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Archives of Dentistry Commentary

Dental Practice Covid-19 Infection Control Precautions

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Introduction

In the end of 2019, a large number of patients started suffering from a disease that includes symptoms which can be displayed as a severe pneumonia and acute respiratory distress syndrome, in addition to multi organ dysfunction. These symptoms were detected in Wuhan, which is considered the capital city of Hubei province, with a population of over 11 million. This infection has fast transmitted from Wuhan city to most other cities, provinces, and other countries. "On January 30, 2020, WHO declared an emergency of public health of global apprehension over this outbreak" [1-3].

It is noted that some of clinical symptoms of this disease are just different than the symptoms that occurred by the severe acute respiratory syndrome (SARS) which is caused by SARS coronavirus (SARS-CoV), but it is just different, indicating that there is a new agent which is responsible for these infection and pneumonia from one person to others, consequently, this has led to understand that the global outbreak of coronavirus disease (COVID-19) is caused by the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [1,4].

In healthcare centers, the most common route of transmission is the human-to-human transmission, which take place through the contact of the mucosae with infectious respiratory droplets or fomites. However, previous studies have also found coronaviruses in sputum, nasopharyngeal secretions, endotracheal aspirate, bronchoalveolar lavage, urine, feces, tears, conjunctival secretions, and blood and lung tissues. A previous study stated that Human coronaviruses can stay infectious on inanimate surfaces for a period up to 9 days. Applying a disinfection on the surfaces using 0.1% sodium hypochlorite or 62–71% ethanol will significantly reduce coronavirus infectivity on surfaces within 1 min of exposure time [4-6].

In order to understanding the concept of infection control, it is better to start from analyzing the route of transmission of microorganisms. The surrounding environment of dental health centers invariably includes multiple risks of infection and transmission of COVID-19; this may route back to the environment of work inside the dental practice, which involves face-to-face communication with multiple patients every day. In addition to increased periodic contact and exposure to saliva and blood [1], the risk factors also include, inside the dental practice the dental professional handling sharp instruments during their working routine. According to our review article, there are possible transmission windows that we put it in our considerations, such as direct contact with blood or body fluids, and the risk of exposure to nasal or oral mucosa [7,8].

Routes of Transmission

According to our review article, there are two main routes of transmission, the airborne transmission, and the surface contamination. The nature of work of dentistry showed that the dental procedures and operations have the ability to produce aerosols and droplets that include viruses. Consequently, both the droplets and the aerosol considered to be the important factors in the process of transmission of these new viruses in the dental clinics and health centers, as avoiding the formation of the large amount of the aerosol that is mixed with the patient's saliva considered to be so difficult practically, this type of transmission considered to be the airborne route of transmission. This is not the only route that the virus may transmit through, as the literature stated that viruses that have the potency to be pandemic, for example, SARS-Coronavirus, have the ability to remain alive for extended periods on dry surfaces causing a contamination in the area of settings and may require more enhancement in the procedures of disinfection and cleaning to assure effective

infection prevention and control. Also, viral and bacterial surface contamination can be spread to hands, and serial transfer to a number of surfaces from contaminated hands may take place. Consequently, measurements should be taken to decrease the chances of transmission through this route [1,9,10].

Infection Control Techniques

Patient assessment

In our review article, we discussed a technique to obtain an assessment for the patients that visiting dental clinics and health centers. The dental clinic or health center will create a team that is responsible for patient assessment, as their duty will be asking the patient about his/her general medical health status, and asking the patients if the they had travelled to the areas that have a history of covid-19 cases. The team also will check the patient's temperature by using Forehead thermometer, and the team will instruct the patient to wear a medical mask before entering the clinic. Then the team will present a special sheet of questions called "checking questionnaire" which will be used to screen patients who have the possibility to be infected by COVID-19 before they could move to the dental unit [1].

