Review Article

# Coronavirus disease 2019 pandemic: An insight into an urgent oral health care and future challenges based on current evidence

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## Abstract

A sequence of unexplained pneumonia cases was reported in December 2019 in Wuhan, China. After several analyses, in January 2020, the World Health Organization temporarily named this new virus as the 2019 novel coronavirus (2019-nCoV). It is found that 2019-nCoV is abundantly present in nasopharyngeal and salivary secretions of affected patients and it is found to be transmitted through the saliva and the feco–oral routes since its spread is through potential person-to-person transmission route which is predominantly thought to be respiratory droplet/contact in nature. Dental surgeons are at tremendous risk of 2019-nCoV infection due to the face-to-face communication and the exposure to aerosols, saliva, blood, and other body fluids and the handling of sharp instruments and also may encounter patients with suspected or confirmed severe acute respiratory syndrome coronavirus 2 infection and will have to act diligently not only to provide care but also at the same time prevent nosocomial spread of infection. The significance of this review is that oral health providers must be aware and be prepared to tackle any imminent infectious diseases like the present coronavirus disease 2019 outbreak, which can be life threatening to susceptible patients. This review provides a brief outline of the epidemiology, symptoms, mode of transmission, specific recommendations for dental practice that are suggested for patient screening, infection control strategies to block the person-to-person transmission routes in dental clinics and hospitals, and patient management protocol since there are certain chances of encountering oral emergencies such as acute pulpitis, periapical periodontitis, abscess, dental trauma, children's oral emergencies, and oro-maxillofacial infections during this period.

**Keywords:** Coronavirus disease 2019, dental doctors, oral health, pandemic, respiratory droplets, saliva

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## INTRODUCTION

An emergent pneumonia outbreak of coronavirus disease 2019 (COVID-19) originated in Wuhan city, China, in the late December 2019. The World Health Organization (WHO) declared a public health crisis[1] of international concern over this global pneumonia outbreak which has spread

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exponentially to other parts of the world [Figure 1].[2] The novel coronavirus belongs to a family of single-stranded RNA viruses known as Coronaviridae.[3] They are known to be zoonotic that is believed to have originated in bats and pangolins and later transmitted to humans. This virus (2019 novel coronavirus [2019-nCoV]) caused fatal pneumonia associated with severe form of severe acute respiratory syndrome (SARS). SARS coronavirus (SARS-CoV) was first identified in 2002, and later, the Middle East respiratory syndrome coronavirus (MERS-CoV) was identified in 2012.[4] There is strong evidence that this novel coronavirus has similarity to coronavirus species originated in bats and potentially pangolins, confirming the zoonotic nature of this new cross-species viral-mediated disease.[5,6] As the published genome sequence for this novel coronavirus has a close resemblance with other betacoronaviruses (betaCoVs) such as SARS-CoV and MERS-CoV, the Coronavirus Study Group of the International Committee on Taxonomy of Viruses (ICTV) has given it the scientific name SARS-CoV-2, even though it is popularly called the COVID-19 virus.[7,8] On January 30, 2020, the WHO declared the extensive spread of SARS-CoV-2 and its associated disease (COVID-19) a public health crisis with a presently known overall mortality rate to be as high as 3.4%.[9,10]

According to the WHO situation report (April 20, 2020) update on COVID-19, there have been more than 2,360,000 reported cases and 161,000 deaths worldwide[11] and this number is still continuing to increase [Figure 1]. Henceforth, measures for identification, prevention, and management of the disease outburst for an appropriate justification of further spread of the disease to be noted and taken care. Due to the widespread transmission of SARS-CoV-2, recent evidences reported regarding its spread to health-care providers.[4,12] As the medical professionals, even the dental doctors are also at the higher risk for nosocomial infection and can become potential carriers of the disease. These risks can be recognized to unique nature of dental interventions, which generally include aerosol generation, handling of sharps, and proximity of the provider to the patient's oropharyngeal region.[13] If adequate precautions are not taken during the dental procedure, even the dental office can potentially expose patients to cross-contamination.

