

# The Emerging Obstacles in Dentistry and Coronavirus 2019 (COVID-19)



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With the high rate of transmission, novel coronavirus is a strain of severe acute respiratory syndrome i.e. SARS-CoV-2, which was first reported in Wuhan, China in December, 2019, hence it is known as COVID-19. The World Health Organization (WHO) declared coronavirus as a pandemic, because of its global spread. Coronavirus is an airborne pathogen which is extremely contagious and typically presents with respiratory distress as one of the common symptoms. Although, the transmission is through animal contact primarily but now the virus has mutated and is capable of spreading via human transmission routes. The increased spread has invoked different responses from all over the world. Cross infection between patient and the dental professional is excessive because of the general characteristics of a dental set up, due to which routine dental procedures have been suspended throughout the world. The Center for Disease Control & Prevention (CDC) recommends to facilitate urgent and emergency visits only, postponing elective dental care. To provide emergency services, infection control methods should be as effective as possible.

**KEYWORDS:** Coronavirus, infection control, dentistry.

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## INTRODUCTION

Coronavirus has aroused echoes of SARS-CoV after twenty years. It was first diagnosed in Wuhan, China where a swarm of pneumonia cases were reported of undetermined origin in December 2019. After variety of researches, corona virus was isolated. This virus is less virulent yet similar to SARS-CoV and Middle East Respiratory Syndrome (MERS-CoV). It mostly affects the elderly and the ones with underlying health condition. Novel coronavirus 2019 is zoonotic in origin as this reservoir has previously been the cause of SARS-CoV and MERS-CoV, too. As it emerged from the live animal markets which are famous in Wuhan, the cause can be a widespread animal source present at the market e.g. bats, snakes, dogs, rabbits etc. The series of symptoms included respiratory distress, fever, cough etc. Coronavirus is an airborne microorganism, which is highly contagious.<sup>1</sup>

The arrival of coronavirus has posed disputes and challenges in medical and dental hospitals. The maintenance of infection and disease control is necessary to carry out emergency care. Dentists have been advised to take several protective and preventive care measures. Minimizing

procedures that produce aerosols, spatters or droplets is needed in order to prevent infection. This article is based on our knowledge about the virus, research and experience of infection control in dentistry.

## WHAT IS COVID-19?

Coronavirus belongs to the coronavirinaesub virus in the Nidovirus super family which is commonly known for causing lung infections, nasopharyngeal diseases, fever etc. This virus family primarily was of animal origin but now has local human to human spread.<sup>1-2</sup> The diagnosis is based on the symptoms and history of the patient. Coronavirus is a single positive strand RNA virus with mutation rate higher than DNA virus. It causes upper respiratory tract infections with severity rate of 5%-15%.<sup>3</sup>

Coronavirus is transmitted by symptomatic patients, via respiratory droplets from infected patient to others, directly or indirectly on surfaces that come in contact. Primarily, the transmission is animal to human contact. The possibility of respiratory droplets to infect a person is less if the person is two meters. Members of coronavirus families causes a broad range of diseases in animals and humans. Since, coronavirus is an airborne pathogen, it can stay up to hours in any surface leading to increase human-human spread. Thus, self-isolation is advised in order to control this disease.<sup>4</sup>

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Emerging and reemerging diseases are global concern. Given the outbreak of coronavirus, public health sectors have performed a variety of researches in order to learn more about this. Epidemiological studies have shown that as of May 2nd 2020, there have been 3.28 million people affected from the virus from which 1.1 million have died.<sup>5</sup> This count is increasing day by day as active cases from all over the world are being reported.

Since it is believed that interpersonal spread through respiratory droplets, chances of feco-oral transmission can also be plausible. Chinese researchers have found SARS-CoV traces on the sputum and stool of infected patients. As discussed above, the virus is airborne, vertical transmission i.e. mother to child is yet to be determined.<sup>1,3</sup>

The characteristics of a dental set up makes dentists the most vulnerable medical professionals, as dental practitioners have high chances of getting exposed. Dental practices should have conscientious infection control protocols for prevention purposes.<sup>6</sup>

### CLINICAL MANIFESTATIONS & MANAGEMENT

Clinically, the novel coronavirus shows classical upper respiratory tract symptoms which includes, flu, fever, cough, malaise, myalgia and difficulty in breathing. Some patients have reported gastrointestinal problems like diarrhea and vomiting. The incubation period of coronavirus ranges from 1-14 days, patients usually report symptoms on the fifth day of catching the disease. Risk factors include elderly people who are more than 65 years old, immunocompromised patients, a comorbid patient, asthmatic or lung disease patient etc.<sup>7</sup> A proper treatment has not been determined yet, it is symptomatic, only. Patients are advised to take vitamin C diet and immune boosting supplements.

