

Covid 19 And Dental Practice: Challenges And Opportunities

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Abstract

COVID-19 pandemic has impacted and stimulated changes in delivery of medical & dental health care. The potential transmission of Novel Corona virus (SARS- CoV 2) through the dental procedures and in dental settings has attracted much attention and traded a fear among dentists, their staff and patients leading to either mandatory or voluntary suspension of routine dental care with only limited access to emergency procedures since March 2020 till May 2021. Dental health services are now resumed with considerable variations to the standard operatory procedures for safe practice as there was need to strike a balance between dental health care workers and providing optimal dental care. This article deals with the challenges and opportunities that the dental profession has encountered during the Covid 19 pandemic.

Key Words Covid 19, Dental practice, Challenges, Opportunities, Dental set up

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I. Introduction

Covid 19, Novel Corona virus (SARS- CoV 2), the latest pandemic first diagnosed in China in November 2019 has proved to be a malevolent challenge towards human health and economy worldwide in a relatively short period of time with the mortality rate of 3.41% worldwide and 1% in India^[1]. The naso-oral route has been implicated as a potential portal of entry as well as dissemination of SARS- CoV 2 via respiratory droplets and aerosols exhaled through coughing and sneezing by infected humans^[2]. The potential transmission of virus through dental procedures and in dental settings has attracted much attention and traded a fear among dentists, their staff and among patients leading to either mandatory or voluntary suspension of routine dental care with only limited access to emergency procedures during that period. Working in close proximity to the patient's oral cavity itself exposes the dental healthcare workers at a very high risk as Saliva is rich in Covid 19 viral load^[3]. Asymptomatic carrier or symptomatic patients may present for dental treatment in daily OPD depending upon their urgency of treatment. The dental procedures involving the use of high-speed hand piece, arotors or ultrasonic instruments may cause salivary secretions or blood to create droplets or aerosols which not

only suspend in the environment but also settle down on various surfaces. The risk of transmission through direct contact (through suspended particles in the environment) or through indirect contact (by coming in contact with contaminated surfaces) is extremely high. In this challenging time of Covid 19 pandemic, strict guidelines were proposed and continuously revised by the Centre for Disease Control and Prevention, Indian Council of Medical Research, Dental Council of India, Indian Dental Association (IDA) as well as other health regulatory bodies to prevent cross infection^[3]. Dental services have now gradually resumed despite the considerable variations in standard operator procedures issued for safe and effective dental practice worldwide. The pandemic obligates the need to strike a balance between the safety of dental health care workers and providing optimal dental care to the patient in the time of urgency. This article deals with the challenges and opportunities that the dental profession has encountered during the Covid 19 pandemic and proposed guideline to deal with confirm or suspected covid 19 patients.

II. Challenges

The Covid 19 pandemic has impacted and stimulated changes in the delivery of dental care. The economical setback, necessary changes in the office set up as per Covid 19 guidelines like need for furniture rearrangement and space management especially for small dental offices, the availability of the PPE and N95 masks to dentists and dental staff and the frequent regular disinfection of the most touched non-critical instruments, equipment and surfaces in the dental office and sterilization of the instruments and equipments, biomedical waste disposal as per Covid 19 guidelines present as unique challenges to open the dental clinics, in front of dental health care providers especially now that the services are resumed even though the covid 19 has seen many waves since March 2020.

Selection of Cases:

The selection of cases is purely based on the degree of urgency and individual dental office set up priority. The health care professionals are bound to follow the duty and standard of care as per the Hippocratic Oath. The patients with confirmed or suspected Covid 19, who need urgent dental care should be provided symptomatic relief with the help of teleconsultation. All the patients should be asked for travelling and contact history and any recent symptoms via teleconsultation before letting them in the dental operator. The inflow of the patient should be purely appointment based.

The urgent cases which require treatment immediately are clarified by ADA (American Dental Association) as “potentially life-threatening conditions that require immediate treatment to stop ongoing tissue bleeding and alleviate severe pain or infection⁽⁴⁾.” These selection of cases has been proposed to prevent cross infection and to combat shortage of PPE if any (Flow Chart 1).

