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Review Article

Combating COVID-19: A Dentist Perspective

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Abstract

The current scenario in the world is awfully perilous and insecure because of the world pandemic of COVID- 19.Healthcare workers (HCW) are frontline warriors for prevention and treatment of Coronavirus affected patients. Face-to-face communication and consistent exposure to body fluids such as blood and saliva predispose dental care workers at serious risk for 2019-nCoV infection. As demonstrated by the recent coronavirus outbreak, information is not enough. During dental practice, blood and saliva can be scattered and aerosol production is common. Accordingly, dental practice can be an impending risk for dental staff, and there is a high risk of cross-infection. This article deals with all information collected to date on the virus, in accordance with the guidelines of international health care institutions and provides a comprehensive protocol for managing possible exposure to patients or those suspected of having coronavirus.

Keywords: *Coronavirus; Covid-19; 2019-nCoV; Dental Care; Dentistry*

A world pandemic outburst that has almost deflated the livelihood of virtually every professional since past few months is the mutated highly contagious version of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) or COVID-19. COVID-19 pandemic represents an unprecedented global public health crisis. WHO and other governmental organizations have published advisories and guidelines for the healthcare workers, who are the frontline warriors, intended for tackling and containment of the novel corona virus disease spread.

Drastic measures have been put into place to intercept the surge in healthcare demand across the world. Dental workers play a decisive role in prevention of the spread of the virus the aerosols, droplets and fomites being the main transmission vectors [1].

Dental practices are at risk of infection due to short working distances, direct and indirect frequent exposition to saliva, blood, and other body fluids and due to use of aerators, ultrasonic devices, etc. These droplets and aerosols are small enough to remain suspended in air for a long period of time before falling into environment surfaces or entering the respiratory tract of other individuals. This virus may remain in the saliva of a contaminated individual for up to 24 days and the patient may be asymptomatic. Primary nonspecific reported symptoms of 2019-nCoV infection at the prodro-

mal phase are malaise, fever, and dry cough. The most commonly reported signs and symptoms are fever (98%), cough (76%), dyspnea (55%) and myalgia or fatigue (44%) [2,3]. They also may have traveled to one of the countries considered disease hotspots in the prior 14 days or have encountered people from those countries or people who have traveled to those countries. Some patients may have unexpected symptoms such as diarrhea. Since it is not possible to know the etiology of each patient's illness, it is crucial to follow the guidelines and precautions at all times during the disease outbreak.

Consequently, it is recommended that health care workers should work as if every patient might be COVID-19 positive. It should be noted that dental care workers are more exposed to the virus than patients, because during dental procedures patients are the ones who keep their mouth open, propelling aerosols. The best way to prevent any disease is to adopt practices that stymie the virus' propagation [4,5]. This is why controlling environments that carry biological risk is part of the routine of all dental care workers.

Standard precautions based on CDC and ADA guidelines for dentists on the coronavirus disease should be embarked on. Dental Council of India has issued an advisory bearing consolidated revised guidelines and protocol for the activities in dental clinic and the dental practitioner.

Following dental treatment guidelines

A dentist can play a significant role in disrupting the transmission chain, thereby reducing the incidence of the disease by simply postponing all non-emergency dental care for all patients. All dental care should be provided in an outpatient dental setting with a minimum of six air changes per hour, such as a hospital with dental care services or customized clinics equipped for Covid-19 patients.

Respiratory hygiene and cough etiquette

Dental personnel should use N95 respirators or respirators that offer a higher level of protection instead of a facemask when performing or present for an aerosol-generating procedure Cover their nose and mouth when coughing/sneezing with tissue or mask, Provide tissues and no-touch receptacles to throw away used tissues and offering face masks to patients who are coughing. Dispose of used tissues and masks and perform hand hygiene after contact with respiratory secretions [6,7].

Be alert, identify patients with respiratory illnesses, and provide them a disposable surgical face mask. Isolate them in a room with the door closed. Limit their direct contact with others. Isolated patients must wear masks outside their room. Isolate suspected patients before and during care to minimize their direct contact with other patients and staff and immediately report any cases to local and state public health authorities. To prevent 2019-nCoV transmission, dental practices should adhere to the infection control protocol, including hand hygiene, providing tissues and no-touch receptacles, and providing face masks for coughing patients.

Personal protective equipment

Dental health care personnel should wear white coats, gowns, headcaps, hoods, goggles, face shields, masks, latex gloves, and impermeable shoe covers to prevent exposure. Disposable masks should be substituted between patients or even during treatment if they get wet. Since Covid-19 recommendations may change rapidly with increasing information about the disease, the ADA recommends checking for updates on the CDC's coronavirus infection control web page for health care professionals. The CDC strongly recommends that all health care staff, including dentists and personnel, should receive the flu vaccine and that staff with influenza must not report to work [8].

