

Let's Begin with New Normal: Impact of COVID-19 in Dental Practice

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Abstract

The novel coronavirus disease (COVID-19) pandemic, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), remains a global challenge. Even after extensive research going on globally, an effective vaccine and other viable treatment options have eluded investigators. Therefore, guidelines by the higher authorities and following the precautions as well as protocols provide the best approach in controlling the spread of the disease. In this article, various treatment modalities, preventive methods and transmission routes of COVID-19 are discussed along with the impact of COVID-19 in dental practice and remedial measures to fight against the same.

Keywords: COVID-19; Coronavirus; SARS-CoV-2; MERS; Dental; Dental Practice; Dentistry

Introduction

The novel coronavirus (COVID-19) pandemic has challenged the human cognition with its fierce and highly contagious nature [1]. The dawn of the year 2020 experienced an abstruse virus i.e. novel corona virus, which was linked to MERS-COV and SARS-COV-2. The SARS-COV-2 was found to be different from the earlier discovered SARS-COV-1 in the year 2003, since it was highly recombinant in nature. Later, the World Health Organization renamed the virus as Corona Virus Disease (COVID 19) [2,3]. The gradual dissemination of the notorious virus has significantly impacted all the sectors of the society. Dental Professionals who have been earlier recognized under the category "High risk professionals", are also negatively impacted with this catastrophic virus [4].

The potentially negative and devastating impact of COVID-19 in dental practice can be divided under following sub-headings:

1. Drastic impact on dental practice
2. Impact on emergency services
3. Impact on dental academics
4. Impact on dental research
5. Psychological impact
6. Financial impact.

Drastic impact of COVID-19 on dental practice

World Health Organization declared COVID 19 as pandemic outbreak on 11th March 2020. Later, it was found that dental practitioners are treated under the “high risk category”. Globally, as per the guidelines, the government has repeatedly issued specific instructions for dental professionals to resort to the emergency dental services only and deferring the elective dental procedures. Not only this, dental surgeons involved in organizing public health programmes to reach the community were also refrained to do so by the higher authorities [5].

The guidelines were totally in interests of the safety of the patient. It was expected from the dental surgeons to keep a strong check and follow up of the patient in these trying times. As per the guidelines, the immediate impact on practice included:

- A. Personal protective equipment (PPE)
- B. Role of dental surgeon and patient role.

Personal protective equipment (PPE)

Personal Protective Equipment has been found out to be the most important component during these turbulent times. Furthermore, the sub-components of PPE include whole body gown, face mask or filter face piece (FFP) with or without respirator, face shield, gloves, overhead cover and overshoe cover. It depends on the kind of procedure performed and one can work with the same PPE unless and until it is soiled. PPEs are generally disposable but nowadays with the advent of more materials and manufactures, autoclavable PPEs are also being recommended. PPEs are generally used in all the procedures particularly involving the aerosols. The donning and doffing are the two most common steps related to the usage of PPE. Initially, dental surgeons feel claustrophobic but the learning curve is very fast. Over the period of time, one can work in PPE but avoid longer appointments as it can lead to hypercarbia (more carbon retention) and hypoxaemia (low oxygen saturation)

Role of dental surgeon and patient role

Screening of the patient

Screening of the dental patient is the first and the foremost step before categorizing the patient. Generally, procedures are categorized into emergency, urgency and elective. This strategy for “Triaging” helps the patients with emergency being given priority. The elective procedures are also deferred to some further point of time. After obtaining the questionnaire form from the patient for identifying any related symptoms to COVID-19, the contact, travel history as well as the social history, the very next step is to screen the temperature of the patient with either non-contact forehead thermometer or non-contact ear thermometer. Although not very specific but in case of

doubt, the patient can be sent to physician for further testing.

