

The Changing Perception of Dental Practice in Pediatrics Post Covid; The New Normal

Post COVID Dental Practice

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Abstract:- Everything in the world was going smoothly until the arrival of coronavirus in December 2019 which marked the beginning of reshaping the world. Like all other aspects, dentistry is also greatly affected during this pandemic. Pediatric dentists are at even higher risk as rate of transmission from children to adults is more than transmission from adults to adults. There is a change in practice of pediatric dentistry that will soon be considered as the new normal. Although the norms and protocols of sterilization were followed earlier as well, but with onset of this pandemic the sterilisation process has to be followed stringently. Despite the fact that the dental treatment options remains the same but approach towards it has to be changed.

I. INTRODUCTION

“The ultimate measure of man is not where he stands in moment of comfort and convenience but where he stands in times of challenge and controversy”- Martin Luther King Jr.

Everything in this world was going placidly until a pneumonia like disease started infecting citizens of Wuhan, China in December 2019. What seemed like an outbreak in early 2020 rapidly surged to a worldwide pandemic creating health and financial crisis globally. On 30th January 2020, this novel coronavirus (COVID-19) was announced as Public Health Emergency of International Concern (PHEIC) by the World Health Organization (WHO) and eventually resulted in the biggest global pandemic disease known to the history of mankind.^[1,2]

COVID-19 currently termed as Severe Acute Respiratory Syndrome SARS-CoV-2 is a human novel virus which is considered to be similar yet distinct from SARS-

COV and MERS-CoV. These belong to subgenus *sarbecovirus*, with Chinese horseshoe bats (*Rhinolophus sinicus*) being predicted to be the most probable origin.

The human to human transmission of COVID-19 occurs either through direct or indirect contact from the respiratory droplets of infected individual (symptomatic/asymptomatic) suspended in air and aerosols or in close contact (within 1 meter) with the infected person having respiratory symptoms (during sneeze, cough, talking loudly)

This virus has been seen to affect the human race unprejudiced, be it the rich or the poor, the healthy or those with co-morbidities, the elderly as well as the children.

It seems as if the entire world has come to a standstill and so has dentistry. Like other professions, there were many nags and hitches to the revival of dental services.

Akin to the healthcare professionals, DHCP (Dentist, Dental hygienist as well as dental assistants) are at greater risk of COVID-19 infection as they deal with the major radix of transmission of virus/pathogens – the oral fluids. Moreover, basic dental procedures that include high-speed handpieces and scalers are potential way of spreading infection as they generate large quantities of aerosols which stay in air for quite a longer period of time..^[2,3]

Though these problems are customary with all the dentist, pediatric dentist have added risks also. Children do not effectively ensure their personal protection and are mostly accompanied by their parents. While fewer children have been affected with the deadly disease COVID-19 compared to adults but it doesn't rule out the fact that children can get infected, can get sick from COVID-19, and

can spread the virus that causes COVID-19 to others. In simpler terms, Children, like adults, who have COVID-19 but have no symptoms (“asymptomatic”) can still spread the virus to others.

Most children with COVID-19 either have very mild symptoms of covid or are asymptomatic. However, some children can get severely ill from COVID-19(Specially with newer mutated strains). They might also require hospitalization, intensive care, or even a ventilator and might even lead to death(in extreme cases). Regardless of age, certain children with the underlying medical conditions might be at increased risk of getting severely infected compared to other children: Asthma or chronic lung disease, congenital heart diseases, metabolic conditions, Diabetes ,neurologic, metabolic conditions, Genetic, Sickle cell disease, Immunosuppression.²

The most common symptoms of COVID-19 in children are fever and cough, but children may present with any of the following symptoms²-

- Fever
- Cough
- Congestion in nose
- New loss of taste or smell
- Sore throat
- Shortness of breath or difficulty breathing
- Diarrhea
- Nausea or vomiting
- Stomach ache
- Tiredness
- Headache
- Myalgia

- Loss of appetite or poor feeding, especially in babies under 1 year old

When treating any pediatric patient with covid, the modalities required for behavior management adds to the potential way of spreading the infection to both the dental staff and the patient.^[2]