Reduce aerosol production

Effective treatment should decrease the aerosol generation. Ultrasonic instruments, for instance, can place a higher risk of producing contaminated aerosols. Since hand and ultrasonic instrumentation are both equally successful in eliminating plaque and calculus, it is suggested to manually scale and polish them. Furthermore, the use of high-speed handpieces and three-way syringes should be minimized by dentists during the COVID-19 outbreak [9].

Dentists should minimize utilizing rotary instruments when preparing a cavity and in selective patients, they should try using atraumatic restorative procedures or chemomechanical caries removal.

Hand hygiene

Practicing proper hand hygiene protocol frequently can help reduce the disease transmission. Wash hands with soap and water for at least 20 seconds after contact with patients or use an alcohol-based hand sanitizer with at least 60% alcohol if soap and water are not available Before and after any direct patient contact and

between patients and inanimate objects in the immediate vicinity of the patients

Pharmacologic treatment

An option is a pharmacologic treatment by antibiotics and/or analgesics for suspected or confirmed COVID-19 cases that need immediate dental treatments for conditions such as swelling and/or tooth pain. This method may provide the relief of symptoms and give dental practitioners some time to come up with a plan to perform dental care to minimize the infection spread. The British Medical Journal prescribed acetaminophen as analgesia instead of ibuprofen for COVID-19 infected patients because ibuprofen can interfere with the immune system function [10,11].

Pre-procedural mouth rinse

One of the most efficient ways to decrease the proportion of microorganisms in oral aerosols is pre-procedural mouthrinse. According to a meta-analysis by Marui, pre-procedural mouthrinse including chlorhexidine (CHX), cetylpyridinium chloride (CPC), and essential oils led to a mean reduction of 68.4% colony-forming units (CFU) in dental aerosols. Although the pre-procedural mouthrinse impact on coronavirus is still uncertain, CHX is efficient against some infectious viruses such as human immunodeficiency virus (HIV), herpes simplex virus (HSV), and hepatitis B virus (HBV) [12]. Approximately 0.12% CHX has been used as pre-procedural mouthrinse. If a patient experiences any other side effects such as tongue stain or mucosal irritation, 0.05% CPC can be a suitable option. The effect of chlorhexidine, which is commonly used for preprocedural mouth washing in dental practice, has not yet been demonstrated to be capable of eliminating 2019-nCoV. However, the prescription of oxidative agents containing mouth rinses such as 1% hydrogen peroxide or 0.2% povidone is recommended. A higher rate of virus exposure because of occupational commitments in health care workers is considered a key factor associated with the increased risk of infection [13].

Single-use tools

Dentists should apply single-use devices for example syringes, mouth mirror, and blood pressure cuff to avoid cross-contamination.

Disinfection of the surface

Human coronavirus may live up to 9 days at room temperature on an inert surface with a higher preference for humid situations. Clinical staff should also check to disinfect inert surfaces using chemicals confirmed against COVID-19 and keep a dry atmosphere to mitigate the 2019-nCoV spread. Such surface sanitizers include 62% - 71% ethanol, 0.5% hydrogen peroxide, and 0.1% (1 g/L) sodium hypochlorite. After each patient's visit, surfaces should be thoroughly wiped down, particularly around the operating sites [1].

Waste disposal

Ensure safe waste management. Treat waste contaminated with blood, body fluids, secretions and excretions as clinical waste, in accordance with local regulations. Human tissues and laboratory waste that is directly associated with specimen processing should also be treated as clinical waste. Discard single use items properly. The medical waste containing disposable protective equipment after use should be promptly delivered to the temporary storage facility of the medical center [14,15]. The reusable tools and materials should be cleansed, sterilized, and carefully preserved in compliance with the Protocol for the Disinfection and Sterilization of Dental Instrument. The medical and domestic waste produced by treating suspected or confirmed COVID-19 cases are considered to be infectious medical waste. Double-layer yellow clinical waste bags with a "gooseneck" knot should be used. The surface area of the waste bags should be labeled and disposed in compliance with the requirements of medical waste disposal [16].

Volunteering and redeployment

A dentist can volunteer by serving at COVID -19 centers and isolation wards. They can also redeploy at the city quarantine centres. They can participate in community health awareness and home dental care practices through webinars and social media [17].

Other clinical precautions

Salivary suction should be carefully carried out to prevent gag reflex. Choose and modify trays to have the proper size for doing the impression to prevent coughing. Using oral mucosa anesthesia to the throat before performing the impression is a good option for extremely sensitive patient [18,19].

Conclusion

Following the announcement of the disease outbreak by international or local authorities, dentists can play a significant role in disrupting the transmission chain, thereby reducing the incidence of disease by simply postponing all non-emergency dental care for

all patients. Dental professionals must be fully aware of 2019-nCoV spreading modalities, how to identify patients with this infection, and, most importantly, self-protection considerations.

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