

Infection Control Measures in Pediatric Dental Practice During Covid -19 – A Review Article

Poornima Kamatchi.P, B.D.S
Final year student
Thai Moogambigai Dental College and Hospital
Chennai, Tamil Nadu, India.

Dr. Joyson Moses, M.D.S
Professor and Head,
Department of Pedodontics,
Thai Moogambigai Dental College and Hospital,
Chennai, Tamil Nadu, India.

Dr. R. Sharanya Ravindran, M.D.S
Senior Lecturer,
Department of Pedodontics,
Thai Moogambigai Dental College and Hospital,
Chennai, Tamil Nadu, India.

Abstract:-Corona – a minacious term within the current lifetime of dentistry have clinical characteristics that are still collated. As Covid -19 cases have also reported among children” at risk”, pediatric dentist are also in danger of Covid -19, so it’s mandatory to need necessary precautions using tele- dentistry and follow the modified protocols ,suggested by the Occupational Safety and Health Act (OSHA). This review study discusses the role of recent technology in dentistry and method of new-normal, which is becoming popular in our surroundings.

Keywords:-Covid-19, Pediatric Dentist, OSHA, Children ‘‘At Risk’’, Tele-Dentistry.

I. INTRODUCTION

The social and cultural exceptions of the children cannot be independently resolved, since they are emotionally and physically immature. As Oral health is inseparable from general health, Oral diseases even have an immediate impact and destructive windstorm on general health in children with systemic health problems. Now the emergence of novel human corona virus is referred as SARS- Cov-2 has become a public health emergence of international concern, due to its rampant spread (person to person transmission via droplets). Its period of incubation is from two to fifteen days.^[1] Infected patients are both symptomatic and asymptomatic. They present with symptoms like fever, cough, chills, throat soreness, myalgia, arthralgia, vomiting or diarrhea.^[2]

Children with special health care needs have also reported Covid – 19 infections, based on several studies. Department of pediatric dentistry of American academy says, Special Health-Care Needs (SHCN) is “any physical, developmental, mental, sensory, behavioral, cognitive, or emotional impairment or limiting condition that needs medical

management, health-care intervention, and/or use of specialised services or programs”^[3]

Special children are like those with harelip and cleft palate, cerebral palsy autism, Down’s syndrome, attention deficit / hyperactivity disorder, behavioral /emotional problems may present challenges like, xenophobia, low intelligence, lack of concentration and communication that requirespecial preparation for effective treatment.

II. RISK FACTORS AND PROTOCOLS

While treating patients using aerosolization, dentist put themselves at very high risk of inoculation of virus. Even in periodontal treatment there is higher incidence of droplet transmission of virus than prosthetic treatment^[4] During nonsurgical procedures ,ultrasonic and sonic transmission followed by air polishing, air/water syringe, and high-speed hand piece aerosolization pose an additional threat .^[5] Around 100,000 microbes per cu ft are transmitted by ultrasonic instrumentation with aerosolization of up to 6 feet, and, if improper wind occurs, microbes can persist from 35 minutes to 17 hours was studied.^[6] Thus all pediatric patients should be considered as potential carries of COVID19 .so the Occupational Safety and Health Act (OSHA) posted a new report called “*Guidance on Preparing Workplaces for COVID-19*”.^[7] Safety measures like the engineering controls, administrative controls, and safe work practice are indispensable.

A. ENGINEERING CONTROLS

- High-efficiency air filters, physical barriers like clear plastic sneeze guards should be installed.
- Increasing ventilation rates in the work environment.
- specialized negative pressure ventilation, such as for aerosol generating procedures should be used.(e.g., airborne

infection isolation rooms in healthcare settings and specialized autopsy suites in mortuary settings).

B. ADMINISTARTIVE CONTROLS

- Face-to-face meetings with virtual communications and implementing telework are encouraged among workers, clients, customers.
- Educative training on Covid -19 risk factors and protective behavior should be imparted to the workers. (e.g., cough etiquette, N95 masks and care of Personal Protective Equipment).
- Instructions on protective equipment and training material should be understandable and available within the regional language.