Access For Patients Needing Oral Health Care:

A developing country like India is already facing unmet dental needs due to shortage of resources, lack of awareness and non-provision of the dental care treatment in health insurances. This scenario is worsened by the reluctance of patients to seek dental treatment during the pandemic. Untreated irreversible pulpitis may lead to formation of space infections, fistulas eventually increasing the cost and suffering of the patients⁽⁵⁾. Routine preventive dental care always provides an opportunity for screening systemic diseases as many times they manifest orally which might be missed otherwise. Covid 19 presents itself in the oral cavity in the form of xerostomia, mouth ulcers, covid tongue, loss of taste, gingival inflammation, white and red plaques, herpetiform or zosteriform lesions, Kawasaki like disease, petechiae etc. Post covid many patients faced opportunistic fungal infections such as candidiasis, mucormycosis, aspergillosis etc^(6,7,8). This recent affair has put forth challenges for dentists globally, so to reduce the risk of cross contamination, reassessment of the risk is mandatory to provide dental care. Due to sudden imposition of lockdown at that time the ongoing cases had to be paused. As the lockdown had gradually being lifted, the dentists have to create a balance in winding up the backlog as well as treat new cases which require urgent care.

Dental Set Up Modifications:

Any dental operator should prepare themselves for inflow of the patients in three phases- Preparatory Phase (I), Implementation Phase (II) and Follow up (III).⁽³⁾

Every clinic should consider their own SWOT (Strengths, weaknesses, opportunities and threats) analysis to develop a strategic workflow module.

Preparatory Phase:

The dentist has to make sure that he himself and subordinates should be vaccinated. They should be allowed to resume their full-fledged clinic only when they are vaccinated with booster (third) dose. Every dental clinic should manage ventilation, air quality and high evacuation lines. There should be constant air exchange

by frequently opening the windows and strong exhaust should be mandatory for unidirectional flow. Ceiling fan usage while doing any procedure should be strictly condemned. There should be frequent services of ACs. The use of HEPA filters and UV light is recommended for adequate air exchange ⁽⁹⁾.

There should be rearrangement in the waiting area and dental operatory should be rearranged as per guidelines. The whole clinic should have the linguistic instructions about hand hygiene, respiratory hygiene and cough etiquettes in the form of poster and advertisement. At entrance thermal scanner and pulse oximeter should be used for every visitor. At reception it's better to have an impervious transparent barrier with adequate space for physical distancing. Reception should be equipped with glass or plastic barrier with a two-way speaker system ⁽³⁾.

Dental operatory should be disinfected frequently and thoroughly in between patients. The dentist and the assisting staff should take appropriate measures like PPE and N95 masks or equivalent or high level respirators to prevent the cross contamination. Every dental clinic should have entry to exit module for every visitor.

There should be dedicated separate area of donning, doffing and BMW (Bio Medical Waste) disposal. A chart should be placed in those dedicated area for donning, doffing and BMW disposal area as tiredness and mental fatigue leads to multiple errors and it will further increase the chances of cross contamination.

Implementation Phase:

Regular training of whole staff of dental clinics is mandatory as per updated Covid 19 guidelines and they should strictly adhere to those guidelines given by health regulatory bodies. Wearing PPE with N95 masks can be uncomfortable and physically challenging to perform certain procedures in dentistry. The backlog, fatigue, burnouts, pressure and desire to limit the exposure may increase the chances of errors like knowledge-based errors (for eg. Misdiagnosis), rule-based errors (for eg. Forgetting instructions) or skill-based errors (for eg. Leaving cement in the sulcus) can jeopardize patient's health and affect quality of care ⁽¹⁰⁾. Regular training and updated knowledge by all the dental health care workers will reduce the errors during dental care.

There should be more emphasis on extra oral radiographs as compared to intraoral radiographs to prevent the chances of contamination. The staff should be instructed to regularly practise pre-procedural rinses (0.12% Chlorhexidine, hydrogen peroxide-essential oils with ethanol and povidone-iodine; as the literature suggests that these mouth rinses can reduce the viral load of SARS-CoV2. The practice of using rubber dam can further reduce the chance of contamination ⁽¹¹⁾. Additionally four handed dentistry aids in reducing the work fatigue, the time of treatment and improves the quality and efficiency of dental treatment with reduce chances of cross infection. The staff should be efficiently trained to follow strict biomedical waste disposal protocols as per guidelines.

