BJOS
Brazilian Journal of Oral Sciences

Original Article

Volume 21
2022
e225967

Pediatric dentist attire and relationship with anxiety in children and parents during Covid-19 pandemic

Raghavendra Havale[1,*], Dhanu G Rao[1], S P Shrutha[1], Irin Mathew[1], Namratha Tharay[1], Kausar-E-Taj[1], Kanchan M Tuppadmath[1]

[1] Department of Pedodontics and Preventive Dentistry, AME's Dental College and Hospital, Raichur-584103, Karnataka, India

Corresponding author:
Dr. Raghavendra Havale
Department of Pedodontics and Preventive Dentistry
AME's Dental College and Hospital
Raichur – 584103, Karnataka, INDIA
Email: raghavendrahavale@yahoo.co.in

Editor: Dr. Altair A. Del Bel Cury

Received: April 10, 2021
Accepted: June 8, 2021

Aim: The study aimed to evaluate children's and parent's preferences of dentist's attire during Covid-19 pandemic and their relationship with dental anxiety. **Methods:** A total of 139 Children(71 boys, 68 girls) aged 6-12 years were shown videos of a pediatric dentist working with different attire such as Personal Protective Equipment (PPE) and pedoscrub, and they were asked to express the way they preferred their dentist to be dressed. Children's anxiety levels with different attire of paediatric dentists were assessed in different age groups and for boys and girls separately and recorded it using the Facial image scale. A questionnaire regarding dental anxiety was created online and completed by 139 parents (76 females, 63 males) of various ages and different educational backgrounds who were asked to choose between two outfits. Results were tabulated and statistically analysed using Chi-square test. **Results:** Children aged 10-12 years preferred PPE by 50.6%, whereas 48.1% of children aged 6-9 years least preferred PPE (<0.05). About 46 (33%) were scored as anxious children and they had a preference for pedoscrub. Also, nonanxious children 43(31%) preferred PPE. All educated parents (100%) selected PPE over pedoscrub and the result were shown to be statistically significant. (<0.05). **Conclusion:** Ultimately, the majority of the anxious children chosen pedoscrub, whereas non - anxious children have chosen PPE. Furthermore, the data reveals that both educated parents and older children preferred PPE as their attire for paediatric dentists.

Keywords: Surgical attire. Covid-19. Parents. Dentists. Dental anxiety.

Introduction

The global outbreak of the COVID-19 pandemic has had an impact on every aspect of the human life[1]. Fear and anxiousness are strong emotions that could be linked to the COVID-19 pandemic. Dental anxiety is thought to be the most common cause for problematic behaviour in children[2]. The attitude of the parents has an impact on the children's view. Children are affected by parents who do have a high level of anxiety. Anxiety in youngsters increases when they are surrounded by anxious parents[3].

The appearance of a paediatric dentist has been demonstrated to elicit a variety of behavioural patterns in both children and parents[4]. The enhanced pedoscrub not only made the environment more child-friendly, but also made it easier to converse with the child in the first place[5]. The highly contagious nature of the disease necessitates changes in paediatric dentists' standard dress, such as the use of personal protective equipment (PPE). For children, seeing someone wearing PPE can be intimidating[6]. Recognizing and determining dental anxiety in children and parents regarding paediatric dentist attire is essential for providing successful dental care[7].

Although there are countless reports[5,6,8-10,] on perception towards attire of paediatric dentist, since the Covid-19 pandemic, no studies have assessed about the anxiety levels of children and parents towards PPE and pedoscrub. The study was aimed to interpret the paediatric dentist's attire by children and their parents and their relationship with dental anxiety while functioning during the outbreak of Covid-19.

Materials and Methods

Study design

This was a questionnaire-based cross-sectional study. Children and their parents who visited the department of Paediatric and Preventive dentistry AME's dental college, Raichur during August and September were included in the study. The study was approved by the Institutional Ethical Committee (380/2019-20). Participants were approached while waiting for their appointment, The parents and children gave their informed consent.