The characteristic clinical symptoms of the patients who are suffering from this novel coronavirus are reported with viral pneumonia, fever, cough, myalgia or fatigue with abnormal chest computed tomography (CT), sputum production, headache, hemoptysis, and diarrhea.[14-16] This new infectious agent is more likely to affect older aged individuals causing severe acute respiratory diseases.[17,18] On February 2020, the ICTV suggested this novel coronavirus name as "SARSCoV-2" due to the phylogenetic and taxonomic analysis of this coronavirus[21,22] and the WHO named the novel viral pneumonia as "Corona Virus Disease-2019 (COVID-19)."

In this review, we summarize the current recommendations for diagnosing and managing patients with COVID-19 during an emergency of oro-maxillofacial- and dental-related procedures.

## ETIOLOGY

CoVs are positive single-stranded RNA viruses containing 29,891 nucleotides, encoding for 9860 amino acids with

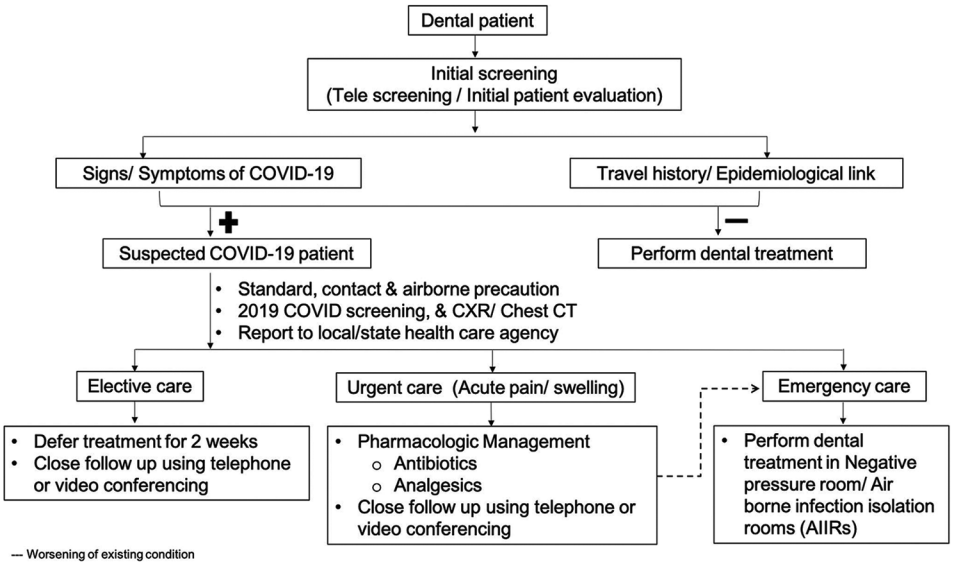


**Figure 1:** Summary of patient screening for coronavirus disease 2019 and dental and oral health-care management[13]

a crown-like appearance under an electron microscope analysis (coronam is the Latin term for crown) due to the presence of spike glycoproteins on the envelope. The group of CoVs, i.e., Coronaviridae family, is classified into four genera of CoVs: alphacoronavirus (alphaCoV), betaCoV, deltacoronavirus (deltaCoV), and gammacoronavirus (gammaCoV).[23,25] The SARS-CoV-2 is the group of CoVs which belongs to the betaCoV cluster. COVID-19 is the third known zoonotic coronavirus disease after SARS and the MERS. SARS-CoV and MERS-CoV also belong to the betaCoV cluster.[24] The genomic classification has shown that bats and rodents are the gene sources of alphaCoVs and betaCoVs. And conversely, the bird species represents the gene sources of deltaCoVs and gammaCoVs.

