVID-19?	
(19) Which treatment procedures do you perform during the pandemic?	
(20) What kind of mask you prefer during the treatment?	

All dental healthcare employees (dentist, dental hygienist, and dental assistant) are included in the highest risk category for SARS-CoV-2 exposure, according to the Occupational Safety and Health Administration in the United States.^[4]



AQI Graph 1: Demographic data of dental professionals (n=87)

In view of the continuing global COVID-19 pandemic and limited scientific publications on dentists' changes adapted in the dental practices throughout the pandemic. The purpose of this study was to assess the changes made by dentists in their clinical practices during the virus outbreak.

MATERIALS AND METHODS

Pre-tested validated questionnaire was prepared and administrated through online survey through Google forms among 150 dental practitioners among Gujarat and Tamil Nadu States. The questionnaire consisted of questions regarding modifications adapted by dentists in terms of safety precautions and health-care measure.

The questionnaire consisted of 26 questions divided into two sections,

- Section 1: Demographic data and specialty of dentist.
- Section 2: To access attitude of dentists and changes adapted in their practice pertaining to COVID-19 pandemic (Table 1).

RESULTS

Total 87 dentists participated in the study (response rate 58%). Out of them, 66% of respondents were specialist dentist, 34% were general dentist. The dental practitioners who participated in the current survey belonged to private clinics (72.4%), public/government hospitals (10.3%), and also academic institutions (17.2%) (Table 2).

The survey results indicated that 69% dentist experienced increase in teledentistry. About 41.4% dentists changed their working pattern to 3–4 patients/day and 66.6% used N95 mask (Table 3).

With regards to patient safety, 82% followed clinical and non-clinical protocol and 96% utilized PPE Kit (Table 4).

Regarding infection control practices, 93% dentist used alcohol-based sanitizer and 91% dentist preferred mouthwash given before the treatment (Table 5).

DISCUSSION

SARS-CoV-2 and the associated COVID-19 caused due to high mortality, hence, garnered great attention with intense investigations.^[8] During other pandemics that occurred before

Table 2: Demographic data of dental professionals (n=87)

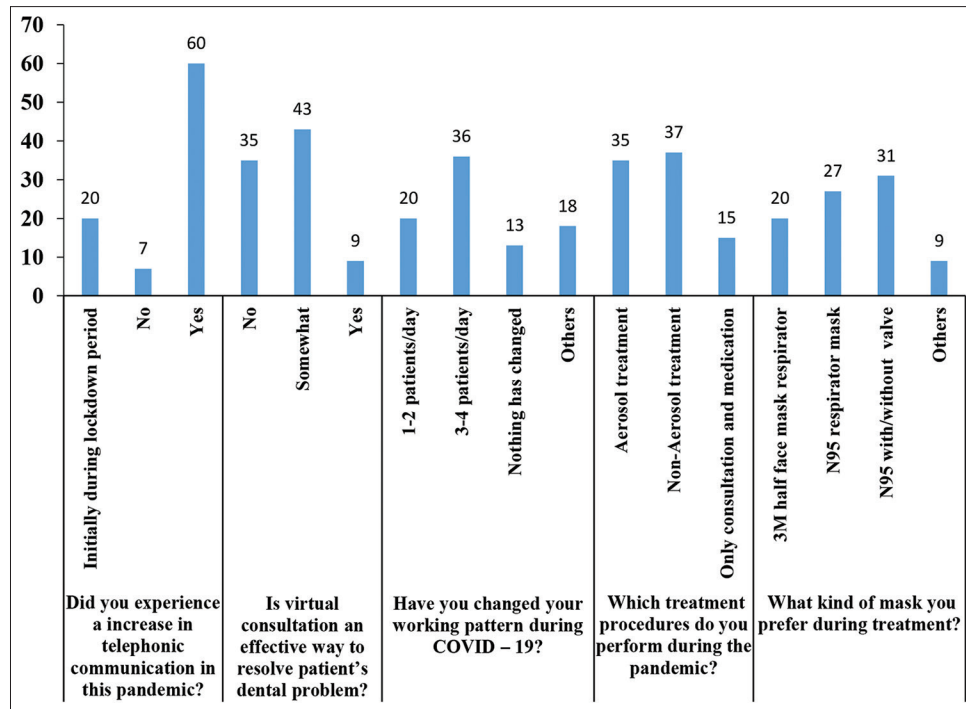
Participant information	<5 years	5–10 years	>10 years	Total	%
General	16	3	11	30	34
Academician			1	1	1
Private	13	3	10	26	30
Public/ Government	3			3	3
Specialist	26	15	16	57	66
Academician	4	3	7	14	16
Private	21	10	6	37	43
Public/ Government	1	2	3	6	7
Grand Total	42	18	27	87	100
%	48	21	31	100	

