

Management of Children in Dental Clinic during Covid-19

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ABSTRACT

Covid 19 (Corona virus disease), is a pandemic, which today's world is going through. The first case was reported in the Wuhan City in December 2019, and then started spreading all over the world. The virus spreads through the droplets and also through direct contact, all the medical workers, especially dentists are at risk due to the mode of infection. The deadly corona virus has effected almost all ages, earlier it was found only to be infected for the old aged, but gradually evidence has proved that there is no low risk for even middle aged and children too. The impact of Covid has changed the way of dental practice, and the impact on pediatric dentistry is not reported much. The review is written focusing on the Covid 19 impact on pediatric dentistry, precautionary measures to be followed by a dentist and the children to lesser the chances of infection and transmission of virus. Scheduling appointments based on the emergency profile, Proper sterilization, disinfection of the dental clinic and instruments that are being used, Preliminary tests before appointment, Recording Medical history of the children, creating awareness among children and parents, other infection control measures. A pediatric dentist should be cautious, and be able to make the decisions suitably, and follow the proper guidelines in the Covid times to avoid infection for both self and the child.

Keywords: Covid -19, Dentistry, Pediatric dentist, Children.

Covid-19, is declared as a pandemic by WHO, that is spreading all over the world in an expeditious manner, its origin was recorded in Wuhan city, China. It is an RNA virus, with spiky projections on it, which cause respiratory distress in human. The severe acute respiratory syndrome coronavirus (SARS-CoV) is a lethal virus which was discovered in 2002, and the corona virus found in 2019 is the similar to SARS, so named as SARS-CoV-2 [1]. Currently, it is spreading in an aggressive manner, all over the world, also in India.

The way of spread is through, droplets and aerosols, all frontline workers, medical professionals, mainly dentists, who will be dealing with oral cavity and saliva on daily basis, are at higher risk of infection [2]. The virus is mostly lethal for old aged people, but evidences showed up that the middle aged and children are also at higher risk of infection because of the frequent mutations of virus. The prevalence of corona virus infection in the case of children is 1-5% among the cases diagnosed all over the world, but a gradual increased chance of infection for kids can be noticed.

The procedures that are done during dental treatments have a higher risk of aerosol production, which acts as a carrier for corona virus, further increasing the risk of transmission and infection. Also the treatments carried out for treating oral diseases in this period, may end up with infectious spread of corona virus for both the patient and the dentist. Taking this into concern, the transmission of virus in the dental clinic might be prevented by limiting the practice to only emergency procedures, maintaining proper sterilization and disinfection, using PPE kits, respirators etc. during the procedures.

COVID EXPRESSION IN CHILDREN: FACTS WITH RATIONALE

It is a known fact that, children are less affected by virus and the risk level is not as high as for adults, but the surprising fact that recently found out in a study conducted a, on the viral load that is present in the nasopharynx, of various age groups showed that, the children below the age of 5 years, who are infected with mild to moderate Covid-19 shows higher viral RNA in their nasopharynx, than the adults. Although children have a lesser rate of infection and a good prognosis even after infection with mild to moderate symptoms, this study states the presence of high viral load in children than adults, makes them acts as a potential driver for spread of Covid -19 [3].

A study also proved the transmission rate of the virus from the children with high viral loads to other population was comparatively higher [4]. Studies reported that cough, fever, sore throat and diarrhea are most common symptoms that are found in children infected with corona virus [5]. Evidence suggests that, there might be a higher risk of transmission from children, because of their nature, actions and immature behavior. There might be several playful actions they do, like touching the mouth and nose often, which may lead to transmission of virus [6]. On contrary, WHO shows limited evidence stating that there is no virus transmission to adult from the children [7-8].

According to the recent researches available on Covid infected children, the reasons for the less effect of Covid among children remains unknown, there are some theories that were proposed to justify the same. Lu X et al, stated that the less effect of Covid in children is due to their lower tendency towards immune dysregulation [9]. Xu Y et al, concluded that the presence of pro inflammatory marker like CRP(C Reactive Protein) is not common in

children, which may lead to suppressed inflammatory response to infection [10]. In a research conducted by Lee et al, it was found that the angiotensin converting enzyme 2 (ACE-2) receptor is responsible for decreased incidence of Covid in children, as the ACE_2 receptors helps in virus binding, and their expression in children is lesser compared to other age groups[11].

PREVENTIVE CARE FOR CHILDREN

Although, the children have a good prognosis and faster recovery rate from the Covid -19, there is fatality rate reported as 0.01% [12]. There are some preventive measures which should be followed, by the parents/guardians, Pediatric dentists and the children themselves, for lowering the rate of infection and also transmission.