Follow up Phase:

Patients should be encouraged to consider follow up on digital platform and if the patient needs to visit the dental clinic, it should be strictly on appointment basis.

Economic Burden:

The changes in the infrastructure need for adequate supply of PPE and N95 masks and frequent disinfection of the dental setup has led to increased cost of the treatment. This additional budgetary pressure has further increased the stress of the dental health care providers. Dentistry is one of the neglected health care services in developing countries like India. Above all, insurance constraints and lack of resources and funding for the dental community by the professional organizations and local, state or central government further burden the dentist. Even today, there's a havoc unleashed regarding the economic burden borne by dentists.

Internet and Dentistry :

The internet has proven to be a boon amidst this chaotic situation for most of the world to provide education, to telecommute, sharing knowledge and consultations. But, there still remain some remote parts of India that have been detached from the world due to lack of internet. Furthermore, technical glitches, lack of concentration and paucity in participation in online educational discussions render the internet unserviceable during that period.

Opportunities

Plato once said-“Necessity is the mother of invention.” It holds true in this era of pandemic also. Several strategies to control SARS CoV 2 transmission are recommended globally for the dental operatory during the pandemic. To ensure the provision of the safe dental care both for the patients and dental personnel

all the dental fraternity worldwide came together on digital platform. There was adoption of new dental workforce models internationally.

The Era of Group Practice:

Steve Jobs once said that great things can achieve by team work. It truly applies for all us in this challenging time of pandemic when everyone is stressed regarding management of workflow and economic burden. The emergence of Covid 19 has substantiated the idea of group practice. This basically suggests the redistribution of the workflow to specialists so as to reduce the burden and cost of treatment as for the patient, sharing the economy and well as to prevent chances of cross contamination errors due to fatigue and stress.

Tele Dentistry:

The idea of teledentistry is not new⁽¹²⁾ but in pandemic teledentistry revolutionized the field of dentistry where an attempt was made to provide a telephonic triage to the patients who are in need of a dental care during the pandemic. This modern digital platform has the potential to eliminate disparities in providing partial/complete dental care between urban and rural areas. This whole process of networking, sharing digital information, distance consultation, workup and analysis is dealt meticulously to provide quality care to all the patients. The visits to the dental clinics should be based on purely on signs and symptoms presented by a patient. It will reduce the treatment cost for the patients and reduces the error by the dentist due to increased workload. The attention can be diverted fully to those patients who are in need of urgent care.

SARS Cov2 has an incubation period of 2-14 days⁽¹⁰⁾ and is the most infective during the acute phase. All the patients who are suspected to have Covid should be treated only after getting cleared from the General Physician strictly following the CDC and ICMR guidelines. For the asymptomatic carriers we should follow the strict protocols laid down by the CDC, ICMR and other health regulatory bodies. (Flow Chart 2)

Globalization: Due to the pandemic all the dental regulatory including various health organization came forward on digital platform to share their view and solutions to start dental practice with reduced chances of cross contamination. It is mandatory for every dentist to be updated by Covid 19 guidelines proposed by various health regulatory bodies and keep sharing their experiences and knowledge to find the best solutions to deal with dental practice. There are many added advantages of these online webinar series which includes reduced cost of the sharing knowledge, international speakers on single platform to exchange information, ease in registration, easy to store the e-content and recollect.

Scope for Research:

Testing times like the outbreak of the Covid 19 pandemic have opened up a new set of requirements which may prompt the research facilities to go great guns in the near future like searching for new ways to reduce or minimize the aerosol generating equipment's, reducing the cost of PPE and N95 masks, generating a new effective ventilation system in dental setups, finding a new working model to treat the patients, validating the effectiveness of tele- dentistry etc.

Future Consideration:

Covid 19 has impacted the health sector worldwide in a short time frame and it has opened the doors not only for new norms of dentistry but also for new research area.