The following were the conditions for inclusion criteria;

- Parents and children who could communicate in English as well as in Kannada.
- Children between the ages of 6 and 12 years old (inclusive).
- Children with a physical status of ASA 1 or 2 (American Society of Anaesthesiologists 2014).
- Children & Parents who are willing to participate in the study
- There should be no systemic disorder in children.
- Children who are visiting a dental clinic for the first time.

The following were the conditions for exclusion criteria;

- Children and parents who were unable to complete the survey on their own due to cognitive disabilities.
- Children with A Physical Status Of ASA 3 (American Society Of Anaesthesiologists) and above.
- Children who did not have their parents with them.
- Parents who didn't give consent to take part in the study.

Sample size

A convenience sampling was performed consisting of 145 children aged 6 to 12 years who visited dental clinics, and one of their parents who accompanied them from Out Patient Department of Pediatric and Preventive Dentistry during the Covid-19 Pandemic. Out of this, 6 parent-child pairs who didn't meet the inclusion criteria were excluded from the study and the study size was dropped to 139. (Fig 1)

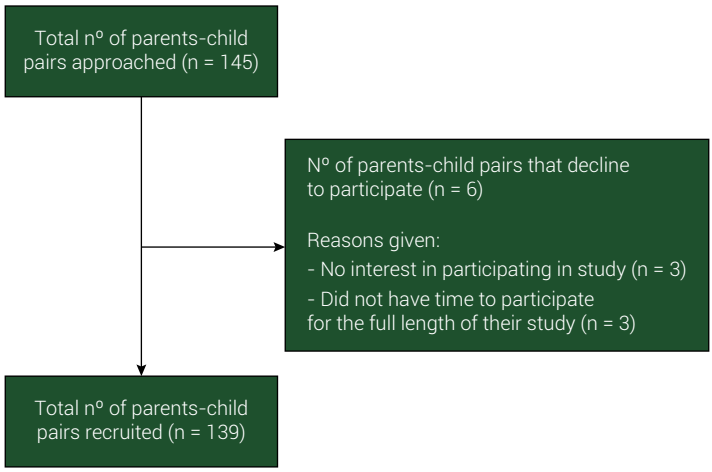

Figure 1. Recruitment flowchart

Sample size estimation: This was done with the formula

$$n = (Z1-\alpha)^2 \{P(1-P))/d^2 \text{ where:}$$

$Z_{\alpha/2}$ is the critical value of the Normal distribution at α/2- 1.64 (at 90% confidence level);d is the margin of error- 3%;p is the sample proportion- 50%= 0.50 (assuming the anxiety levels of children);N is the population size. Substituting the above values in the formula, sample size obtained is 139.

Data collection

Participants were identified and screened for any potential Covid-19 symptoms (temperature, pulse rate and oxygen saturation were measured) in order to prevent cross infection and were confronted while they were waiting for their appointment. A total

of 139 Parents were surveyed using an online interviewer-administered questionnaire and checked the anxiety levels in children using facial image scale (Fig 2).

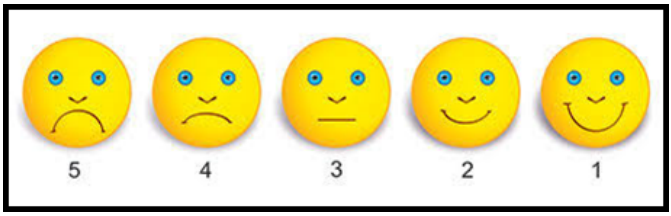

Figure 2. Depicts faces which represents facial image scale with scores: (1) Very happy, (2) Happy, (3) Moderate, (4) Unhappy, (5) Very unhappy

Validity and Reliability of questionnaire

Before its administration to the study participants, reliability and content validity of questionnaire were tested. Questionnaire was validated by 5 experts prior to the study.

