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Recommendation for Pediatric Dental Practice during Third Wave of Covid-19

[1]Dr. Apexa Yadav, MDS, Consultant Pediatric Dentist, Bharuch, Gujarat.

[2]Dr. Vishal Shrishail Kudagi, Lecturer, Department of Orthodontics, JSS Dental College and Hospital, Mysore-15.

[3]Dr. Lilavanti L. Vaghela, MDS, Pediatric and Preventive Dentistry, Jamanagar, Gujarat.

[4]Dr. Shreya Lunia, Reader, Department of Pedodontics and Preventive Dentistry, Maitri College of Dentistry and Research Center, Durg, Chhattisgarh.

[5]Dr. Rituraj Kesri, Reader, Department of Pedodontics and Preventive Dentistry, Maitri College of Dentistry and Research Center, Durg, Chhattisgarh.

[6]Dr. Milind Rajan, Postgraduate student, Department of Pedodontics and Preventive Dentistry, Coorg Institute of Dental Sciences, Virajpet, Karnataka.

Corresponding Author: Dr. Apexa Yadav, MDS, Consultant Pediatric Dentist, Bharuch, Gujarat.

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Abstract

Since the onset of the novel corona virus, India has lived through and survived two of the most disastrous COVID waves. While the first wave introduced us to the challenges posed by the SARs-COV-2 virus, the second wave added to the woes by attacking our healthcare system, damaging our medical infrastructure and claiming more lives than ever. Now, with the emergence of the Omicron variant and the sudden surge in the number of COVID-19 cases, the possibility of a third COVID wave has become the talk of the town. The new corona virus variant Omicron, first detected in South Africa and Botswana, has now been identified in at least 95 nations, including Britain, the United States of America, Denmark and Norway. As pediatric dentists, it is time to prepare ourselves for providing as many consultations and effective dental treatment to young children during the conjectured third wave of the pandemic. This must include parental education regarding the illness, warning signs/symptoms of the disease, and emergency dental needs during the situation. Preventive behavior of social distancing, mask etiquettes, and hand hygiene should be implemented strictly. Hence, present review of literature aims to provide helpful guideline for pediatric dentist to practice during the third wave of Covid-19.

Keywords: Covid-19, Third Wave, Pediatric Dentistry

Introduction

The corona virus disease 2019 (COVID-19) infection was first identified and reported in the year 2019 in a cluster of cases, caused by a newly identified Beta corona virus. Reported at Wuhan, the capital of China's Hubei province the virus was initially named as 2019 novel corona virus (2019-nCoV) by the World Health Organization (WHO) on January 12, 2020.[1] The incubation period for individual infected with Covid-19 infection is between 2 to 14 days.[2]

Corona virus disease-2019 was declared a pandemic on March 11, 2020, and a public health emergency by the World Health Organization (WHO).[3] Since then, South Asian countries have witnessed at least two waves of the disease with variable intensity.[4] India has lived through and survived two of the most disastrous COVID waves. While the first wave introduced us to the challenges posed by the SARs-COV-2 virus, the second wave added to the woes by attacking our healthcare system, damaging our medical infrastructure and claiming more lives than ever.[5]

The Omicron variant has now been detected in many countries around the world. WHO reports that Omicron is probably in most countries, even if it hasn't been detected yet? Omicron is spreading more quickly than other variants. Based on the information available, WHO believes it is likely that Omicron will outpace the Delta variant where there is COVID-19 transmission in the community. On 26 November 2021, WHO designated the variant B.1.1.529 a variant of concern, named Omicron, on the advice of WHO's Technical Advisory Group on Virus Evolution (TAG-VE).[6]

A 44% jump in daily Covid cases on December 29 signals the overall increase in Covid cases that experts, scientific projections forecast following the outbreak of Omicron, the latest variant of SARS-CoV-2.[7]

Dentistry involves working directly on the patient mouth and contact with saliva is inevitable. Most of the procedures in dentistry involve production of aerosols, thereby putting dentists in a high-risk category with risk of 92.3% as categorized by the American Dental Association and the California Dental Association.[8] Aerosols are liquid and solid particles (<50 μm diameter) that are suspended in air for protracted periods. Aerosol generated during dental procedures can remain suspended in the room, settle on the surfaces of the dental office, or even mix with the materials used. When inhaled, or through surface contact, it increases the risk of COVID-19 infection to the professionals in the dental office and the subsequent patients who visit.[9] Hence, present review of literature aims to provide helpful guideline for pediatric dentist to practice during the third wave of Covid-19.

Clinical recommendation for pediatric dental set-up.

In the current COVID 19 pandemic, Dentists, Dental assistant as well as patients undergoing dental procedures are at high risk of cross-infection. Most dental procedures require close contact with the patient's oral cavity, saliva, blood, and respiratory tract secretions. Many patients who are asymptomatic may be shedding the virus. Hence all patients visiting a dental clinic must be considered as potential source of infection and dental professionals must follow appropriate infection prevention control guidelines.

Risk assessment

Low risk patient

- Vaccinated patients
- No active COVID-19 symptoms, RT-PCR negative
- COVID-19 affected person in whom 14 days have elapsed after resolution of the covid symptoms and/or RT-PCR negative.