III. Conclusion:

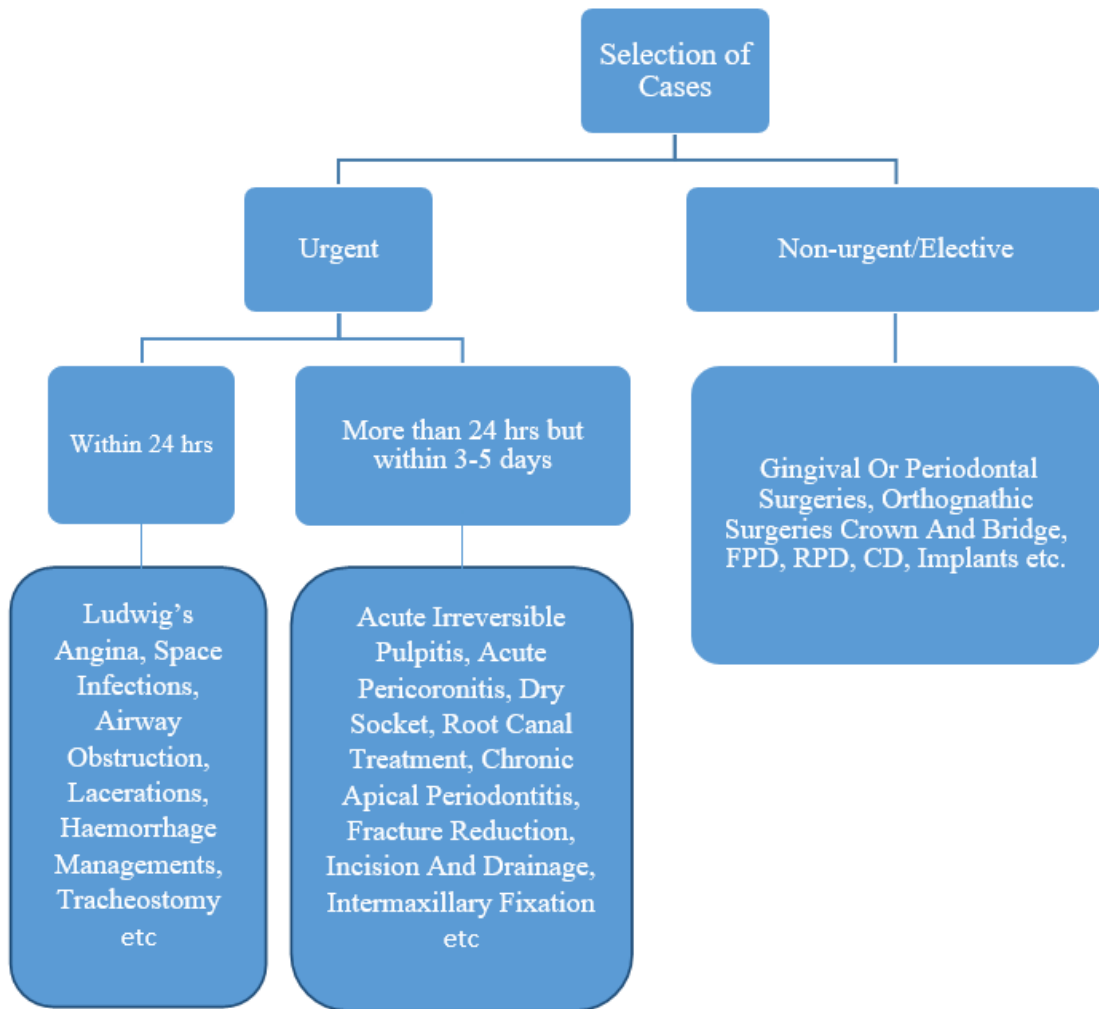
The pandemics have threatened humanity every 100 years. Throughout history, nothing has killed more human beings than infectious diseases. Covid 19 shows how vulnerable we remain. However, these catastrophic events have also taught us how we can avoid similar pandemics in the future. Covid 19 got the better of every aspect of our lives this past year, increasing the economic burden and is imprinted on my minds leaving us with nothing but anguish and torment. The health care sector has never taken a step back from serving humanity and have proved to be true warriors even if at the cost of their own lives. Nevertheless, the same health care sectors have proven to be a hotspot for the spread of infectious diseases as the route of transmission for most of them is our workstation, the oral cavity, saliva and blood. As a result of this dentists should re-equip themselves with every such challenge that comes our way so as to continue the noble work as well as avert the dissemination of infectious diseases in the due process.

