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Original Research Article

Post Covid-19 transition in dentists providing dental health care to children

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ABSTRACT

Aim: The aim of the study is to evaluate the post COVID-19 transition in dentist providing dental health care to children.
Materials and Methods : A cross-sectional questionnaire based survey was conducted among the dentists to assess the transition post COVID-19 towards dental health care to children. The survey was carried out with a sample of 110 respondents.
Results: The results shows that the COVID-19 outbreak had definitely made the dentists uncomfortable in treating the patients and majority (55.4%) of them agree that even children can be asymptomatic carriers. Moreover, 83.7% of the dentists agreed that the PPE kit will definitely increase the fear and anxiety among the children, 75.5% dentists agreed that this will also lead to increase in the cost of the treatment. Even before the COVID-19 pandemic majority of the dentists never used the N2O for managing the pediatric patients and even after such scenario they are not planning to use N2O for pediatric behavior management.
Conclusion: Dental professionals must be fully aware of 2019-nCoV spreading modalities, how to identify patients with this infection, and, most importantly, self-protection considerations. The aerosols and splatter generated during dental procedures have the potential to spread infection to dental personnel and other people in the dental office. Dentists can play a significant role in disrupting the transmission chain, thereby reducing the incidence of disease by simply postponing all non-emergency dental care for all patients.

1. Introduction

During late 2019 and early 2020, a new fatal disease called corona virus disease 2019 (COVID-19) broke out in China and Southeast Asia. It has been reported that COVID-19 appeared in Wuhan, Hubei Province, Central China, and then it was found in other places of China, Southeast Asia, Europe, North America, Oceania and almost all over the world, affecting more than 160 countries or districts.[1,2] According to reports by the China CDC and authoritative organizations, by April 07, 2020, 1,393,797 people had been infected by COVID-19 globally.[2,3] The World Health Organization (WHO) announced that the COVID-19 outbreak had become a public health emergency of international concern on January 31, 2020,4 and then categorized it as a pandemic on March 11, 2020.5

The predominant signs and symptoms of COVID-19 reported to date among all patients are similar to other viral respiratory infections, including fever, cough, and shortness of breath. Although these signs and symptoms may occur at any time during the overall disease course, children with COVID-19 may not initially present with fever and cough as often as adult patients.[1–3]

The detection method confirmed that 2019-nCoV exists in saliva, bodily fluids, faces, and other samples from patients with COVID-19. The virus spreads through close contact between people, especially through respiratory droplets. In addition, when people touch an object contaminated by infectious droplets and then touch their

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mouth, nose, or eyes, the virus can be transmitted.[4]

Due to the nature of dental treatment, procedures typically produce aerosols and splatters, which can contain large amounts of saliva or blood from patients and thus carry the risk of large-scale transmission of the virus.[5] Therefore, many health departments have asked dental departments to adopt strict measures. Such measures include screening patients, only providing emergency treatment, restricting aerosol operation as much as possible, using extensive protection, and performing environmental disinfection. However, researchers have reported that because some carriers have no symptoms.[6]

While data on the incubation period for COVID-19 in the pediatric population are limited, it is thought to extend to 14 days, similar to adult patients with COVID-19.[5] In studies from China, the reported incubation period among pediatric patients ranged from 2 to 10 days.[6,7] There are limited data on laboratory findings associated with COVID-19 in pediatric patients. Unlike adult patients with COVID-19,[8,9] there have been no consistent leukocyte abnormalities reported in pediatric patients.[10] Additional studies are required to understand the laboratory findings associated with pediatric cases of COVID-19. Pediatric patients with COVID-19 may experience the signs or symptoms like fever, cough, nasal congestion or rhino rhea, sore throat, shortness of breath, diarrhea, nausea or vomiting, fatigue, headache, myalgia, poor feeding or poor appetite over the course of the disease:[1,2,11–14]

The largest study of pediatric patients (>2,000) with COVID-19 from China reported that illness severity ranged from asymptomatic to critical:[3]

2. Materials and Methods

A cross-sectional questionnaire based survey was conducted among the dentists to assess the transition post COVID-19 towards dental health care to children. The survey was carried out with a sample of 3500 respondents. Out of 3500 respondents, only 3220 respondents completely filled the required form.

2.1. Designing of web-based questionnaire

A close-ended web based questionnaire was designed using a template provided by the Google Forms (Google Inc., USA). All the questions along with choices were entered onto the Google Form template and were saved. The link to this questionnaire was sent to the dentists who were willing to participate in the survey. The respondent dentist could access the link to the online questionnaire through any smart phone/laptops using internet.

The questionnaire was administered to the dentists by snow-ball method. The responses were recorded electronically using the Google Form application on a laptop. As we used a web-based questionnaire, all the responses were directly saved into Google's online database.

2.2. Statistical analysis

All the data were subjected to statistical analysis with the Statistical package for Social Sciences software (SPSS, Version 20.0, IBM, U.S).

