

## Original Article

# Preferences and choices of a child concerning the environment in a pediatric dental operator

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## ABSTRACT

**Background:** The aim of this cross-sectional descriptive study was to determine children's preferences in a dental clinic so as to reduce anxiety during dental procedures. In this study survey methodology was used.

**Materials and Methods:** A questionnaire was designed to evaluate the child's preference in a dental hospital so as to remove anxiety during a dental procedure. This study was carried out on 50 children aged 6–10 years. The children were randomly selected based on their first dental visit in a private dental college.

**Results:** A large number of children preferred listening to rhymes and watching cartoons while undergoing dental treatment. They also preferred the walls painted with cartoons, the dental chair full of toys, a scented environment, and the presence of their parents during the treatment.

**Conclusion:** The results of this study will help the dental team decide on the appropriate design of the pediatric dental operator room in order to provide a comfortable dental environment which will reduce anxiety in children and improve the quality of health care.

**Key Words:** Anxiety, children, dental clinic, music

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## INTRODUCTION

Children are the country's greatest natural resources. The experience of a child during the formative years can go a long way in formulating the individual personality as an adult. One of the multitudes of experiences is the visit to the dentist who, unfortunately, is often caricatured as a pain imparting tooth-puller in a child's mind.<sup>[1]</sup> Most children do not cooperate during a dental procedure and are sometimes very difficult to manage in a dental clinic. These difficulties in managing are not only related to the mechanical procedure involved but also to emotional distress experienced by the child. Some

of the common emotional distress encountered by a child during a dental treatment are anxiety and fear which might have their roots in a previous traumatic experience in the dental office or in hospitalization for other reasons.<sup>[2,3]</sup>

Dental anxiety and fear of dental treatment in children are recognized in many countries as a public health dilemma.<sup>[4]</sup> The term dental fear and dental anxiety are often used synonymously<sup>[5]</sup> and are considered to be the main reason for behavior management problems and avoidance of dental care.<sup>[6]</sup>

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It is important for the pediatric dentist to establish a friendly relationship with children to combat fears and deliver effective and efficient treatment. Creating a strong rapport with the child on the first visit helps create a comfortable atmosphere in which the child does not feel threatened.<sup>[7]</sup> The changing expectations of children can encourage pediatric dentists to develop a more child-friendly atmosphere in their clinics. Environmental elements that produce positive feelings can reduce anxiety.<sup>[8]</sup> In fact, the attractiveness of the physical environment in the dental operator has been shown to be significantly associated with higher perceived quality and satisfaction, higher reported positive interaction with staff and reduction in patient anxiety. Instead of adults choosing the dental environment for children, it is beneficial to accept preferences and choices of children as to what they enjoy as patients. Therefore, this study was carried out to determine the children's preferences and choices concerning a pediatric dental environment.

## MATERIALS AND METHODS

A cross-sectional descriptive study using survey methodology was conducted on 50 children 6–10 years of age, who visited the Department of Pediatric and Preventive Dentistry, Meenakshi Ammal Dental College and Hospital, Chennai. The sample size was calculated based on previous studies with a power of 80% using the Open Source Epidemiologic Statistics for Public Health, OpenEpi, Version 3 software. Informed consent was obtained from the parents of each child before starting the survey. Only children who exhibited cooperative behavior according to Wright's classification were included in the study. A self-completion 10-item questionnaire was developed to gather data on the child's choices and preferences in a dental operator. These included color of the walls, design on the walls, the presence of toys, a scented operator, music and the kind of music, gender of the doctor, color of the doctor's uniform, watching a cartoon during the dental procedure and the presence of their parents during the dental procedure.

A literature search was carried out to find studies assessing different aids and methods that help pediatric patients overcome preoperative anxiety. This literature was adapted to form a questionnaire. These questionnaires were distributed to the children on their first dental visit after the clinical examination

and before the clinical procedure on the dental chair as they can see all that they preferred in the operator. The questionnaire was filled by the child based on the choices of the child in the presence of their parents. A single dentist was there to help explain questions to the child if doubt arose. The parents of the children received explanations about the purpose of research and were provided with assurance about confidentiality.

The questionnaires were collected and passed in a blind manner to a statistician for the analysis of the results. The statistical analysis was performed using Statistical Package Social Science, IBM Corporation (SPSS Inc. Released 2007, SPSS for Windows, Version 16.0. Chicago). The analysis was carried out on cross tables using Chi-squared test ( $2 \times 2$  tables) to assess responses to the questionnaire items across age groups and gender. The value of  $P < 0.05$  was considered statistically significant.

