



## Corona Virus (COVID-19) Impact on Patient Environment in Dental Practice

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### Abstract

The environmental circumstances create further risk factors that affect severity and duration of oral and periodontal diseases; Corona Virus (COVID-19) makes trouble changing of immune defenses which result in damage the tissue cells at several vital areas of the human body, and may convert the mechanism and symptoms of patient diseases.

Till now Corona viral pandemic has been changing the patient social lifestyle and affected dental clinical practice, and becomes more critical for infection control against all infectious diseases that should be managed before starting treatment of bacterial periodontal disease and other dental problems.

Many new requirements become in need to extend our educational understanding about how these infectious viral or bacterial diseases will contaminate people and are transferring from person to person, especially in dental clinic during practice on patient, and how much to draw attention for additional protective procedures to the patient who still has been looking for a new different managements. So that our concepts should be changed to correspond to all new patient required demands after corona virus pandemic.

**Keywords:** Corona Virus Pandemic; Environment; Immune Defenses; Infectious Diseases; Protective

### Introduction

(COVID-19) is contagious respiratory viral disease caused by Corona Viruses and commonly affect the upper and lower parts of respiratory tract, these viruses are shared among animals (1960s), and corona viruses known to bring:

- The Severe Acute Respiratory Syndrome (SARS-CoV),
- The Middle East Respiratory Syndrome (MERS-CoV).

When corona virus have discovered from the nasal cavities of humans and thus named human corona virus (229E and OC43), a

few other members of this family have also been branded, including: [7]

(SARS-CoV), (HCoV LN63), (HKU1), and (2019-nCoV).

Which was officially designated on the last day of December 2019 by The World Health Organization (WHO), and this virus was reported in Wuhan in China [1,8,9].

### Viruses that affect human body [1]

Virus consists of microscopic component (RNA or DNA) surrounded by glycoprotein membrane, this virus attacks living cells

for replication and multiplication and causes disease or death of these cells.

#### Viruses of adult patients

- Encephalitis viruses: (-Herpes simplex 1 virus, -Enterovirus, -Arbovirus, -Mumps virus).
- Papiloma virus(HPV).
- Human Immunodeficiency virus (HIV).
- Yellow fever virus.
- Hypatitis virus (HCV).
- Herpes simplex 1 virus (Impetigo).

#### Viruses of child patients

- Gastrointestinal Rotavirus.
- Poliomyelitis virus.
- Chickenpox virus (Varicella-Zoster).

#### Viruses of respiratory tract

- Influenza virus.
- FLU virus.
- Measles virus.
- Mumps virus.
- Corona Viruses: (MERS-CoV), (SARS-CoV), (COVID-19).

### Corona Virus (COVID-19) Impact on patient environment in dental practice

#### What dentists should do for clinical practice after corona virus pandemic distribution? [10]

Recently the dentist is very educated against contaminated infectious diseases, and spontaneously, everybody is ready to apply all isolating procedures for protecting the patient and working staff. The patient becomes more conscious to recognize the importance of protective procedures in the life for medical and oral hygiene after corona virus distribution in the human societies [6].

#### What after corona virus pandemic is?

Corona virus has been changing the people understanding of life style, and the dentist should be able to correspond for that by extending the sterilizing and isolating circles to involve all clinical staff and different patients. Because the patient always needs dental care and management, the dental clinic cannot be closed but should be prepared to face all viral or bacterial pandemics like COVID-19, IDES, Hepatitis and other infectious diseases.

#### What are the beneficial results can be take to treat the fear of human society after corona virus pandemic distribution? [7]

- We need more information about corona virus pandemic, how distribution, pathologic mechanisms, and protective ways.
- Applying all procedures of isolations and protection, which start by patient arriving into medical center till entrance dental clinic for treatment.
- Make sure about sterilization circles be closed and extended to include all working staff and places, and control medical tests for all.
- Use the new medical tests early to discover of the diseased patients and cooperate with the pandemic administration. WHO is responsible for medical health of patient and sociality.

#### Protective procedures of corona virus in dental clinic

##### The clinical requirements before patient therapy [1]

##### Clinical preparing

All clinical staff should be informed and trained about new procedures of infection control of corona virus and other contaminated infectious diseases [5].

- Make spaces between patient appointments.
- Infection Control is done for all working staff and patients.

