

Evaluation of child preference for dentist attire and usage of camouflage syringe in reduction of anxiety

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ABSTRACT

Objectives: The aim of this study is to evaluate the child preference for dentist attire and camouflage versus conventional syringe in reduction of anxiety. **Materials and Methods:** A total of 600 children aged 6–14 years were made to look at a set of six photos of an individual dressed with different colored apron of pink, green, blue, white colors, formal dress, and cartoon character along with conventional syringe and camouflage syringe with a toy-like appearance to permit injection of local anesthesia. Children's anxiety level during injections and with colored coat was assessed and recorded using the Modified Child Dental Anxiety Scale faces version. **Statistical Analysis Used:** SPSS statistical software version 21 and using Chi-square test. **Results:** Among age group of 6–8 years, 65.33% selected colorful apron, while other age groups 9–10, 11–12 years, and 13–14 years selected 47.34%, 57.34%, and 50.67% white coat, respectively ($P < 0.05$). For syringe, 78% of younger age group (6–10 years) preferred camouflage syringe, whereas 71% of older age group (11–14 years) preferred conventional syringe. Anxiety level of all children for syringe was more compared to that of white coat. **Conclusion:** Younger children prefer colorful attire of dentist and camouflage syringe over conventional compared to older one.

Key words: Attire, camouflage syringe, conventional syringe, dental anxiety

INTRODUCTION

Children are quite afraid and anxious when they recall a previous run-in seeing doctor's white coat. Needle usage for local anesthesia is one of the most common causes for dental fear.^[1] Children often make judgments about their dentist based on his or her appearance.^[2]

The success of pediatric dental practice is not only dependent on the technique applied or the technical skills of the pediatric dentist but also on their patients attitudes and behavior in the operator.^[3] Children could link colors and emotions as pleasing or

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unpleasant effect.^[4] The previous studies hypothesized that colors such as red, blue, yellow, green, black, and white were associated with anger, happiness, sadness, surprise, disgust, and fear, respectively.^[3-5] One way of motivating children is by using their favorite color. A novel, simple, and child-friendly modification of conventional syringe, the camouflage syringe conceals the needle from child's sight, whereas still keeping the syringe functional to deliver the intended drug.^[6]

The prevalence of fearful dental children ranges from 3% to 55% in various populations. It has been observed from the previous studies that younger children are more anxious than older one.^[4,7] The evaluation of dental anxiety in children is a concern as the unexpected behavior of these children will have an impact on the management in the clinical setting.^[8] The Modified Child Dental Anxiety Scale faces version (MCDAS_f) was formed by adding a cartoon faces rating scale to the original numeric form.^[9,10]

The objectives of the study was to evaluate (i) preference of dentist's attire, (ii) preference of conventional versus camouflage syringe, and (iii) anxiety levels for type of syringe and dress color at different ages (6-8, 9-10, 11-12, and 13-14 years).

MATERIALS AND METHODS

Institutional ethical approval and written consent from principals and participating children of the respective schools was obtained before the start of the study. A total of 600 school children participated from Jodhpur city of Rajasthan were divided equally ($n = 150$) into 4 age groups; (6-8, 9-10, 11-12, and 13-14 years). The age group was further divided into 6-10 years (300 children) as younger age group, whereas 11-14 years (300 children) as older age group. Age groups of 6-14 years old (male-338, females-262) were selected for the study considering their fear perception would be more validated without external influences.

Each child was asked to identify his preference of dentist attire (dress color) and camouflage over conventional syringe by looking at a set of six photos of an individual dressed with (1) Pink color, (2) Gown with cartoon character, (3) Green color, (4) Blue color, (5) With white apron, and (6) without white apron (formal dressed) along with (a) camouflage syringe and (b) conventional syringe [Figures 1 and 2]. Each child's preference for attire and syringe was recorded.



Figure 1: Image showing pictorial identification of child preference of dentist dress color

Anxiety level of child for syringe and white coat according to MCDAS_f [Figure 3] were scored as follows: (1) not afraid, (2) little afraid, (3) fairly afraid, (4) quite afraid, and (5) very afraid. Total scores thus ranged from 2 to 10. Children with score <4 were categorized as nonanxious, >4 to <6 as moderately anxious and >6 as anxious. Evaluation of every child was done based on (1) preference of dentist attire (apron color), (2) preference of syringe, and (3) rating of anxiety level for syringe and apron according to MCDAS_f.

The results were tabulated and statistically analyzed using SPSS Statistical software for Windows, Version 21.0. Armonk, NY: IBM Corp and using Chi-square test for categorical variables.

RESULTS

Among 6-8 years, 32% selected apron with cartoon character, whereas in rest of the age groups 9-10 years 47.34%, 11-12 years 57.34%, and 13-14 years 50.67% selected white coat ($P < 0.05$) [Graph 1].