Hand hygiene

The practice of hand washing popularized by WHO is not new to the field. Maintaining proper hand hygiene and motivating fellow dental surgeons and patients regarding the same is the need of the hour during these testing times. Since, dental professionals are the high risk individuals, they should strictly resort to the hand hygiene practices. As advised by the WHO, the practitioners should follow a proper sequence for the same i.e. before examining a patient, before any dental procedure, after contact with the patient, and after touching any equipment and surrounding surfaces without disinfection. As a cautionary measure, the practitioners and patients should avoid touching eyes, mouth, nose and ears [7]. Hand washing should be done properly for an adequate period of time i.e. 40 to 60 seconds.

With the advent of newly available alcohol hand rubs which generally contain around 67% to 70% of ethyl or isopropyl alcohol, they have also found to be suitable for hand disinfection. Hand rubbing with alcohol rubs should be done for a time period of 20 - 30 seconds. Excessive use of hand rubs should be avoided.

Components of PPE

The various sub-components of PPE namely whole body gown, face mask or filter face piece (FFP) with or without respirator, face shield, gloves, overhead cover and overshoe cover have found to be very effective in preventing cross contamination during these uncertain times.

Mouth wash

Aerosols and related procedures form a major bulk of the dental practice. It becomes evident to reduce the production of aerosols and splatters to further reduce the risk of cross contamination. Antiseptic mouth washes have been found out to be a boon to reduce the contamination in the operatory. Generally, the use of Povidone iodine has been found to be the most effective antiseptic mouth wash in a concentration of 1% against bacteria, fungi, and viruses. Povidone iodine has been found to have a very strong virucidal and bactericidal activity. Other pre procedural mouth rinses like 1% hydrogen peroxide and 0.2% chlorhexidine have found to be less effective against COVID 19 viruses [8].

Rubber dam isolation

Isolation with the help of rubber dam helps to limit the production of aerosols up to 70% [9]. The learning curve in rubber dam isolation is gradual, hence, in these tough times, practitioner not commonly engaged in isolation with rubber dam should resort more to such practices in every patient.

Anti-retraction handpieces

Handpieces with anti-retraction valves had been in the dental practice from quite long [10]. According to Occupational Safety and Health Administration (OSHA), the valves present in anti-retraction handpieces prevent the backflow of various bacterias and viruses into handpiece tubing and subsequently into the dental unit waterlines. In case, handpieces without anti-retraction are used, the dental unit waterlines need to be cleaned with 1% sodium hypochlorite.

Environment disinfection

It is imperative that medical as well dental practitioners should provide a more congenial environment to the patients and fellow practitioners by using adequate disinfection protocols. Adequate ventilation i.e. negative pressure ventilation along with use of exhaust

fans and prohibiting air conditioners during the procedure can help in reduction of aerosolised transmissions. Apart from this, there has been an availability of foggers, fumigators, HEPA-14 filters, air purifiers, UVC chambers, negative ion (Anion) generators and many more to cleanse the environment.

Bio medical waste management

Bio medical waste management forms an important part during the COVID times. The guidelines include use of separate colour-coded bins or containers in wards, proper segregation of waste as per the Bio Medical Waste Management rules and Central Pollution Control Board (CPCB) guidelines, and use of double-layered bags for collection of waste from COVID-19 isolation wards, among others.

Emergency services

As per the guidelines, since the professionals are actively engaged in treating the emergencies [11], even the number of emergency patients have drastically reduced which is likely because of the decrease in the incidences of road traffic accidents etc.

Impact of COVID-19 on dental education

Dental Academics has suffered negatively because of this notorious virus. As per the guidelines by the higher authorities, the actual dental education was transformed into online or distant dental education with the aim that something is better than nothing. Although the online classrooms were quite effective during these turbulent times, still it could not replace the actual teaching methods. The students had a lot of anxiety and fear stigma not only with the examinations but also with the current scenario. Various e-learning modalities included lectures, webinar sessions, problem-solving sessions, reports and assessment exams [12].

