ISSN: 2581-5989
PubMed - National Library of Medicine - ID: 101738774

International Journal of Dental Science and Innovative Research (IJDSIR)

IJDSIR : Dental Publication Service

Available Online at: www.ijdsir.com

Volume – 4, Issue – 2, March - 2021, Page No. : 372 - 378

Post-covid-19 prevention protocols for the dental clinics: A necessity

[1]Dr Kirti Saharan, MDS in oral medicine & radiology, Hampi Nagar, Bangalore -560104

[2]Dr Ashok L., Professor And HOD (MDS In Oral Medicine & Radiology), Dept of Oral Medicine And Radiology, Bapuji Dental College And Hospital, Davangere, Karnataka, 577004

[3]Dr. Arpita Deb, MDS In Conservative Dentistry & Endodontics, Konankunte, Bangalore, Karnataka-560062.

Corresponding Author: Dr Kirti Saharan, MDS in oral medicine & radiology, Hampi Nagar, Bangalore -560104

Citation of this Article: Dr Kirti Saharan, Dr Ashok L., Dr. Arpita Deb,"Post-covid-19 prevention protocols for the dental clinics: A necessity", IJDSIR- March - 2021, Vol. – 4, Issue - 2, P. No. 372 – 378.

Type of Publication: Review Article

Conflicts of Interest: Nil

Abstract

COVID-19 is still prevailing largely in the countries like U.S.A, Brazil and India and it has tremendously affected almost every existing profession and dentistry is not an exception. In fact, dentistry is one of the most exposed professions to the COVID-19 infection. Hence, even in the Post-COVID-19 times, it is of utmost importance to continue practicing precautionary measures and protocols to avoid cross- infections in the dental clinics and to assure a safe environment for the patients and the dental staff. This article highlights various infection control protocols against COVID-19 that need to be taken before, during, and after the dental treatment.

Keywords: Covid-19, Prevention Protocols, Dentistry, Dental Clinics, Post-COVID-19, Dental Practice

Introduction

According to the World Health Organization (WHO), COVID-19 is a pandemic caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). SARS-CoV-2 is a zoonotic virus that spread from animals to humans. Most probably, Chinese horseshoe bats (Rhinolophus sinicus) are the origin of this disease, and pangolins (Manis javanica) are the intermediate host.

On the unfortunate day of 31 December 2019, the first case of COVID-19 was reported in Wuhan, China. At present, COVID-19 has been recognized in over 220 countries, areas and territories, with a total of more than 123,437,200 confirmed cases and 2,722,100 deaths.

The incubation period of the virus is between 2 and 12 days. The most common symptoms of coronavirus disease are fever, dry cough, tiredness, shortness of breath. Other less common symptoms are sore throat, aches, pains, headache, conjunctivitis, loss of taste or smell, diarrhoea, discoloration of fingers or toes, or a rash on the skin.

About 80 % of cases are mild and require only symptomatic treatment. But, around 15% of cases are classified as severely ill and the remaining 5% are classified as critically ill. In these cases, acute respiratory disease can lead to pneumonia, kidney failure, and even

death. The case fatality ratio (CFR) of COVID-19 is around 4.5%.[1]

Covid-19 transmission in dentistry

SARS-CoV-2 enters cells through the angiotensin-converting enzyme 2 (ACE2) receptors which are found in most cells of the respiratory system and salivary gland.[2] Among both, salivary gland cells are the first sites where SARS can be detected, and it is theorized that COVID-19 follows the same path.[3]

Mode of transmissions are: a) Person to person by respiratory droplets b) Direct contact and fomites c) Directly or indirectly through saliva d) Face to face communication e) Contact with contaminated instruments and or environmental surfaces f) Inadequate sterilization protocols g) Poor respiratory hygiene and etiquettes.[4,5]

In Routine dental practice, the patient's oral fluids such as saliva and blood, droplets and aerosol generation by ultrasonic scalers; air-water syringes; and air turbine hand-pieces, material contamination, dental unit surface, etc. can act as sources of infection for the dentists, the assistants, and the patients. Therefore, the use of disinfectants and personal protective equipment (PPE) remains crucial for running a safe dental practice.[6]