Participant information	<5 years	5-10 years	>10 years	Total
General	16	3	11	30
Specialist	26	15	16	57

Table 3: Modifications in practices by dental professionals during COVID-19 pandemic (n=87)

Did you experience an increase in telephonic communication in this pandemic?	Initially during lockdown period	20	23.0%
	No	7	8.0%
	Yes	60	69.0%
Is virtual consultation an effective way to resolve patient's dental problem?	No	35	40.2%
	Somewhat	43	49.4%
	Yes	9	10.3%
Have you changed your working pattern during COVID-19?	1–2 patients/day	20	23.0%
	3–4 patients/day	36	41.4%
	Nothing has changed	13	14.9%
	Others	18	20.7%
Which treatment procedures do you perform during the pandemic?	Aerosol treatment	35	40.2%
	Non-aerosol treatment	37	42.5%
	Only consultation and medication	15	17.2%
What kind of mask you prefer during the treatment?	3 M half face mask respirator	20	23.0%
	N-95 respirator mask	27	31.0%
	N-95 with/without valve	31	35.6%
	Others	9	10.3%
Grand total		87	100.0%
Have you trained your team about COVID-19?	Clinical and non-clinical protocol	71	82%

COVID-19, health-care professionals had to adapt protocols to prevent spread. Gaffar *et al.*^[10] reported in their survey regarding knowledge and practices of dentists related to Middle East Respiratory Syndrome (MERS-CoV) that more than 78%



AQ1 Graph 2: Modifications in practices by dental professionals during COVID-19 pandemic ($n=87$)

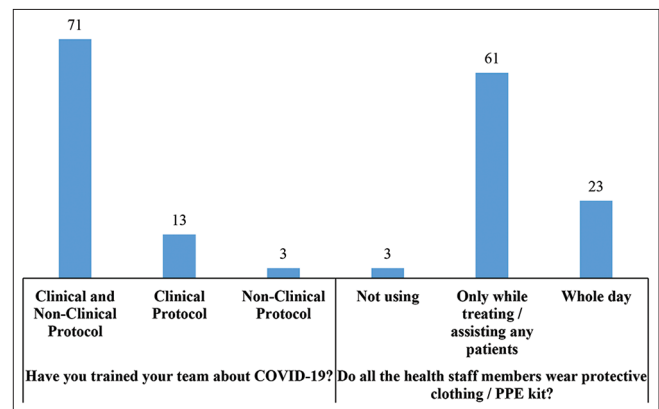
Table 4: Training and safety: Dental auxiliary ($n=87$)

	Clinical Protocol	13	15%
	Non-clinical Protocol	3	3%
Do all the health staff members wear protective clothing/ PPE kit?	Not using	3	3%
	Only while treating/assisting any patients	61	70%
	Whole day	23	26%
Grand total		87	100%

Table 5: Hygiene measures implemented ($n=87$)