Online distant education helped to strengthen the faculty student relationship. The faculty reassured the students with psychological counselling methods. Even the students as well as faculty over the period of time and with the usage of various available online dental portals came up to be more techno savvy. The scope of using the innovative "Virtuality Reality (VR)" concept as a method of simulation to teach the students has been found to be the best manner during the lockdown times. Haptic technology or simulation has helped the students a lot particularly when skills are involved. The introduction of various lab procedures and clinical skills could be possible through this simulation technology in e learning systems.

Impact of COVID-19 on dental research

From the past 2 - 3 months, the practitioners are under the lockdown effect and they are generally resorting to the emergency services and utilization of the same. For that matter, there has been a great uptake of research studies and projects in relation to COVID-19 [13]. Many clinical and laboratory-based dental research studies were impacted by the COVID-19 outbreak. For that matter, there has been an extensive usage of online web platforms and virtual classrooms not only for dental education but also for dental researcher. This includes formulation of questionnaire surveys to conduct descriptive studies as well as literature reviews.

Psychological impact

There has been a profound impact of COVID-19 on the psyche of the dental surgeons as well as patients. There has been a huge reluctance and non-willingness of people to move outside their houses. Psychological stress responses include anxiety, nervousness, irritability, depression, indifference, lack of confidence, sadness, fear, stigma, and other emotional problems; Cognitive symptoms such as hypersensitivity, dull sensation, intrinsic discomfort, pathological illusions, hallucinations, delusions; or physical symptoms such as poor appetite, nausea, abdominal discomfort, diarrhoea, frequent urination, sweating, muscle tension and tremor [14]. Such psychological responses have a dramatic impact on the oral health, which includes oral mucosal disorders, TMJ disorders including parafunctional habits

(bruxism and clenching) due to stress and anxiety, periodontal diseases etc. There have been very few patients in the departments and institutes because of the fear psychosis going on in the mind. Henceforth, COVID-19 has significantly affected the patients as well as the dental professionals.

Financial impact

There has been a cataclysmic impact of COVID-19 on the economics and finances in our practice. During the pandemic outbreak i.e. Spanish flu, 100 years back, a commonly used phrase was "Black Swan Event". Generally, the swan is white in colour and probably if the swan is designated as black, it showcases the negative influence of the outbreak. The phrase used earlier for Spanish Flu was also commonly used to indicate the negative effects of COVID 19. The pandemic outbreak has been a game changer not only in medicine but also in the field of dentistry i.e. ruinous in terms of finances in following ways:

- Consumer and business spending - decreased leading to global recession.
- Shortage of health care providers.
- Difficulty in restarting the practices.
- Financial crisis - salaries curtailed by the government and private institutes.
- Hospital setups - denied any bonus payments.
- Government - slackening further reimbursements.
- Insurance companies - cutting down reimbursement expenses.
- Overhead costs - better and safer environments will require more overhead charges thereby reducing margin of profit.

Future trends (The opportunities)

As far as the catastrophe of the COVID is concerned, in the times to come, the situation will be challenging. We are already at the cross-roads. Let us Restart and Reboot with the positive intention in the mind to curb the menace of this virus. Nobody is sure about when this virus will completely eliminated however with positive hopes and good work, we can completely curb this pandemic outbreak. For that matter, there needs to be a strategic plan for outcome or action against this dreadful virus [16]. This may include:

- Clinical Practices - Structural changes can be carried out particularly for the private setups as far as the condition is concerned.
- Cross-infection control protocols - to be optimized.
- Focus on prevention and oral health promotion for the public.
- The concept of "Slow Dentistry" is gradually coming which will include a new set of policies, protocols and standard guidelines.

Conclusion

COVID-19 has really devastated the whole world with its implications and negative impact on various parameters in our practice. Not only this, there has been a continuous challenge in the field of dental education and dental research. But with the positive intentions, we

as dental professionals can totally get rid of this pandemic with the positive note by H. Jackson Brown i.e. "When you can't change the direction of the wind - adjust your sails".

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