Regularly contact with companies of cleaning and waste take out.

- Start clinical working gradually (50%) with shifts to decrease crowding people and contamination.
- Use digital patient file and bank machines to pay money, and avoid currency paper as possible.
- Checking test and distribute the patient at the entrance of clinical center, and provide them by the required control guiders with cloves or masks and disinfection solutions.
- Disinfecting all service places and left in the clinical center.
- Avoid clinical attending the people with a little influ symptoms like (fever, cough, sore throat, muscle pain, or headache.....).
- At the beginning decrease clinical attending pregnant woman, very old persons and patients with chronic or immune deficiency diseases.
- Daily check of temperature for all staff and patients, and ask to stay home who has degree (> 37.3°-37.8°).

- Postponed the non-urgent dental treatment especially for  $\geq 65$  year old or chronic systemic diseased patients.
- Be Reasonable in using of Personal protection materials like masks, gloves, shields, surgical gowns, and others...
- Remove unnecessary things can patient touch like magazines, toys, or furniture, and rearrange the wide distances between the waiting chairs.
- Put on the wall or stand the guided information pictures of social extending and how to use protective procedures during coughing and sneezing.
- Schadual time spaces between appointments to prevent crowding the patients and ask the additional patients or companies to wait outside of clinical center to call them when you need.
- Ask patient to come clinic without companies as possible with exception for some cases like handicaps, children or very old patients.
- Demend on hand instruments more than rotary or ultrasonic to avoid contamination of air by aerosol bubbles distribution.
- Use rubber dam with high saliva eject suction.
- Doctor-assistant cooperation to get (4-handed technique).
- Hand pieces should be anti-retraction function to avoid water contamination.
- Demend on the largest tip more than smallest for high saliva eject suction to avoid back flow.
- Absorbable sutures are preferable to decrease patient visiting to the clinic during pandemic.
- Decrease using water-air spray to avoid contamination of clinic's air by aerosols as possible.

### Protective procedures of corona virus in dental clinic [1]

#### The clinical requirements after patient therapy

After first patient has finished treatment and before receiving the next patient:

- Clean and sterilize the re-usable devices, equipments, and dental chair or surfaces with disinfection solutions and put disposable materials in specific waste containers.
- Change the rubbing nylon on parts of dental chair and other devices.
- Use disinfection liquids for surfaces, door handles, and chairs...
- Use air condition with special filters for sterilizing the air of clinic, and keep separate time between patients as long as possible ( $\geq 30$  m).

#### After practicing on patient and before living home

- Change working clothes (scrape, coat, or gown) and shoes.
- Clinical clothes should be separated in separate washer machine.
- Washing hands by water and soap for ( $\geq 20$  seconds).
- Do not wear working clothes or personal isolation means outside of clinic.

### Protective procedures of corona virus in dental clinic [1]

#### The clinical requirements during patient therapy

- All dental staff should follow infection control procedures and wearing personal isolation tools like mask (N95), gloves, and shield, and applying other means of protection for instruments.
- Postponed the non-urgent dental treatment and use patient protective infection control means.
- When bubbles (aerosol) are spreading in the clinic's air by turbine or ultrasonic scaler it is mandatory to wear face shield, head cover, and gown.
- Every patient has own instruments that should be changed between patients, and clean the dental chair or equipments by disinfection liquid and isolate them by rubbing nylon.
- Get rid of all disposable used material in special waste containers for the company that will pick up them regularly.

### Protective procedures of corona virus in dental clinic [1]

#### The clinical requirements during patient therapy

- Using mouth wash before treatment the patient is protective procedure to decrease amount of oral bacteria or viruses.
- Prefere to use extra-oral x-ray (panorama) more than intra-oral techniques during corona virus pandemic.

### Clinical infection control [3]

- Education. [www.cdc.gov/oralhealth](http://www.cdc.gov/oralhealth)
- Vaccination (HBV).
- Patient questioner.

**Hand hygiene and care during dental practice**

- Washing hands by water and soap for ( $\geq 20$  seconds) (before and after procedure).
- Avoiding artificial nails.
- Head covering the long hair.
- No wearing hand jewels.
- Use antiseptic when contaminate hands.

