



VALIDATION OF DEEPAK-PARIMALA'S FEAR SCALE FOR CHILDREN- A CROSS-SECTIONAL STUDY

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Abstract: Background and Aim- Fear is an expected experience and is consistent with normal child and adolescent development. However, fear and anxiety become a problem that might need intervention when they are disproportionate to the actual threat and daily functioning becomes impaired.

Materials and Methods- This cross-sectional study was conducted among 6-13 year old school going children from Bhopal city. Study population included 423 children and questionnaire consisting of 55 questions under 10 categories was distributed after obtaining the consent.

Results- Our results revealed that child's perceptions towards dental treatment varies with the advancement of their age. We observed least mean dental fear scores in 6-7 year age group while highest in 12-13 year age group.

Key words- Dental fear, Perceptions, DFA, Prevalence

I. INTRODUCTION

Fears are characterised as typical responses to real threats; they are adaptive and frequently have survival value. Children's concerns have only lately been the subject of comprehensive empirical research, despite being rather well defined and studied in adults. This is especially true with regard to the influences of development and gender on the manifestation of anxieties. Emerging evidence from studies that suggests that excessive fearfulness throughout childhood may place children at risk for the development of anxiety disorders in adolescence highlights the need to increase the body of normative knowledge on children's concerns.^{1,2} therefore our aim was to create a set of unique perceivable thoughts, motions and actions that a child faces. The questionnaire set can be further evaluated using a 5-point scale and an emoji for each. Children of all ages should be able to understand it with ease.

Cultural and social norms of behavior can affect the development and expression of children's fear and as dental care systems can vary considerably across cultures, normative data in each culture are needed. Early recognition of the child dental fear by the use of a simple reliable scale and management of this fear is the key to an effective treatment delivery to the child patient.³ Studies examining differences in the number and intensity of fears in children residing in rural versus urban locations have produced conflicting results, suggesting that location is not a universal predictor of the frequency and intensity of children's fears.^{4,5,6}

There is considerable variability in the instruments used to determine general and dental fear and there is no recognised gold standard. Therefore, with the help of our newer scale we can easily identify the most fear producing items will enable the dentists to select the most appropriate behavior guidance strategy (tell show and do, modelling, desensitization etc.) for the child to deal with his/her specific fear.³

Fear is an expected experience and is consistent with normal child and adolescent development. However, fear and anxiety become a problem that might need intervention when they are disproportionate to the actual threat and daily functioning becomes impaired. Dental phobia (DP) is a severe type of DA and is characterized by marked and persistent anxiety in relation either to obvious situations/objects (such as drilling, injections) or to the dental situation in general. The concepts of DF and DA are often used interchangeably in the dental literature, but the term dental fear and anxiety (DFA) is used when referring to strong negative feelings associated with dental treatment in children and adolescents, whether or not the diagnostic criteria for dental phobia are met.⁷

Dental fear has been recognised as an important problem and is often a barrier to successful dental treatment. Dentists should listen to their patients when it comes to negative experiences of treatment and fear in a clinical setting. A "highly fearful" categorisation should be identified so that it reflects the patient's behaviour and provides a meaningful indicator of fear, which can be used to determine the appropriate approach to dental treatment.⁸

The causes of the children's fear and anxiety as well as what is unfolding in this universe during dental treatment can be better understood by having knowledge of the children's perception of dental care. Safe methods for identifying children's feelings are critical for establishing appropriate dental treatment.⁹⁻¹¹ The primary objective of determining children's attitudes toward dentists is to make positive changes or adjustments that will make children more comfortable in the dentist's office and improve the quality of dental visits. Children have strong preferences for the appearance of their dentist and dental clinics, as well as

identifiable fears associated with dental visits.¹¹ Questionnaires are useful tools for evaluating a children's perception of dental treatment by professionals, which rely solely on verbal information provided by patients.¹¹ Pictures are preferable because they do not necessitate direct responses and can help express feelings that the child is unaware of or unable to express verbally.^{9,10,12,13} The identification of the causes of fear and anxiety is critical for the proper management of paediatric patients.

MATERIALS AND METHODS

This descriptive cross sectional study was conducted to assess the perceptions of the children towards DFA and dental treatment in 6-13 year old children and to study if there is any association between mean DFA scores with SES, PEDS, POS, POC and TOS. 423 children for general and DF assessment were selected by stratified cluster sampling technique and the duration of the study was one year.

