ORIGINAL RESEARCH PAPER

Dental sciences

KEY WORDS: Severe Acute Respiratory Syndrome coronavirus 2, Coronavirus disease 2019, Children, Oral health care, Dental home

VALUING PEDIATRIC ORAL HEALTH CARE IN COVID- 19 PANDEMIC.

Dr. Sarish Mahajan

Post graduate Student final year Department of Pedodontics and Preventive Dentistry Kothiwal Dental College and Reasearch Centre Moradabad UP

ABSTRACT

In view of the ongoing COVID -19 pandemic, dental health professionals and the patients undergoing dental treatment are at a high risk of cross- infections. Severe Acute Respiratory Syndrome coronavirus 2 (SARS-CoV-2) virus, that is a causative agent of Coronavirus disease 2019 (COVID-19) can spread by airborne transmission through respiratory droplets when an infected person coughs, sneezes or talks. The majority of procedures undertaken in dentistry generate aerosols hence it becomes a matter of concern to the dental healthcare personnel. Children are at high risk of getting (COVID -19) .Pediatric dentists are on the front lines of oral health care, being "dental home" for families, means being available when emergency dental care is needed. The updated guidelines provided by American Academy of Pediatric Dentistry (AAPD), American dental association (ADA) and CDC (Centers for Disease Control) should be followed during emergency dental treatment to prevent the occurrence of cross-infections and epidemic spread of COVID -19.The purpose of this article is to provide the word of precautions for the dentists providing oral health care to the children during this worldwide health crisis.

Introduction

Coronavirus disease 2019 (COVID-19) is a disease caused by Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) that originated from Wuhan, Hubei province, China, in late 2019 and has now reached pandemic status. (1)In January 2020, WHO declared the rampant spread of SARS-CoV-2 and its associated disease COVID -19 a public health emergency with a currently known overall mortality rate to be 2.3%. (2),(3) Coronaviruses belong to the family of Coronaviridae, comprising large, single, plus-stranded RNA as their genome. Currently, there are four genera of coronaviruses: α-CoV, β-CoV, γ-CoV, and δ-CoV .According to the phylogenetic analysis based on the viral Genome SARS-CoV-2 explored in Wuhan belongs to the β-CoV genera.'(4) Chaolin Huang et al in a study on 41 hospitalized patients reported that clinical symptoms may vary from mild symptoms including fever, cough, myalgia, sputum production and headache to severe ones including dyspnea, lymphopenia, pneumonia, acute respiratory distress syndrome, acute cardiac injury and secondary infections. (5) The common transmission routes of novel coronavirus include direct transmission (cough, sneeze, and droplet inhalation transmission) and contact transmission (contact with oral, nasal, and eye mucous membranes). (6) Pediatric population are at high risk of getting the disease. Due to the anatomical differences in the respiratory system between the children and adults, the children may get severe respiratory disease.(7) Haiyan Qiu and colleagues have shed light on this under-represented population with a clinical report of 36 paediatric patients (aged 1–16 years) with PCR confirmed COVID-19. An analysis of more than 2000 child patients with suspected or confirmed COVID-19 in Hubei, China, found that over 90% presented as asymptomatic or with mild to moderate symptoms.(8)

This review provides an insight into relevant safety measures to protect dental care professionals as well as the child patient, whilst providing clinical care for the obviously affected children and those potential carriers of the disease.

COVID-19 and Dental treatment

While providing dental care to the child patient a step wise approach should be followed:

Identifying the disease: There are two approaches for identification of disease i.e. conventional approach through sample testing and artificial intelligence (AI) based approach. Raju V et al reviewed the importance of artificial intelligence as an emerging technology to monitor and control the spread of coronavirus. Being an evidence -based medical tool it can pave the way to easily track the spread of this virus, identifying the high-risk patients, and is useful in controlling its spread.(9)

Clinical characteristics:

The incubation period of SARS CoV- 2 ranges from 0 to 14 days for both children and adult patients as confirmed by a study in Wuhan by Backer et al.(10) The symptoms in children may range from being asymptomatic, mild moderate to severe.