**Personal protective procedures****During practice on patient use the following:**

- Disposable gloves (Latex /Vinyl).
- Replacing mask.
- Clean coat or scrape.
- Disposable gown.
- Face Shield or glasses

**Patient protective procedures**

Use changeable instruments and materials:

- New or disposable towel.
- Saliva eject tip and cap of water.
- Sterilized instruments.
- Isolation by nylon for equipment and dental chair (light, table tray handles, and Hand control swishes).

**Exposure Protection**

- Needle, wire, burs, and fine or sharp instrument should be avoided to contaminate or wound hands, and throw them inside special container.
- Contact the company that is responsible to get rid medical waste.

**Medical and dental waste containers**

- Infectious waste.
- Chemical waste.
- Physical waste (sharp instruments and needle).
- Dental waste.
- Normal waste.

**Protection of clinical contact surfaces**

- Use disposable or sterile towel for table.
- Use antiseptic material or spray for surfaces.

- Polished metal tray, easy to sterilize.
- Put instruments that'll be use for patient only.
- Arrange re-usable material out of patients' tray.
- Ask for help to fill record of patient.
- Get out gloves and mask at leaving a clinic.

**Dental hand pieces and other devices**

- Supervise to clean all parts of dental chair (basin, table).
- Give assistant  $\geq 15$  m to finish cleansing and preparing dental unit.
- Sterilize hand-pieces and air syringe between patients.
- Let water coming out of hand-pieces and air syringe for 2 m.
- The clinic should be clean before going home.
- Up dating pouch of sterilized instruments.

**Instruments sterilization and disinfection**

- Keep the used instrument in special container.
- Wash instruments by water to remove the attached blood.
- Use water, soap and brush to clean instrument.
- Dry all instrument before putting in sterilizer.
- Make sure that instruments are autoclavable or dry heat sterilizing (metal, plastic, cotton and gauze).

**Discussion****What are the most common Symptoms of (COVID-19) disease? [1]**

The health protective procedures should be started immediately for the patients are appeared (COVID-19) disease symptoms:

Fever, fatigue, chills, dry cough, muscle pain, headache, runny nose or loss sensation, sore throat, and diarrhea...

- These symptoms appear little by little gradually, and may be initially disappear on contaminated patient.
- (80%) of contaminated patients will be healthy without need for special treatment.
- Only (1 of 6) diseased patients of (COVID-19) appears respiratory difficulty.
- Old patients or who with systemic chronic diseases like (heart, high blood pressure, diabetes mellitus...) have more morbidity incidence of (COVID-19) disease.
- (2%) of diseased persons were died.

**How (COVID-19) disease is distributed?**

- Corona virus can transfer from diseased patient to healthy person via contact air by nose or oral coming out drops during sneezing or coughing.
- The distance between persons should be at least (1 Meter or 3 feet).
- The drops of sneeze or cough will distribute on near surfaces and things that increase probability of contamination when people touch them and their eye, nose or mouth.

**Can (COVID-19) transfer into air?**

Till now, most studies have illustrated the contamination from (COVID-19) is done by touching the breathing drops of diseased patient, but not via the air exactly.

**Can (COVID-19) transfer from asymptomatic diseased patient to normal person?**

The probability of contamination will increase when symptoms of disease will initiate or appear especially in early stages and drops distribute into near air by cough or sneeze.

**Can (COVID-19) transfer from stool of diseased patient to normal person?**

The transfer of (COVID-19) by this way is very limited, and some investigation has found this virus in stool of cases, and this little clue will refer people to clean hands regularly before eating food and after finishing toilet.

**How I Can protect myself from (COVID-19)?****Protective procedures**

- Follow WHO and local information about (COVID-19) pandemic continuously.
- When you concenter protective procedures you will decrease the probability of contamination.
- Clean your hands regularly by water and soap or alcohol solution to decrease the viruses after touching the things.

**Why I should keep one meter or (3feet) away from other people?**

When diseased patients cough or sneeze the drops which containing corona virus will come out to the near air and contaminate the others.

Be at home when you have some symptoms like fever, cough, sneeze, or respiratory difficulty..., and call for medical care at your living area or country.

**Protective care procedures for persons**

- Who visit areas with (COVID-19) pandemic (during last 14 days) or
- Met traveling persons lately.

Stay at home and isolate yourself away from friends or family especially when you feel temperature ( $\geq 37.3^{\circ}$ ) or some symptoms like:

- (Fever, fatigue, chills, dry cough, muscle pain, headache, runny nose, loss sensation, sore throat, and diarrhea...).

