Ideal Citizen in COVID-19: Dental Perspectives

***Sowbhagya M.B.[1] and Bhagyashree M. Nair [2]**
*Corresponding Author E-mail: sowbhagya143@gmail.com

Contributors:

[1]Professor, [2]Post Graduate Student, Rajarajaeswari Dental College And Hospital, #14, Ramohalli Cross, Kumbalgodu, Mysore Road, Bangalore

Abstract

After more than half a century, the mankind is battling against another pandemic which is the COVID-19 caused by *corona virus*. The virus infects the respiratory system causing the illness. First isolated from the city of Wuhan in china, the virus has infected more than a crore, of the world population affecting the socio-economic life, thereby pushing the world economy into recession. Dental professionals are the major group of health workers most vulnerable to the spread of infection due to the increased risk of aerosols production during the treatments. This has foreground the need for attention to the profession of dentistry.

Keywords: COVID-19, Corona Virus, Dental Emergencies, Ideal Citizen

1. INTRODUCTION

The new public health crisis that has threatened the world is the emergence and spread of the novel corona virus which is also called the Severe Acute Respiratory Syndrome Corona -2 (SARS COV2). The corona virus belonging to the Corona viridae family is the seventh member of the family. The outbreak of the pandemic was recognized by WHO in January 2020. The outbreak of the virus was first reported in Wuhan, Hubei province of China in December 2019. The classical picture of COVID 19 is that of flu like syndrome to the most severe form of pneumonia. Patients manifests with a mixture of symptoms mimicking many other respiratory disorders. The harsh hit of the pandemic has also disturbed the socio economic life, pushing into recession. The unavailability of the vaccine has taken the lives of more than a crore of the world population. Scientists are on the fire of their brains and efforts for the invention of the vaccination to cure the disease.[1,2] In the current COVID 19 pandemics, the health care professionals are working day and night. The undue efforts of these health care workers have posed a serious threat to their vulnerability to the infection. More among these are the dentists as the risk of spread of cross infection is very high due to oral screening and the treatment procedures. Dentists, auxiliaries as well as patients undergoing dental procedures are at high risk of cross-infection.

Since most dental procedures requires close contact with the patient's oral cavity, saliva, blood, and respiratory tract secretions the heights of risk is very high. Saliva is a rich source of corona virus. Many patients who are asymptomatic may be carriers. Hence all patients must be treated with due precautions.

To avoid the risk of unknown transmission, the dental procedures have been categorized into emergency and urgent dental procedures and non-emergency procedures. The basis for the categorization is the conditions of dental origin, which requires priority care but do not increase the patient's death risk.[1,2,3,4]

2. CORONAVIRUS

The two subfamilies of coronaviridae are corona virus and toro virus. They are the best known cause of common cold. The virus has been found to be isolated from avians and animals. The structure of corona virus is pleomorphic., ranging in size from 80-220nm. The envelope on the surface of the virus has widely spaced club shaped peplomers with a tubular nucleocapsid and helical symmetry. The presence of spikes gives it a crown like appearance. The virions are assembled and coalesce into the endoreticulam and golgi apparatus and is latter released by exocytosis. The envelope glycoprotein plays the function of attachment to the host cells carrying

the antigenic epitopes. RNA is the genetic material of corona virus[5,6].

The multiplication of the virus is by transcription and translation. The transcription and translation follows immediately after the entry and uncoating of the virus. The formation of a nested set is the unique feature of the viral genome replication. The proteins formed by translation is then assembled in the genomic RNA and gets incorporated with the budding of virus.[7,8]

2.1 Transmission

The transmission of virus is through droplets and aerosols. Respiratory infections are transmitted through droplets of different sizes. If the size of droplets is less than 5-10µm in diameter they are called as respiratory droplets, whereas virus of size less than 5um are droplet nuclei. Covid-19 virus is transmitted through respiratory droplets and contact routes. However, air borne transmission is not yet reported. Droplet transmission occurs when the patient is in close contact within 1m. Therefore the risk of having the oral and conjunctival mucosae exposed to an uninfected person is more. Transmission may also occur via fomites in the immediate environment around the infected person. Prolonged exposure with the infected person within 6 feet for a minimum of 15 minutes or a brief exposure to symptomatic patients are direct routes of transmission. Environment and objects contacted by the infected patient is the second most common route of transmission if the proper precautionary measures are not .Therefore, the transmission of the corona virus occurs by direct contact with infected patient and indirect contact with the surfaces in the immediate environment or with objects used by the infected person as the virus can remain on the surface of objects like stainless steel for around 72hours.[9,10,11]

2.2 Symptoms

The incubation period of the corona virus is around 14 days. The viral load is found to be at the peak in the upper respiratory tract than in the throat. It begins to shed approximately 2-3 days before the onset of symptoms. There is no age and gender predilection.