Illustrations:

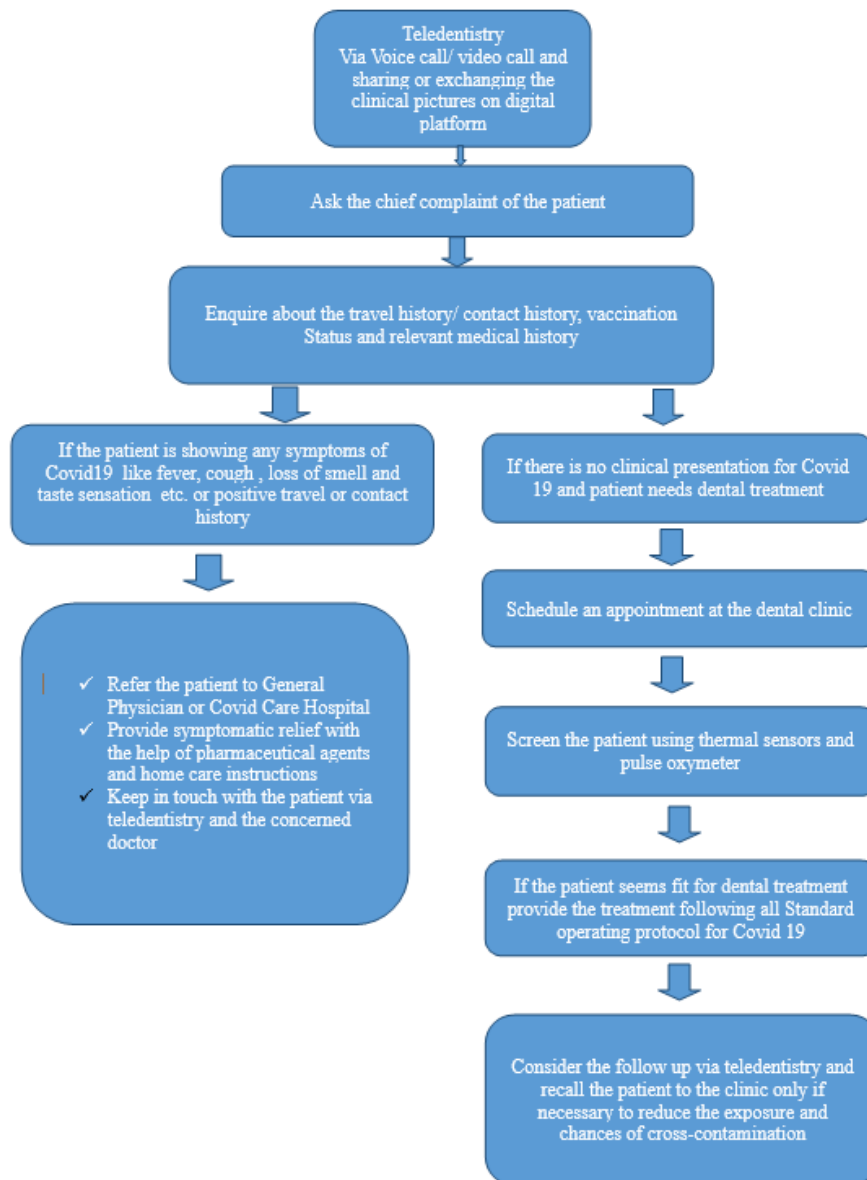
Flow Chart 1: Selection of cases depending upon the degree of urgency

Flow Chart 2: Teledentistry to schedule the appointment of the patient for dental treatment

Flow Chart 1: Selection of cases depending upon the degree of urgency



Flow Chart 2: Teledentistry.to schedule the appointment of the patient for dental treatment ©



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