SARS-CoV-2 is round or elliptic in shape and often presents itself in pleomorphic form with a diameter of approximately 60–140 nm. These are sensitive to ultraviolet rays and heat and can be effectively inactivated by lipid solvents including ether (75%), ethanol, chlorine-containing disinfectant, peroxyacetic acid, and chloroform except for chlorhexidine.[25] These genomic analyses indicate that SARS-CoV-2 may be evolved from a strain found in bats. The potential amplifying mammalian host, which develops as an intermediate between bats and humans, is still unknown. Since studies suggest that the mutation in the original strain could have directly triggered virulence toward humans, it is uncertain that this intermediary exists.[25]

A recent research study by Zhou *et al*.[5] and Wu *et al*.[20] found that the genomic sequence homology between SARS-CoV-2 and SARS-CoV was 79.5%. They also determined that the SARS-CoV-2 had high homology with bat CoVs. Hence, the current evidence strongly supports that the SARS-CoV-2 was derived from bats, although the intermediate hosts of SARS-CoV-2 are yet to be determined.[26]

## ROUTES OF TRANSMISSION

According to the contemporary evidence, the common mode of transmission of novel coronavirus is by two methods: direct transmission through cough, sneeze, and respiratory droplet inhalation transmission and contact transmission through contact with oral, nasal, and eye mucous membranes.[14,18-19,27-30] The WHO proposes that the respiratory infections can be transmitted through droplets of different sizes: when the droplet particles are >5–10 μm in diameter, they are referred to as respiratory droplets, and when they are <5 μm in diameter, they are referred to as droplet nuclei.[1] Therefore, sneezing or coughing by an infected person can condense SARS-CoV-2 airborne, potentially infecting individuals in close contact (approximately within a radius of 6 ft). This has led to the latest concept of social distancing among the public to diminish the community spread of the disease.

Current studies have shown that respiratory viruses through coarse or small droplets and 2019-nCoV can also be transmitted directly or indirectly through saliva.[32] Additionally, some literatures also state the presence of SARS-CoV-2 in saliva of the affected patients.[31,33] It is known that SARS-CoV-2 can bind to human angiotensin-converting enzyme 2 (ACE2) receptors, which are highly concentrated in salivary glands which substantiate to show the presence of SARS-CoV-2 in secretory saliva.[34,35]

In COVID-19 situations, studies suggest that the airborne transmission may be possible in specific conditions and settings in which procedures or support system treatments that generate aerosols are operated like in conditions such as handling of endotracheal intubation, bronchoscopy, open suctioning, administration of nebulizer, manual ventilation before intubation, turning the patient to the prone position, disconnecting the patient from the ventilator, noninvasive positive-pressure ventilation, tracheostomy, aerotor handpiece usage in dental procedures, and cardiopulmonary resuscitation.

### Possible mode of transmission of 2019 novel coronavirus in dental clinics and hospitals

The current evidence states that the 2019-nCoV can be passed directly from person to person by respiratory droplets, and recent studies suggested that it might also be transmitted through contact and fomites.[31,36] The asymptomatic incubation period for individuals infected with 2019-nCov has been stated to be 1–14 days, and after 24 days, individuals were reported, and it was confirmed that those without symptoms can also spread the virus.[14,15,37]

Patients undergoing dental procedures and the treating doctors can be exposed to pathogenic microorganisms, including viruses and bacteria that infect the oral cavity and respiratory tract very easily. Oral and dento-maxillofacial care settings consistently carry the risk of 2019-nCoV infection due to the specificity of its procedures, which involves its direct communication with patients, and repeated exposure to saliva, blood, and other body fluids, and the handling of sharp instruments. The pathogenic microorganisms is generally transmitted during the dental procedures through inhalation of airborne microorganisms that remain

suspended in the air for longer period of time,[39] and in direct contact with saliva, blood, oral fluids, body fluids or other patient materials,[40] contact of oral, nasal, or conjunctival mucosa with the respiratory droplets and aerosols containing microorganisms generated from an infected individual and those which spread in air by short distance due to coughing and talking without a mask,[41,42] and indirect contact with the contaminated instruments and other environmental surfaces.[38]

### Airborne spread

The airborne spread of SARS-CoV has been established in many literatures. The oral health research presents that dental and other oral health procedures emit aerosols and droplets that are contaminated with virus.[43] Therefore, the respiratory droplets, salivary contamination, and aerosol transmission of 2019-nCoV is the most important concern currently in dental clinics and hospitals, because it is very difficult to control the generation of large amounts of aerosol and droplet mixed with patient's saliva and even blood during many major dental procedures.[41] Additionally, an infected patient's cough, breath and saliva, usage of dental instruments such as high-speed aerotor handpiece which uses high-speed gas to drive the turbine to rotate at high speed operating with running water are considered to be quite dangerous in this pandemic situations since there are proven evidences to state that these viruses spread by direct contact and are airborne too. Therefore, the 2019-nCoV has the highest potential to spread through droplets and aerosols from an infected individual in dental clinics and hospitals.