Pre-Treatment Covid-19 Prevention Protocols [4,7-14]

1.1 Tele-dentistry & Triage Protocols:

a) The most crucial steps in COVID-19 prevention in the dental clinics are telephone triage and tele-consulting in which information from the patient and his or her family members regarding symptoms and travel in the last two weeks should be collected. Contact all patients before the dental treatment and screen them via telephone for symptoms related to COVID-19 and refer them to the General Physician if needed. If the patient reports symptoms of COVID-19 such as fever, cough, sore throat, shortness of breath then, non-emergent dental treatment should be delayed until the patient has completed his/her quarantine period. According to Meng et al., there should be a precautionary recovery period of 30 days before conducting non-deferrable dental care in the infected patients.

b) Use the telephone and remote electronic or web-based system to assess the dental problems and try to resolve the same with symptomatic treatment. Only pre-appointed patients should be attended in the clinic whose dental problems are already diagnosed through previous telephone and remote electronic or web-based systems.

c) Either record all personal details of the patients with prior patient's consent or make an entry in your diary stating the date, name, age, contact details, clinical history, and possible diagnosis.

d) Based on the symptoms, advice for some basic investigations which could serve as an aid to the diagnosis and prevent additional appointments.

e) Request the patient to limit the number of accompanying persons and advise them to wear a face mask and brush their teeth before arriving at the dental clinic.

f) Encourage all patients to download the Arogya Setu App (Covid-19 Assessment App) and update it at home prior to their arrival for appointment.

g) Enquire the patients regarding the covid-19 vaccination and encourage them to get them same as early as possible.

1.2 Disinfection of the clinic and its premises:

Lift & Staircase Area

a) Stick covid-19 awareness and vaccination signage in the lift & the staircase area.

b) Sanitize the handrail and lift operating panel frequently.

Entrance Area

a) Stick Covid-19 awareness (respiratory hygiene, cough etiquette, social distancing) and shoe removal signage at the entrance.

b) Provide shoe covers to the patients before entering the clinical premises.

c) Place foot-operated sanitizer dispenser.

Reception and Waiting Area

a) Put markings on the ground to indicate social distancing.

b) Glass or plastic barrier for reception area should be placed to maintain a minimum of 1.5 - 2 meters physical distance from patients.

c) The staff should wear a good quality face mask, gloves and maintain a distance of at least 2 meters at the entrance.

d) Request all the visiting patients to wear face masks inside the dental clinic and in the waiting area. Sufficient face masks and sanitizers and paper tissue should be available at the registration desk, as well as nearby hand hygiene stations.

e) A dustbin with a lid should be available where patients can discard used paper tissues.

f) All the patients and staff should be checked by an Infrared thermometer and pulse oximeter before entering the dental clinic.

g) Place chairs in the waiting room preferably at least six feet apart.

h) Insist on the patient to maintain the appointment time strictly.

i) Minimize overlapping dental appointments. Also, minimize the number of persons waiting in the waiting room. Patients can be advised to wait in a personal vehicle or outside the dental facility where they can be contacted by a mobile phone when it is their turn for dental care.

j) Detailed history should be recorded in the waiting area and then stored in the respective files.

k) Consent form for general and COVID19 to be taken in the waiting area and sanitize/discard the pen used for consent.

l) Keep minimum things on the reception table and frequently touched surfaces like a tabletop, telephone, pen, reading materials, remote controls, chair arms, doorknobs, light switches, etc. should be regularly cleaned with a neutral detergent or 1% Sodium Hypochlorite or Alcohol-Based Sanitizer.

m) Request patients to minimize or eliminate wearing a wristwatch, hand, and body jewelry and carrying of additional accessories bags, etc. for the next visit.

