



Challenges in Resuming Dental Practice During Covid -19 Pandemic –A Review

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Abstract

The world is facing a pandemic due to the spread of the deadly corona virus. The governments all over the world, issued many levels of lockdown protocols and safety measures to control the spread. This pandemic has affected the lives of millions and their families. Health professionals on one hand suffer from the fear of contacting the disease and on the other hand, worry and stress out due to strict protocols to follow to avoid exposure, financing for additional equipment's to implement the best measures of sterilisation and disinfection, uncertainty in terms of patient flow, concern over payments and doubtful employment status. Many of the dentists have resumed their practice with utmost care in following the safety measures It is of paramount importance that we care for our family's as well as our own mental health, to survive this pandemic.

KeyWords: Psychology; Practice; Covid-19; Dentistry

Introduction

An emergent pneumonia outbreak originated in Wuhan City, in December 2019. On 7th January 2020, the Chinese scientists isolated a severe acute respiratory syndrome corona virus 2, SARS-COV-2 from a patient and shortly came out with genome sequencing of the SARS-Cov-2 [1,

2]. This virus is a positive-stranded RNA virus with a crown-like appearance (hence the name) under an electron microscope due to the presence of spike glycoproteins on the envelope. The subfamily Orthocoronavirinae of the Coronaviridae family of order Nidovirales

classifies into four genera of CoV – alpha, beta, gamma and delta. The subgroup causing the pandemic is a beta subgroup of the coronaviridae family which also infects animals like bats [3] This β -coronavirus which was initially named as the 2019-nCoV, was named as coronavirus disease 2019 (COVID -19) on 12th January 2020 by World Health Organisation (WHO), and Coronavirus study group (CSG) of the International committee proposed to name the new coronavirus as SARS-CoV-2 on 11th February 2020. The genome of COVID-19 shares sequence identity with both SARS-CoV and Middle East Respiratory Syndrome (MERS-CoV). The virus has now spread to almost all the countries across the globe.

Common symptoms include fever, cough, fatigue, shortness of breath, loss of smell and taste. Presentation of cases can range from mild symptoms to major life threatening conditions like acute respiratory distress syndrome (ARDS), multi-organ failure, septic shock, and blood clots. The time from exposure to onset of symptoms is typically around five days but may range from two to fourteen days [4]. Based on an epidemiological investigation, it was declared that the incubation period is 1–14 days with a median of 3–7 days. The virus is contagious during the latency period [5]. The virus is primarily spread between people during close contact, most often via small droplets produced by coughing, sneezing, and talking [6].

Transmission of Covid -19 Virus in Dental Practice

Reported that live viruses are present in the saliva of infected patients [7]. Dental clinics have

the high risk of transmission of infection due to the nature of the profession, involving direct exposure to aerosols, indirect or direct contact with contaminated surfaces and/or instruments, inhalation of suspended airborne viruses and mucosal (nasal, oral, and conjunctival) contact with infection-containing droplets and aerosols that are further propelled by coughing and talking without a mask. The virus can persist on inanimate surfaces up to a month. Fomite can maintain infectivity for quite a long time at room temperature. SARS-CoV-2 can exist in the air of poorly ventilated rooms for at least 30 min [8]. Studies have confirmed the presence of ACE2 inhibitors in oral mucosa and in epithelial cells of tongue showing the infection susceptibility of oral cavity and potential risk to dental professionals [9, 10] virus remained viable in aerosols throughout the duration of their experiment for three hours [11]. Studies have confirmed that COVID -19 can be transmitted directly and indirectly through saliva [12-15].

Disinfection and Sterilization Protocols for Dental Clinics Treating Patients During Covid-19 Pandemic:

Marui and Dexter et al., gave recommendations on how to organize dental procedures with adequate protection measures during the COVID-19 pandemic as early as feb.2020 [16, 17] Use of personal protective equipment, respirators, aerosol controlling suctions and face shields are mandatory [18]. Mouth washes should be used before checking on the patient [19]. Patient and personnel should be educated on sneeze/ cough etiquette. Proper signage about hand hygiene practices should be added. All critical, semi critical heat resistant instruments and hand

pieces should be sterilized after each use or discarded. Heat sensitive semi-critical items can be processed with high-level disinfection e.g. 2% Glutaraldehyde [20]. Frequently touched clinical surfaces that are difficult to clean must be covered using a physical barrier for every patient or disinfected between patients. (E.g.: 1 % Sodium hypochlorite or 70% alcohol) [21]. It is advisable to use moistened wipe / cloth to clean all surfaces with freshly prepared disinfectant solution. (E.g.: 1 % Sodium hypochlorite or 3% hydrogen peroxide) and to always discard remnant diluted solution. For floors, Wet Mopping- Multi Bucket Technique by adding detergent followed by Low Level Disinfectant like 3% hydrogen peroxide, 1% Sodium hypochlorite to water is recommended in addition to the thorough cleaning and sterilization of instruments and other supplies, which are routinely carried out in dental offices. It has been considered paramount importance to implement other systematic cleaning protocols like Disinfecting door handles, chairs, and desks in addition to the dental operatory [18], disinfection of elevator buttons, keyboards, and phones, waiting room furniture, toilets, floors, and other surfaces. These new protocols will probably continue to be applied, at least partially, in the future [19-22]. Adequate room ventilation, air purifying system, or airborne infection isolation rooms with negative suction assists in reducing risk of transmission Patient and personnel should be educated on sneeze/ cough etiquette. Proper signage about hand hygiene practices should be added. Patients should bring their own masks to their appointment. All items in waiting rooms, such as magazines, should be removed [23].