### Contact spread

A dental doctor is always in direct or indirect contact with human fluids, patient materials, and contaminated dental instruments or environmental surfaces during any of the oral health-related procedures performed which makes a viable route to the transmission of viruses.[32] Additionally, dental professionals and other patients have possible contact of oral mucosa, saliva, nasal, or conjunctival with droplets and aerosols containing microorganisms generated from an infected individual and which can also be potentiated to short distance from an infected individual by simple coughing and talking without a mask. Dental procedures derived through salivary and respiratory droplets and aerosols from infected patients, are more likely contaminate the whole surface in dental clinical setup.

### Incubation period

The incubation period of COVID-19 has been projected at 5–6 days on an average, but a recent research suggested that it could extend from 2 to 14 days, which is the commonly adopted duration for medical surveillance and quarantine of possibly exposed persons.[19,34]

### Fatality rate

The current evidence indicates that the fatality rate (cumulative deaths divided by cumulative cases) of COVID-19 ranges from 0.39% to 4.05%, depending on different regions of China, which is lower than that of SARS (≈10%) and MERS (≈34%)[44] and higher than that of seasonal influenza (0.01%–0.17%), as per the data obtained for 2010–2017 from the US Centers for Disease Control and Prevention (2020).[58]

## EPIDEMIOLOGY

According to the WHO situation report (April 20, 2020) update on COVID-19, there have been more than 2,360,000 reported cases and 161,000 deaths worldwide[11] and this number is still continuing to increase.

The recent up-to-date source for the epidemiology of this tremendous pandemic can be found at the following sources electronically: [25]

- The WHO Novel Coronavirus (COVID-19) Situation Board
- The Johns Hopkins Center for Systems Science and Engineering site for Coronavirus Global Cases COVID-19, which uses the public sources openly to track the spread of this pandemic.

## PATHOPHYSIOLOGY

The genomic structure of CoVs is arranged in a + ssRNA of an approximate length of 30 kb which is known as the largest known RNA virus with a 5'-cap structure and 3'-poly-A tail. The process is initiated from the viral RNA where the synthesis of polyprotein 1a/1ab (pp1a/pp1ab) in the host is achieved. Through the replication–transcription complex structured in double-membrane vesicles and via the synthesis of subgenomic RNAs sequences, the process of transcription takes place. It is well known that at transcription regulatory sequences, the transcription termination occurs which is located between the so-called open reading frames that work as templates to produce subgenomic mRNAs.[25,45-47]

The current research indicates that the virulence and pathophysiology of CoVs have similar functions of SARS-CoV-2, firstly, its association to the function of the structural proteins, where the viral envelope has a vital role in intensifying the viral pathogenicity, thereby promoting the viral assembly and its release and secondly, are the

non-structural proteins (nsps) which has the capability to block the host innate response.[46-49]

## MECHANISM OF ACTION, SYMPTOMS, AND DIAGNOSIS OF CORONAVIRUS DISEASE 2019

The study conducted by Zhao *et al*.[53] instituted that ACE2 was the receptor responsible for SARS-CoV-2. They suggested that the binding of SARS-CoV-2 on ACE2 leads to the alveolar cells damage due to an upraised expression of ACE2. Damages to alveolar cells lead to an activation of a series of systemic reactions and even death. They also stated that Asian males are more prone to SARS-CoV-2 infection.

