



## Role of Dentist to Stop COVID-19: A Journey map

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### ABSTRACT

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by novel coronavirus resulting in severe acute respiratory syndrome coronavirus 2 (SARS-CoV). Dentistry is a dynamic profession that includes sophisticated treatment planning and a wide variety of treatment modalities ranging from conventional to advanced therapies. The infection is spread from droplets released during coughing, sneezing by the symptomatic or asymptomatic patient. Dentists are in continuous contact with saliva and blood while treating a COVID-19 positive patient. Universal body substance precautions remain as the front line for reasonable risk reduction. However, when dealing with a contagious agent that is spread by droplet contact, we need to recognize the need to manage our generation of aerosols as a judicious additional measure. For dental practices and hospitals in areas that are (potentially) affected with COVID-19, strict and effective infection control protocols are urgently needed. Journey maps play a useful role in conveying information in such a way, that is memorable, concise, and that creates a picture in a person mind. Till date vaccine against coronavirus is not introduced. Therefore, the best option is to prevent exposure. This review aims at discussing the role of dentists in COVID-19, its spread through dental care setting status in India through Journey map.

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### INTRODUCTION

Coronavirus disease 2019 (COVID-19) is a contagious infection caused by novel coronavirus resulting in severe acute respiratory syndrome coronavirus 2 (SARS-CoV) reported from Wuhan, China. This novel virus was publicly announced as the infectious pathogen by the "Chinese Center for Disease Control and Prevention" on 8 January 2020 (Li

*et al.*, 2020). The Coronavirinae comprises of two subfamilies includes Coronaviridae and Torovirinae family. The Coronavirinae are further classified as the alpha, beta, gamma and delta coronaviruses groups. Coronaviruses are spherically shaped with 125 nm diameter, non-segmented, RNA virus of about 30 kb & spike-like projections arises from virion surface (Barcena *et al.*, 2009). These spikes appear like solar corona named as coronaviruses (Neuman *et al.*, 2006).

Dental care unit is at risk and may transmit the 2019-nCoV disease. Dentists are in continuous contact with saliva and blood while treating a COVID-19 positive patient. Verbal communication with patients and the usage of instruments producing aerosols can also transmit the infection. The pathogen transmits via inhalation of air-borne droplets which remain in the air for a very long time. A person gets infected when his nose, eyes or mouth come in contact with the contaminated droplets released by another infected person (coughing), or