Use the mask to avoid contaminates the others when you go out for shopping or ask somebody for help.

Call health care department to evaluate your situation if you need to visit the hospital in advanced case (breathing difficulty).

Open links of WHO about information of self protection [1]

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/situation-reports/>.

**What is probability of contamination by (COVID-19)?**

When you follow the protective precautions, and avoid traveling or visiting other people you will decrease the dangerous distribution and probability of contamination.

**Should I be worry to contaminate by (COVID-19)?**

- At the beginning the contagion of corona virus causes slight symptoms especially for children or young persons, but may be becoming dangerous for the others.
- Only (1 of 6) diseased patients of (COVID-19) appears need for care in hospital (respiratory difficulty).
- Old patients or with severe and chronic systemic diseases are more susceptible to (COVID-19) like heart disease, high blood pressure, and diabetes mellitus...

**How long the incubation period of the (COVID-19) disease will be?**

This period is started from contamination by virus till appearing symptoms (1-14 days) (usually 5 days).

**Can (COVID-19) transfer from animals to human bodies?**

Corona virus is common between bats and other animals that transfer into humans by:

- The Severe Acute Respiratory Syndrome (SARS-CoV). Is by Civet Cats

- The Middle East Respiratory Syndrome (MERS-CoV). Is by Camels
- Corona virus disease (COVID-19). Is not certain yet.

To protect yourself follow these instructions:

- Avoid visiting markets of animal and do not touch the boxes or surfaces of animals
- Take care dealing with raw meat or milk and avoid non-cooked foods of animal sources.

#### Can (COVID-19) transfer from home animals to human bodies?

Till now no study informed us about this possibility, but one case of dog was diseased in Hong Kong. Usually corona virus transfer from diseased patient by drops during cough or sneeze.

#### How long (COVID-19) corona virus stay vital on surfaces?

May be staying contaminated for some hours or several days corresponding with humidity and temperature degree of environment.

Avoid touching non-clean surfaces, and clean your hands by water and soap or disinfectant solution.

#### Can we receive postal envelopes safely from (COVID-19) areas?

The possibility of contamination is increased when some diseased staff touches this postal envelope, but usually sending these materials take several days and faced different temperature circumstances which decrease the danger of contamination.

#### What the vaccine or drug are discovered or used for treatment of (COVID-19) disease?

- Till now the drug or vaccine have not been found, however, many experimental studies are doing for that, and several medications were suggested to use and which need more clinical investigations.
- The treatment of (COVID-19) disease will start according to its stages.
- In initial stages the simple symptoms of diseased patient can be treated very easily, but in advanced stages the patients with severe cases should enter the hospital for more medical care.
- Emphasize on protective procedures to clean hands and keep a distance (3feet) between people to avoid (cough and sneeze drops).

#### Which antibiotic is active for treatment (COVID-19) disease? [1]

(COVID-19 is viral disease and antibiotics are active against bacterial diseases only that are accompanied to viral sources, however, for any medications at the first should be prescribed by specialist doctor.

#### Can my mask protect myself?

- Usually mask is used when the person has some respiratory symptoms like cough or sneeze, contamination by or visiting diseased patients.
- WHO advocate to use mask only in these cases to save this materials for others (hospital staff or patients) who more in need.

#### How the mask is used and get out?

- Clean hands by soap and water or by disinfectant solution.
- Make sure the mask is non-destroyed.
- Differentiate between outer and inner sides of mask by colors or nose metal band.
- The mask should cover the nose and the mouth completely and be tighten to the ears.
- Take off the used mask from rubber bands around ears without touching the outer surface and throw it in waste closed container, and clean hands by soap and water or antiseptic solution.

#### Conclusion

##### What things should be avoided in (COVID-19) pandemic? [1,2]

Some environmental habits should be avoided:

- Smoking.
- Unrequired multiple use of mask.
- Antibiotic intake without doctor consultation.
- Late of contact with medical care when you feel symptoms of corona virus: (Fever, fatigue, chills, dry cough, muscle pain, headache, runny nose, loss sensation, sore throat, and diarrhea...).

Earth map of corona virus illustrate the distribution of diseased, healthy or dead patients numbers in the world [4].



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