

**Practices Adopted to Prevent Dental Illness and Perceived Need for Dental Care among Parents and Caregivers of 6-12-Year-Old Children in Kozhikode City during COVID 19 Pandemic – An Online Survey**

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**Introduction**

**Background:** COVID is a pandemic of unimaginable proportion. Dental procedures, which involves face-to-face communication, frequent exposure to saliva, blood, and other body fluids pose a risk.

**Aims and Objectives:** The study aims to assess the preventive practices adopted to prevent pediatric dental illnesses and the need for pediatric dental care perceived by general population. Further it examines the association of socio-demographic factors with perceived pediatric dental care needs and preventive practices.

**Methodology:** A cross sectional survey using Google form with 23 questions focusing on socio-demographic, perceived needs, and preventive practice maintaining anonymity of the participants were circulated widely. The results were tabulated, and data analysed using the chi-square tests and ANOVA.

**Results:** 43% of respondents monitored brushing habits, 63.4% reported that they post meal mouth washing practice, 67.8% restricted on consumption of soft drinks and sugary syrups, 55.3% restricted chocolates and 51.1% imposed play restriction. 19% reported that their child experienced a dental problem. Of these only 79% did not delay treatment, 21.4% sought tele-consultation, and 10.8% were refused a consultation. The consultation rate was 55.2% for tooth ache, 67.8% for gum swelling and 77.6% for dental trauma, and 56% reported that they want dental services to be open. People with dental problem seek dental consultation for tooth ache ( $\chi^2=23.6$ ;  $p<0.001$ ), and dental trauma ( $\chi^2=15.3$ ;  $p=0.004$ ). Further those who expressed greater worry of infection were willing to consult despite fear of infection ( $\chi^2=35.5$ ;  $p=0.003$ ).

**Conclusion:** Parents have taken adequate preventive measures to avoid dental problems during the pandemic.

There is a great demand for dental services during the pandemic and the problems posed by child dental issues outweigh the fear of contracting COVID-19.

**Keywords:** COVID-19, Pediatric Dental Health, Pedodontic Practice, Preventive Practice

### **Introduction**

COVID 19 (Corona Virus Disease 19) is a pandemic of unimaginable proportion. It has caught the world off guard and the response to it so far has been varied across nations.<sup>1</sup> Dental patients and professionals can be exposed to pathogenic microorganisms, including viruses and bacteria that infect the oral cavity and respiratory tract. Dental care settings invariably carry the risk of 2019-nCoV infection due to the specificity of its procedures, which involves face-to-face communication with patients, and frequent exposure to saliva, blood, and other body fluids, and the handling of sharp instruments.<sup>2, 3</sup> The practice of dentistry involves the use of rotary dental and surgical instruments that create a visible spray that can contain particle droplets of water, saliva, blood, microorganisms, and other debris. Surgical masks protect mucous membranes of the mouth and nose from droplet spatter, but they do not provide complete protection against inhalation of airborne infectious agents. There are currently no data available to assess the risk of SARS-CoV-2 transmission during dental practice.<sup>1,2</sup>

So it was recommended by ministry of health and family welfare that only emergency dental procedures can be performed in the dental facilities falling under "red" zones. The dental clinics in the "orange" and "green" zones can provide consultancy, but such operations should be restricted to emergency and urgent treatment procedures only, the guidelines stated. All routine and elective dental procedures should be deferred for a later review until new policy/guidelines are issued.<sup>3-5</sup>

Because children can be asymptomatic or present with mild, nonspecific symptoms, all child patients and parents should be considered as potential carriers of SARS-CoV-2 unless proved otherwise.<sup>6</sup> In addition, dental settings are more likely to have a high number of potentially contaminated surfaces such as dental chairs, their handles, the spittoon, and dental instruments after carrying out a treatment which are possible routes of transmission.<sup>7,8</sup>

Prevention is better than the cure and tooth decay is largely preventable. Preventive dental care and have regular check-ups will set them on the right path for a lifetime of good oral health. Diet plays an important role in cavity formation.<sup>9, 10</sup> Sugary toffees, biscuits and drinks are part of the holidays and hard to avoid. Maintaining good oral hygiene is essential for healthy teeth and gums. Help your child brush twice a day with a toothpaste containing fluoride. The ideal time to brush is after breakfast and before bedtime using a soft bristle toothbrush. Sticking to structured and predictable toothbrushing times makes the habit become routine. It is always a good idea for parents to help and supervise brushing for school-age children until they are 7-8 years old. So, maintaining such practices can help in preventing dental issues in children.<sup>11</sup> Therefore an extended holiday atmosphere provided by the pandemic with its restricted dental care access can be period of increased dental complaints.

This survey is the first of its kind to assess the practices adopted to prevent child dental health issues and the need for pediatric dental care expressed by the population. Due to the social distancing norms and consequent restrictions on direct study the methodology of online survey was used as the study method.