High risk patient

- Patients with COVID-19 symptoms
- Patients with RAT or RT-PCR positive.

All dental procedures can be undertaken with appropriate precautions in low-risk patient. Only emergency procedures should be undertaken with standard COVID protocol in high-risk patient.[10]

Tele-screening

Patients are to be encouraged to take appointments telephonically or register online before the contact appointment. In cases that sound like it may require a visual examination, initial view of the photograph sent by the patient or a video consultation can be done.[11]

Primary telephone screening to recognize suspected patients or probable COVID-19 infection can be done before scheduling appointments. Questions related to any travel history to COVID-19 infected regions, the existence of febrile respiratory illness (FRI) symptoms such as cough and fever, or presence of other concomitant diseases should be asked during telephone screening. A positive answer to any of these two questions would increase the initial concern and postpone the elective dental care for at least two weeks.[12]

Patient arrival[13,14]

- Avoid wearing a wristwatch, hand, body jewellery, and carrying of additional accessories bags and so on.
- Use their washrooms at home to avoid the need of using toilets at the dental facility.
- Pre-procedural use of mouthwash should be advocated. Oxidative agents containing mouth rinses with 1% hydrogen peroxide or 0.2% povidone iodine are recommended.
- Wear a facemask during transport and before entering the premises.
- Have the body temperature checked and use a sanitizer on the entrance.
- Patients consent and declaration to be obtained in a physical print out or electronic system.
- If the waiting room does not allow for appropriate "social distancing" (situated at least 6 feet or 2 meters apart), patient may wait in their vehicle or outside the facility where they can be contacted by a mobile phone when it is their turn to be seen.

Preparation of clinic entrance, reception and waiting[15,16]

a. Display visual alerts at the entrance of the clinic and reception area about respiratory hygiene, cough etiquette, social distancing, and disposal of contaminated items in trash cans.

b. As soon as the patient enters the reception area, ask them to wash their hands using hand wash or alcohol-based hand rub. Use tissue paper or hand dryer to dry the hands instead of towels. Tissue paper dispenser and foot-operated waste bin are mandatory.

c. Include temperature recordings as part of your routine patient assessment before performing any dental procedure. A noncontact forehead thermometer can be used to measure the patient's body temperature.

d. Use of glass/plastic protective barrier at the reception desk or registration counter help in reducing the chances of infection and ensure safety of staff members.

Appointments should be scheduled such that social distancing can be maintained in the waiting room. Another alternative is for the patient to wait outside or in their vehicle and they can be contacted via telephone when it is their turn to be seen. It is recommended that the patients avoid bringing companions to their appointment, except for instances where the patient requires assistance. This can be communicated to the patient at the time of scheduling an appointment**.**

In-office screening and treatment

If a patient requires in-person visit, temperature needs to be checked at the point of entry itself, preferably with a non-contact thermometer, followed by a questionnaire and rapid test if available. To avoid transmission, magazines, toys, and other unnecessary items must be removed from the clinic and appointments should be staggered. In pediatric dental setup, only one parent should accompany the child. Alcohol-based hand rub (ABHR) should be available at appropriate locations in the waiting area to help improve hand hygiene by children, parents, and staff. If treatment needs to be performed, informed consent must be obtained and the operatory must be prepared for the same.[15]

Protocol for dental procedure

Personal protective measures: Personal protective measures are to be strictly adhered to. Hand hygiene with use of soap and water or use of alcohol-based hand sanitizer, before and after attending to patient, is emphasized. Soap should be done at east for 20 seconds as per the guidelines of the WHO. WHO recommended ABHR formulations with 80% ethanol or 75% 2-propanol, have been assessed against SARS-CoV and MERS-CoV, and were found to be effective.

Use of custom-fit N95 respirator, eye protection, face shield, and over gown during aerosol generating procedure on confirmed or suspected COVID-19 patients have been propounded. Long-sleeved gloves with double-gloving technique, eyewear including side shields or full-face shields, and hair covers/hoods are recommended. The use of powered air-purifying respirator (PAPR) in invasive treatments is suggested by few.[17,18]

Use of PPE kit is mandatory; PPE protocol of wearing and removal should be followed and clearly designated rooms should be assigned. The surgical mask must be changed after every dental procedure.[19]

Minimizing generation of aerosol during the dental procedure

The dental professionals treating children must place more emphasis on preventive and minimally invasive dentistry (MID) and rigorous infection control strategies. Besides being less traumatic, MID is considered a low-risk aerosol-producing treatment modality. During minimally invasive procedures, there is a reduced need for local anesthetic use and obviously less chance of natural aerosols generation by children during crying, coughing, etc. The MID approach includes procedures like preventive sealant application, hand excavation of dentinal caries (ART), silver diamine fluoride (SDF) application, fluoride varnish application, and Hall technique of crown placement.[4]