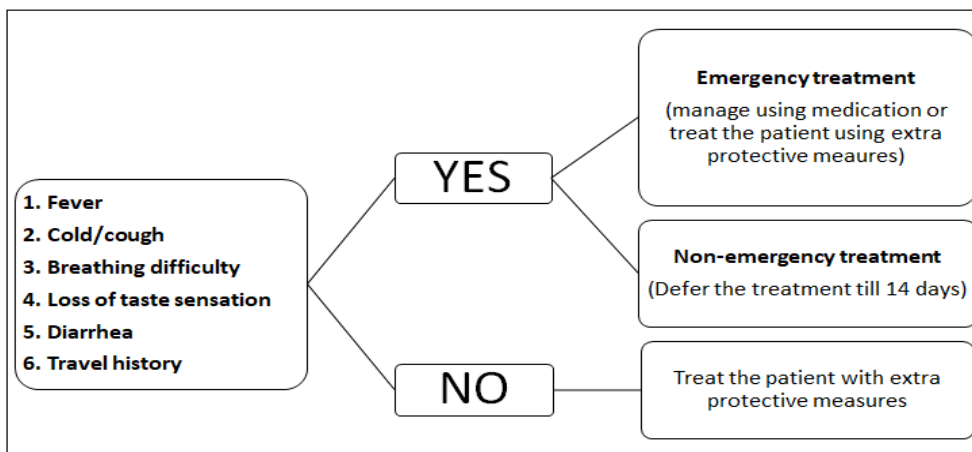
Nevertheless “*It is stated that the best of our work comes out when you are pushed to the wall. The world is pushed to the wall right now, so is dentistry*”

COVID-19 is predicted to reshape the world in general. The world of dentistry is no such exception. Although the end of COVID-19 seems to be indefinite, the perception towards pediatric dental practice post COVID needs a reform which shall soon be considered as the “NEW NORMAL”.

A well delineated step by step approach needs to be formulated for working during this pandemic that starts from the pre appointment session, patient scheduling, behavior management, examination, treatment, post-procedural patient exit.

II. PRE-APPOINTMENT MEASURES

An elaborate pre-appointment discussion through phone or preferably video conference should be planned before the actual visit. This shall include a complete medical history of the patient especially of any symptom in the family over the past 14 days. (Flow chart 1)



Flow Chart 1: Medical history questions to be asked on call

Dental pain can be effectively managed by the analgesics and/or antimicrobials. During isolation, patients might have taken self- medication before the pre-appointment discussion, thus a proper drug history should also be taken before prescribing any medication to avoid over dosage of a drug.^[4]

Paracetamol and/or ibuprofen is effective in relieving most of the odontogenic pain. Although there are concerns

raised for the use of Ibuprofen in COVID-19 patients but due to lack of evidence to establish any link between ibuprofen use and worsening of COVID-19, it can be considered appropriate for the management of dental pain. SDCEP Drug Prescribing for Dentistry guidance recommends a 5 day regime for children suffering from dental pain.^[4] (BOX 1)

In patients complaining of swelling and severe pain, antibiotics should also be prescribed. Most commonly prescribed antibiotic for dental pain is amoxicillin or phenoxymethylpenicillin. Metronidazole is either used as an alternative for patients who are allergic to penicillin or used along as an adjunct to penicillin in treating patients with rapid spreading of infection. A 5 day Regimen is

advised in cases of acute periapical abscess and a 3 day regimen is advised in case of acute pericorinitis. SDCEP Drug Prescribing for Dentistry guidance recommended antibiotic doses for children.^[4] (Box 2)

After prescribing the medication, advise the patient to inform if the symptoms still persists or worsen.

Paracetamol (500 mg tablets, or 120 mg/5 ml* or 250 mg/5** ml oral suspension), dose depending on age; up to four times daily (max 4 doses in 24 hours)¹⁴

OR

Ibuprofen (200 mg tablets or 100 mg/5 ml oral suspension), dose depending on age, preferably after food, up to three times daily ¹⁴

*120 mg/5 ml paracetamol suspension is suitable for children 6 months to 6 years; 250 mg/ 5 ml paracetamol suspension is suitable for children 6 years plus.

