

In-Office Dental Treatment Considerations amongst Dental Professionals during COVID -19: A Cross-Sectional Survey

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Citation of this Article: Dr. Ila Rajendra Patel, Dr. Abhijeet Ramchandra Kore , Dr. Pronob Kumar Sanyal, “In-Office Dental Treatment Considerations Amongst Dental Professionals during COVID -19: A Cross-Sectional Survey”, IJDSIR- January - 2021, Vol. – 4, Issue - 1, P. No. 122 – 128.

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Type of Publication: Survey Article

Conflicts of Interest: Nil

Abstract

Background: COVID-19 pandemic continues to claim lives every day around the world. Dentists stand at a high risk of exposure through droplets or aerosols while treating patients during this pandemic. This study aims to assess the in-office preparedness of dentists during COVID-19.

Materials & Method: The study included general dental practitioners, specialists, and postgraduate students all over the country working in private clinics, hospitals, or colleges.

Results: A total of 250 dentists participated in this close-ended questionnaire study. Males were in the majority compared to females. Most of the dentists had implemented the protocols in their practice to prevent the

spread of COVID-19. Most of the dentists had knowledge about referring suspected patients to the local healthcare centers.

Conclusion: In the present study, the majority of the dentists displayed satisfactory knowledge about their preparedness in the clinic regarding the COVID-19 pandemic. However still there is a need for the dentists to update and improve their knowledge to prevent the spread of COVID-19.

Keywords: COVID-19, cross-sectional study, Personal Protective equipment, Dental Professionals

Introduction

The advent of the coronavirus pandemic marred the year 2020, which marked the beginning of a new decade. Coronavirus, also called as COVID-19 or SARS-CoV-2

virus has spread like wildfire throughout the world since its inception in Wuhan, China, in 2019.¹ According to the current World Health Organization (WHO) situation report, from 30th December 2019 till 11th October 2020, over 37 million COVID-19 cases and 1 million deaths were reported globally.²

Earlier, the transmission route of COVID-19 infection was presumed to be from animal to human; however, infected humans were the primary infection source.³ Currently, the evidence points out that human transmission occurs through nasal droplets or contact route.⁴ Health care workers are at risk of exposure while treating these infected patients. Dentists, too, stand a chance of getting infected if exposed while treating a COVID-19 positive patient or an asymptomatic carrier because of working in close vicinity of the patient and the type of dental treatment.

Various health bodies like the Centre for Disease Control and Prevention (CDC),⁵ American Dental Association (ADA)⁶ have released various dentistry guidelines. These guidelines include emergency dental procedures, proper history of patient, proper handwashing techniques, appropriate disposal of biological waste, disinfection of dental clinic, personal protective equipment to prevent the transmission of COVID-19 through dental clinic.

Although the guidelines have been released, there remains a doubt whether the dentists follow the protocols properly. This cross-sectional study survey across India reports about dentists' knowledge and practices for providing essential care in times of this pandemic.

Material and method

An approval from the Ethics committee was obtained from the institution.

Study Setting

A cross-sectional questionnaire-based study was conducted amongst general dental practitioners (GDPs),

postgraduate students, and dental specialists representing North, South, East, West, and Central zones of India through an e-survey using Google forms between August to October 2020.

Study population and sampling technique

A list of the email addresses of all the practicing dentists was collected through convenience sampling. The sample size was calculated using EpiInfo software based on Ashok *et al.*⁷ The final sample size was 250, and e-mails were sent to 600 members through a google form.

Study tools and Data Collection

The 15-item closed-ended questionnaire was framed according to ADA guidelines, CDC^[5,6] Content validity, face validity, and reliability of the questionnaire were established amongst 20 volunteers of similar populations. The questionnaire was anonymous to maintain the confidentiality of the dentists. The questionnaire was divided into two sections; demographic details included age, sex, education, and clinic location. The second half consisted of 10 questions pertaining to the dentist's knowledge and practice for providing essential care during COVID-19. The questionnaire was sent to the subjects through an electronic mail and WhatsApp (Social Media Platform).^[8] Descriptive statistical analysis was applied to give details of the questions in the survey.

Results

Participants and demographic characteristics (Table 1)

The total number of participants and their demographic details are given in Table 1. This study included 250 dentists in which male subjects (53.6%) were in the majority compared to female subjects (103, 46.3%). With respect to specialties, the majority were general dentists (66.6%), 12% had done their specialization in different dentistry branches, and 8% were postgraduate students studying in various dental colleges across India. Majority of the dentists (40.4%) belonged to the 46-55 age group.

Regarding the type of dental practice, most of the dentists(60.8%) owned private dental clinics while few worked in dental colleges(19.2%), and few worked in hospitals (20%).