### **Methodology**

A cross sectional survey using a specifically designed questionnaire adapted as a Google form was conducted

during the lockdown months. Convenient sampling technique was used for the study. There were no studies examining these variables so the sample size was calculated based on a study to verify oral health, treatment needs, dental service accessibility, and impact of oral health on quality of life (QL) of subjects from Brazil as 180.<sup>12</sup> An online questionnaire with 23 questions focusing on socio-demographic, perceived needs, and preventive practice was developed for the survey. All respondents in Kozhikode city with children or children between 6-12 years directly under their care who consented for the study were included. Respondents who did not have direct childcare responsibility, who lived outside the Kozhikode city, who had children above or below the specified age, and those who did not complete the questionnaire were excluded. The online questionnaires maintaining anonymity (names and email addresses were not collected) of the participants were circulated via e-mail groups and WhatsApp groups of different parent- teacher and school groups and miscellaneous housing societies in Kozhikode city to get a wide coverage. A detailed information letter regarding the study objectives was sent and those who consented could click the link and answer the questionnaire. An institutional ethical review board approval was obtained for the study. The data was collected in excel sheets embedded with the Google forms. The results were tabulated, and data analyzed using the chi-square tests, Pearson Correlation and the independent sample t test and ANOVA. The data was analyzed using SPSS version 17 for Windows.

## **Results**

The survey had 241 consenting respondents. However, 49 were excluded as they were outside Kozhikode city, further 6 were excluded as they had no children, giving a final sample of 186 respondents.

Most of the respondents were females (Female: Male = 69.3%: 30.7%). Of the respondents 183 (98.4%) were married and 3 (1.6%) were either widowed or separated. The mean age was 33.1 years (SD=5.2). Most of the respondents had postgraduate education (53.3%) while 29.0% had graduate and 17.7% had primary/ high school education (Table 1)

There was a mild to moderate worry of developing COVID 19 infection in 45.5% of the population, while 23.1% were extremely worried. There was no worry of infection expressed in 16.1% while 15.4% were unsure of developing COVID 19.

Regarding monitoring of practices to prevent dental issues, 43% of respondents said they most definitely monitored brushing habits of their children during this period. A further 39.9% definitely/ frequently monitored brushing habits. Only 10.8% parents showed no interest in monitoring the child's brushing. 63.4% reported that they definitely/ most definitely monitored post meal mouth washing practice, while 23.1% paid attention to it most of the times while only 8% paid little or no attention to the practice. There was restriction on consumption of soft drinks and sugary syrups by 67.8% while only 32.2% seldom or not at all restricted. Chocolate restriction was implemented by 55.3% while 44.7% did not restrict. While 51% imposed definite/ most definite restriction on play while 49% put little to no restriction. (Table 2)

During the pandemic period 19% of the respondents reported that their child experienced a dental problem. Of these only 21% had decided to delay dental treatment till the pandemic improved. Therefore 79% of those who experienced dental problems in some form or other consulted a dentist. 21.4% of those who had dental problems sought consultation over phone, e-mail or video. Of those who sought help 10.8% were refused a

consultation either direct or tele-consult. The tele-consult was refused 66.6% of the time.

Regarding dental visits, 80.4% said that they would avoid a routine dental visit. Of those with specific issues, the consultation rate was 55.2% for tooth ache, 67.8% for gum swelling and 77.6% for dental trauma. Regarding the need for dental services, during the pandemic, 56% reported that they would definitely/most definitely want dental services to be open, and 23.7% opining that it may be opened while only 20.3% wanted it to be closed. (Table 3)

The type of dental facility they most preferred during this period was private home based dental clinic (63.6%), followed by dental colleges (11.9%), dental wings of health centres (10.5%), corporate multi-specialty dental clinics (7.7%) and dental wings of corporate hospitals (6.3%).

On comparing the respondents who had a dental issue in their child with those who did not, it was seen that people who experienced a dental problem are more to definitely/most definitely to seek dental consultation for tooth ache (57.1% Vs. 26.1%) and less likely to ignore the problem (7.1% Vs. 34.8%) which was significant. ( $\chi^2=23.6$ ;  $p<0.001$ ) The people who had experienced a dental problem also were more likely to seek help for dental trauma (92.1% Vs. 53.9%) and less likely to ignore it (7.2% Vs. 26.7%) which also was significant. ( $\chi^2=15.3$ ;  $p=0.004$ ). The people who had children with no dental problems reported unwillingness for consultation despite reporting significantly that they were not worried about contracting COVID 19 than those with dental issues in children. (18.3% Vs. 7%;  $\chi^2=9.9$ ;  $p<0.04$ ). So the dental problems were being consulted by them as a priority, keeping aside their worry.