BOX1

Amoxicillin (250 mg capsules, or Oral Suspension 125 mg/5 ml or 250 mg/5 ml) dose depending on age; three times daily

*In cases of severe infection in child aged 6 months to 11 years, dose of amoxicillin is increased to 30 mg/kg (max 1 g) three times daily and in children aged 12-17 years, dose of amoxicillin is doubled.

OR

Phenoxymethylpenicillin (250 mg tablets, Oral suspension 125 mg/5 ml or 250 mg/5 ml) dose depending on age; four times daily

*For children up to 11 years with severe infection, phenoxymethyl penicillin 12.5 mg/kg four times daily and for children aged 12-17 years, increase 1 g four times daily.

OR

Metronidazole (200mg dose tablets, or Suspension(orally) - 200 mg/5 ml) dose depending on age; three times daily

BOX 2: Recommended first-line antibiotic doses for children

If the answer to all the question asked is 'NO', the patient can be called for treatment with few mandatory extra precautionary measures. The clinician should prefer to give the set of instructions through call or via electronic mail. The instructions should include the following:

1. Patients/parents should be informed that the questions will be again asked when the patient comes in the dental office to reassure that there is no change in the symptoms since the last conversation.
2. It is crucial that the number of people in the dental operatory should be reduced, hence only one parent/guardian should accompany the patient.
3. Inform the patient to get their own story books, coloring books and toys to keep the child busy. Also, inform the patients either to bring their own headphones or keep cartoon video in their phone.
4. As modelling would not be possible in the dental office settings, so send some modelling videos and ask the parents to show those video before their visit in the clinic.
5. Dentist needs to develop a positive relationship with the child, so a prior video calling should be done with the

child. Dentist can do modelling through video call as a behavior management protocol. Also, dentist can explain about PPE kits and even don the PPE in front of child so that child does not get afraid when they see the dentist in PPE suit in the clinic.

❖ Patient Scheduling

All the patients entering the dental clinic should be considered as a COVID suspected/positive patients. Therefore, all the precautions taken should be same for all the patients. If a person contacts the corona positive patient for less than 10 minutes, then chances of infection are very less. Therefore, time of appointment should be kept to the minimum.

❖ In-Office Patient Registration Procedures

Reception area: As soon as patient enters the dental office, provide them with hand sanitizer before they enter into rest of the office. All patients must wear disposable shoe cover before entering the operatory. If possible, there should be a safe distance of 6 feet in between the chairs in the waiting

area. Patients initial screening should be done which include asking the questions which were asked previously on call and recording the temperature of the patient. [6] Screening form issued by Indian Dental Association should be filled by the patient/guardian.

Chairside checklist: Paper work in the operatory should be limited. No one should enter the dental operatory without mask as infected aerosols might be present. If possible, access to the dental operatory should be limited for parent/guardian.[6]

Behavior Management:

“They may forget your name or what you said but they will never forget how you made them feel”

When patient enters the operatory, author advises that dentist should wear PPE kit in front of the child. By doing so, patient will gain confidence in his dentist as the patient will be assured that this is the same person which was on video call. Also, dentist can use euphemisms like space suit or superhero cape or costume for PPE kit. To make patient more comfortable, PPE like suit can also be given to the child to make him feel like an astronaut.

Patient examination:

Before examination of the oral cavity, patient should rinse their mouth using 10ml of 0.5% PVP-1 solution mouthwash to reduce the bacterial load. Patient should thoroughly swish the solution in the mouth for about 30 seconds and then should gargle for another 30 seconds and then spit out.[7] PVP-1 has proved to reduce SARS-COV virus infectivity by 99.99% , thus rinsing mouth with PVP-1 will reduce both bacterial and viral load in the patient’s mouth.[8]

Hand hygiene protocol must be followed as it limits the spread of viral infection.[9] WHO emphasizes that hand washing by the dentist should be done before examining the

patient, dental procedure, after coming in direct contact with saliva and oral fluids.[6,10]