Responses of dentists to the questions asked about in-house preparedness against COVID-19 (Table 2)

When asked whether they were aware of the CDC guidelines,98.8 % of dentists were aware that .98% of the dentists were aware of the signs and symptoms of COVID-19 disease.88% of the dentists asked the patient about their travel history before initiating the dental procedure. Only 34% of the dentists had a separate triage/ separate previewing area in their clinic or hospital where they worked. 94% of the dentists answered that their clinic was well ventilated.

With respect to educating the patients about COVID-19, 80% of the dentists answered that they educated their patients regarding COVID-19. Only 48% of the dentists had a separate aerosol generating area in their clinic or the hospital or college. They worked in.96% of the dentists chose to use the Personal Protective Equipment (PPE) while working on emergency cases. Similarly, 88% of the dentists answered that they would use a rubber dam and high- volume suction devices if an aerosol-producing procedure were required to be performed.

74.8% of dentists answered that they would advise pre-procedural mouth wash and extraoral scrubbing in every patient before any treatment. The majority of the dentists(95.6%) favored using extraoral radiographs over intraoral radiographs.95.2% of the dentists preferred to recall the patient within 48 hours if their dental symptoms did not subside when an elective dental procedure was performed. When asked whether the dentists had trained their dental staff, 88% of the dentists had trained their staff about sterilization, disinfection of the dental clinic, and proper biomedical waste disposal.88.4 % of dentists

answered that they would report and refer any suspected patients with symptoms similar to COVID to the nearest local healthcare authority. 80% of the dentists answered that they disinfected their clinic after completing treatment on each patient.

Discussion

COVID-19 claims a countless number of lives every day and affects many more. This will continue until a cure is discovered. It thus becomes imperative for dentists to follow protocols set by various health bodies to prevent the transmission of COVID-19 through dental practice. The present study has examined the in-house preparedness of dentists against COVID-19. A total of 250 dentists across India had participated in this study.

It was observed that the majority of the dentists were aware of the guidelines and infection control protocols released by the CDC.⁵ Patients with COVID-19 present with clinical symptoms such as headache, fever, nasal congestion, cough, sore throat, shortness of breath, nausea, vomiting, and diarrhea.⁹ . It is necessary to have a separate previewing and triage area to screen the patients before treatment to prevent disease transmission.¹⁰ Triage area refers to a separate previewing area with adequate ventilation for all the OPD patients. Also, the clinic should be well-ventilated to serve the same purpose.¹¹ In the present study. However, most of the dental setups were well-ventilated, only a few of these setups had a separate previewing and triage area. Ge *et al*¹⁰ and Pelleu GB Jr *et al*¹² have emphasized the use of air filters and HEPA or mechanical HVE to minimize disease transmission. Most of the dentists preferred to ask the travel history of the patient before the treatment as it gives an insight whether the patient had visited any high-risk area, especially in the last 14 days.¹¹It is necessary to educate the patient regarding the transmission of COVID-19 and the precautions associated with the dental field through online

consultation.¹³ Most of the dentists in this study answered that they educated patients regarding COVID-19. It is preferable to avoid aerosol-generating procedures during these times. However, suppose an aerosol-generating procedure needs to be performed. In that case, it should be performed in a closed room or at the end of the day.^{3,14} Only a few dentists had a separate aerosol generation and non-aerosol generation area in their dental setup.

It is mandatory to wear the entire PPE kit if any emergency procedures arise. The PPE kit includes a fluid-resistant mask, a visor, and an apron.¹⁴ Additionally, eye protection is necessary by using goggles and a face shield.¹⁵ A N95 respirator is recommended for protection from airborne and fluid splashes.¹⁶ Most of the dentists in this study emphasized wearing PPE kits while performing emergency cases. Pre-procedural mouthrinses like 1% hydrogen peroxide or 0.2% povidone-iodine are known for their non-specific virucidal activity.^{17,18} 74.8% of the dentists advised pre-procedural rinse and extraoral scrubbing of the patient before initiation of procedures.

88% of the dentists preferred to use a rubber dam and high-volume suction devices in aerosol-generating procedures. It is essential to place a rubber dam to decrease cross-contamination through saliva.¹⁹ The use of high volume suction devices with regular suction has been advised.³ 95.6% of the dentists prefer extra-oral radiographs over intraoral radiographs. Though intra-oral radiographs are the most common radiographic technique used in dental setup, they tend to cause oral mucosa irritation, leading to over excretion of saliva, thus increasing infection susceptibility.¹⁹ Panoramic radiographs, or cone-beam computed tomography (CBCT) is preferred over intraoral radiographs.¹⁹

Due to the pandemic, teledentistry is emerging. Teledentistry helps the dentist in monitoring the treatment

outcomes through mobile photography and keeping it confidential.²⁰ However, if the symptoms persist, it would be advisable to recall the patient. 95.2% of the dentists preferred to recall the patient after 48 hours if the dental symptoms did not subside. According to the Ministry of Health and Family Welfare (MoHFW) guidelines,²⁰ it is mandatory for the dental staff to learn proper triaging, sterilization, disinfection of clinic, and proper biomedical waste disposal. In the present study, 88.4% of dentists had trained their dental staff for the tasks mentioned above.