Dental treatment procedures are broadly divided into the nonaerosol-generating (non-AGP) and the aerosol-generating procedure (AGP). The AGP is to be done ideally in designated isolation rooms equipped with HEPA filters/augmented ventilation only. They are preferably to be performed under rubber dams and using high-volume saliva ejectors as they help to minimize aerosol or spatter in dental procedures.[20]

Pre-procedural rinse incorporating oxidative agents like 1% hydrogen peroxide or 0.2% povidone iodine is advocated to reduce viral load.[9]

Nonaerosol-generating procedure for management of dental caries

Atraumatic restorative treatment: The ART was introduced in Tanzania in 1987 and is defined as “a minimally invasive care approach in preventing dental caries and stopping its further progression.”19 The ART involves two components: sealing the deep pits and fissures with pit and fissure sealants and removal of soft

denatured dentin to create an access for the restoration. The removal of dentin is done using sharp spoon excavators and the cavity is then sealed with a glass ionomer cement (GIC). GIC is the choice of restoration because of its chemical bonding to the teeth and fluoride release.

In the year of the COVID-19 crisis and high disease transmissibility, where aerosol generation is nothing short of dangerous, ART is a great treatment option in both primary and permanent teeth in order to arrest and delay further caries progression.[21]

Silver diamine fluoride: Silver diamine fluoride, composed of ammoniacal silver nitrate, was first introduced in the 1960s in Japan. The American Association of Pediatric Dentistry (AAPD) formulated guidelines for its use in 2017 and it is now available worldwide under several brand names.[22]

SDF is a non-restorative caries control method. The use of a 38% SDF solution twice per year has been shown to inhibit and/or prevent coronal caries in the primary teeth of preschool children, as well as on the root surfaces of permanent teeth in adults. Non-restorative caries control is common, but a renewed focus during the current and post- COVID-19 era is critical.[23]

Hall technique: In 2006, Dr. Norna Hall of Scotland introduced the Hall Crown Method, which uses preformed metal crowns. The Hall technique is a non-invasive, non-aerosol producing procedure for restoring a child's carious, yet asymptomatic, primary molar.

The hall technique is AGP-free as there is no removal of carious tissue and no tooth preparation. No local anaesthesia is required. The luting cement is GIC. As with all clinical procedures, careful case selection with accurate lesion and pulp status diagnoses (clinically and radiographically) are essential for success.[24,25]

Management of children undergoing orthodontic treatment: A virtual triage by using photos, videos, and video-calling can be of great help to differentiate and prioritize the actual orthodontic emergency that needs immediate attention in the clinics from the problem that can be self-aided by a home remedy and deferred without reporting to the clinic.[26]

Since the orthodontic practice involves minimal aerosol generation, an orthodontic practice can be at relatively less risk for transmission of the corona virus. While bonding orthodontic brackets and attachments, follow the same pattern for etching and bonding as discussed previously. Interproximal reduction can be done using IPR strips and care should be taken while debonding and changing arch wire to avoid splatter and any fly away.[21]

Management of oral surgical procedures: All intra-alveolar extraction procedures can be performed with due caution. Avoid aerosol-generating procedures such as bone cutting or trimming. Nonaerosol-generating procedures such as frenectomy and mucocele excision can be performed, but with proper personal protection and sterilization protocols.[21]

Post-treatment infection control:

Before seating the patient the operatory and chair are cleaned and wiped with a disinfectant solution; the area is sprayed and left for a minimum 10 minutes. The dental chair is covered with a plastic sheath, which is removed after treatment. Subsequent to treatment, the protective covers are removed, and the room is sprayed, wiped with phenol solution, and left to dry.

All sterilizable instruments must be timely cleaned, disinfected, and sterilized. All disposables should be considered highly infected medical waste and discarded appropriately Ethanol at concentrations between 62% and 71%, 0.1–0.5% sodium hypochlorite, and 2% glutaraldehyde reduced corona virus infectivity within 1

minute exposure time. A comparable effect is expected against the SARS CoV- 2 and these agents should be used for appropriate surface disinfection. Hydrogen peroxide vaporizer can also be used to decontaminate the operatory.[27]

Instrument sterilization guidelines: All instruments pertaining to dental procedures are to be disinfected, cleaned, and sterilized as per the standard infection-control protocol (CDC, 2003). All instruments should be mandatorily sterilized in color-changing sterilization autoclave pouches and proper storage to be done in the UV chamber.[28]

Biomedical waste management: Improper disposal of biomedical waste in open space and water bodies leads to the spread of diseases.

All biomedical waste pertaining to patient care should be carefully disposed as per the Bio-Medical Waste (Management and Handling) Rules, 1998, amended from time to time through an authorized biomedical disposal agency by the State Pollution Control Board.[29]

Conclusion

SARS-CoV-2 or COVID-19 pandemic has affected the economic, psychosocial, and social lives of pediatric dentist as well as pediatric dental patients, with increased levels of anxiety and distress. The clinician should follow the guidelines provided by the concerned health regulatory authorities. Modification and redesign of the dental clinic might be required to maintain efficient air circulation and ventilation and appropriate standard PPE. Non-aerosol techniques and minimally invasive procedures will be preferable whenever possible. The moment is suitable for the use of preventive practice and for minimally invasive techniques

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