Patient treatment: As the high speed air-rotor creates aerosols so, it is time to shift to Minimally Invasive Dentistry. A professional judgement should be employed to minimize the spatter of aerosols. Options that will reduce the use of air rotor should be considered (Box 3). In some situations, use of air rotor cannot be avoided, therefore in such cases, a high volume aspirator/ airtor with retraction valves/ Micromotor/ electric motor can be used and operating field should be isolated with rubber dam. It is very crucial to minimise the aerosols and droplets produced during high-speed turbine procedures. The high speed turbines with anti-retraction valves should be used as it will help to reduce the flow of oral flora significantly. Four handed dentistry should be practiced and absence of parents in dental operatory is preferred. Dental office contains unhealthy air quality which also increases the risk of infection. Thus, air purification should be done. Proper ventilation should be maintained in the operatory. Along with air conditioners, filters should be used. HEPA filters, Carbon filters, UV Light or combination of filter and UV light have been recommended.

❖ *Using Nitrous Oxide Inhalation Sedation In The Era Of “New Normal”*

If patient is treated under nitrous oxide inhalation sedation, disposable nasal hoods should be used and tubing should either be disposed or sterilized as stated by the manufacturer.

❖ *The Growing Importance Of Preventive Dentistry*

Emergency treatment interventions required would expose the child to potential risks of getting exposed to outer environment. Therefore, dentist should emphasize on preventive dentistry and should tell the parents/guardians about the home care and application of use of fluorides and pit and fissure sealants placement.

| | CONVENTIONAL MANAGEMENT | MANAGEMENT DURING COVID |
|----------------------------------|---|--|
| Preventive treatment | <ol style="list-style-type: none"> 1. Fluoride application 2. Pit and fissure sealants application 3. Silver Diammine Fluoride (SDF) application | <ol style="list-style-type: none"> 1. Fluoride application 2. Pit and fissure sealants application 3. Silver Diammine Fluoride application |
| Non-emergency treatment | <ol style="list-style-type: none"> 1. SDF application 2. Remineralizing agents 3. Restoration 4. Ultrasonic Scaling | <ol style="list-style-type: none"> 1. Silver diammine fluoride application 2. Remineralizing agents 3. Atraumatic restorative treatment (ART). It can be combined with use of conditioners and chemo-mechanical agents (Papacarie, Carie-care) 4. Class II caries- Hall’s technique 5. Hand Scaling |
| Non-emergency invasive treatment | <ol style="list-style-type: none"> 1. Pulp capping 2. Pulpotomy | <ol style="list-style-type: none"> 1. Selective caries removal using hand instruments 2. Tooth preparation using airtor with retraction valves/micromotor/electric motor |
| Emergency Treatment | <ol style="list-style-type: none"> 1. Pulpectomy 2. Extraction followed by space maintainer | <ol style="list-style-type: none"> 1. Treatment of choice should be extraction followed by space maintainer 2. In case of pulpectomy, tooth preparation using airtor with retraction valves/ micromotor/ electric motor |

BOX 3: Alternative treatment approaches to reduce aerosols

Post-procedural instructions: Patient should be given post-operative instructions and should also be told that information has to be given if any covid related symptoms appear after going back home within a period of 14 days.^[6]

After exit of the patient: Operatory should be cleaned after every patient while wearing gloves, mask and face shield. Flushing the suction pump with chemical 1% sodium hypochlorite is also necessary. All suction and spittoon filters should be removed and cleaned after every patient. Fumigation is done in clinical and high contact areas daily and in clinical or low contact areas bi-weekly.

For fumigation, clinic should be completely sealed and air conditioners should be switched on so that fumigant can reach the filter. Fumigation machine should be placed at one corner of the room and the fumigation solution is filled in it. The room should be left for the process for 30 minutes.^[11]

III. CONCLUSION

Someone rightly said “Life is about moving on, accepting changes and looking forward to opportunities that make us stronger and competent”

We all know that COVID -19 is likely to stay for long and we as dentist have to adjust with living with the new normal. Dentist are at greater risk of COVID-19, therefore new approach towards the treatment has to be inculcated by the dentist.

The treatments though remain the same but protocol may vary and we as dentist need to change and mend ourselves with the new normal.

After all “change begins at the end of our comfort zone”

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