The respondents with dental problem experience also wanted services to be open (78.5% Vs. 50.5%) than not

(0% Vs. 12.2%) significantly more than those who did not experience the need. ( $\chi^2=10.0$ ;  $p<0.04$ ) The group which had experience an issue were also most definitely going to monitor post meal washing. (60.7% Vs. 36.5%;  $\chi^2=10.45$ ;  $p=0.03$ ) These groups did not differ significantly in other preventive measures like monitoring of brushing, restriction of chocolates or ice creams or soft drinks and play restriction.

Regarding infection worry influencing consultation for different problems, it was noted that those who expressed greater worry of infection (moderate/extreme) were willing to consult more than those who has little or no fear of infection. (59.2% Vs. 22.2%;  $\chi^2=35.5$ ;  $p=0.003$ ). When it comes to consulting for swelling, significantly more people with extreme worry said they would definitely consult than those with little or no fear. (63.0% Vs. 17.3%,  $\chi^2=26.6$ ;  $p=0.04$ ). Regarding consultation for swelling, significantly more people with infection fear (definite/ most definite) reported that they would definitely consult than those with little or no fear. (50.6% Vs. 28.2%,  $\chi^2=33.5$ ;  $p=0.007$ ) When it came to having dental services open, it was noted more people with infection fear (definite/ most definite) reported that they would definitely consult than those with little or no fear. (54% Vs. 24%) Most of those who never wanted dental services to be open were people with little or no infection fear than those with definite/ most definite infection fear. (81.4% Vs. 14.2%) Both these observations were significant. ( $\chi^2=57.65$ ;  $p<0.001$ ) People with more worry of infection restricted their children from playing than those who had little or no infection worry. (73.6% Vs. 14.7%,  $\chi^2= 40.2$ ;  $p=0.001$ ) However COVID 19 infection fear did not have any significant association with monitoring of other practices to prevent dental problems. Education of the parent showed a significant association with monitoring of post meal washing of mouth with more

parents with post graduate education insisting on the practice than those with primary/high school education. (606% Vs. 3.0%,  $\chi^2= 19.5$ ;  $p=0.012$ ). Education however did not have any significant association with other preventive practices. Education also had no association with infection worry, consultation pattern, and need for services to remain open.

### **Discussion**

Modern dentistry focuses on prevention, and oral health is the prerequisite for that. Maintaining effective oral hygiene by rinsing, effectively brushing teeth to remove dirt and food debris. Parents should manage children's diet and avoid eating high-sugar foods/ juices, at high frequency; in addition, because children are more at home and playing during the epidemic, prone to deciduous teeth and young permanent teeth trauma, parents should take good protection.<sup>13</sup> In this study the pandemic period monitoring of parents of the brushing, cleaning practices were given great attention. So also most parents restricted soft drinks, ice creams and out door play. This adheres to the recommendations from previous literature.<sup>13</sup> However we do not have any comparative data on the levels to which such practices were adopted during this pandemic, as no studies exist on preventive dental practices during COVID 19 period. Of the preventive practices post meal washing was significantly monitored by people who had children with dental problems and by parents with postgraduate education. These findings also are unverifiable as there are no studies examining these variables. Reviews recommend caries prevention strategies like brushing, washing post meal, healthy diet, avoidance of soft and energy drinks, high sugar rich substances like candies during the period of COVID 19.<sup>13</sup> Further it was worry of catching COVID 19 than the worry of dental trauma that seemed to have prevented parents from allowing children to play. However, a review

has mentioned that during COVID 19 the need to spend more time inside their homes, may result more lively modes play in children, which might increase the incidence of dental trauma, and the consequent need for emergency consultation results in increased risk of COVID 19 contagion.<sup>14</sup> The review goes on to recommend close monitoring of play in children and avoidance of or provision of mouth guards if they are engaged in contact sports.<sup>13</sup>

Dental problems were encountered by nearly one- fifth of the children and most cases sought treatment (79%). So there is need for dental services and around 79.7% wanted dental services to be open. Though there are no clear cut guidelines as to case acceptance for treatment, there is consensus that only emergency cases be dealt with.<sup>4</sup> Regarding the others there is a gray area. A review from China states that in principle, children should go to hospital as little as possible or not, unless there is an oral emergency such as tooth trauma, maxillofacial infection, severe swelling, severe pain in the mouth or teeth that must be treated immediately. Our study shows that patients with pain, swelling. And trauma seek consultation despite the COVID pandemic. The patients who had encountered such problems are more likely to seek treatment for ache and trauma. They also tend to seek treatment despite their high fear of COVID 19 as demonstrated by this study. Therefore, for children with non-emergency oral diseases, there needs to be some guidelines for management. A Chinese review recommends that non-emergency oral diseases should be treated at home and selected or postponed to the oral medical institution. They further impress the point that their hospital public account opened a free online consultation to provide timely diagnosis and treatment suggestions for children, effectively reducing the number of emergency oral consultations and reducing unnecessary