By Parents/Guardians:

The Centers of Disease Control and Prevention (CDC), proposed guidelines in the wake of Covid-19. Children are not expected to take their own responsibility and care, so the parents and guardians should take charge in preventing the virus infection or transmission. Their duties include,

- A) Regularly monitoring the activities of children, everywhere.
- B) Restricting activities that are conducted in large groups, maintaining proper distance during the act of play/interaction.
- C) Keep the objects and surfaces sanitized, that will be in contact to children, as they may act as medium for transferring pathogens.
- D) Prevent travelling in groups, Picnics & Tours.
- E) Teaching about maintenance of hand hygiene [13].

By Pediatric Dentists:

Pediatric dentist plays an important role in educating children about oral health and the maintenance of the same. In the wake of Covid, preventive measures should be taken by avoiding frequent direct contact with children, educating them through digital platforms, performing only the emergency procedures. Regular online checkups should be conducted, encouraging children in maintenance of oral health and also teach the children to maintain hand hygiene & follow social distancing. The main motive behind doing these is to decrease the transmission and infection rate of Covid among children and also to maintain good oral hygiene.

PREVENTIVE MEASURES IN DENTAL CLINIC

In the dental clinic, most of the procedures generate aerosols, which may act as a medium of virus transmission, increasing the risk of infection. It is suggested that the patient who require the procedure which generate aerosols, should be scheduled at last, in order to prevent the exposure [14]. It is advised to prioritize the medically compromised children in the dental clinic as there might be an increased risk of complications because of dental infections, if left untreated. Pediatric dentists should discern the cases according to the guidelines by ADA as, Emergency Care, Urgent Dental Care, and Elective Dental Care [15]. Emergency care includes conditions like Cellulitis, Trauma, Avulsion of tooth. Urgent care includes the treatments in which, medications should be prescribed for symptomatic relief, and a minimal dental procedure in the view of patients' comfort. Elective care includes the treatments which can be postponed, with no or minimal associated loss of patient.

Clinic should be thoroughly disinfected every day, clean the areas that get into frequent contact between every clinical session. The procedures that cause aerosol generation should be followed in a separate cabin, to prevent the virus transmission, and minimal objects should be present inside the clinic that may get into contact and can't be cleaned or disinfected. Every person who visits the clinic, patients along with the accompanying persons should thoroughly sanitize their hands with the use of a sanitizer containing 60-95% alcohol [16]; temperature should be monitored as fever is the most common finding in Covid infected patients. A person should be only considered for dental treatment, if they show a normal temperature i.e. $\leq 37.3^{\circ}\text{C}$ (99.14°F) [17], in case of higher temperatures, the person should be advised to get their Covid test done and it is preferred to postpone the treatment up to their recovery. The chairs in the waiting room should be placed with at least 6 feet distance in between them. It is advised to educate the patients and accompanying persons, through animated videos to which usually children attracts to in the waiting room, about the maintenance of hand hygiene, wearing face mask, maintaining social distancing. Every person should be provided with disposable head cap, face mask, and shoe covers before entering the disinfected area of the clinic where, procedures will be followed [18].

Dentists are expected to follow proper hand hygiene, it is preferred to use the technique proposed by WHO[19], washing hands before touching the patient, before the clean/aseptic procedures, after exposure to the body fluids, after touching the patient, and the surroundings. All the staff should be wearing a proper PPE (personal protective equipment) kit, with face mask, eye wear, head cap and a face shield. It is unclear that which mask produces the best protection against the transmission of Covid virus, most of the study states that the respirators and N-95 masks do the work [20], in absence of those one can use triple layered disposable mask with a face shield [21]. Preprocedural rinses, application of rubber dam should be followed to minimize the risk of infection. IOPA's are least preferred due to direct contact to saliva; OPG and CBCT are preferred over IOPA [22].

If possible, it should be encouraged to avoid parents into the area of treatment, until or unless in the case of infants. Behaviour management is the thing, which becomes extremely difficult to follow, especially in the children with negative behavior. The surroundings and dental setup may frighten the children, affecting their behaviour and reluctant towards the treatment. Those patients can be managed by using modified PPE kits and face masks with printed cartoons, and other techniques like tell show do. However, as suggested by AAPD, treatments in such patients can be adjourned and reappointed [23].

CONCLUSION

Although SARS CoV-2 is spreading rapidly, and remained as a cause of death in many people all over the world, it seems to be causing less affects in children compared to adults with a negligible fatality rate. But, the children infected with Covid may cause virus transmission, which is a considerable risk especially in the dental clinic; there is a high risk of virus transmission from child to the dentist as well as other patients. The pediatric dentist should be cautious while treating children, as they may not exhibit any symptoms even after the infection. Proper protocol, disinfection, hand hygiene, and sterilization should be maintained to avoid the risk of infection. A modest negligence in following these protocols may end up with Covid infection. Hence pediatric dentist should be updated with day to day challenges emerging due to Covid and follow precautionary measures to minimize the risk of viral spread.

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