Among 6-8 years, 31.75% females selected pink apron, whereas 34.48% males selected cartoon apron ($P < 0.05$). At 9-10 years, 33.80% females and 59.49% males selected white coat, whereas 32.39% female preferred pink and only 2.60% males preferred blue coat ($P < 0.05$). At 11-12 years, 51.72% females and 60.87% males selected white coat and at 13-14 years, 45.72% females and 55% males selected white coat and the result was significant at $P < 0.05$ [Table 1]. 56% of Younger age (6-10 years) kids preferred colorful aprons, whereas 54% older age (11-14 years) kids preferred white coat $P < 0.05$ [Table 2].



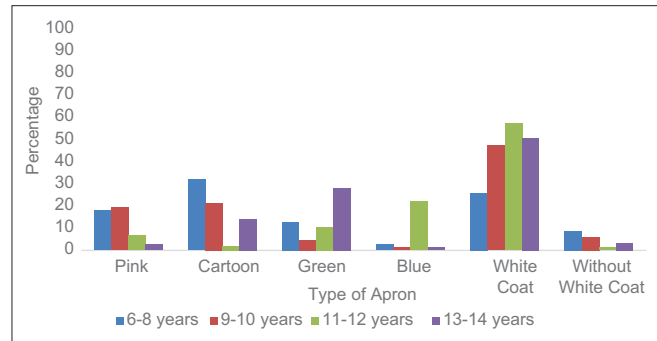
Figure 2: Image showing colored aprons and formal dress (1-4) Camouflage and conventional syringe images (A and B)

QUESTIONNAIRE FOR THE SURVEY REGARDING THE CHOICE OF APRON AND ANXIETY LEVELS									
SR NO	NAME	AGE/GENDER	CHOICE OF APRON OR SYRINGE FROM THE POLAROID PHOTO	HOW DO YOU FEEL ABOUT (MCDASF)					
				1	2	3	4	5	
				SYRINGE			WHITE COAT		
1.									
2.									
3.									
4.									
5.									
6.									
7.									
8.									

Figure 3: Image showing MCDAS₁ scale

78% younger age (6-10 years) preferred camouflage syringe and 71% older age (11-14 years) preferred conventional syringe ($P < 0.05$) [Table 3]. 63.36% females selected camouflage syringe, whereas 54.14% males selected conventional syringe ($P < 0.05$) [Graph 2].

When compared for anxiety level of all children for conventional versus camouflage syringe, at 6-8 years 64%, at 9-10 years 44%, at 11-12 years 42%, and at 13-14 years, 40% children were anxious for conventional syringe ($P < 0.05$) [Table 4]. In 6-8 years 44.67%, in 9-10 years 59.34%, in 11-12 years 66%, and in 13-14 years 72.67% children were nonanxious to white coat-dressed pediatric dentist ($P < 0.05$) [Table 5].



Graph 1: Graph for preference of Apron among different age group. Chi-square value: 194.639. $P: 0$. The result is significant at $P < 0.05$

DISCUSSION

Dental fear may persist to adolescence if not modified at younger age. This fear and anxiety is a major barrier in delivering the successful dental care. [4,6,8] Children fear is more strongly associated with subjective experience of pain than objective type and fear is more among girls than boys. [8] For successful dental care, identification and prevention of dental fear are must as dental environment, attitude, and attire of dentist can influence the child's attitude toward dental care. [4]

Several studies have observed that color has been associated with the negative or positive type of emotions in children. [4] Use of child's friendly color can create positive environment. Similar to our results in Graph 1, Asokan *et al.* observed preference of colored attire of dentist among younger children over older one. [3] Alsarheed concluded from his study that 90%

Table 1: Preference of apron among male and female of different age groups

Age	Gender	Preference of apron						Total	P
		Pink (%)	Cartoon (%)	Green (%)	Blue (%)	White coat (%)	Without white coat (%)		
6-8 years	Female	20 (31.75)	18 (28.57)	8 (12.70)	3 (4.76)	12 (19.05)	2 (3.17)	63	0.001
	Male	7 (8.05)	30 (34.48)	11 (12.64)	1 (1.15)	27 (31.04)	11 (12.64)	87	
	Total	27	48	19	4	39	13	150	
9-10 years	Female	23 (32.39)	20 (28.17)	1 (1.41)	0	24 (33.80)	3 (4.23)	71	0.001
	Male	6 (7.60)	12 (15.18)	6 (7.60)	2 (2.53)	47 (59.49)	6 (7.60)	79	
	Total	29	32	7	2	71	9	150	
11-12 years	Female	8 (13.79)	2 (3.45)	4 (6.90)	14 (24.14)	30 (51.72)	0	58	0.04
	Male	2 (2.17)	1 (1.09)	12 (13.05)	19 (20.65)	56 (60.87)	2 (2.17)	92	
	Total	10	3	16	33	86	2	150	
13-14 years	Female	4 (5.71)	19 (27.14)	13 (18.57)	0	32 (45.72)	2 (2.86)	70	0.001
	Male	0	2 (2.5)	29 (36.25)	2 (2.5)	44 (55)	3 (3.75)	80	
	Total	4	21	42	2	76	5	150	