medical treatment.<sup>13</sup> So the need for tele-consultation, not as definitive treatment, but avenues for provisional diagnosis, parental counseling, broad treatment suggestions and averting emergencies has a major role which need to be studied and practiced based on strict guidelines. In our study, 21.4% sought tele-dental consultation further impressing the point that this is a modality that needs serious examination. Again, currently no studies show the rate of teleconsultations during COVID 19 period. However, we may need to form a national policy by looking into a number of country-specific measures currently in place. For example, in the United States (US), Telephone Health (Telehealth) systems have been introduced, and United States Department of Health and Human Services has relaxed the Health Insurance Portability and Accountability Act (HIPAA) regulations in order to enable free and transparent Telehealth services to patients during the COVID-19 public health emergency.<sup>15</sup> In Brazil, the Ministry of Health has also implemented regulations for Telehealth services to reduce disease transmission.<sup>16</sup> Of the facilities preferred an overwhelming majority preferred home based private clinics. These facilities usually have one to two doctors with visiting consultants. They have little personnel to screen and identify COVID - 19 cases. This leads to a greater infection risk for doctors, support staff and consequently the patients. Upon patient arrival in dental practice, patients should complete a detailed medical history form, COVID-19 screening questionnaire and assessment of a true emergency questionnaire (Figs. 4 and Fig. 5). Dental professionals should measure the patient's body temperature using a noncontact forehead thermometer or with cameras having infrared thermal sensors. Patients who present with fever and/or respiratory disease symptoms should have elective dental care deferred for at

least 2 weeks. As per the Centers for Disease Control and Prevention guidelines, individuals with suspected COVID-19 infection should be seated in a separate, well-ventilated waiting area at least 6 ft from unaffected patients seeking care.

Treatment refusal is also an issue which was found in 10.8% cases. A study on Indian dentists during COVID 19 showed that only 10% dentists felt confident to take up cases. But 77.2% had provided emergency treatment at some point in time. This is despite the fact 61.5% had no PPE and 55.8% had no N 95 mask. And 45.9% expressed risk of infection as the main reason for not starting clinics.<sup>18</sup> Our study showed that 78.6% dentists provided treatment which is despite their fear. This level of commitment to service, should be paralleled by measures to protect the dental professionals by adequate provisions of masks, PPE and testing where indicated. Tele-consultation can also be a temporary avenue with little infection risk to the doctor and patient. Also of the people who took tele- dental consultations 66.6% were refused a review states that an array of medico-legal and professional concerns for Indian dentists in terms of such patient care provisions may be the reason.<sup>18</sup>

Reviews have observed that the internet can be used for qualitative research and to generate hypotheses. The internet population, however, is non-representative of the general population. This is an important limitation of our study, as we could not investigate more quantitative variables. However electronic interviews and surveys ('e-surveys') are emerging scientific research methodologies, pioneered by communication scientists, sociologists, and psychologists.<sup>19</sup> Further, the bias towards the more educated and technology adept classes, with no data on people who are unable to afford such platforms.

## Conclusion

Parents have taken adequate preventive measures to avoid dental problems during the pandemic. More care is taken by people who have experienced dental problems and with higher education. There is a great demand for dental services during the pandemic and the problems posed by child dental issues outweigh the fear of contracting COVID-19. There is also a fair percentage of tele-dentistry during this period. Taking into account the needs of the population, safe environments with PPE and masks should be provided on a war-footing and also avenues for tele-consult in minor cases need be considered to better manage such cases in a safe environment.

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**Legend Figure**

Table 1: Socio-demographic Data

Variable	Distribution
Sex	Female- 129 (69.3%) Male – 57 (30.7%)
Age	33.09 years (SD=5.2)
Marital Status	Married- 183 (98.6%) Widowed/ Separated- 3 (1.6%)
Education	Primary/High School- 33 (17.7%) Graduate-54 (29.0%) Postgraduate- 99 (53.3%)

Table 2: Preventive Practices

Variable	Not At All/ Seldom	Mostly/ Definitely/Most Definitely
Monitor Brushing	16.8%	83.2%
Monitor Post Meal Mouth Washing	14%	86%
Chocolate Restriction	53.2%	46.8%
Ice cream Restriction	44.8%	55.2%
Soft Drink Restriction	32.2%	67.8%
Play Restriction	49%	51%



Table 3: Consultation and Service Pattern

Variable	Not At All/ Seldom	Mostly To Most Definitely
Prefer to have Dental Services	20.3%	79.7%
Routine Check-up	80.4%	19.6%
Tooth Ache	44.8%	55.2%
Swelling of mouth/ gums	32.2%	67.8%
Dental Trauma	22.4%	77.6%