Precautionary measures for dental settings:

The children remain asymptomatic, they must be considered potential carriers and can form link in the chain of transmission.(11) Hence the following precautions should be taken into consideration to prevent the cross-infections:

- Hand hygiene has been considered the most critical measure. Wash hands with soap and water for at least 20 seconds. A final concentration of 80% ethanol or 75% isopropyl alcohol recommended in USP hand sanitizer toolkit as per WHO guidelines.(12)
- Respiratory hygiene/cough etiquette.
- Face shields, N95 respirators and goggles are essential with use of high or low speed drilling with water spray.
- Use gowns or long sleeve shirts.
- Establish pre- check triages to measure and record the temperature of every staff and patient as a routine procedure
- Dental settings are more likely to have a high number of potentially contaminated Surfaces hence thorough disinfection of all surfaces including dental chair, their handles, the spittoon, and dental instruments after carrying out a treatment.(13)
- Saliva is the reservoir of this virus. Preoperative antimicrobial mouth rinse could reduce the number of microbes in the oral cavity. Peng et al. focused on the mouth rinses containing 1% hydrogen peroxide or 0.2 % povidine iodine to reduce microbial load.–(6)
- Minimize operations that can produce droplets or aerosols. The use of saliva ejectors with low or high volume can reduce the production of droplets and aerosols.
- Consider sharp items that are contaminated with patient blood and saliva as potentially infective. Use safe injection practices and used sharps should be properly disposed in appropriate puncture- resistant containers.
- Clean and disinfect environmental surfaces.(14)
- In areas where COVID -19 spreads, nonemergency dental practices should be postponed.'(15)
- Limit patient movement within the institution and ensure that patients wear triple layer surgical masks when

outside their rooms."(16)

Sterlization

It is now mandatory that every clinic would strive to have good disinfection and sterilization protocol so that infection should not be transmitted further.

Every instrument used should be disinfected first, followed by double check disinfection in an ultrasonic bath.(14)

Clinical waste management

Proper management of biomedical waste generated in dental clinics is of utmost importance to halt the spread of pathogens.

All health care waste produced during the care of COVID 19 patients should be collected safely in designated containers and bags, treated, and then safely disposed of or treated, or both, preferably on-site All who handle health care waste should wear appropriate PPE (boots, apron, long-sleeved gown, thick gloves, mask, and goggles or a face shield) and perform hand hygiene after removing it.(17)(18)

Pedodontic triangle and its importance in prevention of COVID -19.

In pedodontics the patient doctor relationship is triangular. It involves both parents and the child and child forms the apex of the triangle as he is the focus of attention. COVID-19 pandemic has turned out to be a major stress for most of humanity especially children who are likely to suffer mental and emotional stress. Therefore parents /caregivers should be informed to look for following points:

Watch for behavior changes in your child

- Excessive crying
- Bed wetting
- Avoidance of activities
- Excessive worry /sadness
- Difficulty in concentration
- Unexpected headaches

Recently WHO and Ministry of Women and Child Development has released certain stress and coping strategy for children and caregivers:

Ways to support your child

- Provide simple and clear information, Listen and respond, Reassure and explain, Keep a normal schedule, Eat well ,Be active, Model good behavior ,Avoid too much information, Breathing exercises and be positive.(19)

- **Conclusion**

The COVID 19 pandemic is having wide ranging impacts on our everyday lives including scheduled dental appointments. In order to contain the virus dentists worldwide are concentrating on emergency and urgent dental care during this pandemic. The role of pediatric and preventive dentists is very crucial in this pandemic, as by maintaining their own safety as well as ensuring the safety of pediatric patients and guiding the parents too about coping up this tough situation. As the number of cases may increase in future, pediatric dentists should be well informed and educated about not only the signs and symptoms of the condition but also how to follow stringent infection control measures in these cases.