The questionnaire was pretested (reliability) on ten parents to ensure that the questions were appropriate, to see if they were easy to understand, and to evaluate the data collection workflow. Reliability was assessed using test-retest method[11]. A total of 10 participants were given the same questionnaire one week apart. Data from 9 participants were included for analysis. Due to missing data, one participant was removed from the study. For each question, Cohen's kappa was used to assess the agreement at two time-points. It was observed that among the 13 questions, 12 questions had a kappa value ranging from fair (0.40) to perfect agreement (1) and hence were retained in the questionnaire. One question had a kappa value of 0.17 was removed from the questionnaire.

Parents were interviewed separately according to the questionnaire to assess their own level of anxiety. The parent's questionnaire consisted of two sections, section one involved the consent and section two had the questionnaire.

Questionnaire survey for parents

Questionnaire was given after obtaining informed consent from the parents. A self-administered questionnaire was prepared and translated to local language Kannada by the language experts. An online semi-structured questionnaire was developed by using google forms. The link of questionnaire was circulated through WhatsApp, Email and other social media and to the parents and received the response through an online survey submission. Each participant was asked to complete a set of questionnaire while waiting for their appointment. Clear instructions were given to avoid confusion. Participants were automatically led to details about the study and informed consent after obtaining and clicking the connection. After agreeing to participate in the survey, they completed the demographic information. Then a series of 12 questions related to dental anxiety emerged, which the

participants were to answer in order. Participants were only permitted to choose one answer per question and only make one request.

Child's perception towards Pediatric dentist's attire

All 139 children were asked to rate their preferred attire from the videos shown with different attire (PPE and Pedoscrub) of pediatric dentist. The attires were as follows: (Figure 3)

Personal Protective Equipment **Pedo scrub**

Figure 3. xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx.

A) Pedoscrub- Colourful uniform with cartoon images in order to reduce the white coat phobia in children.

B) PPE – Equipment that will protect the user against health or safety risks at work which includes goggles, face shield, mask, gloves, gowns, head and shoe cover.

And their anxiety levels were assessed using facial image scale. The Facial Image Scale consists of one item with a five-faces (ranging from a very sad to a very smiley face). It is a 'state' indicator of anxiety because children were asked to show which of the faces they feel most likely at that time. Anxiety level of child for attire according to facial image scale in (Fig 2) as follows. (1) very happy, (2) Happy, (3) Moderate, (4) unhappy, (5) very unhappy. Children with score 4 & 5 as highly anxious[12].

Statistical Analysis

Observed data was coded, tabulated and analysed using IBM SPSS Statistics for Windows (Version 20.0. Armonk, NY: IBM Corp.). Descriptive data were reported as frequency and percentages for categorical variables and mean and standard deviation for continuous variables. Comparison between study groups (gen-

der, age group and education level of parent) for categorical dependant variables (questions) and (gender, age) of child for child's perception of PPE and scrub was done using Chi-square test. A p-value of less than 0.05 was considered statistically significant.

Results

Of all 139 children 46 (33%) were scored as anxious children and had preference of pedoscrub and 42 (30%) preferred PPE. Of all non-anxious children, 33(24%) had preference of pedoscrub and 43 (31%) preferred PPE. (Fig 4). The comparison of perception of PPE and pedoscrub by gender of child using facial image scale showed that there is no statistical significance in anxiety scores between boys and girls. (P=0.097) (P=0.431)(Table 1).

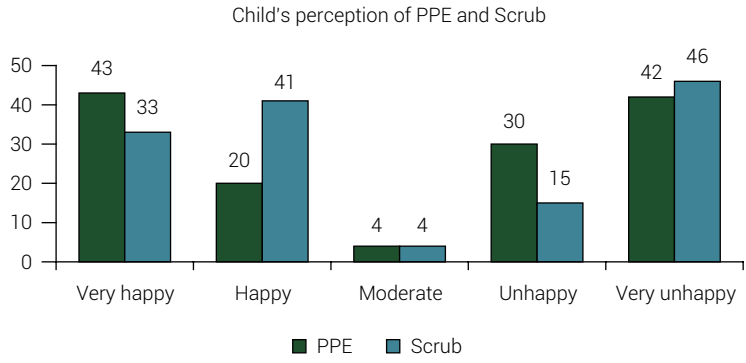

Figure 4. Child's Perception of PPE and scrub using Facial Image Scale

Table 1. Comparison of perception of PPE and pedoscrub by gender of child (Facial Image Scale) using Chi square test

