



IJCRR
Section: Healthcare
ISI Impact Factor
(2019-20): 1.628
IC Value (2019): 90.81
SJIF (2020) = 7.893



Copyright@IJCRR

Protocols for Clinical Dental Care During Covid-19 Pandemic - Need of the Hour: A Retrospective Study

Moses J¹, Soumya SV^{2*}

¹Senior Resident, Department of Dental & Oral Surgery – II, CMC, Vellore; ²Associate Professor, Department of Dental & Oral Surgery – II, CMC, Vellore.

ABSTRACT

Introduction: The novel coronavirus disease (COVID-19) pandemic has emerged as a community health crisis and is spreading exponentially across the globe. Usually, there is a high risk of cross-infection between dentist/dental team and patient in a dental office set up. In this article, we recommend a revised policy of infection control in the dental office setting during this COVID – 19 pandemic.

Aim: The impact of the COVID-19 pandemic has been challenging, especially in health care. As a dentist, we face several challenges such as protecting ourselves and our patients from cross-transmission of infection and at the same time we have to ensure that the patients continue to have access to dental care.

Method: The documents of twenty dental staff including seven dentists, eight dental assistants, four nurses and one office staff who continued to work during the COVID-19 pandemic were selected for this retrospective study. In this study, we retrospectively evaluated amongst this twenty dental staff how many individuals developed symptoms of SARS COV-2, how many individuals were tested and amongst the tested individuals how many were tested positive and negative.

Results: Among twenty dental staff, only seven staff were tested for SARS COV-2. Dental staff who developed any symptoms of COVID-19 or came in contact with confirmed COVID-19 patients were only tested for SARS COV-2. Among the seven dental staff who tested for SARS COV-2 were three dentists, two dental assistants, one dental nurse and one office staff. Amongst the three dentists only one turned to be positive, between the two dental assistants one turned to be positive and one dental nurse turned positive. So among the seven staff who were tested only three turned to be positive. Totally among the twenty dental staff, only three staff tested positive for COVID-19.

Conclusion: Following the above-mentioned protocol proved to be effective in keeping the dental care workers safe and infection prevention in dental clinical areas. Since the protocols and guideline mentioned here seems to be effective the dental practitioners can revise their infection control protocol as the knowledge and information about SARS CoV-2 are evolving and maintain high standards of infection control.

Key Words: COVID-19, Infection control, Dental care

INTRODUCTION

The novel coronavirus disease (COVID-19) pandemic has emerged as a community health crisis and is spreading exponentially across the globe. The first case was reported in Wuhan City, of China, in late December 2019.¹ On 11th February 2020, WHO named the novel viral pneumonia as “Corona Virus Disease (COVID-19)” while the International Committee on Taxonomy of Viruses named this novel virus as “SARS-CoV-2” following phylogenetic and taxonomic analysis.²

Usually, there is a high risk of cross-infection between dentist/dental team and patient in a dental office set up. Now the COVID – 19 pandemic has put both dentists and patients at high risk of cross-infection so there is an absolute requirement for changes to be made in infection control protocols in our dental setting. In this article, we recommend a revised policy of infection control in dental office settings during this COVID – 19 pandemic.

Corresponding Author:

Soumya S.V., Associate Professor, Department of Dental & Oral Surgery – II, CMC, Vellore.
Phone: 9566522233; E-mail: dr.soumya.mds@gmail.com

ISSN: 2231-2196 (Print) ISSN: 0975-5241 (Online)

Received: 24.05.2021

Revised: 12.07.2021

Accepted: 24.08.2021

Published: 13.12.2021

AIM

In this study, we retrospectively evaluated the changes made in our clinical area setup and treatment protocol during the COVID-19 pandemic and how effective were our guidelines in preventing cross-transmission of infection. During this pandemic period, it is important to provide a safe environment for dentists, dental assistants, nurses and office staff who work in the clinical area. Here in this study, we analysed the number of dentists and assistants who worked on patients during this pandemic, changes that have been made in their treatment protocol and how effective was this change in protocol kept them safe while working on patients.

OBJECTIVES

1. Recommendations for infection prevention and control in a dental clinical area.
2. Specific dental procedure-related recommendations.
3. To evaluate the efficiency of proposed recommendations in keeping the dental care workers safe.