How often hand hygiene is being performed	After removing face mask or respirator	1	1%
	Both of the above	53	61%
	Performed after seeing every patient	33	38%
What kind of hand sanitizer is used in your practice?	Alcohol-based sanitizer	81	93%
	Non-alcohol-based sanitizer	3	3%
	Plain water and soap	3	3%
Was any mouthwash given before the treatment?	No	8	9%
	Yes	79	91%
Grand Total		87	100%

dentists knew that the impact can be prevented by good hygiene practices and infected patients should be isolated. Priya and Chauhan^[9] in their study among Malaysian dental students understanding of the pandemic H1N1 influenza outbreak,



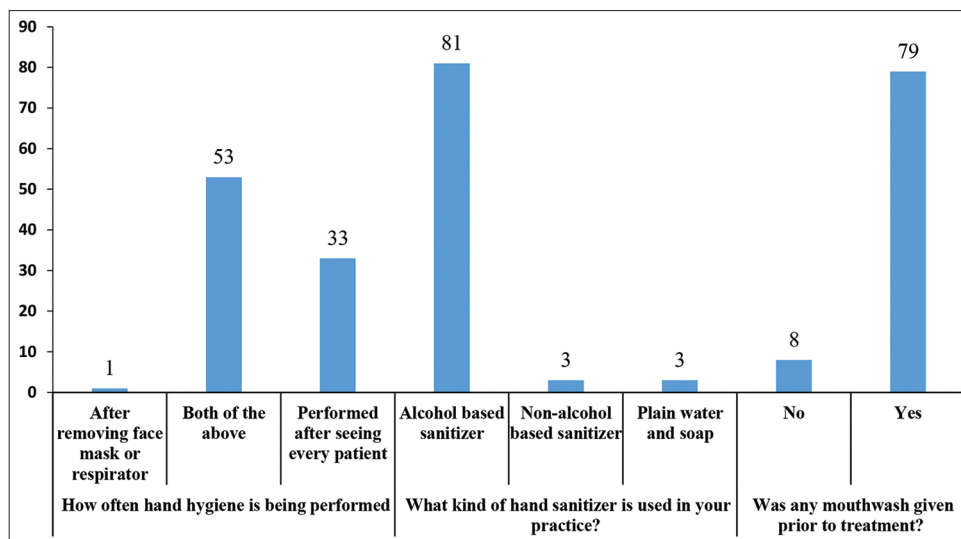
Graph 3: Training and safety: Dental auxiliary ($n=87$)

AQ1

88.9% stated hand-washing with soap and 77% believed that travel restrictions were the most effective preventive measures.

On September 29, 2021, the Ministry of Health and Family Welfare of the Government of India announced “National Norms for Safe Dental Practice during the COVID-19 Pandemic”, in accordance with the WHO guidelines. It recommends procedures and protocols to be followed related to disinfection of dental clinic, waste management, ventilation, air quality management in dental clinics, and instructions to patients visiting dental clinics. It also advises regarding dental laboratory and imaging protocols.^[11]

During the first COVID-19 lockdown, a global survey was conducted. According to Phadraig *et al.*,^[12] there has been an increase in teledentistry, which is similar to the current survey's result that 69% of dentists have witnessed



AQ1 Graph 4: Hygiene measures implemented ($n=87$)

an increase in telephonic communication. However, other such study by Shivu^[13] indicate that 90% of dentists were aware about teledentistry, few implemented into their routine dental practice. In a questionnaire-based survey conducted by Menhadji concluded that the majority of clinicians observed that the teledentistry platform to be beneficial and simple to use.

Izzetti *et al.*^[14] in their survey observed that dental activity was reduced by 95% and limited to urgent treatments. Tysiąc-Miśta and Dziedzic^[15] concluded that 71.2% dentist decided to entirely suspend their dental practice. In the current survey, 41.4% dentist changed their working pattern to 3–4 patients/day. The altruistic need to give emergency and urgent dental procedures was the main reason for the dentists who continued their clinical job during the pandemic. The dentistry profession's primary principle is to provide critical medical/dental treatment.