3. Results

Table 1 Shows the distribution of the dentists according to their years of experience and their working speciality, wherein the majority of thedentists haexperience of 1-5years (28.2%) followed by 10-20 years (26.4%). Majority (61.8%) of the dentists were general practionners. Table 2 shows the distribution of the dentists according to their response regarding the post COVID transition in dental care towards children.

Majority of the dentists (41.8%) rated themselves 4 out of 5 in managing pediatric patients, while in case of managing anxious/uncooperative pediatric patients majority (46.4%) of the dentists rated themselves 3 out of 5.

On asked, majority (37.3%) dentists rated their comfort level 3 out of 5, followed by 23.6% who were least comfortable in treating patients after COVID-19 pandemic.

Almost half (43.6%) the dentists agreed that even children can be asymptomatic carrier while 35.5% still remained neutral to it.

More than half the dentists (57.3%) agrees that PPE kit will affect the behavior management of the pediatric patients while, 26.4% strongly agreed to it. More than half (54.5%) dentists never used N2O sedation to manage anxious/uncooperative pediatric patients and majority (30%) were still unlikely to use N2O sedation in future.

During this pandemic period, majorly (75.5%) dentists agreed to increase the cost of treatment at their clinic due to increase in the usage of extra PPE equipments after COVID-19.

4. Discussion

In contrast to our study, in a study by Foley J et al (2007),[15] 73.3% dentists were comfortable treating the pediatric patients. Whereas in the present study in majority only 41.8% dentists rated themselves 4 out of 5 in managing the pediatric patients while 46.4% dentists in majority rated themselves 3 out of 5 in managing uncooperative and anxious children. Although such scenerio exist, the use of N2O is still not in use as is also shown in our study where 54.5% dentists has never used N2O.

Dental fear and anxiety (DFA) refers to the fear of and anxiety towards going to the dentist. It exists in a considerable proportion of children and adolescents and is a major dilemma in pediatric dental practice. Fear of and anxiety towards going to dentists (i.e, dental fear and

Table 1: Shows the distribution of dentist according to years of experience and working speciality.

	Frequency	Percentage
Years of experience		
<1year	499	15.5
1-5 years	907	28.2
5-10 years	409	12.7
10-20 years	850	26.4
>20 years	555	17.3
Speciality		
General practitioner	1991	61.8
Pediatric dentistry	523	16.2
Endodontics	118	3.6
Orthodontics	118	3.6
Oral surgery	87	2.7
Periodontics	118	3.6
Oral pathology / Medicine / Radiology	147	4.5
Prosthodontics	118	3.6

anxiety, DFA) are major problems for a sizeable proportion of children and adolescents. The prevalence of DFA in children and adolescents ranges from 5-20% in various countries, with some cases being considered to be dental phobia (severe DFA). Children and adolescents with DFA are often uncooperative during dental visits, thus rendering treatment difficult or impossible.[16] This is also in agreement to the present study where the PPE kit and other equipments will present as more scary and further add on to the child fear and anxiety.

A coordinated effort by government, local community health officials, academics, and international organizations such as the WHO led to the elucidation of the nature of COVID-19 and the measures that were required to prevent the spread of this new infection. After the COVID-19 outbreak dentists, appropriately upgraded their measures to prevent cross-infection. For example, infection control measures were introduced by providing a preparative mouth rinse, taking body temperature before dental treatment, and compiling a medical history relevant to COVID-19 symptoms before commencing dental treatment, as preoperative rinse of chlorhexidine gluconate can reduce the bacterial load of aerosols.

The predominant signs and symptoms of COVID-19 reported to date among all patients are similar to other viral respiratory infections, including fever, cough, and shortness of breath. Although these signs and symptoms may occur at any time during the overall disease course, children with COVID-19 may not initially present with fever and cough as often as adult patients.[1,3] In a report of nine hospitalized infants in China with confirmed COVID-19, only half presented with fever.[17] Gastrointestinal symptoms, including abdominal pain, diarrhea, nausea, and vomiting, were reported in a minority of adult patients.[18] In one pediatric case of COVID-19, diarrhea

Table 2: Shows distribution of the dentist according to their responses.