A research study by Huang *et al*.[14] observed that 98% of the patients who were recruited in their study presented with fever, of which 78% of them had a body temperature higher than 38°C. They also reported that 76% of them presented with cough, 44% of them experienced fatigue and myalgia, and 55% of them had dyspnea. Few patients also developed expectoration (28%), headaches (8%), hemoptysis (5%), and diarrhea (3%). Laboratory tests also revealed that 25% of infected patients had leukopenia and 63% had lymphocytopenia. The aspartate aminotransferase (AAT) levels were elevated in 37% of the patients. Myocarditis was diagnosed in 12% of the patients with a significant increase in the levels of hypersensitive troponin I.[50-52] All the patients (100%) who were recruited in the study exhibited abnormalities in their chest CT images. Grinding glass-like and consolidation areas were seen in 98% of the infected patients' bilateral lungs. Wrapp *et al*.[54] estimated that the receptor-binding capability of SARS-CoV-2 is almost 10–20 times stronger than that of SARS-CoV.

## PREVENTION OF CORONAVIRUS DISEASE 2019

### Oral health-care patient management and prevention of nosocomial infection during the pandemic coronavirus disease 2019

Experiences acquired from the previous outbreak of SARS-CoV and based on the information available on SARS-CoV-2 and its associated diseases,[13] certain specific measures are mentioned for dental patient management during this pandemic period of COVID-19 which is summarized in Figure 1.

Initially, tele-screening is the recommended option – initial screening via telephonic conversations so as to identify patients with suspected or possible COVID-19 infection can be performed distantly at the time of scheduling appointments. The three most relevant questions for initial screening should include any exposure to a person with known or suspected COVID-19 presentation, any recent international travel history, and travel to an area with high incidence of COVID-19 or presence of any symptoms of pyretic respiratory illness such as fever or cough.[13]

### Risk of nosocomial infection in dental clinic and hospitals

If the patients undergoing dental treatment, and if he/she experiences cough, sneeze, or if they are receiving any treatment that includes the use of a high-speed aerotor handpiece or ultrasonic instruments which creates their secretions, saliva, or blood, then there are high chances of aerosolization of the surroundings.[61] Dental apparatus and instruments would get contaminated with various viral and pathogenic microorganisms after use or clinical environment get contaminated due to its exposure. Subsequently, infections can occur through the puncture of sharp instruments or direct contact between oral, nasal, saliva, or mucous membranes and contaminated hands.[55,56]

### Personal protective measures for the dental doctors and other oral health-care professionals

Currently, there are no specific guidelines formulated for the protection of dental professionals from 2019-nCoV infection in the dental clinics and hospitals. Moreover, there are no particular instances to state that the dental professionals have been reported to acquire 2019-nCoV infection till the date this paper was drafted, but there are evidences to state that the dental profession ranks top in list of potential risk of acquiring 2019-nCoV infection. Previous experience with the SARS coronavirus has shown vast numbers of acquired infections of medical professionals and few dental professionals too in hospital settings.[58]

Risk of the spread of 2019-nCoV infection, has led to developing three-level protective measures of the dental professionals which are particularly recommended for specific situations:

#### *Primary protection*

It is the standard protective measure for staffs in clinical settings. All of them are required to wear disposable working cap, disposable surgical mask, and working clothes (white coat), use of protective goggles or face shield is a must, and disposable latex gloves or nitrile gloves if necessary.[22]

#### *Secondary protection*

It is the advanced level of protective measures for dental professionals. It is the advanced level of protective measures for dental professionals that includes the wearing of disposable working/head/doctor cap, disposable surgical mask, protective goggles, face shield, and working

clothes (white coat) with disposable isolation clothing or surgical clothes outside, and disposable latex gloves.[22]

*Tertiary protection*

It is the strengthened level of protective measures that is recommended strongly when with contact patients with suspected or confirmed 2019-nCoV infection. Even though a patient with 2019-nCoV infection is not expected to be treated in the dental clinic or hospital except during any severe oral and dento-maxillofacial emergencies and in the unlikely event that this does occur, and the dental professional cannot avoid close contact, so then special protective outwear is needed. Additionally, disposable doctor cap, protective goggles, face shield, disposable surgical mask, disposable latex gloves, and impermeable shoe cover should be worn compulsorily before starting any oral health-care procedure on an infected patient.[22]