Chi-square test significant at $P < 0.001$

Table 2: Preference of apron among younger and older age group kids

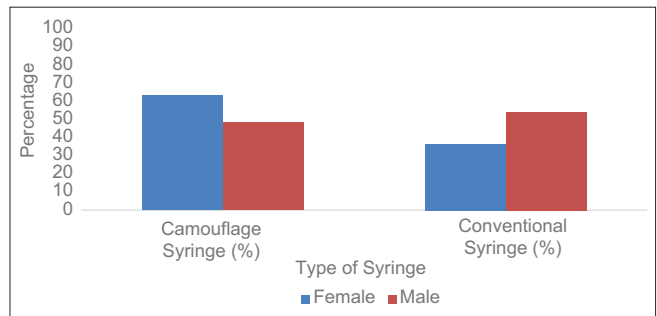
Groups (years)	Preference of apron						Total
	Pink (%)	Cartoon (%)	Green (%)	Blue (%)	White coat (%)	Without white coat (%)	
Younger age (6-10)	56 (18.66)	80 (26.67)	26 (8.67)	6 (2)	110 (36.67)	22 (7.33)	300
Older age (11-14)	14 (4.67)	24 (8)	58 (19.33)	35 (11.67)	162 (54)	7 (2.33)	300
Total	70	24	58	35	272	29	600

χ^2 : 105.756, P : 0, the result is significant at $P < 0.05$

Table 3: Type of syringe preferred among younger and older age group kids

Groups (years)	Preference of syringe		Total
	Camouflage syringe (%)	Conventional syringe (%)	
Younger age (6-10)	234 (78)	66 (22)	300
Older age (11-14)	87 (29)	213 (71)	300
Total	321	279	600

χ^2 : 144.769, P : 0, the result is significant at $P < 0.05$



Graph 2: Type of syringe preferred by males and females among all 600 kids

children preferred dentist with white coat, 40% along with the mask.^[2] Ikusaka *et al.* observed preference of white coat in older individual over casual.^[11]

Similar to our results as shown in Table 1, Umamaheshwari *et al.* from their study observed that both anxious and nonanxious children preferred yellow color for positive emotion followed by blue and black or red for negative emotion. They concluded about highly significance of color with emotion.^[4] Brase and Richmond observed preference of white coat which increases trustworthy.^[12] Ikusaka *et al.* concluded from their questionnaire survey study that practice without white coat might reduce patient anxiety during the first visit.^[11] In contrast to our study, McCarthy *et al.* observed higher white coat preference in children.^[13] Rehman *et al.* concluded that older individuals

prefer professional attire, which is in accordance to our results [Table 3].^[14]

Beena J observed higher fear toward injection and drilling procedures among younger children.^[15] Camouflage syringe shows that the efficacy of it to reduce dental fear and anxiety were more in younger age group [Tables 3 and 4]. Our results are in accordance to Ujaoney *et al.*^[6] We observed that females prefer camouflage syringe while males selected conventional syringe [Table 5 and Graph 2]. We have observed decrease in anxiety level to syringe as age advances; this is in accordance to study by Raj *et al.* They also found no significant difference in fear scores between girls and boys.^[16]

Table 4: Anxiety level of all kids (600) for syringe by different age group

Groups (years)	Anxiety level of all kids (600) for syringe			Total
	Nonanxious (%) Scale: <6	Moderately anxious (%) Scale: 6-12	Anxious (%) Scale: >12	
Younger age (6-8)	25 (16.67)	29 (19.34)	96 (64)	150
Younger age (9-10)	35 (23.33)	49 (32.67)	66 (44)	150
Older age (11-12)	54 (36)	33 (22)	63 (42)	150
Older age (13-14)	71 (47.33)	19 (12.67)	60 (40)	150
Total	185	130	285	600

χ^2 : 53.128, P : 0, the result is significant at $P < 0.05$

Table 5: Anxiety level of all kids (600) for white coat by different age group

Groups (years)	Anxiety level of all kids (600) for white coat			Total
	Nonanxious (%) Scale: <6	Moderately anxious (%) Scale: 6-12	Anxious (%) Scale: >12	
Younger age (6-8)	67 (44.67)	32 (21.33)	51 (34)	150
Younger age (9-10)	89 (59.34)	35 (23.33)	26 (17.33)	150
Older age (11-12)	99 (66)	28 (18.67)	23 (15.33)	150
Older age (13-14)	109 (72.67)	20 (13.33)	21 (14)	150
Total	364	115	121	600

χ^2 : 34.443, P : 0.0000552, the result is significant at $P < 0.05$

Many researchers observed that Modified child anxiety scale (MCDAS_f) is reliable shorter and faster than child's fear survey schedule measure for child dental anxiety assessment.^[12,17] The anxiety level recorded by MCDAS_f for syringe was more among children than the white coat.

It has been observed from the present study that younger children prefer cartoon and colorful pediatric dentist attire and use of camouflage syringe in younger individuals reduce the dental fear. Older children prefer whit dressed dentist. These data's help in implementing the quality dental care and to reduce child's dental anxiety by creating child's friendly environment.

CONCLUSION

Younger children prefer colorful attire of dentist and camouflage syringe over conventional. Children anxiety level decreases with age and preference for white coat and conventional syringe increases.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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