The most common symptoms are fever, myalgia, dry cough, lethargy sore throat .These symptoms are often confusing too. As the condition worsens, it may be associated with diarrhea, conjunctivitis, dyspnea, chest pain. The important oral manifestation is the loss of taste sensation or dysgeusia. Anosmia is also reported commonly by the patients. Since many of these symptoms simulates other disorders the important differential diagnosis considered are respiratory viral infections like Influenza, Parainfluenza, Respiratory Syncytial Virus (RSV), Adenovirus, Human Metapneumovirus. Travel history plays a very important role in differentiating covid-19 from other respiratory diseases, however, the undue spread of the epidemic dissolves the relevance of the travel history.

The progress of the illness varies by the end of one week. In severe cases, complications like pneumonia and acute lung injury leading to death may occur. This sudden worsening of the illness is due to the rise in inflammatory cytokines[10,11]

3. EMERGENCY DENTAL TREATMENTS DURING COVID -19

Due to the widespread transmission of COVID 19, the health care professionals are at an increased risk of contracting the infection and becoming the potential carrier of the disease. According to OSHA, the dental professionals are at the highest risk of exposure category due to the interaction of the close proximity to the patient's oral cavity. Since most of the treatment involves the use of rotary instruments, there is a huge amount of aerosol generated. These aerosols contain blood and saliva of the patient. Treating the patient in their incubation period is the most dangerous situation as it inadverantly transmits the virus. Hence standard infection control and protocol measures should be undertaken.[12]

First and foremost, all the dental health care providers must be updated about the skills regarding infection control. The practice of telephone triage should be implemented in clinics and hospitals to all the patients in need for dental care. The role of teledentistry has played a very important and promising results during this pandemic. This wing of dentistry has a wide range of applications from networking to analysis.

Prior to the consultation a telephonic triage should be done to know about the patients need to visit the dental clinic. This helps the dentist to decide whether the management is in emergency line. Once the patient reports to the clinic, the pre-treatment procedures should be done. This includes monitoring the body temperature using contact less forehead sensor machine. The most important procedure is recording the history. This should include recent travel history, interaction with infected patients if any and history of any illness. Once the pre- treatment procedures are completed the patient can be taken for further treatment.

To minimize the undue exposure and interaction of the patient and the clinician the treatment options have been categorized into emergency, urgent and less urgent dental care procedures. The conditions that requires emergency support includes uncontrolled bleeding from oral cavity, fast spreading facial space infections, uncontrolled dental pain not responding to medication, trauma to facial bones. These emergencies should be scheduled immediate appointment without delay.

Very urgent dental care conditions includes pericoronits, acute pulpal and periodontal pain , activation of skeletal anchorage , localized abscess, soft tissue injuries ,deep dental caries, dry socket , suture removal , denture repair . Before providing appointment for the treatment of these conditions, a telephonic triage should be done to confirm the relevant histories. The non - urgent treatments include scaling, periodontal therapy, temporary restoration, dentinal hypersensitivity. These cases requires telephone triage followed by pharmaceutical support and thorough home instructions. Appointments should be given if the symptoms persists[12,13,14].

This categorization is followed so that both the patient and the clinician are least susceptible to the spread of infection.

3.1 During Treatment

All the health care professionals should mandatorily use personal protective equipment which head cap, face mask, face shield, gown, eye protectors, shoe covers, gloves. An N95 mask or a combination of surgical mask and full face shield is to be used during extensive surgical procedure. Prior to the examination the patient and the clinician should gargle the throat using 10percent Povidine iodine solution and sanitize the hands. Radiographic investigations like Intra Oral Periapical Radiographs involves severe contact with patient's oral cavity and saliva, hence extra oral radiographs like Orthopantamograph or a CBCT in emergency cases should be taken.

3.2 Role of an Ideal Citizen

Fighting against the pandemic is not the sole responsibility of a government or a health care professional. It is a collective communal approach. Every individual has the responsibility in preventing the spread of the disease. The first and most important step is social distancing. As per the protocols, a one-meter distance should be maintained avoiding social gathering. Self-distancing is completely effective only with the use of a mask to cover the nose and mouth. Variety of masks are introduced on a daily basis. It is important is to use a mask that is equally effective in preventing the viral penetration. Sponge masks and single layered cloth masks are least effective in preventing viral penetration. N95 masks are proved to prevent the viral entry by around 95%. The second most important measure is to sanitize hands for 20seconds and a mouth rinse so as to avoid contacting the face. From dental management perspective, the doctor as well as the patient is equally responsible in preventing the spread of the disease. Little precautions can prevent big massacre. Before visiting a dental clinic minimize or avoid wearing accessories like wrist watch, chains and earrings, handbags as metallic objects may behold the virus for around two to three hours which indirectly can lead to transmission. Always try to avoid the use of washrooms in the hospital facility. After any examination wash the hands with a sanitizer and rinse the mouth with 10 ml of the 0.5% solution of povidine iodine solution. It is necessary to gargle at the back of the throat for 30 seconds. Mode of payment can be changed to cashless or online transaction options. During every conversation, the patient should make sure to wear the mask. It is equally important to wash the clothes in any disinfectants immediately after reaching the residence, and the masks should be

disposed safely or reusable masks should be washed separately after soaking in soap and water for few hours. The symptoms of covid-19 varies from mild to moderate to severe depending upon the immunity of the individual. Most of the early stage diseases present with prodromal symptoms. These cases need not necessarily seek for an *emergency* medical care rather, isolate themselves in room and observe for the progress of the condition. In case of any respiratory distress medical help should be sought. Elderly individuals above sixty years and children below ten years are advised for extra care as the immunity status of these groups of people may vary. As long as there is no vaccination for the management of Covid -19, prevention and precaution are the only measure to combat it. The interplay of government, health workers, non-health workers, society, communities, families and individuals is the only way to walk against it for the time being.[1,14,15,16]