### Effective infection control protocols in dental/oral health-care clinic and hospital settings

Washing hands thoroughly and properly for 20 s continuously by using sanitizer or an alcohol-based soap has been established as the most critical measure for reducing the risk of spread or transmitting microorganism to patients.[59] The use of personal protective equipment (PPE) which includes surgical masks, gloves, gowns, and goggles or face shields as mentioned in the above section in detail is recommended to protect skin and mucosa from (potentially) infected saliva, blood, nasal, respiratory droplets, or secretion.[58] As respiratory droplets are found to be the main mode of SARS-CoV-2 transmission, particulate respirators such as N-95 masks authenticated by the National Institute for Occupational Safety and Health or FFP2 standard masks set by the European Union are strongly recommended for routine dental practice or during any oral and dento-maxillofacial emergency procedures.[57,58]

### Diagnosis and treatment plan for coronavirus disease 2019

The initial diagnosis of COVID-19 can be performed based on a combination of the epidemiologic information collected from the patients which includes recent international travel history or travel to region in affected region 14 days prior to the onset of the symptoms, clinical presentation, CT imaging findings regarding if any abnormalities found in chest and lung region, and few important laboratory tests like reverse transcriptase-polymerase chain reaction (RT-PCR) tests on respiratory tract specimens and swabs according to the standards of the WHO.[59] It should be stated that a single negative RT-PCR test result from suspected patients does not eliminate the infection.[58] Clinically, the patients must be notified with an epidemiologic history, COVID-19-related symptoms, and/or positive CT imaging results.

Holshue *et al*.[39] in an experimental study used remdesivir, an antiviral drug for the treatment of patients with SARS-CoV-2 infection, and succeeded in treating the patients and found the patients getting recovered. Approaches such as early diagnoses, reporting, isolation, and supportive treatments; timely release of pandemic information; and maintenance of social orders. Preventive measures must be taken by every individual by the following protective measures that includes improving personal hygiene, wearing medical masks, handwash with sanitizer, alcohol-based soaps, taking adequate rest, and keeping the rooms well ventilated by which the spread of SARS-CoV-2 infection can be prevented effectively.[56]

## DISCUSSION

Recent evidences and scientific publications state that the COVID-19 virus can be detected in the air and suggest that there has been airborne transmission. The latest experimental study published in an esteemed New England Journal of Medicine has assessed the virus persistence of the COVID-19 virus.[7,19,60] In this study, aerosols were generated using a three-jet Collison nebulizer and fed into a Goldberg drum under controlled laboratory conditions. This is a high-powered machine that does not reflect normal human cough conditions. Since the study was conducted as an experimentally induced aerosol-generating procedure, the presence of COVID-19 virus in aerosol particles up to 3 h does not indicate a clinical setting. However, there are also few reports from settings where symptomatic COVID-19 patients have been admitted and in which no COVID-19 RNA was detected in air samples.[61,62]

Currently, the possibility of dental health-care professionals treating the subset of patient population worldwide increases due to the proliferative spread of SARS-CoV-2. Comprehensive and personal protective precautions are very much essential in this pandemic situation to resist the spread of this deadly virus and its associated disease. The American Dental Association and the Indian Dental Association recommend dental doctors worldwide and nationwide, respectively, to postpone nonemergency or general dental treatments and are advised to focus mainly on treating oral and dento-maxillofacial emergencies so as to prevent the risk of transmission of this disease, as the dental professionals are at potential risk for acquiring this disease very easily as it is proven to be airborne and it spreads through oro-salivary or respiratory droplets.[63] Since the number of positive cases is increasing day by day of COVID-19 cases, it is necessary to postpone the general