METHOD

The documents of twenty dental staff including seven dentists, eight dental assistants, four nurses and one office staff who continued to work during the COVID-19 pandemic were selected for this retrospective study. Despite the crisis in dental care globally and most dental clinics being closed during the COVID-19 outbreak but we continued to work and provide adequate emergency dental care for required patients as ours is a hospital setup.

In this study, we retrospectively evaluated amongst this twenty dental staff how many individuals developed symptoms of SARS COV-2, how many individuals were tested and amongst the tested individuals how many were tested positive and negative.

Dental staffs who developed any symptoms of COVID-19 or came in contact with confirmed COVID-19 patients were only tested for SARS COV-2.

RESULTS

Among twenty dental staff, only seven staff were tested for SARS COV-2. Dental staff who developed any symptoms of COVID-19 or came in contact with confirmed COVID-19 patients were only tested for SARS COV-2. Among the seven dental staff who tested for SARS COV-2 were three dentists, two dental assistants, one dental nurse and one office staff. Amongst the three dentists only one turned to be positive, between the two dental assistants one turned to be

positive and one dental nurse turned positive. So among the seven staff who were tested only three turned to be positive. Totally among the twenty dental staff, only three staff tested positive for COVID-19. **Table 1** contains the proportion and percentage of staff tested and for SARS COV-2. **Table 2** contains the proportion and percentage of staff turned positive or stayed negative of SARS COV-2

DISCUSSION

This recommended protocol for providing dental care was strictly followed in our dental clinical area during the COVID-19 pandemic.

1. Clinical area modification

A. Waiting area³

- i. Patients temperatures were recorded as part of routine patient assessment before entering the hospital premises. A noncontact forehead thermometer was used to measure the patient's body temperature. Patients presenting with fever or respiratory disease/ symptoms were referred to a designated fever clinic.⁴
- ii. Visual alerts were displayed at the entrance of the clinical area and waiting area about respiratory hygiene, cough etiquette, social distancing, and disposal of contaminated items in trash cans.
- iii. Foot-operated alcohol-based hand rub dispensers were installed around the outpatient waiting area. Tissue paper dispensers and foot-operated waste bins were mandatory.
- iv. Maintain social distancing in the waiting area by blocking alternative chairs were done (minimum 1-meter distance).
- v. Patients were instructed to wear a triple-layered surgical mask while waiting in the reception area.
- vi. Plastic barriers at the medical records officer desk and cash counters were installed.
- vii. Usage of commercial split/centralized/window air conditioners was avoided.

B. Operatory area

- i. High vacuum extra oral suction devices were used in the procedure room.
- ii. Maintaining natural air circulation within the operatory room, through keeping the windows open to maintain cross ventilation were practised.
- iii. Heavy-duty exhaust fans were installed in every aerosol-generating procedure (AGP) room to create a uni-directional flow of air away from the patient.
- iv. Usage of ceiling fans while performing procedure were avoided.
- v. Usage of any commercial split/centralized/window air conditioners was avoided in the operatory room.

2. Protocols for dental patient management

A. Patient triaging

The objective of patient triaging was to facilitate the scheduling of patients based on the level of need and this helps to limit incoming patients while prioritizing emergency care. Thus, there were three categories of patients requiring emergency, urgent, and scheduled/elective care.

Elective care: Treatment was deferred for a few weeks/months

- The patient who comes for routine dental visits and follow up patients.
- Procedures like oral prophylaxis, restorations, denture prosthesis, denture corrections and post endodontic restorations.

Emergency care: Perform emergency care with standard PPE

- Life-saving interventions like cellulitis and uncontrolled bleeding
- The trauma of facial bones causing airway obstruction

Urgent care: The first step is pharmacological management if the problem is still persistent perform emergency care with standard PPE

- Procedures were performed to relieve the pain caused by pulpitis, pericoronitis, abscess, avulsion/luxation and dry socket

B. Dental health care professional guidelines

- i. Strict adherence to hand hygiene protocols were followed.⁵
- ii. The highest level of PPE, i.e., gloves, surgical gowns, goggles, face shields, and an N95 were used during emergency dental care.⁶

Formulated PPE protocol for dental staff:

Staff with low risk of exposure such as indirect contact – history taking/ prescriptions were recommended to wear plastic barrier, surgical mask and N95 as required.