Perception score	PPE score		p value	Pedo Scrub score		p value
	Male	Female		Male	Female	
Very Happy	26 (40%)	17 (23%)	0.097	17 (26.2%)	16 (21.6%)	0.431
Happy	5 (7.7%)	15 (20.3%)		16 (24.6%)	25 (33.8%)	
Moderate	2 (3.1%)	2 (2.7%)		3 (4.6%)	1 (1.4%)	
Unhappy	15 (23.1%)	15 (20.3%)		9 (13.8%)	6 (8.1%)	
Very Unhappy	17 (26.2%)	25 (33.8%)		20 (30.8%)	26 (35.1%)	

* statistically significant at $p < 0.05$

Out of 139 children, approximately 50.6 % of children aged 10-12 years preferred PPE and 48.1% of children aged 6-9 years least preferred it. It has also shown that elder

children were less anxious towards PPE when compared to younger ones. Preference was statistically significant. (P<0.05) (Table 2).

About 50 % Children aged 6-9 years were less anxious towards pedoscrub whereas 50.6% of children aged 10-12 years preferred their dentist not to wear them and the result was significant at (P<0.05) (Table 2).

Table 2. Comparison of perception of PPE and pedoscrub by age group of children (Facial Image Scale) using Chi square test

Perception score	PPE score		p value	Pedo Scrub score		p value
	6 - 9 years	10 - 12 years		6 - 9 years	10 - 12 years	
Very Happy	0 (0.0%)	43 (50.6%)	< 0.001	27 (50.0%)	6 (7.1%)	< 0.001
Happy	5 (9.3%)	15 (17.6%)		21 (38.9%)	20 (23.5%)	
Moderate	2 (3.7%)	2 (2.4%)		1 (1.9%)	3 (3.5%)	
Unhappy	21 (38.9%)	9 (10.6%)		2 (3.7%)	13 (15.3%)	
Very Unhappy	26 (48.1%)	16 (18.8%)		3 (5.6%)	43 (50.6%)	

* statistically significant at p < 0.05

The result from the questionnaire study showed that there were no statistical significant difference between the two age groups and different gender groups towards the attire of Pediatric dentist. Parent's education showed significant relation in the preference of dentist attire during Covid-19 pandemic. That is all the educated parents (100%) selected PPE over pedoscrub in reducing the droplet transmission. (P=0.001) (question 10) (Table 3).

Discussion

The impact of Covid-19 Pandemic led to an overwhelming feeling of fear and anxiety among parents and children. The need for PPE for paediatric dentists has caused increased anxiety in both parents and children, posing challenges in oral health management. Several studies in the literature addressed preferences of children and parents attitude towards attire of the pediatric dentist and association between dental anxiety[5,8-10]. Since Paediatric dentists began wearing PPE at the clinic during the Covid-19 outbreak, the acceptability of this attire was evaluated along with anxiety level of parents and children.

The findings of the current study showed that anxious children preferred pedoscrub which is similar to the findings from previous studies which concluded that anxious children preferred colourful attires[5,13]. In our opinion the reason behind this may be due to the increased access to the internet and social media which made children more aware about the use of protective wears in dental operatory. We also found that most of the non-anxious children preferred PPE as their attire of choice.

In current study we also found that there is no significant difference in anxiety scores between boys and girls for PPE and pedoscrub.