Study population-

The data was collected from the children of 6-13 years of age attending the departments of Pediatric and preventive dentistry, RKDF Dental College and Research Centre and People's college of dental sciences, Bhopal. The prior consent and approvals were taken from respective school authorities and the parents before handing out the questionnaires along with this whoever children of this age attended the OPD of the department were included in our study after obtaining the written informed consent from the parents of children. The period of data collection, segregation and analysis went on for a year.

We have selected 5 sets of expressive cartoonistic character (Doraemon) showing different emotion towards fear for both general and dental fear components to be chosen by the child. These emoji are Gender neutral and among one of the most watched cartoon series by children worldwide. These characters will be scored on the scale of 0-4 expressing gradient towards fear. The five-point scale is as follows:

- 1- Not fearful
- 2- Little fearful
- 3- Neutral
- 4- Very fearful
- 5- Extremely fearful

The entire questionnaire have to be answered by the children only. Parent's involvement may affect the genuinity of the responses.

DHS-I: We analysed the dental health status of the study population using WHO criteria (2013)

SES: We compared the SES of study population with modified Kuppuswamy Scale where 0 indicates lower SES, 1- indicates middle SES and 2 indicates upper SES.

PEDS: We compared the educational status of the parents of with modified Kuppuswamy Scale where 0 stands for illiterate; 1- stands for high school or metric pass and 2- shows graduated.

POS: We compared the occupational status of study population's parents with modified Kuppuswamy Scale where 0 indicates unemployed, 1- indicates daily wages or part time workers and 2 indicates official or government jobs.

POC: Position of a child in the family has shown to affect the level of DFA in children. Here we used 0 as an indication of younger child with siblings; 1 shows eldest child with siblings and 2 shows only child in the family.

TOS: We compared the effect of school and education on the prevalence of DFA. In our study 0 stands for state board (government school), while 1 and 2 stands for CBSE board and ICSE board (private schools) respectively.

Statistical Analysis- Statistical Package for Social Sciences [SPSS] for Windows, Version 22.0. was used to perform statistical analyses. One-way ANOVA test was used to compare the mean general and dental fear value in different age groups of the study (6-7; 8-9; 10-11; 12-14 year). Unpaired student t test was used to compare the mean general and dental fear score between boys and girls of different age groups. Spearman Correlation test was used to assess the relationship between mean general and dental fear score and age; Point Biserial correlation test was used to assess the relationship between mean general and dental fear score and the gender of child. Pearson correlation test was used to assess the relationship between mean general and dental fear score and DHS-I, DHS-II, SES, PEDS, POS, POC and TOS.

Table 2: Comparison of Overall Score for fear between different age groups

Age Group	N	Mean	Std. Deviation	F value	p value
6-7 years	10	341.9	36.54	916.26	0.001* *
8-9 years	4	9	22.61		
10-11 years	10	405.0	6.61		
12-13 years	6	9	19.42		
Total	11	453.9	6.61		
	0	6			
	10	506.8	19.42		
	3	0			
	42	427.0	64.81		
	3	5			