### EFFECTS IN DENTISTRY & HOW TO COUNTER THEM

Pondering over the severity of the COVID-19 pandemic, it is crucial to take clear and firm guidelines in order to manage dental patients and to decrease risk of getting exposed. In a dental set up, infections can occur easily with a needle puncture or via contaminated surfaces when a person with any contagious disease coughs, sneezes or when high suction devices are used which create aerosols and spatters. Thereafter, any infection can occur directly or indirectly, making dental professional high at risk.<sup>8</sup> Since, the characteristics of a dental setting generates excessive cross contamination, the conventional infection control measures do not work on the critical pandemic COVID-19.

Although Centre of Disease Control (CDC) recommends

to facilitate dental emergency cases only, it is necessary to know the type of difficulty which needs urgent care. The category of dental treatment that need to be countered urgently include following;

- Fractures of oral maxillofacial region.
- Diffuse soft tissue infection with intraoral or extraoral swelling which can compromise airway.
- Unbearable dental pain due to pulpal inflammation, tooth fracture or trauma.
- Uncontrolled postoperative bleeding.
- Fractured denture or orthodontic device which has caused tissue laceration.<sup>9</sup>

Owing to the fact that current data suggests that human-human spread of nCoV-19 occurs through respiratory droplets, the infected droplets can enter the mouth, eyes, nose or lung inhalation. Therefore, it is necessary for dental professionals to have exceptional personal protective measures. It is also essential that thorough screening of asymptomatic and symptomatic people should be done of anyone entering a dental care setting. Few of these recommendations are needed in order to provide a virus free environment which includes;

- Considering every person as potential COVID-19 carrier.
- Effectively ruling out symptoms of COVID-19 e.g. fever before setting into the healthcare facility.
- Identify the urgent need of patient and focus onto making the treatment as less invasive as possible.
- Determining essential treatment for each patient and its benefit and risks.
- Disinfecting the dental unit after every treatment.
- Use of personal protective equipment (PPE) for every procedure.
- The staff should work at a sufficient distance from the patients, handpieces must have anti reflux devices in order to steer clear of contamination as possible.
- Reduced aerosol generating processes should be done in operating session to improve risk of cross infection.<sup>1,9,10</sup>

According to a recent study, coronavirus survives on steel or disposable surfaces for as long as 4 to 24 hours.<sup>11,12</sup> For this reason, substantial amount of sanitizing and proper hand wash with soap is necessary. On the grounds that the virus proliferation is high in specks released when a person coughs or sneezes and every person is considered to be a possible COVID-19 carrier, it is necessary to disinfect all the surfaces that the patient comes in contact with. It is important to provide everyone in the facility with a mask to decrease likelihood of infection.<sup>12</sup> On the basis of potential transmission of coronavirus in dental practice, it is crucial to maintain three level protective measures particularly primary, secondary and tertiary level protection. Primary protection depends upon standard clinical protection i.e. disposable respirators or masks, gloves, gowns etc. Secondary

protection consists of advanced care level which includes disposable isolation clothing or surgical clothes, protective eye wear, disposable caps, masks and gloves. Whereas tertiary protection is based on the type of protection where contact patient is COVID-19 positive. However, this type of patient is not generally taken under dental care, but if emergency exists, it is necessary to facilitate this type of patient as well.<sup>8,11,12</sup>

## CONCLUSION

As a part of healthcare fraternity, it is of utmost importance that dental professionals sustain high level of infection control and sanitization. It is also needful to educate patient and dental team about the virus and its severity and decrease the unnecessary amount of panic, in the meanwhile countering emergency dental problems and maintain well-being of the patient.

## CONFLICT OF INTEREST

None

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