

COVID-19 Impact on Dentistry: Lesser Known Truth

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The coronavirus infection in South Asian region has reached to stolid proportions and requires collective efforts of governments, hospitals, health workers, nongovernment organizations, professional organizations, and individuals to reduce its devastating effects. At the same time, there is a flood of information on effects of this infection on dental profession. Out of the contents available at various websites and publications, some of them need further analysis of the origin of that information and scrutiny before being followed in our practices. This editorial is an attempt to cover some of the less-known truths about COVID-19 impacts on dentistry.

CONCENTRATION OF COVID-19 VIRUS PARTICLES IN SALIVA OF ASYMPTOMATIC INDIVIDUALS

As of today, there is lack of evidence to suggest that viral load in saliva of asymptomatic COVID-19 carriers is sufficient to cause potential transmission during dental procedures. The available literature on salivary concentration of COVID-19 virus particles mentions about high concentration in oropharyngeal saliva of the patient already at 2–7 days' post-hospitalization.¹ The serial specimen of saliva of six patients shows that viral load reduces sharply after symptom reduction in most of the subjects. Viral culture suggestive of live virus in saliva was possible in only 3 out of 12 patients.¹ In other words, it may be assumed that these patients were in the fulminant stage of COVID-19 virus infection. It is more likely that the patients with acute symptoms will not visit a dental operator for treatment. Therefore, the evidence is not very strong that how infective is the saliva of asymptomatic carriers and how much risk is there to transmit the COVID-19 viral infection to other individuals.

SUSTENANCE OF VIRAL PARTICLES IN AEROSOL AND SURFACES

The most commonly used reference for citing examples of risk of COVID-19 infection through aerosol generation has been quoted from the experiment of viral particles spray in a controlled chamber.² In this experiment, the investigators have used the suspension of virus particles in a very high concentration using a special jet in a controlled manner in a biosafety chamber. However, this cannot be equated to air water spray generated during dental procedures. Another reference of high risk of health professionals with aerosols refers to the risk of critical care physicians who are intubating the COVID-19 patients going into acute respiratory distress and requiring intubation.³ This aerosol due to reflex coughing of the patients due to irritation of the tube being inserted is likely to have high viral concentrations in saliva and secretions from oropharynx and the lower respiratory tract.⁴ Nevertheless, even this does not accurately simulate clinical situations in dental settings. However, surface contamination requires sufficient attention and methods to clean the surfaces

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using sodium hypochlorite or any other suitable solutions should be undertaken as mandatory after every patient.⁵

MIXING OF SALIVA INTO AEROSOLS GENERATED DURING DENTAL PROCEDURES

The most common instruments generating large amount of aerosols in dental practice are high-speed airtorator turbines and ultrasonic scaling units. This is in fact an air-water spray coming out from the small nozzle in the handpiece. All the dental chairs use sterile distilled water mixed with filtered air coming from the dental chair through the handpiece directed at the tip of bur/scaler to cool down the surface where it is contacting. However, there are no reports as to how much quantity of saliva gets dispersed as a splatter to this spray and what is the likelihood of having the COVID-19 virus in this evaporated saliva. The study done in England in year 1995 mentions about count of bacteria after dental procedures in the environment of dental operator,⁶ but it does not mention about live viral particles.

Apart from these, some rebound salivary splatter may also be generated during low-speed air motor and air water spray drying of tooth surfaces during restorative procedures, orthodontic bonding, tooth surface examination for white spots/incipient lesions, topical fluoride application, etc. There is a likelihood that some of the procedures like impression taking and insertion of some removable orthodontic appliances, may also induce gag reflex and coughing. Some of the root canal irrigants may also cause throat irritation and heightened cough reflex causing aerosol generation. Further, the pediatric patients are likely to cough, hyperventilate, or vomit during dental procedures due to anxiety, fear, or irritation due to some of the dental procedures. The aerosols generated due to cough, hyperventilation, and spitting by children may pose high

risk of COVID-19 infection⁷ to the pediatric dentists and therefore they must wear appropriate PPE.

Therefore, probability of viral transmission through dental aerosols cannot be ruled out. However, there is an inevitable need to think about the panic being created about dental aerosols.

DENTAL PROFESSIONALS ARE AT HIGHEST RISK OF CONTRACTING AND TRANSMITTING COVID-19 INFECTION

Most of the literature published recently has been quoting a news report published in the New York Times by Lazaro Gamio on March 15, 2020, about the risk of COVID-19 infection to various professionals.⁸ This graph is meant for showing exposure to disease vs. physical proximity to others. This newspaper article is based on another data by U.S. Department of Labor in which the general probability of hospital contact time of the health professionals has been compared with possibility of hospital-based infection in the health facility. It does not mention about risk of coronavirus infection as being quoted. Naturally, because of the time spent for longer duration by the dental professionals close to the oral cavity of the patient is highest among all the professionals in health sciences, therefore the likelihood of occupational risk of infection to a dentist is high. On the contrary, there is scanty literature about any report/study on nosocomial or cross-transmission of COVID-19 infection between patients, from dentist to patients and vice versa.

Several professional bodies and groups have released various documents/guidelines/graphics about highest risk to dental profession as well as projecting requirements of various extraoral suction, air purifiers, types of PPE, requirements of negative pressure rooms, etc., as per their own opinions with or without adequate scientific basis. We would like the readers of this journal to take these recommendations with a pinch of salt and after confirming the scientific basis of these guidelines on their own. It may be a testing time for dental professionals but the real challenge for the people suffering is only one—how

to get back to their dentist and get their life going. Or may be deciphering the NEW NORMAL. It is also time for the dental profession to step back and make changes in the way the profession is practiced and by ensuring that no member of the fraternity feels abandoned.

Stay home stay safe!

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