Staff with moderate risk of exposure such as direct contact with patients and non- aerosol-generating procedures were recommended to wear plastic barrier, surgical gown as required, surgical mask over that N95 mask, head cap, goggles, face shield, shoe cover and disposable gloves.

Staff with a high risk of exposure such as direct contact with patients performing aerosol-generating procedures were recommended to wear the surgical gown, surgical mask over that N95 mask, head cap, goggles, face shield, shoe cover and surgical gloves.

C. Preprocedural modifications

- i. COVID-19 consent forms to be signed by patient/guardian before the procedure

- ii. Patients were draped with single-use towels which are sterilized before their next use.
- iii. Ask the patient to remove the mask.
- iv. Preprocedural mouth rinse: Effective reduction in salivary microbial load can be achieved by rinsing with 0.2% povidone-iodine or 1% hydrogen peroxide before the procedure.⁷ Studies conclude that chlorhexidine is ineffective against COVID-19.⁸

D. Procedural modifications

Only emergency and urgent procedures were carried out and all routine and elective dental procedures were deferred. Procedures performed in different speciality during COVID-19 pandemic is mentioned below.

Pedodontics and preventive dentistry:

Procedures performed:

Rampant caries: Prescribed medications if required and treatment only if the tooth is symptomatic.

Dental caries: Primary management was diet/oral hygiene measures. Secondary management was atraumatic restorative treatment with GIC.

Deep dental caries: Primary management was diet/oral hygiene measures. Secondary management was to do a temporary filling (TF).

Reversible pulpitis: Primary management was to take intraoral periapical radiographs and prescribe analgesics. Secondary management was to perform temporary filling (TF)/ pulp therapy.

Irreversible pulpitis: Primary management was to take intraoral periapical radiographs and prescribe analgesics and antibiotics. Patients were recalled if symptomatic to perform extraction preferably.

To avoid Routine dental treatment and aerosol-generating procedures, Pulpectomy.

Conservative and endodontics:

Procedures performed:

Dental caries: Atraumatic restorative treatment with GIC was performed.

Deep dental caries: Atraumatic restorative treatment with dycal base and GIC was performed.

Reversible pulpitis: Atraumatic restorative treatment with dycal base and zinc oxide eugenol was done and kept under review. If the patient is asymptomatic we proceeded with GIC restoration but if the patient is symptomatic pulp extirpation was done.

Irreversible pulpitis: Primary management was to take intraoral periapical radiographs and prescribe analgesics and

antibiotics. Patients were recalled if symptomatic to perform pulp extirpation/extraction.

To avoid Light cure restorations, aesthetic restorations, obturation procedures, restorations requiring aerosol-generating procedures.

Orthodontics and dentofacial orthopaedics:

Procedures performed:

Ongoing treatment: Wire change, Retraction were performed.

Spacing, crowding, and CL-I/C-LII/CL-III Malocclusion: Consult OPG/ lateral Cephalogram workup were done.

Emergencies: Cutting off excess wire, Re-banding were performed.

To avoid the Bonding/ strap up procedure, rebonding of broken brackets, debonding procedure.

Oral and maxillofacial surgery:

Procedures performed:

Facial space infection: Incision and drainage under antibiotic coverage was performed.

Maxillofacial trauma: Primary management was done by suturing of bleeding lacerations/ splinting of dentoalveolar trauma. Secondary management was done by Intramaxillary fixation.

Biopsy for malignant and benign lesions was performed.

Tooth pain: Primary management was done by prescribing analgesics and antibiotics. If pain not relieved extraction was carried out.

To avoid: Planned tooth extraction, planned surgical extraction for asymptomatic teeth, elective surgeries.

F. Patient discharge protocol

- Removal of patient drapes was done by an assistant.
- Recording prescription and follow up instructions were given and the patient was guided out of the operator room.

3. Disinfection of the clinical settings⁹

COVID-19 virus can potentially survive in the environment for several hours/days.