## RESULTS

A total of 50 children (29 males and 21 females) aged 6–10 years, with a mean age of  $8.1 \pm 1.17$  years, completed and returned the questionnaires. Table 1 shows the preferences of a child in the dental operator, where only eight questions exhibited statistical significance. Nearly 76% of the children preferred cartoon designs on the walls of the dental operator; 82% preferred toys in the dental operator; 94% preferred a scented operator; 96% preferred listening to music and when asked specifically 64.6% preferred rhymes. Nearly 88% of the children wanted the doctor to explain the procedure to them before starting. About 76% wanted to watch a cartoon movie during the dental procedure and 68% wanted their parental presence. Table 2 shows the gender-based analysis, where a significant difference existed only in the preference of the doctor, with 26 of the male children preferring a male doctor to treat them and of 21 females 14 preferring a female doctor to treat them. Other questions did not exhibit statistically significant differences in terms of gender.

## DISCUSSION

This study revealed that children had strong preferences regarding the dental operator environment. The purpose of identifying the likes and dislikes in a child is to create an environment in

**Table 1: Results showing children's preferences in a dental operator**

Questions	Total, n (%)	P
Preferred color of the dental operator		
White	18 (36.9)	0.806
Blue	20 (40.0)	
Yellow	5 (10.0)	
Green	7 (14.0)	
Design of the wall		
Cartoon	38 (76.0)	0.048
Nature scene	8 (16.0)	
Doesn't matter	4 (8.0)	
Toys in the dental operator		
Yes	41 (82.0)	0.003
No	9 (18.0)	
Scented operator		
Yes	47 (94.0)	0.019
No	3 (6.0)	
Music in the operator		
Yes	48 (96.0)	0.002
No	2 (4.0)	
What kind of music		
Rhymes	31 (64.6)	0.028
Songs	14 (29.2)	
Instrumental	3 (6.3)	
Gender of the doctor		
Male	33 (66.0)	0.506
Female	17 (34.0)	
Would you like the doctor to wear a		
White coat	39 (78.0)	0.270
Colored coat	11 (22.0)	
Preference of watching cartoon		
Yes	38 (76.0)	0.004
No	12 (24.0)	
Parents presence during the treatment		
Yes	34 (68.0)	0.014
No	16 (32.0)	

which children are more comfortable and to improve the quality of dental visits. The age group 6–10 was taken since only in this age the behavior of the child and the child's approach to things changes.

Color plays an important role in a child's life. A child's environment which includes the clothes he/she wears, the toys he/she plays with and other things at home convey many psychological messages through colors.<sup>[9]</sup> If the color of the dental environment can have a positive impact on the child's behavior, it is possible that those colors may be added to comfort the child, thus reducing dental anxiety. The use of child-friendly colors such as yellow and blue in the dental operator could enhance a positive dental attitude in the child's mind.<sup>[10]</sup> The color yellow is associated with happiness, cheerfulness and a positive

emotional state, the color blue is associated with security calmness and comfort; green is associated with quietness; red is associated with anger, aggression and excitation; and black is associated with depression or anxiety.<sup>[11,12]</sup> In this study, majority of the children preferred blue walls, but this was not statistically significant.

A preference of the walls with cartoon design was seen in this study. Studies suggest that walls with pictures or artwork were preferred among the younger age group (6–8 years) when compared to bare walls in the older age group (9–11 years).<sup>[13,14]</sup> The children in this study favored a dental clinic decorated with toys over a routine and bare clinic. This is in agreement with McCarthy *et al.*,<sup>[15]</sup> who reported that the majority of children favored a decorated clinic over a plain clinic. This finding may be attributed to the comfort a decorated clinic generates or the distraction it causes in the child's mind during the dental treatment.

Aromatherapy has been widely recognized as a stress reduction technique. In this study, most of the children preferred a scented dental operator. Jafarzadeh *et al.*<sup>[16]</sup> investigated the effect of aromatherapy with natural essential oil of orange on child anxiety during dental treatments and concluded that its use could reduce salivary cortisol and pulse rate and hence could be effective in reducing anxiety.

The majority of the respondents preferred having music in the dental operator, which was statistically significant. Over the past few decades there has been a growing interest in the use of music in healthcare to achieve a diverse range of outcomes. In the medical setting, studies have found that day-surgery patients who listen to music during their preoperative wait have lower levels of anxiety than patients who receive routine care.<sup>[17]</sup> In pediatric dental patients, there have been conflicting results, with some studies showing that music used for distraction purpose did not result in a decrease in pain, anxiety, or uncooperative behavior during dental treatment.<sup>[18]</sup> When children were asked to choose the type of music in the dental treatment room, the majority preferred listening to rhymes.

