



ISSN Print: 2394-7489  
ISSN Online: 2394-7497  
IJADS 2021; 7(2): 111-113  
© 2021 IJADS  
www.oraljournal.com  
Received: 18-01-2021  
Accepted: 23-02-2021

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## Current scenario of COVID-19: Dentistry, Second wave & Vaccination

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DOI: <https://doi.org/10.22271/oral.2021.v7.i2b.1198>

### Abstract

It's been more than a year since when World Health Organization (WHO) declared COVID-19 as a public health emergency of international concern. Still, people all over the world are facing the consequences of the pandemic. The second and third waves are observed in several countries despite the vaccination. Dentistry took an enormous hit amidst the Covid-19 pandemic due to its nature of work especially the production of aerosols. This article reviews the current scenario of COVID-19 and its impact on dentistry.

**Keywords:** COVID-19, Coronavirus, Current Scenario, dentistry, second wave, vaccination

### 1. Introduction

In December 2019 cluster of pneumonia cases reported in the city of Wuhan in China. Investigations found that the disease was caused by a newly discovered virus called the Coronavirus. The disease was subsequently named COVID-19. The disease spread from the boundaries of China to the rest of the world. On 30 January 2020, the World Health Organization (WHO) declared the outbreak a public health emergency of international concern<sup>[1]</sup>. The first case of COVID-19 in India, a student who had returned to his hometown for a vacation from Wuhan University, was confirmed on January 30 in Kerala's Thrissur district. Globally, as of April 2021, there have been 133,552,774 confirmed cases of COVID-19, including 2,894,295 deaths, reported to WHO. As of 7 April 2021, a total of 669,248,795 vaccine doses have been administered<sup>[2]</sup>.

Dentistry took an enormous hit amidst the Covid-19 pandemic due to its nature of work. Dentistry entails close proximity of dentists with their patients, involving face-to-face communication and frequent exposure to their saliva, blood, etc. Thus, dentists stand at higher risk of SARS-CoV-2 infection or vice versa. This aspect delivered a huge blow to the dental services amid the pandemic<sup>[3]</sup>. This article aims to discuss the current scenario of COVID-19, second wave, and vaccination and how it affected dentists worldwide.

### 2. Discussion

Public health and social measures have proven critical to limiting transmission of COVID19 and reducing deaths. Public health and social measures include personal protective measures (such as hand hygiene, respiratory etiquette, mask-wearing); environmental measures (such as cleaning, disinfection, ventilation), surveillance and response measures (including contact tracing, isolation, and quarantine); physical distancing measures (e.g. limiting the size of gatherings, maintaining distance in public or workplaces, domestic movement restrictions); and international travel-related measures. This ensures adequate control.

The branch of dentistry has been severely affected due to the COVID crisis. "The Workers Who Face the Greatest Coronavirus Risk,"<sup>[4]</sup> is an article published in The New York Times, where a remarkable schematic representation showed that dentists were at the highest risk of contact with the virus as they encounter direct exposure to saliva and droplets.

## 2.1 General precautions

- ❖ Thermal scanning of the dentist while entering the clinic.
- ❖ Sanitizers should be put outside elevators, outpatient departments, screening areas, and wards
- ❖ Wear personal protective equipment (PPE) as per the recommendations.
- ❖ Strict fumigation or sanitization of operatory should be done post splatter treatment. Preferably, fumigation with a quaternary ammonium compound should be performed every day.
- ❖ Mop floor with routinely available disinfectant.
- ❖ Ultraviolet rays can also be used to disinfect the air.
- ❖ It is advisable to remove all the potential sources of fomites such as blinds, upholstery, or any other clutter near the operatory.
- ❖ Buckets should be disinfected by soaking in disinfectant or bleach solution or rinsed thoroughly in hot water before filling.
- ❖ Cleaning methods that might aerosolize infectious material, such as the use of compressed air, must not be used.
- ❖ Two layers of biohazardous bags should be used; they should be properly labeled and tied before disposing of, upon completion of the disinfection work.
- ❖ Medical staff should use an alcohol-based hand sanitizer for a minimum of 20 s or by washing with detergent and water for about a minimum of 40 s.
- ❖ When a confirmed case has visited, the area should be sealed before carrying out cleaning and disinfection of the contaminated environmental surfaces. This is done so as to prevent the unsuspected person from being exposed to those surfaces.