Many orthodontic societies recommend similar protocol [24]. The Australian Society of Orthodontists makes an additional recommendation along with the recommendations listed above. They suggest that upon resuming routine care, providers should consider making appointments and clarifications after the appointments over the phone, and to reduce in-office interactions. Asking the patients to bring their own glasses to wear at appointments to avoid cross-contamination was also recommended²⁴. The Bulgarian Orthodontic Society recommended making treatment methods to be passive to avoid frequent appointment, and sending patients aligners through post [25]. The Egyptian Orthodontic Society recommended using hand sanitizer containing greater than 70% alcohol concentration before and after treatment. This organization also noted that pre-procedural mouthwash may be beneficial, but stressed chlorhexidine as not effective [26]. Overall, the WFO (world federation of orthodontists) affiliated orthodontic societies seem to have a general consensus on guidelines recommended to combat corona virus transmission [27].

Psychological Challenges in resuming the Dental practice:

Dentists have resumed the provision of patient care, but are experiencing great anxiety arising from extensive changes to the workflow and fear of contracting covid-19 in the practice. Besides work-related stress, some dental professionals are burdened with personal stress associated with family, finances etc., [28]. It is predicted that this pandemic might have a negative financial impact on the dental profession, and many

practitioners might face difficulty to restart their practice because of the various new disease prevention protocols, many of which require investment [29]. The awareness of the importance of mental health related to occupational stress is generally not high and specific guidelines issued will be helpful especially during the pandemic period. A regular part of global efforts to curb this, should include routine supervision and monitoring of the psychological consequences associated with the outbreak of such life-threatening diseases and should be clearly established with early targeted interventions.

Dentists:

During a pandemic, health care workers are known to face psychological hazards like anxiety, insomnia, depression, obsessive-compulsive symptoms etc., [30] Studies on earlier outbreaks of coronavirus infectious diseases such as SARS and MERS revealed many factors leading to psychological distress, including the fear of becoming infected while treating a patient or passing the infection on to the family [31]. Many dentists continued their clinical work during the pandemic, to provide emergency and urgent dental procedures as that forms an essential duty of medical/dental profession. In a study conducted by it was found that many dentists were stressed due to the fear and continuous changes of protocols and implementation of them [32] found that there was a significant deterioration in the psychological health status of dentists in the United Kingdom and Israel in this pandemic situation due to a change in the working patterns, loss of work, income, and lack of hands on dentistry [33]. Dentists throughout

the world may be experiencing similar psychological symptoms and stress during this pandemic [34]. Artenstein suggested about the need for special intervention and support programs to promote mental health and well-being among dental residents [35]. In a study 92% of dentists declared that they were afraid of carrying the COVID-19 infection from their practice to their families 34 most of the Turkish dentists were found to be very concerned about their families and their stress levels exceeded the average stress value [36]. The severity of psychological symptoms depended on age, gender, occupation, and proximity to the affected patient. Females were found to have higher risk of experiencing anxiety and stress. According to a study dentists who stayed at home during the pandemic outbreak also had a significantly higher level of self-reported anxiety [37]. Their study revealed that females were associated with higher self-reported anxiety and stress levels but there was no significant difference between gender in terms of present or future financial and organizational difficulties. They also found that older people, people residing in cities, and people with stable income showed low anxiety and depression levels. Young people who followed pandemic related news tend to show increased anxiety and stress. Their study showed that older dentists with more than 20 years of professional experience had lower stress levels than less experienced counterparts [38].

Uhlen et al., [39] showed that a considerable psychological impact of the COVID-19 pandemic on dental personnel in Norway regardless of working clinically with patients or not although working on patients increased their insecurity

about contracting the disease and of infecting family and people close to them. Adding to these factors, working environment like wearing PPE can be uncomfortable and may be physically challenging. There is also a challenge to balance a significant backlog of patients who were in mid-treatment, when there are mandatory state wide lock downs. There could also be patients with new, unmet urgent needs, requiring the dentists to extend the practice hours. These conditions may present several challenges, like, the need to minimise exposure to patients, fatigue, reducing the procedural duration which might lead to increased errors in dental practice. Managing necessary deviations from well-established practice frame-work, under additional financial pressures, stress and time constraints, may increase the risk of patient safety failures during dental care. The CDC provides clear information on PPE and related acquisition issues [40]. There were many reports about the shortage of PPE all over the world [41-45]. During the peak outbreak, the PPE resources were targeted to major hospitals treating covid-19 patients. In March 2020, WHO released a press report emphasizing the severe shortage of PPE [41]. Availability of PPE was one of the deciding factor for many dentists to practice.