The majority of the children in this study indicated that they would prefer to be treated by the dentist of the same gender and this was statistically significant. Assigning children to dentists of the same gender might improve the general comfort level of children in the dental office.<sup>[5]</sup> This is in contrast to a previous study

**Table 2: Results showing gender-based analysis of children's preferences**

Questions	Males, <i>n</i> (%)	Females, <i>n</i> (%)	Total, <i>n</i> (%)	<i>P</i>
Preferred color of the dental operator				
White	11 (37.93)	7 (33.33)	18 (36.9)	0.310
Blue	12 (41.38)	8 (38.09)	20 (40.0)	
Yellow	1 (3.45)	4 (19.04)	5 (10.0)	
Green	5 (17.24)	2 (9.52)	7 (14.0)	
Design of the wall				
Cartoon	22 (75.86)	16 (76.19)	38 (76.0)	0.710
Nature scene	4 (13.79)	4 (19.04)	8 (16.0)	
Doesn't matter	3 (10.34)	1 (4.76)	4 (8.0)	
Toys in the dental operator				
Yes	22 (75.86)	19 (90.48)	41 (82.0)	0.171
No	7 (24.13)	2 (9.52)	9 (18.0)	
Scented operator				
Yes	27 (93.10)	20 (95.24)	47 (94.0)	0.621
No	2 (6.90)	1 (4.76)	3 (6.0)	
Music in the operator				
Yes	28 (96.55)	20 (95.24)	48 (96.0)	0.669
No	1 (3.45)	1 (4.76)	2 (4.0)	
What kind of music				
Rhymes	18 (62.07)	13 (61.90)	31 (64.6)	0.280
Songs	7 (24.14)	7 (33.33)	14 (29.2)	
Instrumental	3 (10.34)	0	3 (6.3)	
Gender of the doctor				
Male	26 (89.66)	7 (33.33)	66.0 (33)	0.000
Female	3 (10.35)	14 (66.67)	34.0 (17)	
Would you like the doctor to wear a				
White coat	24 (82.76)	15 (71.43)	78.0 (39)	0.270
Colored coat	5 (17.24)	6 (28.57)	22.0 (11)	
Preference of watching cartoon				
Yes	20 (68.97)	18 (85.71)	76.0 (38)	0.151
No	9 (31.03)	3 (14.28)	24.0 (12)	
Parents presence during the treatment				
Yes	20 (68.97)	14 (66.67)	68.0 (34)	0.551
No	9 (31.03)	7 (33.33)	32.0 (16)	

carried out by Patir Münevveroglu *et al.*, who reported that 84% of the children preferred to be treated by a female dentist regardless of the child's gender.<sup>[19]</sup>

Watching cartoons while undergoing dental procedure serves as a mode of distraction. In this study, the majority of the children preferred watching cartoons during the dental procedure. Hoge *et al.*<sup>[20]</sup> concluded that video eyewears were more preferred to normal coolers.

The physical appearance of a doctor plays an important role in building up a doctor-patient relationship. In this study, the majority of the children preferred to see their doctor wearing a white uniform, but this was not statistically significant. This finding supports the reports of McCarthy *et al.*,<sup>[15]</sup> who found that children are not afraid of a doctor in a white uniform. However, Patir Münevveroglu *et al.*<sup>[19]</sup>

reported that 76.5% of the children preferred their dentist to wear a colored uniform rather than a white one.

Conventionally, parents are excluded from the dental operator for their child's dental care with an office policy that eliminates many behavior problems.<sup>[21]</sup> Exclusion of the parents allowed the dentist to develop an amicable relationship with the child without the parents' interference. However, in the present study, the majority of the children who were 6–8 years of age preferred their parents to be present in the dental operator during the dental procedure.

## CONCLUSION

The results of the present study will help the dental team decide on the appropriate design of the pediatric

dental operatory and prepare a comfortable dental environment which will reduce anxiety in children and improve the quality of healthcare. A blue wall, with cartoon background, filled with toys, in a scented atmosphere, with rhymes played in the background, with cartoon videos in front and the presence of parents, are the most preferred dental clinic atmosphere for children aged 6–10 years.

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### Conflicts of interest

The authors of this manuscript declare that they have no conflicts of interest, real or perceived, financial or nonfinancial in this article.

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