The checking questionnaire should contain multiple questions to investigate whether the patients experienced any of the disease symptoms, in addition to provide a history whether those patients have visited any epidemic regions in the past 14 days. This will give a background about the possibility of the infection of the patients that are presented to dental clinics [11].

The examination procedure

It is essential to understand that avoiding all the chances that may lead the patient to cough will help in reducing the chances of the transmission of the infection. Hence, in our review we discussed how can dentist counteract that by changing the intra-oral X-ray which is a type of radiography initiates coughing with other different techniques such as orthopantomogram radiography and cone beam computed tomography [11].

Categorization of the patients

In our review article, we create a system that include categorization for the patients according to the risk of level. The categorization of the patients divided to three risk levels, low, moderate, and high, as every risk level include some criteria, and according to these criteria the dental team will wear personal protective equipment. The equipment includes protective eyewear, medical hand gloves, medical cap, face shield, medical face mask, and special medical protective suits. A study recommended using N95 respirator masks or FFP3 respirator in addition to room ventilation to counteract airborne transmission [1].

Special aids

Using special aids will enhance the concept and procedures of infection control such as the mouth rinse, extra oral suction machines, and dental dam. It was shown that both SARS and MERS were highly susceptible to povidone mouth rinse [1]. Hence, before the dental procedure, rinsing the mouth of the patient with 0.2% povidone-iodine may decrease the load of coronaviruses in saliva. Also, using the dental dam will help in the prevention of the spread of the infection that appears in the cases that have contagious diseases, for example, acquired immune deficiency syndrome (AIDS) and viral hepatitis. A previous study showed that applying the dental dam in the dental operations is considered to be an excellent barrier to the potential spread of the infectious disease in the dental office [12,13].

Disinfection protocol

Provide a good cleaning of the surfaces in the dental clinic is recommended before and after treating each patient. Consequently, both dental clinics and health centers should consider an effective and firm disinfection protocols in both inside the dental chair room and public area, the equipment and settings of the clinic should be disinfected and cleaned according to the special protocol which is accredited inside your country [1].

Removal of Personal Protective Equipment

At the end of the clinical operation, it is mandatory for the dentist and his/her team to throw all disposable Personal Protective Equipment (gloves, masks, protective gowns, headgear, shoes) inside special double-layered garbage bags, and spraying them with a 0.5% hypochlorite solution, which will be sealed with a knot and temporarily stored in a closed container with a pedal opening [2].

Vaccinations

Maria Eleonora et al. stated that when the COVID-19 vaccine is ready, healthcare professionals should take it. As additional infection prevention and health care worker measures, rapid tests can be used in dental practices to diagnose COVID-19 before each treatment [14].

Orthodontics

Khadijah stated that orthodontic pliers can be sterilized with steam autoclave sterilization, ultrasound bath and thermal disinfection, or disinfected with chemical substances 2% glutaraldehyde or 0.25% peracetic acid. Instrument cassettes can be effectively used, with pliers preferably sterilized in an open position [15].

Endodontics

Khawer Ayub et al. provided some suggestions for acute endodontic management during the COVID-19 crisis including pre-operative, intra-operative, and post-operative. These suggestions including some essential steps [16].

Before Operation:

- Consider 'scrubbing' the patient's lips and surrounding area with povidone-iodine or chlorhexidine if available to preserve as a aseptic technique as possible, similar to other dental operations which need an aseptic technique [16].

During Operation:

- Using single use instruments wherever possible to decrease the demands for sterilization and decontamination [16].
- Decrease the need to utilize intraoral radiographs wherever possible, this is unlikely to be practical for endodontics, as an appropriate pre-operative radiograph should be available [16].

Post-operations:

- Depending on the patient's presenting symptoms, analgesics could be prescribed. The patient will need to be informed that the treatment provided is not definitive and will need follow-up. Proper advice should be given regarding lateness in treatment in the current situation. This could affect the results of endodontic treatment outcomes, the patient may encounter further flare-ups of pain, a higher chance of tooth fracture and loss of temporary restoration [16].

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