In a survey conducted by Prajapati *et al.*,^[16] it was discovered that 59.3% of respondents utilized full PPE with an adequate mask, whereas 96.5% of respondents used PPE kits, with just 26.4% using them for the entire day.

Regarding N95 usage in the current study, 66.6% used the same and this result is inconsistent with results shown by Ahmed *et al.*^[17] who were 90% of the respondents reported not wearing an N-95 mask and Duruk *et al.*^[18] found that only 12% practitioner wore an N-95 mask.

The concern of COVID-19 spreading and the requirement for time to implement a revised biosafety standard drove dentists to curtail elective treatments in dental care.^[13] In the present survey, 42.5% dentist preferred non-aerosol treatment.

Several dental practitioners implemented safety measures for patients ultimately ensuring to restrict the spread of COVID 19 within the clinic premises. In this regard, various safety and hygiene related practices were introduced. About 78.2% dental practitioners mentioned about implementation of patient

safety measures. Furthermore, disposable PPE kits were provided to patients in 47.1% clinics. Hand hygiene became a very important practice since spread of COVID-19 was predominantly through hand contacts and so survey results showed that 98.8% responses confirmed about hand hygiene. The results are in line with the findings of the study conducted by Duruk *et al.*^[18] wherein 98.57% of dentist implemented frequent hand washing in their daily lives. Further in the study by Izzetti *et al.*^[14] found that 99.1% clinical staff performed hand washing.

Clinical fumigation became very important preventive measure to restrict the spread of COVID-19 and 86.9% respondent that clinics were fumigated frequently with a view to prevent transmission of disease. Faccini *et al.*^[19] found that 95.5% of the professionals reinforced biosafety protocols of dental offices such as hand washing procedures, equipment disinfection using sodium hypochlorite, and mandatory use of disposable masks all the time.

With a view to reduce the danger of COVID 19 spread, records related to thermal and oxygen saturation check and hand sanitizer measures were taken before the treatment in case of 96.6% patients and social distancing was maintained by 82.8% dental clinics as per our survey. The results are similar to the study conducted by Ahmed *et al.*^[17] observed that 82.66% social distancing was maintained. Khader *et al.*^[20] found that 74.7% believed that it was necessary to ask patients to sit far from each other, wear masks while in the waiting room, and wash hands before getting in the dental chair to decrease disease transmission.

The primary concerns of dentists all over the world during the ongoing COVID-19 pandemic are more than clinical practice modifications. These professionals, especially those who work in private clinics, are faced with the critical choice of stopping work to ensure their health or to continue working for the upkeep of their home and family. Therefore, it is up to each

professional, based on their circumstances, to assess the risks and benefits when making their decisions.

CONCLUSION

The knowledge and attitude of dental patients as assessed in this study show that the majority of the dentist have adapted the “New Normal”. That is adapting to the safety measures like PPE utilization and following clinical as well as non-clinical protocols. The majority of the dental practitioners experience increase in telephonic communication and even modified their working pattern to reduce the risk of transmission by not neglecting the necessary precautionary measures while performing dental treatment. In addition, dentist should follow local and universal guidelines to keep COVID-19 preventive and management strategies updated.