Table 3. Responses based on age, gender and education level of parents using chi-square test

Question	Response	Total	Age			Gender			Education of parents		
			Less than or equal to 40 years	More than 40 years	p value	Male	Female	p value	High school and below	Intermediate/ Diploma and above	p value
1)Have you ever taken your child to a pediatric dentist (Child's dentist)?	No	89 (64.0%)	64 (71.9%)	25 (50.0%)	0.008*	39 (61.9%)	50 (65.8%)	0.383	61 (68.5%)	28 (56.0%)	0.098
	Yes	50 (36.0%)	25 (28.1%)	25 (50.0%)		24 (38.1%)	26 (34.2%)		28 (31.5%)	22 (44.0%)	
2)Are you anxious about visiting a pediatric dentist for the treatment of your child?	No	74 (53.2%)	43 (48.3%)	31 (62.0%)	0.084	36 (57.1%)	38 (50.0%)	0.252	41 (46.1%)	33 (66.0%)	0.018*
	Yes	65 (46.8%)	46 (51.7%)	19 (38.0%)		27 (42.9%)	38 (50.0%)		48 (53.9%)	17 (34.0%)	
3)Do you know people in India are affected by Covid-19?	No	4 (2.9%)	4 (4.5%)	0 (0.0%)	0.164	2 (3.2%)	2 (2.6%)	0.616	1 (1.1%)	3 (6.0%)	0.133
	Yes	135 (97.1%)	85 (95.5%)	50 (100.0%)		61 (96.8%)	74 (97.4%)		88 (98.9%)	47 (94.0%)	
4)Are you aware of the mode of spread of Covid-19?	No	2 (1.4%)	2 (2.2%)	0 (0.0%)	0.408	2 (3.2%)	0 (0.0%)	0.204	2 (2.2%)	0 (0.0%)	0.408
	Yes	137 (98.6%)	87 (97.8%)	50 (100.0%)		61 (96.8%)	76 (100.0%)		87 (97.8%)	50 (100.0%)	
5)Did you take your child to dental clinic during the Covid-19 pandemic?	No	85 (61.2%)	55 (61.8%)	30 (60.0%)	0.488	40 (63.5%)	45 (59.2%)	0.367	64 (71.9%)	21 (42.0%)	0.001*
	Yes	54 (38.8%)	34 (38.2%)	20 (40.0%)		23 (36.5%)	31 (40.8%)		25 (28.1%)	29 (58.0%)	
6)Are you aware that personnel protective equipment (PPE) worn by pediatric dentist reduces the droplet transmission from dentist to child and vice versa ?	No / Don't know	20 (14.4%)	16 (18.0%)	4 (8.0%)	0.084	8 (12.7%)	12 (15.8%)	0.394	18 (20.2%)	2 (4.0%)	0.006*
	Yes	119 (85.6%)	73 (82.0%)	46 (92.0%)		55 (87.3%)	64 (84.2%)		71 (79.8%)	48 (96.0%)	