A. Floor

- Floors are mopped with 1% sodium hypochlorite solution with a contact time of 10 min.
- Separate mops were used for the clinical area. Unidirectional mopping techniques were followed by mopping from inner to outer area.
- Ideally, the floor was cleaned after every patient or after a major splash or two hourly periods.

- The mop has to be washed and disinfected with clean water and 1% sodium hypochlorite and leave it for sun-drying.

B. Rest of the surfaces

- Freshly prepared 1% sodium hypochlorite is used to disinfect the surface around the dental chair after every procedure with a contact time of 10 min.
- Disinfection should be done daily before starting work, after every procedure, and at the end of the day.

C. Delicate electronic equipment

Delicate electronic equipment such as composite curing lamp and endodontic rotary motor was wiped with alcohol-based rub/spirit (60%–90% alcohol) after each patient contact if they were used.

4. Waste management

The segregation method of waste management was followed. The infectious medical waste of suspected or confirmed COVID-19 patients were disposed of in double-layered yellow colour bags with gooseneck ligation. The bags should be marked and disposed of following the Biomedical Waste Management and Handling Rules, 2018.¹⁰

As mentioned in the above results amongst the twenty dental staff only three staff were tested positive for SARS CoV-2 and these three staff were also turned to be positive because of their household exposure and not due to dental clinical area exposure. Hence, following these protocols and guidelines proved to be effective in maintaining high standards of infection control during in COVID – 19 pandemic protecting the dentist and dental staff from infection.

CONCLUSION

As a dentist and dental care providers it is our responsibility to serve our patients and provide them dental care during this pandemic. At the same time, we have to protect ourselves and our patients from transmission of COVID – 19 infection. Following the above-mentioned protocol proved to be effective in keeping the dental care workers safe and infection prevention in dental clinical areas. As it is expected for the COVID – 19 pandemic to continue for several years dentists have to protect the patient and themselves from this novel infection. Since the protocols and guideline mentioned here seems to be effective the dental practitioners can revise their infection control protocol as the knowledge and information about SARS CoV-2 are evolving and maintain a high standard of infection control.

Source of Funding: NIL

Conflict of Interest: NIL

REFERENCES

1. Zhu N, Zhang D, Wang W, Li X, YANG Bo, Song J, *et al.* A novel coronavirus from patients with pneumonia in China, 2019. *N Engl J Med.* 2020;382:727-33.
2. Wu Y, Ho W, Huang Y, Jin DY, Li S, Liu SL, *et al.* SARS-CoV-2 is an appropriate name for the new coronavirus. *Lancet.* 2020;395:949-50.
3. Guidelines for Dental Professionals in Covid-19 pandemic situation. May 2020. Available from: <https://www.mohfw.gov.in/pdf/DentalAdvisoryF.pdf>.
4. 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;12:9.
5. Dental settings: Interim infection prevention and control guidance for dental settings during the COVID-19 response. (2020). Available from: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/dental-settings.html>.
6. CDC Guidance for Providing Dental Care during COVID-19. 2020. <https://www.cdc.gov/oralhealth/infectioncontrol/statement-COVID.html>.
7. Kariwa H, Fujii N, Takashima I. Inactivation of SARS coronavirus using povidone-iodine, physical conditions, and chemical reagents. *Jpn J Vet Res.* 2004;52:105-12.
8. Chan JF, Yuan S, Kok KH, To KK, Chu H, Yang J, *et al.* A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: A study of a family cluster. *Lancet.* 2020;395:514-23.
9. List N. Disinfectants for use against SARS-CoV-2. 2020. Available from: <https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>.
10. The Bio-Medical Waste Management (Amendment) Rules, 2018. 2020. Available from: <http://www.indiaenvironmentportal.org.in/content/453336/the-bio-medical-waste-management-amendment-rules-2018/>.

Table 1: Number of staffs tested and for SARS COV-2

Test for SARS Cov-2	Proportion	Percentage
Tested	7/20	35.00%
Not tested	13/20	65.00%

Table 2: Number of staffs turned positive or stayed negative of SARS COV-2

Test for SARS Cov-2	Proportion	Percentage
Positive	3/20	15.00%
Negative	4/20	20.00%