

Covid-19 and Dental practice

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ABSTRACT

Covid-19 is a corona virus-related disease that was discovered in December 2019. It spreads through saliva droplets produced by sneezing or nasal discharge. It is spreading with a very high rate all over the world. Health-care staff and dental practitioners are at a greater risk of contracting the virus, and they may even spread it to others. This is because the dental practice involves aerosol generation, handling of sharp instruments, in more contact with patient's saliva and proximity of dental professional to the patient's oral cavity. So proper precautions should be taken to avoid cross contamination in the dental office. The dental professional should be well prepared to identify the Covid-19 patients by their history, symptoms and lab investigations and be able to refer the patient for further medical treatment for this infectious disease. This article elaborates the characteristic of the virus, modes of transmission, precautions to be taken for patients as well as dental professional and overall patient management in this pandemic situation..

Keywords:

Corona virus infection, aerosol, transmission, dental professional

1. Introduction

Coronaviruses belong to the Corona viridae family, which is large in size, single, positive sense RNA virus.^{[1],[2]} At present, there are 4 genera of coronaviruses: α Corona virus, β -Corona virus, γ -Corona virus, and δ -Corona virus.^{[3],[4]} According to current reports 207 countries are affected by corona virus. Corona virus infections mostly affect the upper respiratory tract. Coronavirus symptoms can range from mild (like a common cold) to severe (bronchitis, pneumonia, and involvement of the kidneys).^[5] Dental treatment is really important. Professionals are the most vulnerable when they live in intimate quarters of patients. Many dentists have now been put on quarantine as a result of their exposure to the virus. Preventing such viral diseases is a pressing necessity.^[6]

2.Symptoms

Malaise, fever, and dry cough are the initial non-specific recorded signs of 2019-nCoV infection at the incubation stage. ^[7,8] In addition, irregular chest X-ray and computed tomographic observations, such as ground-glass opacities, are common.^[9] Eighty percent of patients have mild signs that resemble flu-like symptoms or seasonal allergies, potentially leaving more cases undiagnosed.^[10]

Men with a median age of 56 years and pre-existing chronic diseases such as cardiovascular disease or immunosuppression are more likely to develop severe types of this disease. Symptoms indicative of pneumonia or acute respiratory distress syndrome are exhibited by the higher risk patient population. ^[9]

2.1 The possible routes of transmission 2019-nCoV

The most common modes of transmission are

1. Direct transmission-These types of transmission occur when the infected patient sneezes or coughs and the droplet is inhaled.
2. Contact transmission- When a human comes into contact with infected patients' dental, nasal, or eye mucous membranes, they become infected.^{[11],[12]} Aerosols produced during dental procedures can carry nCoV into the air.^[13]

2.2. Possible 2019-nCoV transmission routes in dental offices

Viruses and bacteria that can invade the oropharynx can be spread by dental patients and dentists. Since dental clinics include prolonged exposure to spit, blood, and other body fluids, as well as the handling of sharp instruments, there is a higher risk of CoV infection.^[14] In a dental environment, pathogenic microorganisms can be spread in two ways. The first is direct transmission, which occurs when an infected person inhales airborne microorganisms that have been suspended in the air for a long time or comes into contact with the conjunctival, nasal, or oral mucosa, and the second is indirect transmission, which occurs when an infected person comes into contact with pollut.^{[15],[16]}

2.2.1 Airborne spread

The dental operation produces a huge number of aerosols and droplets that combine with the patient's saliva and blood, making it impossible to stop. The most critical considerations that should be addressed when operating in dental clinics are droplet and aerosol transmission of nCoV in this pandemic situation.^[15] In addition to the cough and respiration of the contaminated patient, the high-speed dental handpiece often produces significant amounts of aerosols. These formed droplet and aerosol particles linger in the dental operating room for a long time before settling on surfaces or penetrating the respiratory tract.