2. During Treatment Covid-19 Prevention Protocols [13-19]

2.1 OPD Area

i. If the patient's temperature is not normal (98.6°F/ 37°C) and travel history is positive then, send the patient back after prescribing required medications. Recall them after regaining normal temperature.

ii. If the patient's temperature is normal and travel history is negative, then:

a) Ask the patient to fill an online registration form.

b) Ask the patient to sit on a fully sanitized dental chair (ensure physical barriers between patient chairs or at least six feet distance between them) and put a sterilized drape over the patient.

c) Ask him to gargle with 0.23% povidone-iodine mouthwash for at least one minute before the procedure.

d) Examine the oral cavity with sterilized diagnostic instruments. The dentist should take necessary precautions and wear personal protective equipment such as a surgical

gown, head cap, face mask, face shield, gloves, and shoe cover. As compared to the surgical masks, FFP2 (or N95) and FFP3 respirators provide greater protection against viral respiratory infections.

e) Write down the clinical findings after removing gloves and performing hand washing.

f) If required, send the patient to the radiology section for intra-oral periapical radiography/orthopantomography.

g) Sanitize the dental chair again with 1% Sodium Hypochlorite or 70% Alcohol including work surfaces such as dental chairs; inspection lights and handles; hand controls including replacement of covers; trolleys/delivery units; spittoons; aspirators; curing lamps, etc.

g) Keep the clinic well ventilated by opening the windows and using an exhaust blower. Usage of air-purifiers with HEPA filters is recommended.

h) Air-conditioning vent should be facing upwards. The window air condition system/ split AC should be frequently serviced, and filters cleaned.

2.2 Radiology Area

Intra-oral periapical radiographs

a) Sanitize the X-Ray machine and radiovisiography equipment before & after taking the radiograph.

b) Laminate the laptop and cover the sensor with a clear plastic cover and change it after taking every radiograph.

c) Intra-oral holders require steam sterilization followed by washing and disinfection.

Orthopantomograms

a) Sanitise the OPG machine before & after taking orthopantomographs especially the hand and headrest, bite block, and the computer keyboard.

b) Sanitize the lead apron and thyroid collar with 1% Sodium Hypochlorite or 70% alcohol after every patient.

2.3 Clinical Area

a) Four-handed technique is beneficial for controlling the infection.

b) Instruments, suction tips, and mouth-rinsing cups, etc. should be changed after every patient.

c) Autoclaved handpiece should be used for every patient. If possible, use an anti-retraction handpiece to avoid cross-contamination.

d) Rubber dam isolation should be used for any procedure wherever possible as it is an effective method to reduce aerosol production and particle spread.

e) ADA recommends the use of high-volume evacuation suction which can tremendously reduce the on-site aerosol production.

f) Sterilized cotton rolls/gauze pieces should be used for required treatments.

g) Required burs, endodontic files, and ultrasonic scaler tips should be handed over by the assistant separately instead of keeping the entire dental bur and endodontics file box to avoid contamination.

h) A cup full of 1% sodium hypochlorite should be kept on the tool tray to put used endodontic files, burs, and ultrasonic scaler tips.

3. Post Treatment Covid-19 Prevention Protocols [4,13,14]

a) After the required treatment, the patient's drape should be removed by the assistant, and the patient is asked to perform meticulous hand hygiene and guided towards the reception area.

b) Details related to the procedures and prescription should be recorded only after doffing the PPE and performing meticulous hand hygiene.

c) Give follow-up instructions to the patients and later on the patient should be contacted telephonically after 24 hours and in a week's time to know if he/she has developed any symptoms and should be advised to inform back to the dental clinic in case of any adverse symptoms.

d) Encourage digital or cashless payment modes. Moreover, POS or card swiping machines should be wiped with disinfectant after every use.

e) After the patient leaves the treatment room, the assistant (with gloves) should collect all the used instruments immediately, rinse them in running water to remove organic debris, and then soak them in 1% sodium hypochlorite or 2% Glutaraldehyde solution.

f) All three in one syringe, water outlets, handpiece water pipelines, etc. should be flushed with the disinfectant solution (2% Glutaraldehyde or 1 % Sodium Hypochlorite solution) for 30-40 seconds. g) Remove water containers/boosters and clean them with 1% Sodium Hypochlorite using sterilized cotton/ gauge piece and then re-fill them with fresh 0.01% Sodium Hypochlorite solution/water and attach back to the dental chair.

h) Disinfect the dental chair along with all the auxiliary parts within three feet of distance using 1% Sodium Hypochlorite with either a microfiber cloth or sterilized cotton/gauge piece. The areas include:

- Dental chair along with the arm-rests.
- Dental chair extensions including water outlets, suction pipe, handpiece, and ultrasonic scaler connector, three in one syringe, etc.
- Dental light and handle.
- Tool tray (cover it with clear plastic and change it every day) and spittoon.
- Clinic walls around the dental chair and switchboards.
- Hand washing area including the slab and tap nozzle.
- Handpieces, Apex locators, Endo-motors, etc. should be cleaned using a handpiece cleaning solution to remove debris, followed by packing in the autoclave pouches for autoclaving.
- Files should be sterilized in glass bead sterilizer and needles should be put in needle burner.

i) Impressions will be thoroughly disinfected with either 2% Glutaraldehyde or 1 % Sodium Hypochlorite solution before pouring or sending to the laboratory.

j) Floor should be mopped with 1% Sodium Hypochlorite solution through separate mops for the clinical area and then wash and disinfect the mop with clean water and 1% sodium hypochlorite and leave it for sun-drying.

k) Discard the gloves, syringes, needles, cotton/gauze, and other anatomical waste in the color-coded dustbins.

l) Lastly, the assistant should remove gloves and perform hand washing.

4. Routine Disinfection Protocols For Dental Clinic [13]

4.1 Floors: Floors should be mopped at the starting and end of the day with detergent and freshly prepared 1% sodium hypochlorite starting from the corner of the room towards the door. Cleaning should be repeated either after a major splash or after two hours.

4.2 Other surfaces: Other surfaces such as walls, switch-boards, door-knobs, etc. should be cleaned with freshly prepared 1% sodium hypochlorite. Cleaning should be done before starting daily work, after every procedure, and at the end of the day.

4.3 Electronic equipment: They should be cleaned with alcohol-based rub/spirit (60-90% Alcohol) swab before and after each patient contact.

4.4 Washrooms: Ask patients to use their own wash-rooms at home to avoid the need of using toilets at the dental facility. Sensor taps or taps with long handles should be installed in the washrooms and hand hygiene stations. Paper towels should be preferred over cloth towels.

4.5 Fogging/Fumigation: The commercially available hydrogen peroxide is an 11% (w/v) solution which is stabilized by 0.01% Silver Nitrate. A 20% working solution should be prepared. The volume of working solution required for fogging is approximately 1000ml

per 1000 cubic feet. After the procedure has been completed in the operatory (in case of no negative pressure), exit the room and close the operatory for half an hour for the aerosols/droplets to settle down. Perform the surface cleaning followed by fogging. The fogging-time is usually 45min followed by contact-time of one hour. After that the room can be opened, fans can be switched on for aeration. Wet surfaces can be dried by using a sterile or clean cloth (other surfaces).

5. Protocols For Health Care Workers On Reaching Home [4,13]

5.1 Dental health care providers (DHCP's) should change from scrubs to personal clothing in the doffing room before returning home.

5.2 On the way back home, follow all precautions and on returning, follow the removal of shoes, change of clothes, having a wash and disinfect your mobile wristwatch, etc.

5.3 Take a hot water bath using an antiseptic solution.

5.4 Wash your clothes separately in antiseptic solution daily.

Conclusion

Oral health care providers are among the forefront workers amidst this COVID-19 outbreak. . As a dentist, we should have in-depth knowledge of infection control measures to prevent cross-contamination in the dental clinics. Therefore, this article has focused on various COVID-19 prevention protocols such as telephone and clinical triage followed by a questionnaire on recent symptoms and travel, body temperature measurement, oral rinses with 0.23% povidone-iodine, use of specific personal protective equipment such as FFP2 (or N95) and FFP3 respirators, four-handed dentistry, use of anti-retraction dental handpieces and rubber dam, routine dental clinic disinfection, etc.

Declaration of patient consent

Patient's consent not required as patient's identity is not disclosed.