Continua

Continuação

7)Do you think your child will feel anxious seeing the pediatric dentist in full covered PPE?	No / Don't know	57 (41.0%)	36 (40.4%)	21 (42.0%)	0.499	24 (38.1%)	33 (43.4%)	0.322	39 (43.8%)	18 (36.0%)	0.236
	Yes	82 (59.0%)	53 (59.6%)	29 (58.0%)		39 (61.9%)	43 (56.6%)		50 (56.2%)	32 (64.0%)	
8)Do you feel the colourful dress worn by the pediatric dentist reduces the anxiety in children?	No / Don't know	23 (16.5%)	14 (15.7%)	9 (18.0%)	0.451	12 (19.0%)	11 (14.5%)	0.310	22 (24.7%)	1 (2.0%)	< 0.001*
	Yes	116 (83.5%)	75 (84.3%)	41 (82.0%)		51 (81.0%)	65 (85.5%)		67 (75.3%)	49 (98.0%)	
9)Do you think that the play area filled with toys reduces your child's anxiety level ?	No / Don't know	29 (20.9%)	15 (16.9%)	14 (28.0%)	0.092	15 (23.8%)	14 (18.4%)	0.284	23 (25.8%)	6 (12.0%)	0.041*
	Yes	110 (79.1%)	74 (83.1%)	36 (72.0%)		48 (76.2%)	62 (81.6%)		66 (74.2%)	44 (88.0%)	
10)Is PPE more effective than colourful dress of pediatric dentist in reducing droplet transmission during this Covid-19 pandemic?	No / Don't know	15 (10.8%)	11 (12.4%)	4 (8.0%)	0.311	8 (12.7%)	7 (9.2%)	0.348	15 (16.9%)	0 (0.0%)	0.001*
	Yes	124 (89.2%)	78 (87.6%)	46 (92.0%)		55 (87.3%)	69 (90.8%)		74 (83.1%)	50 (100.0%)	
11)Do you think prevention of droplet transmission is more important than handling child's anxiety?	No / Don't know	15 (10.8%)	10 (11.2%)	5 (10.0%)	0.532	7 (11.1%)	8 (10.5%)	0.562	15 (16.9%)	0 (0.0%)	0.001*
	Yes	124 (89.2%)	79 (88.8%)	45 (90.0%)		56 (88.9%)	68 (89.5%)		74 (83.1%)	50 (100.0%)	
12)Has your perception changed towards the attire of pediatric dentist after answering this questionnaire?	No	19 (13.7%)	13 (14.6%)	6 (12.0%)	0.439	10 (15.9%)	9 (11.8%)	0.329	18 (20.2%)	1 (2.0%)	0.001*
	Yes	120 (86.3%)	76 (85.4%)	44 (88.0%)		53 (84.1%)	67 (88.2%)		71 (79.8%)	49 (98.0%)	

In the present study we have found that elder children were less anxious towards PPE and younger ones preferred pedoscrub. This suggests that dental anxiety decrease with increasing age. Our study revealed that elder children were less anxious towards PPE is due to the fact that they were better instructed about the transmission of Covid-19 and they are aware about the better aspects of PPE whereas younger age group children had the preference of coloured attire to trust their pediatric dentist. This result effectively replicates the findings of Babaji P et al (2017) where younger age group children had the preference of coloured attire of dentists[2].

This study also compared parents of different age group, and found that majority of the elder age group parents were ready to bring their child for dental treatment whereas younger age groups were less aware about the importance and benefits provided by the Paediatric dentist and the result was statistically significant. (P =0.084). In the present study there was no statistically significant difference observed in between the gender of parents about the perception towards the Paediatric dentist attire.

The findings of the questionnaire study showed that parents who have only primary level education were not ready to take their children to clinic during Covid-19 pandemic indicating that they are more scared about the transmission of the disease. In our study we also found that parents with higher education preferred PPE over pedoscrub. The level of education of parents was found to have a significant effect on their pediatric dentist attire preferences. Result from our finding showed that all educated parents preferred PPE in reducing the droplet transmission which support the view of Kiranmayi et al, (2021)[14]. From our point of view, people with better education have received better knowledge about PPE during this pandemic. Some of the limitations of the present study are larger samples could not be covered due to cross sectional nature of the study and language barrier as it was conducted in only two languages (English and kannada). Moreover, it could not be carried out in people who do not have smart phone to access the questionnaire. Lastly, main drawback of the study was general anxiety was not assessed before the start of study which could have made our results more precise.

In conclusion, most of the anxious children chose pedoscrub and non-anxious children have chosen PPE. And the study also suggests that both educated parents and elder children chose Personal Protective Equipment as the attire for Paediatric dentists.

Acknowledgements

We would like to thank all the participants for giving their valuable time for the study.

Funding

This research received no external funding.

Data availability

Datasets related to this article will be available upon request to the corresponding author.

Conflict of Interest

None

Author Contribution

Raghavendra Havale: Design of the work, interpretation of data and revision of manuscript

Dhanu G Rao: Drafting the work and revision of manuscript.

Shrutha S P. Manuscript editing

Irin Mathew: Data collection, design of the work, analysis of data and drafting the work

Namratha Tharay: Designing of the study.

Kausar-E-Taj: acquisition of the data

Kanchan M Tuppadmath: acquisition of the data

All authors actively participated in the manuscript's findings, and have revised and approved the final version of the manuscript.