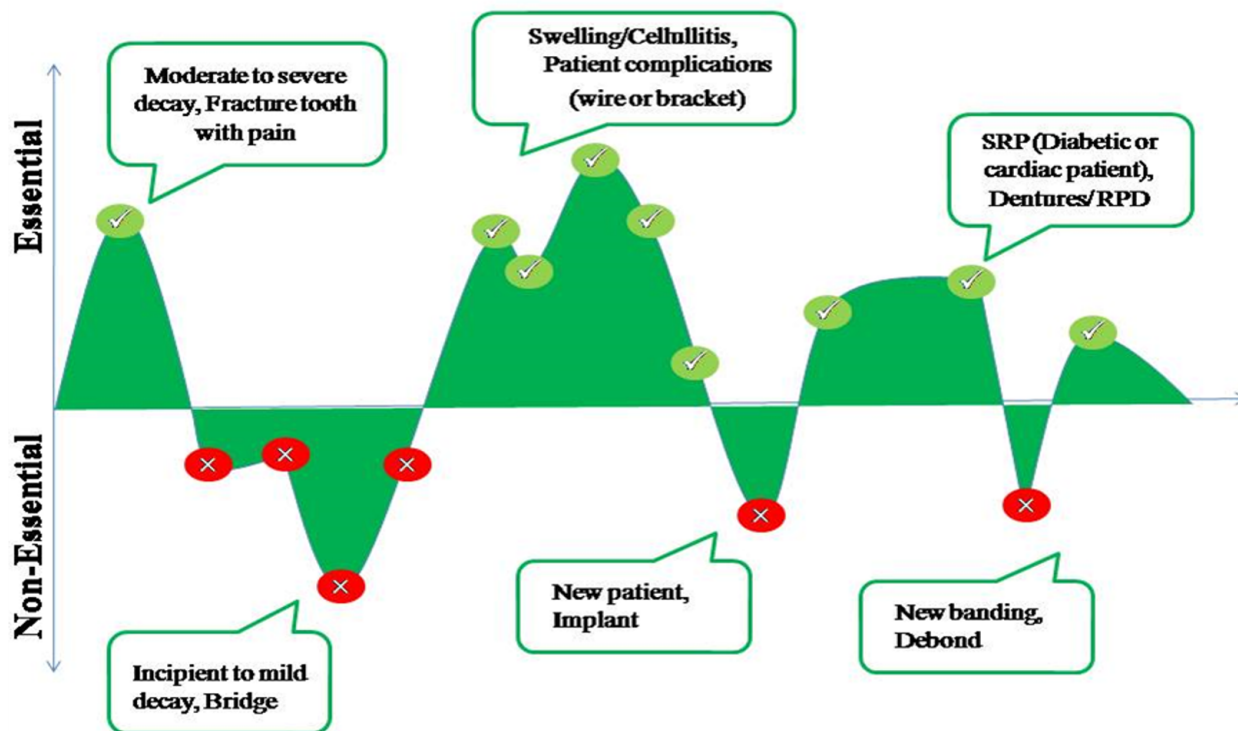


Figure 1: Dental procedures showing Essential versus Non-Essential during emergency