## 2.2 Patient protection:

- ❖ Online registrations and telecommunications should be done for all patients to record the detailed clinical, travel, and contact history
- ❖ Patients should practice hand hygiene before entering the hospital and clinics. Therefore, sanitizers should be put outside elevators, outpatient departments, screening areas, and wards
- ❖ Social distancing should be maintained at all times

among patients, staff, and students.

- ❖ All personnel and patients entering the premises should strictly wear masks. Mask should be carefully worn to cover the mouth and nose. Once the mask is worn, it should not be touched. Due to the tight seal in the N95 mask, there are fewer chances of the virus entering the respiratory tract. Face shield provides protection to an extent of 96% and goggles prevent the irritation of eyes at the time of exposure to the aerosol production.
- ❖ Pre-rinsing using povidone-iodine, chlorhexidine, cetylpyridinium chloride, and essential oils should be done by the patient before undergoing any procedure including examination as it reduces approximately 68.4% of the bacterial load in the oral cavity
- ❖ Patients should be scrubbed with isopropyl alcohol extra orally before undergoing any dental procedure followed by preoperative germicidal mouth wash to decrease the number of microorganisms in the mouth
- ❖ Attend 4–5 patients only per day and try completing the maximum amount of work to reduce patient visits. In addition, patients must be educated about the facts of the disease as much as possible.
- ❖ In between the interval of two patients, 62%–71% ethanol, 0.5% hydrogen peroxide, and 0.1% sodium hypochlorite should be used to clean the surface around the working area.
- ❖ No patients should be referred for intraoral periapical X-rays and only extraoral dental radiographs should be preferred till the outbreak of COVID-19 subsides

## 2.3 General dental treatment:

- ❖ Aerosol-generating treatment should be replaced by nonaerosol-generating alternatives for the same procedure as far as possible
- ❖ The use of arotors and ultrasonic scalers, -way syringe should be avoided altogether as they generate aerosols.
- ❖ High evacuation suctions should be used for aerosol-generating procedures

## 2.4 Specific dental treatment:

The Precautionary measures in various departments in dentistry are summarized in Table 1 [5].

**Table 1:** Specific precautionary measures in routine dental procedures in various departments

Departments	Special precaution
Oral Diagnosis and Radiology	-Examination: Until and unless there is an emergency or the use of antimicrobial mouth rinse. -Using extra-oral radiographs such as panoramic radiographs (OPG) or Cone Beam Computed Tomography (CBCT) is endorsed over the intraoral radiographs.
Oral & Maxillofacial Surgery	-The patient should preferably be kept in a supine position to increase the distance from his oral cavity and avoid working within the direct exhalation pathway of the patient. -Use chisels and osteotomes. -Prefer scalpel over electrocautery. -Elective surgery: Avoid -Emergency surgery: Surgery; with the proper protocol or after COVID-19 Report Negative
Prosthodontics	-During fixed partial denture or single-crown preparation, treatment alternation maybe considered to incorporate rubber dam application. -Upon removal from patient's mouth, dental prosthesis, impressions, and other prosthodontics materials (e.g., bite registration) should be thoroughly disinfected by a disinfectant having at least intermediate level activity
Periodontics	-Adjusting the patient's position, and the patient's head angulation will minimize aerosol formation. -Use of manual periodontal instrumentation. -Using an attached aerosol reduction device with the air polisher. -Subgingival scaling/curettage with hand instruments with Proper Protocol.
Restorative dentistry	-Use Anti-retraction dental handpiece. -High-speed handpiece without abundant water spray is the most recommended. -Rubber dam isolation of the operative field during cavity preparation should be used. -Manual removal of carious tissue by using dentine excavators or use of chemical caries removal techniques.