4. CONCLUSION

The new coronavirus has spread so rapidly that it has changed the rhythm of the globe. Once the universe heals, we must craft measures to cope with the challenges together.
A pandemic is not new in human history. But what makes the covid-19 pandemic special is that it takes place in an unprecedented backdrop when the interconnectivity and interdependence between people, between countries and between continents are so deep. The pandemic reminds us that we need to stay humble in the face of disasters. Every country or individual, regardless of their geography, fortunes or political ambitions, is equal. The novel coronavirus crisis has ripped off all fanciful illusions and superficial things now and has displayed the lasting value of human life. Therefore it is important to be a responsible citizen rather than being a good citizen.

REFERENCES

1. Kumar D, Malviya R, Kumar Sharma P. Corona Virus: A Review of COVID-19. EJMO. 2020; 4(1): 8-25
2. Singhal T. A Review of Coronavirus Disease-2019 (COVID-19). Indian J Pediatr. 2020;87(4):281-286
3. World Health Organization, Coronavirus Disease 2019 (COVID-19) Situation Report–97, World Health Organization, Geneva, Switzerland, 2019, https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200514-covid19-sitrep-115.pdf?sfvrsn?3fce8d3c_4.
4. Gandhi S, Sharma SK, Shoor P, Sorout J, Raina A, Raina R, Miglani U, Chaudhari UK, Srivastava S. Covid-19 immune mechanisms: A systematic review. Indian J Allergy Asthma Immunol 2020;34:23-
5. Kuldeep Dhama, Sharun Khan, Ruchi Tiwari, Shubhankar Sircar, Sudipta Bhat, Yashpal Singh Malik, Karam Pal Singh, Wanpen CHaicumpa, D.Katterine BonillaAldana, Alfonso J. Rodriguez-Morales Clinical Microbiology Reviews Jun 2020, 33 (4) e00028-20;
6. Dhama K, Khan S, Tiwari R, Sircar S, Bhat S, Malik YS, Singh KP, Chaicumpa W, Bonilla-Aldana DK, Rodriguez-Morales AJ. 2020. Coronavirus disease 2019 –COVID-19. Clin Microbiol Rev 33:e00028-20
7. Sing fung et al Human Coronavirus: Host-Pathogen Interaction, Annu. Rev. Microbiol. 2019. 73:529–57
8. Cavanagh D. Coronaviridae: a review of coronaviruses and toroviruses Coronaviruses with Special Emphasis on First Insights Concerning SARS. 2005;1-54. doi:10.1007/3-7643-7339-3_1
9. Wiersinga WJ, Rhodes A, Cheng AC, Peacock SJ, Prescott HC. Pathophysiology, Transmission, Diagnosis, and Treatment of Coronavirus Disease 2019 (COVID-19): A Review. JAMA. Published online July 10, 2020
10. Hussain A, Kaler J, Tabrez E, Tabrez S, Tabrez SSM. Novel COVID-19: A Comprehensive Review of Transmission, Manifestation, and Pathogenesis. Cureus. 2020;12(5):e8184. Published 2020 May 18.
11. Insights into the recent 2019 Novel Coronavirus (SARS-CoV-2) in light of past human coronavirus outbreaks. Ashour HM, Elkhatib WF, Rahman M, Elshabrawy HA. Pathogens. 2020;9:186. Singhal T. A Review of Coronavirus Disease-2019 (COVID-19). Indian J Pediatr. 2020;87(4):281-286.

12. Krithikadatta J, Nawal RR, Amalavathy K, Mc Lean W . Endodontic and dental practice during COVID-19 pandemic: position statement from the indian endodontic society, indian dental association and international federation of endodontic association. Endodontology 2020 ;32;55-66
13. Gugnani, N., Gugnani, S. Safety protocols for dental practices in the COVID-19 era. Evid Based Dent 21, 56–57 (2020)
14. Bhanushali P et al , COVID-19: Changing Trends and Its Impact on Future of Dentistry, International Journal of Dentistry 2020:1-6
15. Pandemic Influenza Preparedness and Response: A WHO Guidance Document. Geneva: World Health Organization; 2009. 3, ROLES AND RESPONSIBILITIES IN PREPAREDNESS AND RESPONSE. https://www.ncbi.nlm.nih.gov/books/NBK143067/
16. To beat Covid-19, citizens must remain responsible | Opinion.hindustan times. Updated: Jul 12, 2020 22:11 ISTShashi Shekhar.