Dental clinics should have protocols for proper reporting and referral systems to the local health authority to report or refer any suspected COVID-19 patients.^{10,13,19,21} In the present study, 96.4% of the dentists were aware of the local health authority to refer any suspected COVID-19 patient this is similar to the finding by Singh *et al.*⁸ It has been shown that coronavirus can persist on inanimate surfaces up to 9 days.¹⁰ Thus, cleaning the surfaces with either 62 to 71% ethanol or 0.5% hydrogen peroxide or 0.1% sodium hypochlorite after every patient.¹⁰ In this study, 80.4% of the dentists followed this disinfection procedure strictly.

The study had a few limitations. The primary limitations being the small sample size and a short period for data collection. Also, this questionnaire was available on social media only; thus, those who did not use social media were excluded. Further certain cities or states in the country were more affected than the others. This might also influence the preventive health care measures implemented in that region, affecting the study.

Conclusion

Dentists stand at high risk of exposure as they are exposed to droplets and aerosols. Also, they have to treat asymptomatic carriers who can transmit the disease. In this study, most of the dentists showed preparedness in their dental set up against COVID-19. The dentists need to

follow the guidelines set by WHO, CDC, MoHFW strictly. However, dentists need to attend a training program on COVID-19 to improve and update their knowledge to prevent the spread of disease.

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Legend Tables

Table 1: Demographic Details

| Profile | | Number (n=250) | Percentage (%) |
|------------------|-----------------------------|----------------|----------------|
| Gender | Male | 147 | 53.6 |
| | Female | 103 | 46.3 |
| Speciality | General Dental Practitioner | 200 | 66.6 |
| | Specialist | 30 | 12 |
| | Post graduate student | 20 | 8 |
| Type of Practice | Private Practice | 152 | 60.8 |
| | Hospital | 50 | 20 |
| | College | 48 | 19.2 |
| Age Group | 26-35 | 20 | 8 |
| | 36-45 | 81 | 39.5 |
| | 46-55 | 101 | 40.4 |
| | 55+ | 48 | 2.4 |

Table 2: Responses of dentists to the questions asked about in-house preparedness against COVID-19

| Questions | YES n (%) | NO n (%) |
|---|-------------|-----------|
| 1. Are you aware of the basic CDC guidelines for infection control and follow them in every patient | 247 (98.8%) | 3 (1.2%) |
| 2. Are you aware about the signs and symptoms of COVID-19? | 245(98%) | 5(2%) |
| 3. Do you take proper case history including travel history prior to initiation of any procedure | 220(88%) | 30(12%) |
| 4. Do you have a separate pre-viewing and triage area in your office/hospital | 85(34%) | 165(66%) |
| 5. Is your clinic well ventilated? | 240(96%) | 10(4%) |
| 6. Do you educate your patients regarding COVID-19? | 200(80%) | 50(20 %) |
| 7. Do you have a separate aerosol generation and non-aerosol generation area in your office/hospital | 95(38%) | 155 (62%) |
| 8. In case of performing emergency dental procedure do you use PPE | 240(96%) | 10(4%) |
| 9. Do you advice pre-procedural mouth wash and extra oral scrubbing in every patient prior to any treatment | 187(74.8%) | 63(25.2%) |
| 10. Do you use rubber-dam or high- volume suction devices, if an aerosol-producing procedure is required to be performed | 220(88%) | 30(12%) |
| 11. Do you think extraoral radiograph is more advisable to use over intraoral radiographs | 239(95.6%) | 11(4.4%) |
| 12. For the elective dental procedure, if dental symptoms are not relieved within 48 hours, is a recall advisable | 238(95.2%) | 12(4.8%) |
| 13. Have you trained your dental staff pertaining to disinfection, sterilization of the dental clinic, and biomedical waste disposal? | 221(88.4%) | 29(11.6%) |
| 14. Are you aware of the local health authority and test laboratories to refer/ report any patient with relevant symptoms and history | 241(96.4%) | 9(3.6%) |
| 15. Do you disinfect your clinic after every patient? | 201(80.4%) | 49(19.6%) |