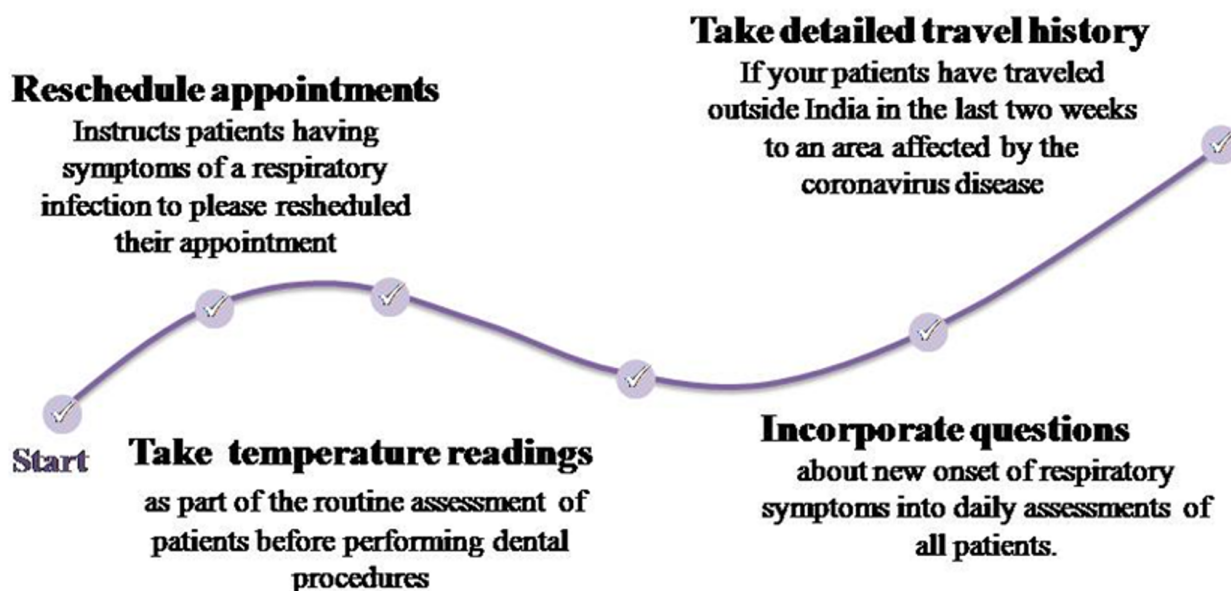


Figure 2: Guidance to avoid chances for exposure

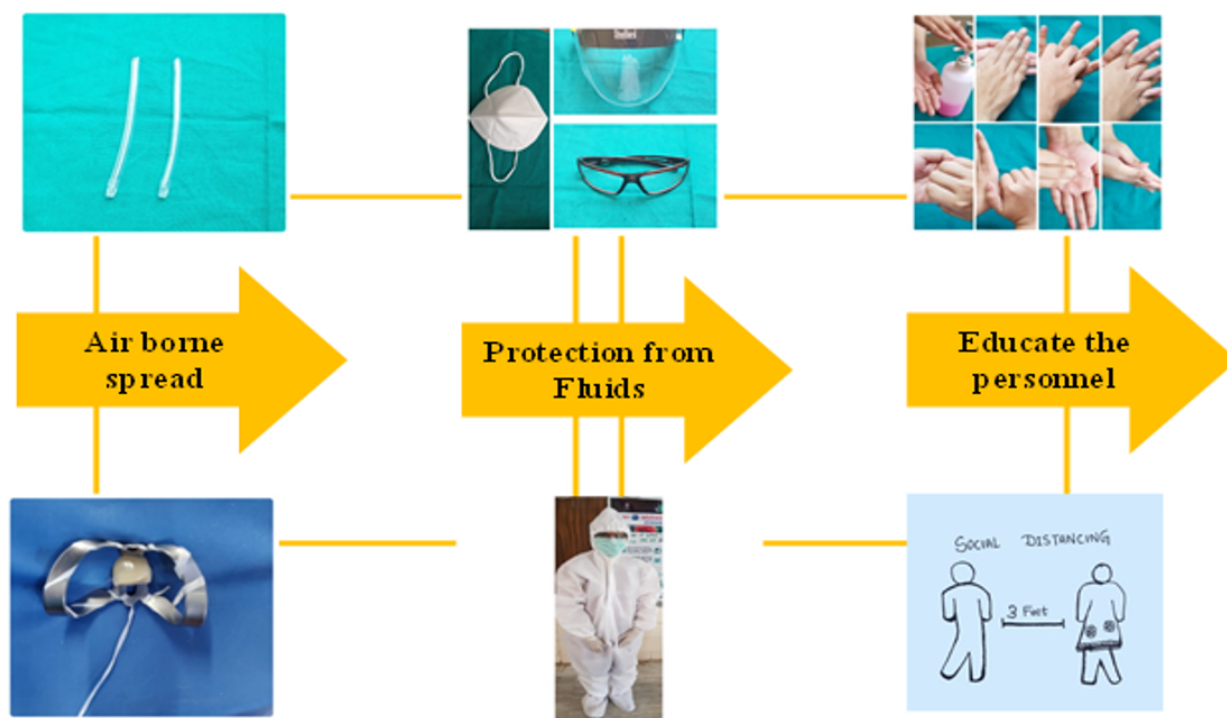
by communicating without protection or through aerosols generated from dental instruments like ultrasonic scalers, three-way syringe and air rotors.

Dentistry is a dynamic profession that includes sophisticated treatment planning and a wide variety of treatment modalities ranging from conventional to advanced therapies. In dental clinics/ hospitals all over the country, need firm and efficient disease control protocol to stop COVID-19 spread (Meng

*et al., 2020*). This review aims at discussing the role of dentists in COVID -19, its spread through dental care setting status in India and some suggestions to develop the plans for the same.

**The American Dental Association developed guidance on dental emergency & non-emergency care**

There is some dental emergency which is required to treat as soon as possible. These are severe



**Figure 3: Measure to minimize COVID-19 infection**

dental pain from pulpitis, pericoronitis, dry socket, abscess, fracture tooth with pain, extensive caries (Rathi *et al.*, 2018), suture removal, orthodontic wire or appliances causing the ulcer to the oral mucosa.

This guide is to help dentists to identify which dental procedures are considered Essential vs Non-Essential during national emergency showing through Journey map representation (Figure 1). All procedures should also consider risk factors associated with demographics more susceptible to COVID-19, such as elderly patients.