References

1. Wu JT, Leung K, Leung GM. Nowcasting and forecasting the potential domestic and international spread of the 2019-nCoV outbreak originating in Wuhan, China: a modelling study. Lancet [Internet]. 2020;395(10225):689–97. Available from:http://dx.doi.org/10.1016/S0140-6736 (20) 30260-9
2. Zhou P, Yang X Lou, Wang XG, Hu B, Zhang L, Zhang W, et al. A pneumonia outbreak associated with a new coronavirus of probable bat origin. Nature [Internet]. 2020;579(7798):270–3. Available from: http:// dx.doi.org/ 10. 1038/s41586-020-2012-7
3. Petrosillo N, Viceconte G, Ergonul O, Ippolito G, Petersen E. COVID-19, SARS and MERS: are they closely related? Clin Microbiol Infect [Internet]. 2020;(xxxx). Available from: https://doi.org/10.1016/j.cmi.2020.03.026
4. Li X, Geng M, Peng Y, Meng L, Lu S. Molecular immune pathogenesis and diagnosis of COVID-19. J Pharm Anal [Internet]. 2020;10(2):102–8. Available from: https://doi.org/10.1016/j.jpha.2020.03.001
5. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet. 2020; 395 (10223):497–506.
6. Peng X, Xu X, Li Y, Cheng L, Zhou X, Ren B. Transmission routes of 2019-nCoV and controls in dental practice. Int J Oral Sci [Internet]. 2020;12(1):1–6. Available from: http://dx.doi.org/10.1038/s41368-020-0075-9
7. Mallineni SK, Innes NP, Raggio DP, Araujo MP, Robertson MD, Jayaraman J. Coronavirus disease (COVID-19): Characteristics in children and considerations for dentists providing their care. Int J Paediatr Dent. 2020;(April).
8. Qiu H, Wu J, Hong L, Luo Y, Song Q, Chen D. Clinical and epidemiological features of 36 children with coronavirus disease 2019 (COVID-19) in Zhejiang, China: an observational cohort study. Lancet Infect Dis [Internet]. 2020;2019(20):1–8. Available from: http://dx.doi.org/10.1016/S1473-3099(20)30198-5
9. Cao Y, Deng Q, Dai S. Mandarin on the novel coronavirus COVID- 19 . The COVID-19 resource centre is hosted on Elsevier Connect , the company ' s public news and information. 2020;(January).
10. Backer JA, Klinkenberg D, Wallinga J. Incubation period of 2019 novel coronavirus (2019- nCoV) infections among travellers from Wuhan , China ,. 2020;(January):1–6.
11. Kelvin AA, Halperin S. COVID-19 in children: the link in the transmission chain. Lancet Infect Dis [Internet]. 2020;2(20):2019–20. Available from: http://dx.doi.org/10.1016/S1473-3099(20)30236-X
12. ADA - American Dental Association. Interim Guidance for Minimizing Risk of COVID-19 Transmission Table of Contents After Dental Care is Provided ADA Interim Guidance for Minimizing Risk of COVID-19 Transmission Before Dental Care Starts. line. 2020;1–8.
13. Marwaha J, Shah K. Safety & Preventive Measures for Dental Health Care Professionals on COVID-19. 2020;(April).
14. Krithikadatta J, Roongta Nawal R, Amalavathy K, Mclean W, Gopikrishna V. Endodontic and Dental Practice during COVID-19 Pandemic: Position Statement from International Federation of Endodontic Associations (IFEA) & Indian Endodontic Society (IES). 2020;1–24.
15. Indian Dental Association's Preventive Guidelines for Dental Professionals on the Coronavirus Threat. 2020;1–5. Available from: https:// www. ida.org.in/ pdf/IDA_Recommendations_for_Dental_Professionals_on_the_Coronavirus Threat.pdf
16. Alharbi A, Alharbi S, Alqaidi S. Guidelines for dental care provision during the COVID-19 pandemic. Saudi Dent J. 2020;(March).
17. OMS. Water , sanitation , hygiene and waste management for the COVID-19 virus. World Heal Organ. 2020;(March):1–9.
18. Spagnuolo G, De Vito D, Rengo S, Tatullo M. COVID-19 outbreak: An overview on dentistry. Int J Environ Res Public Health. 2020;17(6):3–5.
19. Talking With Children: Tips for Caregivers, Parents, and Teachers During Infectious Disease Outbreaks,https://store.samhsa.gov/product/Talking-With-Children-Tips-for-Caregivers-Parents-and-Teachers-During-Infectious-Disease- Outbreaks/SMA14-4886.