C. SAFE WORK PRACTISES

- Providing resource for healthful and reasonably safe environment that promotes personal hygiene. For example, providing non-touch trash cans, hand soap, alcohol-based hand rubs containing a minimum of 60 percent alcohol, disinfectants, and disposable towels for workers to clean their work surfaces.
- Regular hand washing or usage of alcohol-based hand rubs should be encouraged. Workers are advised to wash hands once they're visibly soiled and after removing any PPE.
- Post hand washing signs in restrooms should be made compulsory.

III. TELE DENTISTRY

Telehealth modalities connect Health care professional (HCP) and patients through technology to promote health care.

A. SYNCHRONOUS

This real-time telephone or live AV communication typically with a client using a Smartphone, tablet, or PC. In few cases, HCP use peripheral medical equipment. (e.g., digital stethoscopes, otoscopes, ultrasounds)

B. ASYNCHRONOUS

“Store and forward” technology in which messages, images, and data are collected and interpreted. Secure messaging between providers and patients can help improving the communication.

C. REMOTE PATIENT MONITORING

Patient's clinical measurements from a distance (may or won't be in real time) to their healthcare provider has been provided.^[8]

IV. TELEPHONE TRIAGE

Provide referral to a dentist and determines that the situation of a patient needs emergency treatment, to a hospital or urgent care. Triage inquiries to assist with decision are;

Common information -demographic data, genealogy, chronological description of the patient's illness, play history etc...

Unknown etiology for the pain - to know the intensity of the pain on the 0 to 10 scale, and about the medication, its dosage and its relieving effects. Is the discomfort is recuperating, remain consistent, or aggravating? Is there sensitivity while biting or during changes in temperature in oral cavity?

Trauma – in case of patient's emergency admission, to know whether x-rays taken, or any bleeding occurred, and is there any avulsed tooth?

Prescription of narcotic and opioid medicines to be avoided for patients who doesn't have your clinical record.^[9]

V. MANAGEMENT OF DENTAL PROBLEMS DURING COVID-19

What accounts for dental emergency? (Adapted from American dental association)

Dental emergencies	Urgent dental care	Other urgent dental care
(i) Uncontrolled bleeding	(i) Severe dental pain from pulpal inflammation	(i) Extensive dental caries or defective restorations causing pain
(ii) Cellulitis or a diffuse soft tissue bacterial infection with intraoral or extraoral swelling that potentially compromises the patient's airway	(ii) Pericoronitis or third-molar pain	(ii) Manage with interim restorative techniques when possible (silver diamine fluoride, glass ionomers)
(iii) Trauma involving facial bones, potentially compromising the patient's airway	(iii) Surgical postoperative osteitis, dry socket dressing changes	(iii) Suture removal
	(iv) Abscess or localized bacterial infection resulting in localized pain and swelling	(iv) Denture adjustment on radiation/oncology patients
	(v) Tooth fracture resulting in pain or causing soft tissue trauma	(v) Denture adjustments or repairs when function impeded
	(vi) Dental trauma with avulsion/luxation	(vi) Replacing temporary filling on endo-access openings in patients experiencing pain
	(vii) Dental treatment required prior to critical medical procedures	(vii) Snipping or adjustment of an orthodontic wire or appliances piercing or ulcerating the oral mucosa
	(viii) Final crown/bridge cementation if the temporary restoration is lost, broken, or causes gingival irritation	
	(ix) Biopsy of abnormal tissue	

FIG 1- courtesy [10]

The following flow chart [Fig.2] represents the management of dental issues, during covid-19.

VI. INFECTION CONTROL MEASURES

In pediatric dental practice, infection control measures for the prevention or minimization of infection is implemented by use of high volume suction for aerosols, four hand techniques, double and high-volume saliva ejectors, rubber

dam, improving the quality of water, anti-retraction hand pieces and valves [11],[12],[13] Pre-procedural mouth rinse with 0.5%–1% hydrogen peroxide should be used in children ,who are able to split, as it has non specific virucidal activity against corona viruses. [14] Extra oral radiographs such as panoramic radiography and Cone beam computerized tomography is preferred because intra – oral radiographs stimulates excess salivary secretions. [15] 10 or 11 o'clock working position is preferred.