2.2.2 Contact spread

A possible route of spread of infection in dentists can be direct or indirect contact with infected patients and contaminated dental equipments. In addition to it there can be conjunctival or nasal spread. It can spread when infected patient talks or coughs without a mask.^[16]

Table.1 Precautions for dental practitioners based on CDC and ADA guidelines on coronavirus disease ^[17,18,19]

Postpone	Non-emergency dental surgeries can be postponed for all patients. The transmission chains can be broken as a result of this.
Where to treat	Emergency dental procedures should be provided in hospitals with customized clinics and proper protocols should be followed.
Symptoms and history	Fever (98 percent), cough (76 percent), dyspnea (55 percent), and myalgia or nausea(44 percent)are the most often recorded signs and symptoms of covid infection, Proper travel history should be taken. The Patient should be enquired if he/she has been in the hotspot region 14 days prior or have come in contact with the people from such places. There may be asymptomatic patients also.
How long?	During the disease outbreak, it is very important to follow the protocols which are laid at all times because the etiology of each patient's illness cannot be known in this situation.
Preparations and	The patients with respiratory illness should be identified and should be

Arrangement	isolated in a room and should be given disposable surgical face mask The suspected patients should be reported to government health care authorities.
Transmission prevention consideration	Dental practitioners should ensure proper infection control protocol, including hand hygiene habits, provide disposable tissues, mouth masks for patients, this will prevent 2019-nCoV transmission. Dentists must wear white aprons, plastic gowns, head caps, eye protectors, facial guards, mouth masks, rubber gloves, and impermeable disposable shoe covers to protect themselves against infection. Disposable masks must be changed when they get wet during treatment procedures.
Guidelines updates	The dentist should check the CDC's coronavirus infection control web page for recent updates, as Covid-19 protocols can quickly update with increasing disease specifics.
Health care workers	Both healthcare professionals, including dentists and personnel, should have the flu shot, and employees who have flu-like symptoms should not return to work.

3. Infection controls for dental practice

Dentists should specifically prevent contact with their pupils, lips, and nose, even their own facial surfaces. For all health workers, the use of personal protection devices such as goggles, eye protectors, gowns, disposable gloves, head caps, face shields, and disposable shoe covers is recommended to prevent airborne droplet transmission.

3.1 Mouth rinses

When doing an emergency dental treatment, mouth rinses containing 1 percent H₂O₂ or 0.2 percent povidone-iodine should be used. To reduce the microbial load of oral cavity fluids, mouthwash should be used prior to the procedure.^[20]

3.2 Rubber dam isolation

Rubber dams should be used during dental operations because they serve as a buffer in the oral cavity and eliminate aerosol production by 70%.^[21] In addition to rubber dam, high volume suction should also be used to prevent the aerosol reduction. If in cases were rubber dam cannot be placed hand scalers should be used.

3.3 Anti-retraction handpiece

Using a handpiece with an anti-retraction mechanism is advised during this pandemic. The anti-retraction valves help in preventing the diffusion and splatter of droplets.^[22,23]

3.4 Appropriate disinfectants

Sodium hypochlorite (1000ppm or 0.1 percent is used for disinfecting surfaces and 10,000ppm or 1 percent is used for blood spills), 0.5 percent hydrogen peroxide, 62-71 percent ethanol, and phenolic and quaternary ammonium compounds should be used according to manufacturer's directions.^[24]

3.5 Management of medical waste

The institution's temporary holding unit can be used to better dispose of dental waste. Reusable devices must be sterilized and preserved correctly for future use. Dental waste from alleged or confirmed 2019-nCoV patients is considered medical infectious waste which must be disposed of properly in double-layer yellow colored medical waste box containers.^[24]

4. Conclusion

It is your responsibility as a healthcare provider to protect the public while maintaining high levels of treatment and infection prevention. Dental practitioners must be properly informed of nCoV transmission mechanisms to be able to recognize patients infected with the virus. When delivering emergency dental care to a patient who is vulnerable to or has been diagnosed with COVID-19, proper protocols should be followed.

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