References

1. Alharbi A, Alharbi S, Alqaidi S. Guidelines for dental care provision during the COVID-19 pandemic. Saudi Dent J. 2020 May; 32(4): 181-186.
2. Liu L, Wei Q, Alvarez X, Wang H, Du Y, Zhu H, et al. Epithelial cells lining salivary gland ducts are early target cells of severe acute respiratory syndrome coronavirus infection in the upper respiratory tracts of rhesus macaques. J Virol.2011;85:4025-30.
3. Vinayachandran D, Saravanakarthikeyan B. Salivary diagnostics in COVID-19: Future research implications. J Dent Sci.2020 Sep;15(3):364-366.
4. Indian Dental Association Protocol Covid-19. 2020:1-44. Available from: https://www.ida.org.in/pdf/Covid19-IDA-Protocol.pdf [Last accessed on 2020 Dec 03]
5. COVID-19 Dental Practice Recommendations/Guidelines. 2020:1-4. Available from: https://www.fdiworlddental.org/sites/default/files/media/documents/covid19_dental practice_recommendations_guidelines.pdf [Last accessed on 2020 Dec 03]
6. Villani FA, Aiuto R, Paglia L, Re D. COVID-19 and Dentistry: Prevention in Dental Practice, a Literature Review. Int J Environ Res Public Health. 2020 Jun; 17(12): 4609.
7. Luzzi V., Ierardo G., Bossù M., Polimeni A. COVID-19: Pediatric Oral Health during and after the Pandemics. Appl. Sci. 2020;10:1–8.
8. Meng L., Hua F., Bian Z. Coronavirus Disease 2019 (COVID-19): Emerging and Future Challenges for

Dental and Oral Medicine. J. Dent. Res. 2020;99:481–487.

9. Costa Marui V., Silveira Souto M.L., Silva Rovai E., Romito G.A., Chambrone L., Mendes Pannuti C. Efficacy of preprocedural mouthrinses in the reduction of microorganisms in aerosol. A systematic review. JADA. 2019;150:1015–1026.
10. Peng X., Xu X., Li Y., Cheng L., Zhou X., Ren B. Transmission routes of 2019-nCoV and controls in dental practice. Int. J. Oral Sci. 2020;12:1–6.
11. Yang Y., Soh H.Y., Cai Z.G., Peng X., Zhang Y., Guo C.B. Experience of Diagnosing and Managing Patients in Oral Maxillofacial Surgery during the Prevention and Control Period of the New Coronavirus Pneumonia. Chin. J. Dent. Res. 2020;23:57–62.
12. Guidance for Dental Settings Interim Infection Prevention and Control Guidance for Dental Settings During the Coronavirus Disease 2019 (COVID-19) Pandemic. Centres for disease control and prevention.2020. Available from: https://www.cdc.gov/coronavirus/2019-ncov/hcp/dental-settings.html [Last accessed on 2020 Dec 03]
13. Guidelines for Dental Professionals in Covid-19 pandemic situation. 2020:1-10. Available from: https://www.mohfw.gov.in/ [Last accessed on 2020 Dec 03]
14. COVID-19 infection prevention and control for primary care, including general practitioner practices, dental clinics and pharmacy settings: European Centre for Disease Prevention and Control Technical Report.2020:1-10. Available from:https://www.ecdc.europa.eu/sites/default/files/documents/Infection-prevention-and-control-primary-care-dental-pharmacies.pdf [Last accessed on 2020 Dec 03]
15. Indian Dental Association's Preventive Guidelines for Dental Professionals on the Coronavirus Threat.2020:1-5. Available from:https://www.ida.org.in/pdf/IDA_Recommendations_for_Dental_Professionals_on_theCoronavirus_Threat.pdf [Last accessed on 2020 Dec 03]
16. Samaranayake LP, Peiris M. Severe acute respiratory syndrome and dentistry: A retrospective view. J Am Dent Assoc. 2004;135:1292-302.
17. Samaranayake LP, Reid J, Evans D. The efficacy of rubber dam isolation in reducing atmospheric bacterial contamination. ASDC J Dent Child. 1989;56:442-4.
18. Harrel S, Molinari J. Aerosols and splatter in dentistry: A brief review of the literature and infection control implications. J Am Dent Assoc. 2004;135:429-37.
19. Summary of ADA Guidance During the COVID-19 Crisis. 2020. Availablefrom: https://www.success.ada.org/~/media/cps/files/covid/covid19_int_guidance_summary.pdf?utm_source=cpsorg&utm_medium=cpsalertbar&utm_content=cv-pm-summary-guidance&utm_campaign=covid-19 [Last accessed on 2020 Dec 03]