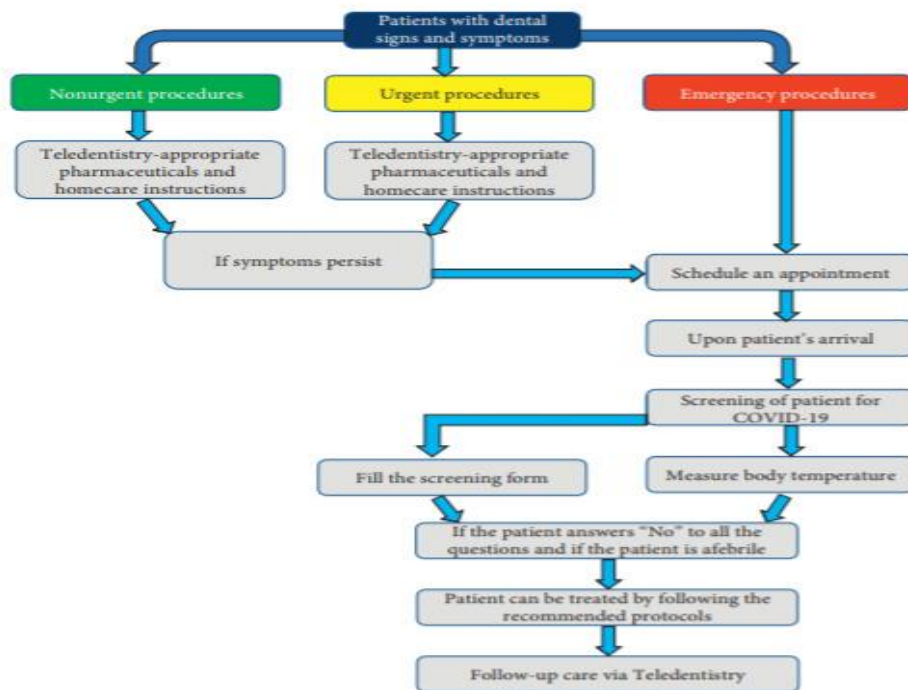


FIG 2 – courtesy [22]

To prevent splatter, eight o'clock position is not recommended.^[16]

In uncooperative patients;

Use of Velcro straps, Mouth props, finger guard, and Canvasstraps with Velcro fasteners can be used to restrain the arms and legs, which encircle the limbs and arms, are recommended.^[17] Since, these immobilization devices are contaminated, it should be disinfected accordingly. Before recommending mouth guards or bite splints, gagging or swallowing problems must be considered, as it may make them uncomfortable or unbearable.

Disinfection and decontamination procedures should be practiced not only for the instruments used in dental procedures but also for surfaces which will have inherit from the patients' biological fluids.^[18] Most commonly used chemical disinfectants are formaldehyde, glutaraldehyde, peracetic acid, potassium peroxy-monosulphate complexes, phenols, alcohols, iodine compounds, chlorate compounds, quaternary ammonium salts, and chlorhexidine, to prevent patient-to-operator and operator-to-patient contamination.^[19] An EPA (Environmental Protection Agency) registered sodium hypochlorite product is preferred.^[20] Concentrations starting from 5,000 ppm (a 1:10 dilution of household bleach) to 500 ppm (a 1:100 dilution) sodium hypochlorite are effective, depending on the amount of organic material (e.g., blood, mucus, etc.) that is present on the surface. It should be cleaned and disinfected. Caution should be exercised, since it is corrosive.^[21]

VII. CONCLUSION

Children with Special health care needs have considerably higher prevalence of oral diseases when compared to healthy children because of the lack of oral health knowledge and access to care. General health and wellness increasingly depends on oral health. The most important aspect for successful treatment in children with Special health care needs is attitude, skills of dentists and dental team and also effective management of the sterilization and decontamination procedures in a work environment that helps to prevent the spread of infections.

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