

# **RESEARCH ARTICLE**

# IMPACT OF CORONAVIRUS DISEASE-19 (COVID-19) OUTBREAK ON DENTAL MEDICINE & PATIENT CARE

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#### Abstract

..... During past 3 months COVID-19 has rapidly expanded across various countries. This is a zoonotic disease which is believed to have originated in bats and pangolins and later transmitted to humans. Human transmission occurs via respiratory droplet/contact. WHO declared COVID-19 as a pandemic due to the alarming levels of spread and severity. In response to the current threat, many countries have employed various containment strategies to protect people from health risk and avoid strain on the national healthcare systems worldwide. However despite the extensive efforts, this outbreak is still on the rise due to the community spread. In such a scenario, dental healthcare workers may deal with patients who have suspected/confirmed SARS-CoV-2 infection. Thus the current article aims to provide brief information pertaining to etiology, spread and symptoms and transmission routes of SARS-CoV-2 virus infection and outline infection control as well patient management strategies in a dental setting.

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## Introduction:-

A novel human coronavirus, also called as severe acute respiratory syndrome corona virus-2 (SARS-CoV-2) was announced as the causative microorganism of COVID-19 outbreak by the Chinese Center for Disease and Prevention in January 2020.<sup>1</sup> The COVID-19 pandemic has rapidly become a public health crisis of global concern. Due to the widespread transmission of SARS-CoV-2 and the unique characteristics of dental office (including proximity of oropharyngeal region, generation of aerosol during dental procedures), both the Dental healthcare professionals as well as the patients have an increased risk of cross infection.<sup>3</sup>

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# **Etiology & Transmission**

The etiologic agent of COVID-19 is the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Transmission of virus has been shown to occur through droplet infection and by contact.<sup>4</sup> Airborne spread of the virus occurs when an infected person coughs or sneezes, with a potential to infect people in close vicinity. Therefore various public health guidelines have recommended social distancing as an important means to avoid spread of the disease. Additionally the surfaces of objects contaminated with virus laden droplets also may lead to transmission of the virus if touched by another individual. Other potential routes of transmission could be through aerosols or fecaloral spread.<sup>5</sup> Average Incubation period of the disease is around 5-6 days but could also extend to 14 days.<sup>1</sup>

## **Symptoms**

Patients commonly present with symptoms of fever, dry cough, shortness of breath, fatigue and muscle pain. Less commonly, nausea, diarrhoea, Headache may also be reported.<sup>6</sup> Radiologic investigations show ground glass opacities in chest on Computed tomography. Wu et al reported that 80% of the patients show only mild symptoms similar to seasonal flu which could contribute to undiagnosed cases.<sup>7</sup> Severe form of the infection which may progress to pneumonia or acute respiratory distress appears to be more common in males with age of 50-60 years and those with pre-existing cardiovascular disease or chronic illness related with suppression of immune system.<sup>8</sup>

## Prevention of Cross infection in dental setting

Dental professionals are at high risk for transmission of COVID-19 due to the high concentration of viral load present in oropharyngeal secretion and its primary source of spread a droplet infection. Various dental interventions involve aerosol generation (via use of high speed handpiece or ultrasonic devices) which could also contribute to increased risk of cross-infection especially in asymptomatic patients who are carriers for virus. Therefore the universal protective protocols followed routinely in dental practice may not suffice to prevent nosocomial spread.<sup>9</sup>

## **Recommended precautions**

During the current COVID-19 pandemic the advisory for Dental clinics is to establish precheck triages to measure and record the temperature and medical health status of every staff and patients. Dentists should aim to focus only on emergency dental care and postpone any elective procedure. Dental office and the waiting area should be well ventilated at all times along with spaced out seating of patients.