#### Diagnosis to minimize chances for exposures

The diagnosis of COVID-19 can be evaluated through the travel history of an individual in the affected region, clinical signs and symptoms, CT imaging results & laboratory investigations. Individual with dental problems who cough, sneeze & undergone treatment with ultrasonic scalers or high-speed hand-piece affects the surroundings through their saliva or blood secretions due to aerosol production. Diagnosis is essential in areas of severe COVID-19 outbreak. The detection of an affected individual will help to direct the public health measures to manage the outbreak (Figure 2). (Emery *et al.*, 2004).

#### Role of dentist to prevent chances for exposures

Based on knowledge and relevant strategy & research, dental health workers should take per-

sonal safety actions to reduce COVID-19 infection (Figure 3). (Wang *et al.*, 2020).

Use of suitable personal protective equipment while carrying out the dental procedures is mandatory. Disinfection of public areas, cleaning of door handles, chairs and bathrooms should be carried out. Preoperative gargle with antimicrobial mouthwash could minimize the number of microorganisms in the oral cavity (Vanessa Costa Marui *et al.*, 2019).

Adequate care should be practised to prevent healthcare-associated infections. Single-use items should be appropriately disposed of/discarded. Safety precautions while handling the biomedical waste should be ensured.

#### Spread through air-borne

Dental procedures through ultrasonic scalers, three-way syringes and air rotors produce aerosols and droplets that play a role in the spread of COVID-19. These spread in dental clinics/ hospitals through high-speed hand-piece by the use of a compressor to revolve the turbine at high speed. It produces more number of aerosol and droplets in the mouth and gets mixed with the patient's saliva or blood. These aerosols are small enough to stay in the air for a longer time and enter into the respiratory tract, to reduce the aerosols contamination, use of Rubber dams, high-volume saliva ejectors, autoclaved hand-pieces should be used for the patient.

#### Protection from sprays of blood, body fluids,

## secretions and excretions

Avoid touching the eyes, nasal & oral mucosa with unwashed hands is the utmost importance. To protect patient and dental health worker from aerosols of blood, body fluids, secretions should be taken. Wear a surgical mask or N95 mask, eye protection like face shield and goggles, gloves, head cap to protect an individual (Samaranayake *et al.*, 1989). Use of gown for protection of skin should be carried out. Hand hygiene measures to be practised through proper hand wash using soap and water or alcohol contains hand rub for at least 20 seconds after contact with patients, contaminated surfaces and equipment.

## Educate the Personnel

Educate and provide training to the personnel to reduce the spread of the infectious agent. Aged people and medically compromised people like patients with diabetes, cardiovascular disease, chronic respiratory disease, and cancer are the vulnerable populations for developing a severe illness (Acharya *et al.*, 2019). Advice to wrap or protect the nose & mouth of individual while coughing/sneezing using tissue or mask. Proper disinfection and cleaning of areas and instruments before its use (Gondivkar *et al.*, 2019; Kohn *et al.*, 2003).

Post visual alerts icon (e.g., signs, posters) at the doorway of hospital/clinics & waiting areas, elevators to provide patients with instructions about hand hygiene, respiratory hygiene & cough etiquette (Regmi *et al.*, 2019). Avoid close contact with individuals who are sick & maintain distance 1 meter or 3 feet with them. Stay home, self-isolate and lockdown yourself from others in the household.

## CONCLUSION

As an old proverb by Jim Rohn stated that "The difficulties you meet will resolve themselves as you advance. Proceed, and light will dawn and shine with increasing clearness on your path." Though today health workers have to face various difficulty and challenges how coronaviruses progress the disease and knowing the host immuno-pathological response will considerably advance our skill to make vaccines and decrease disease load. It was noticed that open discussion with students, teachers & administrative staff would develop mutual trust and smooth the progress of teamwork. Proper dental care and knowledge about infection prevention and control lead to defeat over COVID-19.

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## Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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