REFERENCES

1. de Oliveira RS, Ballesterio MF. The Covid-19 outbreak and pediatric neurosurgery guidelines. *Arch Pediatr Neurosurg* 2020;2:53-4.
2. Spagnuolo G, De Vito D, Rengo S, Tatullo M. COVID-19 outbreak: An overview on dentistry. *Int J Environ Res Public Health* 2020;17:2094.
3. Campus G, Betancourt MD, Cagetti MG, Giacaman RA, Manton DJ, Douglas GV, *et al.* The COVID-19 pandemic and its global effects on dental practice. An international survey. *J Dent* 2021;114:103749.
4. Ali S, Noreen S, Farooq I, Bugshan A, Vohra F. Risk assessment of healthcare workers at the frontline against COVID-19. *Pak J Med Sci* 2020;36:S99.
5. World Health Organization. COVID-19 and Food Safety: Guidance for Food Businesses: Interim Guidance. Geneva: World Health Organization; 2020.
6. Izzetti R, Nisi M, Gabriele M, Graziani F. COVID-19 transmission in dental practice: Brief review of preventive measures in Italy. *J Dent Res* 2020;99:1030-8.
7. Bawankar PV, Kolte AP, Kolte RA. Combating COVID-19: A dentist perspective. *Acta Sci Dent Sci* 2020;4:59-62.
8. Shahin SY, Bugshan AS, Almulhim KS, AlSharief MS, Al-Dulaijan YA, Siddiqui I, *et al.* Knowledge of dentists, dental auxiliaries, and students regarding the COVID-19 pandemic in Saudi Arabia: A cross-sectional survey. *BMC Oral Health* 2020;20:1-8.
9. Priya H, Chauhan A. Awareness of the pandemic H1N1 influenza outbreak among Malaysian dental students. *J Pierre Fauchard Acad (India Section)* 2018;32:57-62.
10. Gaffar BO, El Tantawi M, Al-Ansari AA, AlAgl AS, Farooqi FA, Almas KM. Knowledge and practices of dentists regarding MERS-CoV: A cross-sectional survey in Saudi Arabia. *Saudi Med J* 2019;40:714.
11. Available from: mohfw.gov.in/pdf/NationalGuidelinesforSafeDentalPracticeDuringCovid19pandemic.pdf
12. Phadraig CM, van Harten MT, Diniz-Freitas M, Posse JL, Faulks D, Dougall A, *et al.* During the COVID-19 first wave lockdown. *Med Oral Patol Cir Bucal* 2021;26:e770.
13. Shivu ME. Evaluation of Knowledge, Awareness and Attitude about Teledentistry among Dental Practitioner. Karnataka: Shivu System Service; 2021.
14. Izzetti R, Gennai S, Nisi M, Barone A, Giuca MR, Gabriele M, *et al.* A perspective on dental activity during COVID-19: The Italian survey. *Oral Dis* 2021;27:694-702.
15. Tysiąc-Miśta M, Dziedzic A. The attitudes and professional approaches of dental practitioners during the COVID-19 outbreak in Poland: A cross-sectional survey. *Int J Environ Res Public Health* 2020;17:4703.
16. Prajapati AS, Kulkarni PR, Shah HG, Shah DB, Sodani V, Doshi P. Attitude, practices and experience of dental professionals during COVID-19 pandemic: A cross-sectional survey from Gujarat, India. *Adv Hum Biol* 2021;11:266.
17. Ahmed MA, Jouhar R, Adnan S, Ahmed N, Ghazal T, Adanir N. Evaluation of patient's knowledge, attitude, and practice of cross-infection control in dentistry during COVID-19 pandemic. *Eur J Dent* 2020;14:S1-6.
18. Duruk G, Gümüşboğa ZŞ, Çolak C. Investigation of Turkish dentists' clinical attitudes and behaviors towards the COVID-19 pandemic: A survey study. *Braz Oral Res* 2020;34:e054.
19. Faccini M, Ferruzzi F, Mori AA, Santin GC, Oliveira RC, de Oliveira RC, *et al.* Dental care during COVID-19 outbreak: A web-based survey. *Eur J Dent* 2020;14:S14-9.
20. Khader Y, Al Nsour M, Al-Batayneh OB, Saadeh R, Bashier H, Alfaqih M, *et al.* Dentists' awareness, perception, and attitude regarding COVID-19 and infection control: Cross-sectional study among Jordanian dentists. *JMIR Public Health Surveil* 2020;6:e1879.

Author Queries???

AQ1: Kindly cite Graphs 1-4 in text part