

COVID-19 AND PROTECTIVE PROTOCOLS IN DENTISTRY - A REVIEW

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ABSTRACT

Covid-19 is a deadly virus which remains on the surface for long period of time depending on environmental temperature, humidity, types of surface material. This caused the healthcare professionals hard to deal with it. The people coming in contact with infected one were more susceptible as well as people of all ages were at risk. But the vulnerable were. elderly and those who are immune-compromised as well as also those who have respiratory problems. Thus all the health care workers were advised to wear personal protective equipment's (PPE) to prevent being infected by symptomatic and a symptomatic patients.

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INTRODUCTION

Several epidemics have been affected many countries around the world out of which coronavirus (COVID-19) did remain the deadly one.¹ Several epidemics were successfully tackled but there is no evidence from any research for approved treatment or vaccines or cures or other prevention options for COVID-19 or patients contacting them.¹⁻⁷ It did spread widely affecting the health care professionals largely.

Covid-19 is a deadly virus which remains on the surface for long period of time depending on environmental temperature, humidity, types of surface material.¹ This caused the healthcare professionals hard to deal with it. The people coming in contact with infected one were more susceptible as well as people of all ages were at risk. But the vulnerable were. Elderly and those who are immune-compromised as well as also those who have respiratory problems.¹⁻⁷ Thus all the health care workers were advised to wear personal protective equipment's (PPE) to prevent being infected by symptomatic and a symptomatic patients²

When talking about dentist particularly it became hard for them to work with such risk. During pandemic there was time when dentist had no choice but to treat the patients presenting with emergency such as pain, bleeding, sepsis^{6,7}

People all over the world have become more conscious while visiting health care centres and more specifically they have become more conscious while visiting dental clinic be it be any kind of treatment. This affected the practice of dental practitioners as the number of patients visiting dental clinic reduced globally by the fear of contracting covid-19 infection⁸⁻⁹

As the dental Practitioners we should support all the ethical principles especially those which show respect for autonomy, beneficence non-maleficence, veracity and justice⁸

While being aware of these principles dentist are bound to follow the guidelines that are set by their own country's health councils and public health authorities during pandemic.⁹

So the main objective of this review includes to evaluate the impact of this virus on future dentistry and how we can deal with it.

The main aim of this review is to conduct the review and identify and focus On the infection control measures taken.

Structure of corona-19 virus

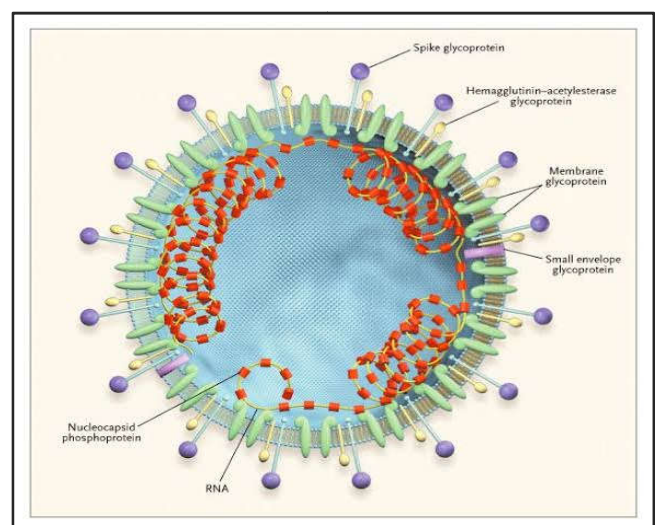


Figure 1 Structure of corona-19 virus

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The structure of SARS-CoV-2 is an enveloped positive stranded RNA virus with a diameter of 60 to 140nanometer spherical or elliptical in shape and pleomorphic that shows a crown like appearance under electron microscope (coronais the Latin term for crown).^{9,10} It is the seventh member of the family of coronavirus that has infected human being similar to beta

Corona viruses but distant from SARS-CoV and MERSCoV. It has it probable origin from theorthocoronavirinaesubfamily with Chinese horseshoe bats (Rhinolophussinus.).¹¹

Clinical Manifestations of Covid-19

Symptoms of corona-virus include fever, cough, myalgia, fatigue, headache and haemoptysis. Another common symptoms are pneumonia which can be seen from chest x-ray. Organ dysfunction is also common which can lead to death in severe cases. Age and comorbidity have been found to be risk factors for poor outcome.

Transmission of covid-19

The main source of transmission of this Infection are infected patients itself whether symptomatic or a symptomatic. It was presumed that the animal to human transmission was the main mechanism¹¹. Latest evidence suggests that transmission from one person to another occurs primarily via droplet spread or contact routes. Droplet transmission occurs only in cases of close contact that is within one meter. Those having respiratory problems are at risk exposing infected respiratory droplets when person sneezes coughs or talks loudly.¹²

Effect on Health care workers

Along with the effect on dental setup the virus also affected the mental health of the health care workers. It was seen that during pandemic health care workers were more under emotional stress than the normal population.^{13,14}

Half of the population of health care workers were suffering from depression and anxiety.

Increased workload, working with repeatedly changing protocols, using PPE, social-distancing, self-isolation, and caring for patients are found to be the main concerns among the medical staff during the pandemics^{15,16}.