A vast decrease in the number of treated patients found that the number of dental patients declined by 38% in feb,2020.They concluded that this pandemic has significantly influenced people's behaviour on seeking dental treatments and that they were reluctant to visit dental institutions or clinics for non-urgent procedures [45]. Minimising the number of patients scheduled at a given time might also have significant financial

implications for all specialities of dentistry. They are also concerned that the necessary changes that are mandatory for infection control and patient safety might become expensive in the current situation and may affect the procedural charges in the long run.

Dental Staff

Dental staff are currently extremely susceptible to deteriorating mental health, which is why the well-being of staff should be regarded with the utmost importance. It is recommended to encourage employees to share their concerns. The employers being more empathic and receptive helps manage the stress levels of the employees. This will not only demonstrate engagement, but also help solve the issues at hand more promptly. Employees who are reluctant or afraid to share their work related problems should be offered a channel to express their concerns, anonymously. Other measures to show support and reduce tension among employees include relaxing certain pre-covid-19 practices and policies. Implementing alternative work weeks or days to reduce the number of employees at a given time might help reduce exposure to the contagion. Having an open dialogue between dentists and staff might facilitate the establishment of clear responsibilities and expectations and boost employee morale.

New bioethical considerations

In Dentistry, as in all other health professions, the biopsychosocial approach to the patient's pathology has always been important. At present, and presumably more so in the near future, this vision has become more real. Many families may

be victims of unemployment, pay cuts.

Hospital bills etc., and these financial repercussions might take a long time to resolve. Dentists must consider these circumstances while deciding on the right time to begin treatments or the advisability of postponing them, when assessing the cost-effectiveness of some treatments etc., The dentists must more than ever prioritize the psychosocial interests of patients and the society at large, while continue to stress the role of oral health and its impact in the society. Some of the adaptations needed will improve the orthodontist's line of work when the pandemic will be defeated, but others might not be cost-effective. Few rules and regulations might become reversible post pandemic, but majority safety measures are here to stay. Of the people's need for dental services might grow explosively when the threat of COVID-19 was over and the dental professionals should prepare to brace that [45].

Dental Education Challenges

Most dental education is being carried out virtually through remote learning with an unclear end date as to when normal didactic curricula might happen, as health officials make decisions based on the spread of the corona virus and death rates in individual states. Case studies have been recommended as a substitute to achieve clinical education in the absence of clinic time [46]. Residents participate in telemedicine consultations under the supervision of their attending guides and with the permission of the patient [47]. This might help to certain extent but the clinical requirements to complete the course cannot be met with, which might hamper the

duration for the students to become hands-on experienced clinicians. For orthodontic post graduates this might mostly impact current II and I year residents as they may have a decrease in the number of cases to start. It is crucial for dental programs to formulate alternative methods to facilitate clinical learning and to evaluate proficiency [48]. An increase in treatment fees for patients at institutions or private clinics, due to increase costs for installing equipments for safety measures might result in reduced patient flow. In institutions, this might also impact orthodontic residents' ability to start new cases. Although numerous consequences to orthodontic education have resulted, in the interim, students have been able to focus on research projects related to SARS-CoV-2 [49] there has also been a rise in unique virtual activities, both academic and non-academic, for students and faculty. This pandemic is also contributing to strengthened infection control instruction for students that will benefit the field in the event of future epidemics [50, 51].

Currently, Delta variant of the coronavirus is up more than half of COVID-19 infections in the two weeks ending July 3, according to the U.S. Centers for Disease Control and Prevention. Hanage noted that Delta variant was slightly more capable of causing breakthrough infections in vaccinated people also, particularly those who are yet to receive both shots and that unvaccinated people are at increased risk for severe disease requiring hospitalization [52]. Finally, as Rosenberg argued, epidemics put pressure on the societies they strike, and as a result, they provide a sampling device for social analysis. They clearly demonstrate what really

matters to a population and what they truly value. The history of epidemics has offered considerable advice all along but only if people understand the history clearly and respond with wisdom can we come out of this [53].

Conclusion

The COVID-19 outbreak has revealed many shortcomings in the health care system, especially in dental field in relation to the insufficient protocols and general deficit of advanced PPE. The direct result of the overwhelming fear, confusion and anxiety among dental professionals, amplified by the high perception of COVID-19 contraction risk, was a significant reduction in dental clinical practice all over the world. A sudden decrease in the number of dental procedures done, reduced patient flow and implementation of new infection control protocols has caused psychological and financial problems for many dental practices. It is expected that dentists, armed with the experience gained during this pandemic, should be able to efficiently redefine and expand the scope of clinical practice and adapt to the new circumstances.

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