Endodontics	-Endodontic emergency like symptomatic Irreversible pulpitis/ Acute apical periodontitis or Acute Apical Abscess: Pain management with appropriate NSAIDs / Nonopioid and antibiotics or Full pulpotomy or Vital Pulp Therapy or Incision and Drainage with proper protocol.
Pediatric dentistry	-Using chemo-chemical caries removal or atraumatic restorative techniques. -Toys, magazines, and other frequently touched objects in the waiting area which cannot be cleaned or disinfected regularly are removed from the waiting area.
Oral pathology	-All specimens should be labeled properly with patient details and status of COVID-19 (negative, suspected, positive, or Not Tested). -COVID suspect or positive patients, communication to oral pathology laboratory is recommended. -Any aerosol-generating procedure such as bone cutting should be avoided. Hand saw should be preferred over electric bone saw in those conditions. -Preparation of air-dried smears should be avoided. -Health-care workers collecting the sample (blood, serum, and plasma) should follow universal precautions.

## 2.5 Second wave of COVID-19

The second wave of increased incidence is reported in many countries. The second wave of COVID, which has hit India is causing a wide surge of infections. With cases having crossed the 1-lakh mark over the recent days (April 04), experts are now worrying that not only will the second wave reimpose the need for restrictions, it could also be much worse than the first one.

The second wave of new severe acute respiratory syndrome coronavirus 2 (COVID-19) cases is terrifying. A medical hypothesis titled, 'The second wave of Covid-19 is determined by immune mechanism' describes an immunological explanation for the double-peaked epidemic curve of new viral diseases including Covid-19. According to this hypothesis, the second wave of cases is due to the innate immunity in some of the population. These individuals may later develop clinical disease upon repeated exposure. This theory claims that a double-peaked pattern of new cases in a new viral epidemic is intrinsically determined by the pattern of pathogen interaction with the host. According to this hypothesis, relaxation of the community control measures is not responsible; at least in part, for the resurgence of cases [6].

According to current research which emerged from across India, people testing positive for the virus are now also reporting different viral symptoms like abdominal pain, nausea, vomiting, joint pain, myalgia, gastrointestinal complications, weakness, and loss of appetite. The absence of typical symptoms such as that of fever and cough is now making doctors caution patients to get tested even if they do not show classic signs. Unusual signs and symptoms were also highlighted during the second, third wave of infection that hit the UK and other European countries. These stains directly affect the lungs and causing acute respiratory distress due to viral pneumonia [8].

## 2.6 COVID-19 Vaccination

The disease will be under control when 75% of the population gets vaccinated. As of February 2021, at least seven different vaccines have been rolled out in various countries. Vulnerable populations including people with systemic diseases, the elderly age group, and health care workers are the highest priority for vaccination. Vaccination is a critical new tool to fight the battle against the COVID pandemic. It is quite encouraging to see so many vaccines proving successful and going into development. Scientists from all across the world are collaborating and trying hard to bring us tests, treatments, and vaccines that will collectively save lives and end this pandemic.

Need for vaccination remains crucial: There remains some concern that the current set of vaccines administered in India (Covaxin®, Covishield®) may not be effective against newer mutation, since the mutant virus may be able to surpass the

antibodies easily and still spread infection. But it could be lower viral load and symptomatic risk, lowering the risk for secondary infection [8].

Safe and effective vaccines will be a turning point, but we must continue wearing masks, follow social distancing and avoid crowded areas. Being vaccinated does not mean that we can put ourselves and others at risk, particularly because it is still not clear to what extent the vaccines can protect not only against disease but also against infection and transmission [7].

## 3. Conclusion

People all over the world are tired of the current state and how the pandemic maintains a tight grip over our lives. 2021 is going to be a harder year, than the last one as the second wave seems to be more dangerous. But one can avoid getting seriously ill by following all the norms and regulations and getting vaccinated of sure. In spite of the crisis caused by the present pandemic, we can still be supportive, be careful, be alert and be kind. We can always hope for the good times ahead.

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