**Highly Significant

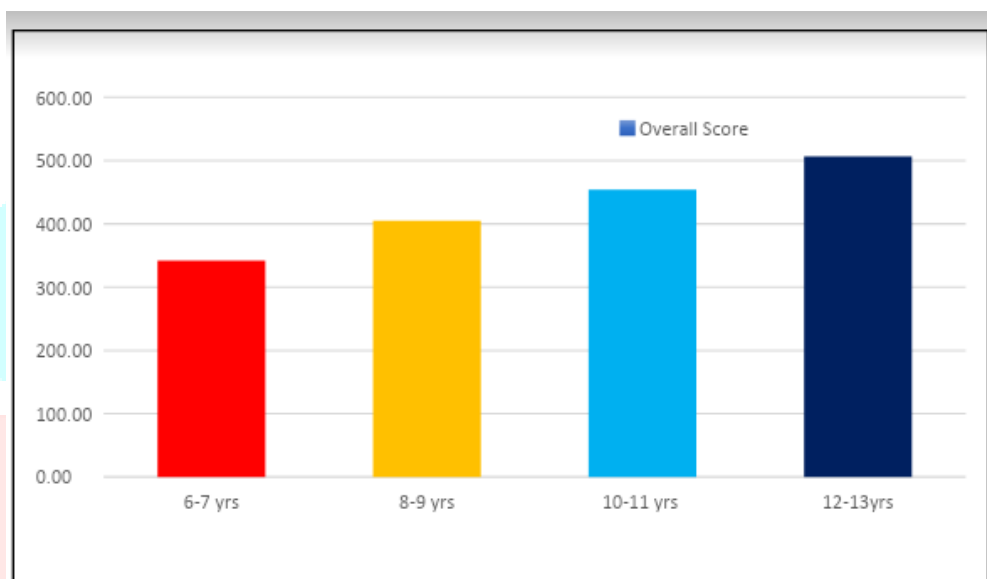


Figure 1- Comparison of Overall Score for mean dental and general fear in different age groups

Table 3: Comparison of Overall Score for mean dental and general fear between different age groups

	Age Group	N	Mean	Std. Deviation	F value	p value
Total all Category (general fear)	6-7 years	10	280.3	40.54	696.23	0.001* *
		4	7			
	8-9 years	10	339.3	24.20		
		6	1			
	10-11 years	11	383.6	6.99		
	0	0				
	12-13 years	10	434.9	18.15		
		3	3			
	Total	42	359.6	61.85		
		3	2			
Dental Fear	6-7 years	10	61.63	4.38	334.58	0.001* *
		4				
	8-9 years	10	65.78	2.01		
		6				
	10-11 years	11	70.36	1.21		
	0					
	12-13 years	10	71.87	1.61		
		3				
	Total	42	67.44	4.77		
		3				

**Highly Significant

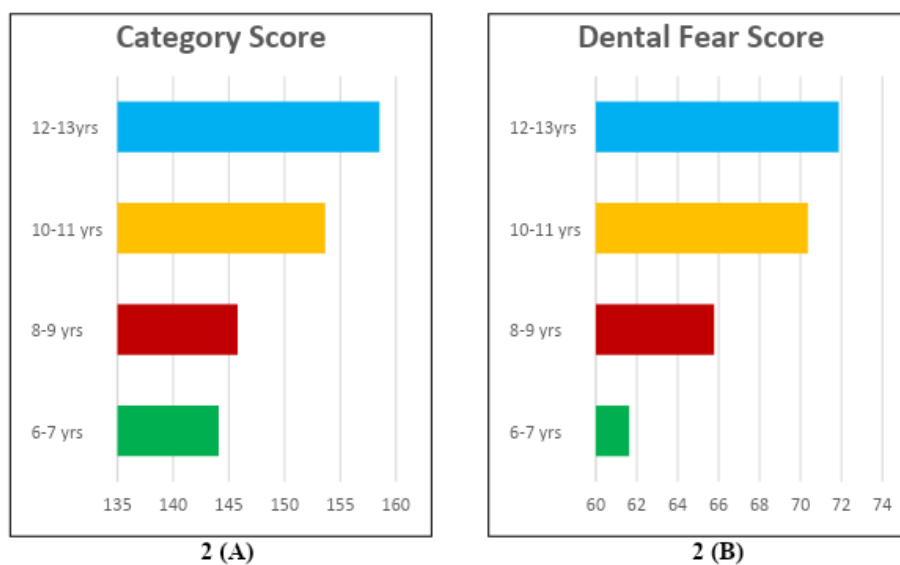


Figure 2- 2A-Comparison of category wise fear score between different age groups.

2B- Comparison of dental fear score between different age groups.

Table 4: Correlation between Overall Fear score and Different variables affecting dental health

Variable 1	Variable 2	Type of Correlation	Correlation value	P value
Overall Value	Age	Spearman	$\rho = 0.960$	0.001**
	Gender	Point Biserial correlation	$r_{pb} = 0.325$	0.001**
	DHS-I	Pearson	$r = 0.810$	0.001**
	DHS-II	Pearson	$r = 0.202$	0.001**
	SES	Pearson	$r = 0.329$	0.001**
	PEDS	Pearson	$r = 0.169$	0.001**
	POS	Pearson	$r = 0.169$	0.001**
	POC	Pearson	$r = 0.159$	0.001**
	TOS	Pearson	$r = 0.202$	0.001**