Effect on Dental Setup

Dental practitioners like all other healthcare workers also take the oath to serve And protect their patients by saving theirlives^{17,18}. Working with this mind-set was important during pandemic but dentist were bound to give up the ethical principles they follow^{19,20}

Understanding the current situation regarding dental practice and the limitations it had to undergo the American dental association suggested that the emergency dental treatment should be done in minimal invasive way as possible. In this context ADA had divided dental procedures into two parts:

1. Emergency dental conditions
2. Non-emergency dental conditions

Emergency dental conditions included²⁰

- Inflammation resulting in pain
- Inflammation of tissue surrounding an impacted third molar (pericoronitis).
- Post-operativeosteitis or dry socket dressing changes.

- Localised pain associated with swelling as a result of localised Abscess or localised infection.
- Pain or soft tissue trauma as a result of broken tooth.
- Loss of temporary restoration due to soft tissue trauma or broken teeth.

Non emergencyprocedures^{20,21}

- Initial or regular oral examinations and dental appointments with or without routine radiographs.
- Regular hygienist appointment that is scaling and root planning and other preventive therapies.
- Orthodontic therapies Other than those which address acute issues that is pain infection and trauma.
- Elective tooth removal procedures
- Restorative treatments related to asymptomatic carious teeth or crown preparation
- Aesthetic dental treatments

As a result precautionary measures became more important part of the dentistry or dental practice which somewhere affected the routine practice as it became hard to deal with or work with this personal precaution measures.

Also Sanitation and sterilisation turned out to be the important part of the daily routine practice.

The use of Aerosol generating instruments like hand pieces and ultrasonic instruments became hard. As the speed of these instruments can generate the droplets of blood and saliva which can contaminate Dental instruments as well as the office environment. Use of mask became the important precaution measure.

Precaution measures to take

Before Treatment

- The Indian Dental Association has recommended to post visual alert icon like signs and posters that tell about hand hygiene, covering of face during coughing and sneezing at entrance or at strategic places to provide instructions to patients.²¹
- Also appointments should be done keeping in mind about maintaining social distancing in the waiting room.²²while appointing patients should be advised not to bring companions with them.Number of companions should be decided and patient should be instructed likewise about the number of people who get the entries in the waiting room of dental clinic.²²
- Use of mouth wash before treatment is recommended as it might reduce the risk of spread of virus through saliva.²²0.2%povidone -iodine or 0.2%chlorhexidinecan be suggested.
- Sanitisation of hands after entering the clinic became the part of appointment and sanitisation at every point became the important part of treatment.
- While giving appointments the patient should be informed about the risk of contracting covid-19 during the treatment.
- On patient's arrival,the body temperature of the patient should be measured using contact free forehead thermometer.²³
- A detailed history needs to be taken by filling the screening form for covid-19 which includes questions

about experiencing fever or respiratory problems in past few days.²⁴

- This can be done after we finalise whether the patient needs to visit the dental clinic or no.

During Treatment

- Use of personal protective equipment that is PPE became the important part of the daily routine dental practice. As well as goggles or a disposable/ reusable face-shield that covers the front and sides of face and a N954 or higher level respirator is also recommended.²⁵
- Sanitisation of hands after touching everything became the important part of treatment.
- Good Hand Hygiene Is One of the important Ways to prevent the spread of infectious disease.²⁵
- Hand hygiene is the important part during treatment specifically the dental assistance and the dental surgeon should wash their hand after touching each and everything in a dental clinic and most importantly after treating each and every patient.
- The Use of gloves, gown, head cover, shoe cover, eye protection is advised while treating the patients.

After treatment

- Sterilisation of instruments after every treatment stated to be important in every aspect.
- Fumigation of the dental clinic everyday were added to important measures.
- Like mopping the floor with 1% sodium hypochlorite and disinfecting waterlines with 0.1% sodium hypochlorite can help reduce the risk of cross infection.²⁶
- The Biomedical wastes that of patient should be carefully disposed from time to time.²⁷
- The National Task Force for covid-19 has constituted by Indian Council of Medical Research has recommended the use of hydroxyl-chloroquine as the prophylaxis for covid-19 infection. The recommended dosage is 400mg twice a day on day 1, followed by 400mg once weekly for next seven weeks to be taken with meals.²⁸

Alternatives to Be Used!

- Tele-dentistry is the best idea in this pandemic situation. It can be of great assistance.
- Tele-dentistry is the process of sharing digital information, distant consultations, workup and analysis which is dealt with by a segment of the science of telemedicine concerned with dentistry.^{29,30}
- New technologies have always enhanced the dental practice and also the quality of management of patients.
- Use of aerosol-generating procedures should be avoided and use of hand instruments such as spoon excavators in combination with chemo mechanical caries removal agents should be brought in practice.³¹
- Alternative to this can be aerosol generating procedures can be kept in last few hours of clinic working hours.³¹
- The non-emergency procedures can be treated by giving medications through a telephone call that is through tele-dentistry and some home care instructions can also work.

- This can be decided on patient's signs and symptoms.
- Vaccinated patients can be given priority for treatment modalities.

CONCLUSION

The review has concluded on the note that there is no doubt there is increased risk of covid-19 transmission during dental treatment. But dentist need to overcome this risk and keep working by taking all the precautions.

If not done accordingly it can affect them financially on a large scale.

Dentist need to keep themselves updated with new technologies as well regarding disease.

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