**Table 1: Recommendations for dental and oral health-care emergency management during coronavirus disease 2019 pandemic[13]**

| Diagnosis | Primary management | Secondary management |
|---|---|---|
| Symptomatic Irreversible pulpitis/ Symptomatic Apical Periodontitis | Pain management:<br>1st line: Ibuprofen 600mg + Acetaminophen 325-500mg[73,74,75]<br>2nd line: Dexamethasone 0.07-0.09 mg/kg [76]<br>Consideration for supplementation with long acting local anaesthetic - 0.5% Bupivacaine for immediate pain relief [77] | Full pulpotomy[78,79] |
| Acute Apical Abscess | Intraoral Swelling:<br>Incision and drainage<br>Augmentin 500mg b.i.d x 5 days/Clindamycin 300mg q.i.d x5 days[80]<br>Ibuprofen 600g + Acetaminophen 325-500mg [73,74,75]<br>Consideration for supplementation with long acting local anaesthetic - 0.5% Bupivacaine for immediate pain relief [77]<br>Extraoral Swelling:<br>Augmentin 500mg b.i.d x 5 days/Clindamycin 300mg q.i.d x5 days[80]<br>Ibuprofen 600mg + Acetaminophen 325-500mg [73,74,75] | Call Oral and Maxillofacial Surgery for further instructions for a possible referral. |
| Tooth Fracture resulting in pain | Pain management:<br>Ibuprofen 600mg + Acetaminophen 325-500mg [73,74,75] | Vital Pulp Therapy [78,79,83] |
| Avulsion/Luxation | If tooth is replanted, follow pain management protocol:<br>Pain management - dependent on age<br>1st line: Ibuprofen 600mg + Acetaminophen 325-500mg [73,74,75] | If tooth is not replanted, replant and follow IADT guidelines as best as possible [81,82] |
| Cellulitis or a diffuse bacterial infection with intra-oral or extra-oral swelling that can potentially compromise the patient's airway | Refer to Oral and Maxillofacial Surgery | |
| Trauma involving facial bones, potentially compromising patient's airway | Refer to Oral and Maxillofacial Surgery | |

and nonemergency treatment protocols. Consequently, to help the dental professionals and the fraternity to deal with general and nonemergency treatment situations during this period, an approved set of recommendations has been formulated and tabulated by Ather *et al*. for management of the dental emergency during COVID-19 pandemic situations [Table 1].[64-74]

Development in the latest diagnostic technology would be very much helpful in determining the possible super-spreaders in the future. Asymptomatic spreaders should also be under the surveillance of health-care providers to prevent further risk of transmission of SARS-CoV-2.[39] Sheng *et al*.[75] performed a clinical study and suggested that the risk of pulmonary fibrosis increases during viral infections. Consequently, it is estimated that pulmonary fibrosis might be one of the severe complications after patients recover from 2019-nCoV infections. The prevention of pulmonary fibrosis in patients who just recovered from 2019-nCoV infections must be addressed immediately.

## CONCLUSION

Medical, dental, and all other health-care professionals have an equal responsibility in protection of the public and maintain high standards of health care and infection control. It is first very much important for all health-care professionals first to self-protect themselves by following effective infection control protocol by using appropriate and good quality PPE before treating an infected COVID-19 patient.

Based on the current evidence, the WHO recommends the salivary or respiratory droplet and contact precautions for those people caring for COVID-19 patients. According to the risk assessment, it continues to recommend airborne precautions for conditions and settings in which aerosol-generating procedures and support treatment are performed majorly during oral and dento-maxillofacial procedures performed by dental doctors.[76] It highlights the importance of rational and appropriate usage of all PPE,[77] during handling the infected patients, lifting procedures, and hand hygiene practices.[78] It also advocates staff training procedures on these above recommendations,[79] and in obtaining and overseeing the adequate supplies of necessary PPE and other essential supplies and facilities.

Therefore, it is important to take appropriate clinical decision at suitable time. All health-care professionals have to educate and prevent panic among the public while promoting the health and well-being of our patients during this challenging pandemic time. Oral and dental health professionals share an equal responsibility as any other health-care professional in fighting against this COVID-19 pandemic. This review contains an updated information regarding this outbreak till date, and this might be very helpful for any judicious clinical practitioner or health-care professional.

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## Conflicts of interest

There are no conflicts of interest.

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