	Frequency	Percentage
Q1 How do you rate yourself managing pediatric patients? (1- least, 5- most)		
1	58	1.8
2	293	9.1
3	1201	37.3
4	1346	41.8
5	322	10
Q2. How do you rate yourself managing anxious/ uncooperative pediatric patients? (1- least, 5- most)		
1	206	6.4
2	615	19.1
3	1494	46.4
4	760	23.6
5	145	4.5
Q3. Do much comfortable you are treating patients after COVID-19 pandemic? (1- east, 5- most)		
1	760	23.6
2	586	18.2
3	1201	37.3
4	293	9.1
5	380	11.8
Q4. How strongly do you believe children can be asymptomatic carriers?		
Strongly disagree	57	1.8
Disagree	235	7.3
Neutral	1143	35.5
Agree	1404	43.6
Strongly agree	381	11.8
Q5. Do you believe PPE kit will effect the behavior management of the pediatric patients?		
Strongly disagree	145	4.5
Disagree	116	3.6
Neutral	264	8.2
Agree	1845	57.3
Strongly agree	850	26.4
Q6. How often do you use N2O sedation to manage anxious/ uncooperative pediatric patients in your clinic?		
Always	57	1.8
Usually	57	1.8
Sometimes	558	17.3
Rarely	791	24.5
Never	1757	54.5
Q7.Are you planning to use N2O sedation to manage the anxious/uncooperative pediatric patients in your clinic?		
Very likely	206	6.4
Likely	850	26.4
Neither Likely nor Unlikely	789	24.5
Unlikely	966	30
Very Unlikely	409	12.7
Q8. Will the extra PPE equipment after COVID-19 lead to increase in the cost of treatment at your clinic?		
Yes	2429	75.5
No	206	6.4
May be	585	18.2

was the only symptom reported.[4] There have been multiple reports to date of children with asymptomatic SARS-CoV-2 infection.[2,11–14] In one study, up to 13% of pediatric cases with SARS-CoV-2 infection were asymptomatic.[3] The prevalence of asymptomatic SARS-CoV-2 infection and duration of pre-symptomatic infection in children are not well understood, as asymptomatic individuals are not routinely tested.

Based on these early studies, children of all ages are at risk for COVID-19; however, complications of COVID-19 appear to be less common among children compared with adults based on limited reports from China[3] and the U.S.[1] In children, SARS-CoV-2 may have more affinity for the upper respiratory tract (including nasopharyngeal carriage) than the lower respiratory tract.[3]

During this pandemic period, where a lot of the PPE equipments and sanitization things are used it is quite obvious that the treatment cost is bound to increase which is shown in our study also.

5. Recommendations

Since the oral route is considered one of the 2019- nCoV transmission routes, attention to hand hygiene before, during, and after dental practice is important. Dentists should exercise extreme caution to avoid contact with their own facial mucosal surfaces including their eyes, mouth, and nose. Since transmission of airborne droplet is considered one of the main routes of infection spread, application of personal protective equipment such as masks, protective goggles, gowns, helmet, gloves, caps, face shields, and shoe covers is strongly recommended for all health care personnel.

5.1. Mouth rinses

Chlorhexidine, which is commonly used for pre-procedural mouth washing in dental practice, has not yet been effectively proved to be capable of eliminating COVID-19. However, oxidative agents present in the mouth washes such as, 1% hydrogen peroxide or 0.2% povidone-iodine are recommended. Pre-procedural use of mouthwash, especially in cases of inability to use a rubber dam, can significantly reduce the microbial load of oral cavity fluids.[19]

5.2. Rubber dam isolation

Using rubber dams creates a barrier in the oral cavity that effectively reduces the escape of droplets and aerosol mixed with patient saliva and/or blood in the surgical field by 70%.[20] Along with it, extra high-volume suction is also required for maximum prevention of aerosol and spatter from spreading.[21]

5.3. Disinfectant

Since very little information is available regarding 2019-nCoV, relatively similar genetic features between 2019-nCoV and SARS-CoV indicate that the novel coronavirus can be vulnerable to disinfectants such as sodium hypochlorite (1000 ppm or 0.1% for surfaces and 10,000 ppm or 1% for blood spills), 0.5% hydrogen peroxide, 62–71% ethanol, and phenolic and quaternary ammonium compounds if utilized in accordance with the manufacturer's instructions.

5.4. Waste management

Prior to any inappropriate accumulation, dental office waste should be routinely transported to the institution's temporary storage facility. Reusable tools and equipment must be properly pre-treated, cleaned, sterilized, and properly stored until the next use. Dental waste resulting from the treatment of suspected or confirmed 2019-nCoV patients is considered medically infectious waste that must be strictly disposed of in accordance with the official instructions using double-layer yellow medical waste package bags and "gooseneck" ligation.

6. Conclusion

Following the announcement of the disease outbreak by international and local authorities, dentists can play a significant role in disrupting the transmission chain, thereby reducing the incidence of disease by simply postponing all non-emergency dental care for all patients. Dental professionals must be fully aware of 2019-nCoV spreading modalities, how to identify patients with this infection, and, most importantly, self-protection considerations. A higher rate of virus exposure because of occupational commitments in health care workers is considered a key factor associated with the increased risk of infection. The aerosols and splatter generated during dental procedures have the potential to spread infection to dental personnel and other people in the dental office. While, as with all infection control procedures, it is impossible to completely eliminate the risk posed by dental aerosols, it is possible to minimize the risk with relatively simple and inexpensive precautions.

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8. Conflict of Interest

The authors declare they have no conflict of interest.

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