References

1. Ahmed MA, Jouhar R, Ahmed N, Adnan S, Aftab M, Zafar MS, et al. Fear and Practice Modifications among Dentists to Combat Novel Coronavirus Disease (COVID-19) Outbreak. Int J Environ Res Public Health. 2020 Apr 19;17(8):2821. doi: 10.3390/ijerph17082821.
2. Babaji P, Chauhan PP, Rathod V, Mhatre S, Paul U, Guram G. A cross sectional evaluation of children preference for dentist attire and usage of camouflage syringe in reduction of anxiety. Eur J Dent. 2017 Oct-Dec;11(4):531-6. doi: 10.4103/ejd.ejd_223_17.
3. Dikshit P, Limbu S, Bhattarai K. Evaluation of dental anxiety in parents accompanying their children for dental treatment. Orthod J Nepal. 2013 Dec;3(1):47-52. doi:10.3126/ojn.v3i1.9282.
4. Panda A, Garg I, Bhobe AP. Children's perspective on the dentist's attire. Int J Paediatr Dent. 2014 Mar;24(2):98-103. doi: 10.1111/ipd.12032.
5. Kuscu OO, Caglar E, Kayabasoglu N, Sandalli N. Short communication: preferences of dentist's attire in a group of Istanbul school children related with dental anxiety. Eur Arch Paediatr Dent. 2009 Jan;10(1):38-41. doi: 10.1007/BF03262666.
6. Alsarheed M. Children's Perception of Their Dentists. Eur J Dent. 2011 Apr;5(2):186-90.
7. Yon MJY, Chen KJ, Gao SS, Duangthip D, Lo ECM, Chu CH. An Introduction to Assessing Dental Fear and Anxiety in Children. Healthcare (Basel). 2020 Apr 4;8(2):86. doi: 10.3390/healthcare8020086.
8. Kamavaram Ellore VP, Mohammed M, Taranath M, Ramagoni NK, Kumar V, Gunjalli G. Children and Parent's Attitude and Preferences of Dentist's Attire in Pediatric Dental Practice. Int J Clin Pediatr Dent. 2015 May-Aug;8(2):102-7. doi: 10.5005/jp-journals-10005-1293.
9. Ravikumar D, Gurunathan D, Karthikeyan S. Children's perception towards pediatric dentist attire: An observational study. Int J Pedod Rehabil 2016 Dec;1(2):49-51. doi: 10.4103/2468-8932.196479.
10. Tong HJ, Khong J, Ong C, Ng A, Lin Y, Ng JJ, et al. Children's and parents' attitudes towards dentists' appearance, child dental experience and their relationship with dental anxiety. Eur Arch Paediatr Dent. 2014 Dec;15(6):377-84. doi: 10.1007/s40368-014-0126-z.

11. Howard KE, Freeman R. Reliability and validity of a faces version of the Modified Child Dental Anxiety Scale. Int J Paediatr Dent. 2007 Jul;17(4):281-8. doi: 10.1111/j.1365-263X.2007.00830.x.

12. Prasad MG, Nasreen A, Radha Krishna AN, Devi GP. Novel Animated Visual Facial Anxiety/Pain Rating Scale-Its reliability and validity in assessing dental pain/anxiety in children. Pediatr Dent. J. 2020 Aug;30(2):64-71. doi: 10.1016/j.pdj.2020.05.003.

13. Asokan A, Kambalimath HV, Patil RU, Maran S, Bharath KP. A survey of the dentist attire and gender preferences in dentally anxious children. J Indian Soc Pedod Prev Dent. 2016 Jan-Mar;34(1):30-5. doi: 10.4103/0970-4388.175507.

14. Kiranmayi M, Raju SS, Reddy ER, PM Srujana, Snehitha P, Divya SS. Parental attitude towards their child's dental treatment during covid19 pandemic - a questionnaire study Ind J Res. 2021 Feb;10(2):61-3. doi: 10.36106/paripex/7004664.