Ather et al have suggested Initial telescreening of dental patients to identify suspected COVID carriers before scheduling dental appointments. Questions should be asked pertaining to recent travel history to COVID-19 prone areas; possibility of exposure to known-suspected COVID-19 infected individuals; appearance of respiratory symptoms/fever in recent history. Since the incubation period of SARS-CoV-2 may extend over 2 weeks, a positive response to any of the above queries mandates deferring the appointment for at least 2 weeks. Additionally the patients should be encouraged to self quarantine at home and contact their primary care physician for tele-consultation.<sup>3,10</sup>

Those patients who seem fit for appointment scheduling should be advised to wear surgical facemask and preferably come alone or with a single attendant at the time of their dental visit. At the appointment visit, patients should be requested to fill out detailed questionnaire regarding their medical history, Covid-19 screening as well as a true emergency questionnaire. Patients should be tested for their body temperature via non contact thermometer or cameras having infrared sensors in waiting area itself.<sup>5</sup>

Those who show fever (> 100.4 degree F = 38 degree C) or respiratory illness symptoms should be prescribed symptomatic medications for dental ailment and deferred for another 2 weeks.<sup>3</sup> Alternatively it has been suggested to perform dental treatment of suspected cases in negatively pressured rooms if available.<sup>9</sup>

#### What is a true dental emergency?

As per the guidelines issued by American Dental Association (ADA), following list of Dental illnesses has been compiles falling into emergent and non emergent dental care:

#### **Dental Emergencies**

- 1. Uncontrolled bleeding
- 2. Cellulitis or a diffuse soft-tissue bacterial infection with intra-oral or extra-oral swelling that potentially compromises the patient's airway
- 3. Trauma involving facial bones, potentially compromising the patient's airway

# **Dental Urgencies**

- 1. Severe dental pain from pulpal inflammation
- 2. Pericoronitis or third-molar pain
- 3. Surgical port-operative osteitis, dry socket dressing changes
- 4. Abscess, or localized bacterial infection resulting in localized pain and swelling
- 5. Tooth fracture resulting in pain or causing soft tissue trauma
- 6. Dental trauma with avulsion/luxation

- 7. Final crown/bridge cementation if the temporary restoration is lost, broken or causing gingival irritation
- 8. Biopsy of abnormal tissue

## Non Urgent Dental treatment that can be postponed

- 1. Initial or periodic oral examinations and recall visits, including routine radiographs
- 2. Routine dental cleaning and preventive therapies
- 3. Orthodontic procedures other than those to address acute issues (e.g. pain, infection, trauma) or other issues critically necessary to prevent harm to the patient
- 4. Extraction of symptomatic teeth
- 5. Restorative dentistry including treatment of asymptomatic carious lesions
- 6. Aesthetic dental procedure

## **Guidelines for Dental Interventions**

In the event of providing emergency dental care, Dental clinicians should adhere to standard ,contact and airborne precautions including use of personal protective equipment (inclusive of masks, gloves, gowns, and goggles or face shields) and hand hygiene practices. To avoid respiratory droplet associated transmission of virus, particulate respirators (e.g. N-95 masks or FFP-2 standard masks) are recommended for clinicians.

A preprocedural mouthrinse with 0.2% povidine iodine is recommended for reducing the viral load in saliva since SARS-CoV and MERS-CoV appears to be highly susceptible to povidone mouth rinse.<sup>11</sup> Another alternative is rinsing with 0.5-1% hydrogen peroxide mouthrinse preoperatively as it demonstrates non specific virucidal activity.<sup>12</sup>

Imaging procedures should use extra oral techniques including panoramic radiography or computed tomography to avoid contact with oral secretions and minimise gag/cough reflex. However if intraoral sensors are to be used, they should have double barriers to avoid cross contamination. Ather et al suggest the use of disposable (single use) instrument where possible.<sup>3</sup> It is emphasized to minimize the use of aerosol generating devices like high speed handpiece, ultrasonic instruments and 3-way syringes along with use of saliva ejectors to further reduce the production of droplets and aerosols.<sup>14</sup> Additionally clinicians should strictly try to perform procedures under rubber dam isolation.<sup>3</sup>

SARSCoV-2 can remain viable in aerosol and survive upto 3 days on inanimate surfaces at room temperature, more so in humid environment. It is of paramount importance therefore, to disinfect inanimate surfaces and maintain a dry environment as much as possible.

# **Conclusion:-**

Progressive spread of COVID-19 pandemic is associated with increased possibility that Dental clinicians will be exposed to COVID-19 infected patients. Therefore it has become all the more important for dental professionals to incorporate all precautions in their routine practice and additional safety measures if treatment of patients with COVID-19 becomes necessary. Every patient should be considered potentially infected by this virus, and all dental practices need to review their infection control policies

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