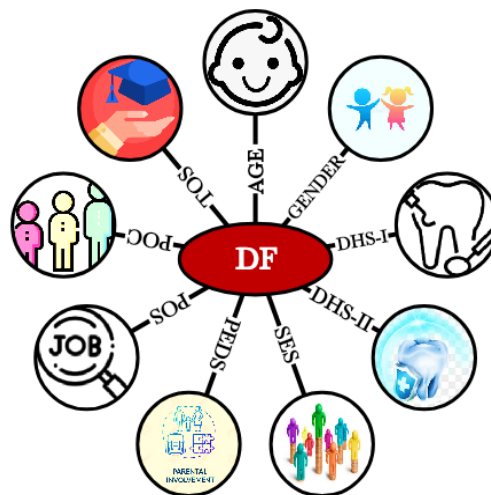


Figure 3- Correlation of DF with other variables

Discussion

Early recognition and management of DFA are critical to win the child's confidence and for efficient treatment. In recent years, there has been an increase in cross-cultural and cross-national investigations of children's fears. This study assesses the factors responsible for causing fears and anxiety in children.¹⁴ The use of our scale has made it possible to identify extreme fears, as well as the intensity and content of fears; it has also allowed a comparison across different participants' gender and age. The objectives of this study were

to analyze the fear complex of a new self-report instrument to assess general and dental fears in children in a non-clinical sample. Results indicate good psychometric properties; high reliability and a multidimensional structure for the questionnaire (construct validity).¹⁵

The detailed analysis of fear sub-dimensions based on the factor analysis helped to give a more specific and development-oriented meaning to the age-related differences. It was hypothesized that the youngest children were less able to perceive danger and death issues, so they reported being less fearful. With the increase in age, children may be more aware of danger and as a result, their fears of danger increased.¹⁴

Shore GN et al (1998)⁶ in their study observed that parental control coupled with traditions emphasizing social conformity are reasonable explanations for the higher levels of fearfulness or worries in general, and the identification of social conformity fears in particular. Ellis and Petersen (1992)¹⁶ described that cultures that value conformity are frequently associated with higher levels of parental control, whereas those that value self-reliance and autonomy are associated with less overall discipline and less severe discipline practices. Siqueland, Kendall, and Steinberg et al (1996)¹⁷ also reported that higher levels of parental control, in turn, has been linked with greater anxiety and fearfulness in children. Our study is in confirmation to the above studies where we obtained significant p values in Categories I (fear at home), II (fear from parents/ guardians) and IV (fear from profession of parents) where girls reported higher fear scores in comparison to boys and highest fear was observed in 12-13 year age group (Table 1).

With regards to age and gender variables, our results are in agreement with the earlier studies of Méndez FX et al (2008)¹⁸ and García-Fernández (2010)¹⁵ where they reported that the tendency for school fears to increase with the age (Category III). Our result are in total contrast with the study of Pradhan P et al (2023)¹⁹ who reported that the prevalence of school fears in children decreases with the advancing age of the child (Table 2 & Table 3).

Angelino et al (1956)²⁰ reported that the fear increases with growing age due to increase in the social worries in children with increasing age. In our study, it was seen that children aged between 6-7 years had lesser fear towards different scenarios, while children aged between 10-11 years had greater fears towards the same surroundings situations. Our findings are in total contrast with the studies of Shore GN et al (1998)⁶ who reported that with the advancement of age there is substantial decrease in fears of personal safety, dark, imaginary creatures, and animals due to cognitive development in the child, and another study of Pradhan P et al (2023)¹⁹ where they found that there is decrease in the prevalence of school fears with the increasing age

of the child. This variation in findings is possible because with developmental changes in the cognitive and socioemotional abilities of the child coupled with increasing exposure to the world and surroundings may influence the children's perceptions towards fear and danger.

In our study we observed that general fears tends to be higher in girls than boys whereas mean scores for dental fear complex reveals boys are more fearful than the girls of same age groups. Gullone and King et al (1992)²¹ reported that gender differences have been attributed to the socialization differences between males and females. In our present study, we noted that girls were more fearful as compared to boys, which was similar to the studies reported by Shore GN et al (1998)⁶, Eisen and Schaefer (2005)²², Fernández et al (2010)¹⁵, Alamri et al (2019)²³, and Pradhan P et al(2023)¹⁹. However, in earlier studies it was stated, as there was no effect of gender on this. Nevertheless, negative dental experiences in childhood were associated with high dental fear in adulthood.

In addition, our study showed significant correlations between overall dental fear score With DHS-I, DHS-II, PEDS, POS, POC and TOS. (Table 4).

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