

The Prevalence of Dental Anxiety and Fear among 4–14-year-old Indian children in a Paediatric Dental Setup.¹Geetanjali Jadhav, Associate Professor, D Y Patil Dental School, Pune.²Rahul Hegde, Director, D Y Patil Dental School, Pune.³Anand Shigli, Dean & Professor, D Y Patil Dental School, Pune.⁴Pritesh Gawali, Associate Professor, D Y Patil Dental School, Pune.⁵Gazal Saxena, Intern, D Y Patil Dental School, Pune.**Corresponding Author:** Geetanjali Jadhav, Associate Professor, D Y Patil Dental School, Pune.**Citation of this Article:** Geetanjali Jadhav, Rahul Hegde, Anand Shigli, Pritesh Gawali, Gazal Saxena, “The Prevalence of Dental Anxiety and Fear among 4–14-year-old Indian children in a Paediatric Dental Setup”, IJDSIR- June - 2022, Vol. – 5, Issue - 3, P. No. 481 – 488.**Copyright:** © 2022, Geetanjali Jadhav, et al. This is an open access journal and article distributed under the terms of the creative commons attribution non-commercial License. Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.**Type of Publication:** Original Research Article**Conflicts of Interest:** Nil**Aim:** The study's goal was to determine the prevalence of dental fear and anxiety in children aged 4 to 14 years old using two fear scales: Children's Fear Survey Schedule–Dental Subscale (CFSS-DS), and the Modified Child Dental Anxiety Scale (MCDAS).**Materials and Procedures:** The study involved 55 children aged 4–14 years old who attended the department of Pediatric and Preventive Dentistry. Two fear measuring scales CFSS-DS, and MCDAS, were used to assess fear and anxiety levels. The Frankl's Behaviour Rating Scale was used to assess the dental behaviour observed (FBRS).**Results:** Dental caries and its related complications is a common finding considering the change in the consumption of sugar and the lifestyle. Dental caries in general requires a more invasive approach than it did previously. Dental phobia was seen in all 55 children with CFSS-DS 36.40±14.778 male and 40.83±11.922

female. MCDAS 16.43±6.224 male and 17.27±4.974 female. When using the FBRS to analyse the conduct of children in clinics, it was discovered that the majority of respondents 70.6 percent gave Frankl's rating 3 (positive). Further comparisons were done using the ANOVA tests based on the age groups the age group 4-7 had a mean of 43.20±13.489, 8-10 had 38.29±12.459 and 11-14 had 31.08±13.370. The P value was found to be 0.041 which was noted to be significant.

Conclusion: Both the CFSS-DS and the MCDAS are trustworthy and valid measures for assessing dental anxiety and fear in young children. Assessing dental anxiety and fear is beneficial because behaviour management for children may be tailored accordingly.**Introduction**Dental fear is an unpleasant emotion evoked by stimuli that are viewed as frightening during dental clinical practise¹. Dental anxiety is defined as a set of extreme

and illogical negative emotions experienced by a group of patients who are particularly vulnerable. With repeated visits to the dentist and after becoming adjusted to the dental situation, the pain will lessen. The probable link between dental fear and dental behavioural management issues makes dental fear a critical problem for children dentists².

DFA in children might make it harder to provide services and potentially result in a negative dental visit outcome. As a result, identifying children with DFA prior to their dental visit is critical so that appropriate behaviour control measures (both pharmacological and nonpharmacological) can be used, allowing them to get effective dental treatment³. DFA in children can be assessed using a variety of approaches, including behavioural assessments like Frankl's Behaviour Rating Scale - FBRS. The tools are a collection of self-reported questionnaires that have been used to assess DFA. The 15-item Children's Fear Survey Schedule-Dental Subscale (CFSS-DS) and the 8-item Modified Child Dental Anxiety Scale (MCDAS) are the most commonly utilised psychometric tools in children⁴.

Both dental fear and dental anxiety (DFA) have been linked since both describe the extreme discomfort that people (both children and adults) feel in various oral situations⁵.

This fear will most likely manifest itself in the majority of children with repeated visits to the dentist and after becoming adjusted to the dental situation, the pain will lessen⁶. The probable link between dental fear and dental behavioural management issues makes dental fear a critical problem for a Pedodontist.

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behaviour control measures (both pharmacological and nonpharmacological) can be used, allowing them to get effective dental treatment.

The fear survey schedule for children was developed by Scherer and Nakamura as a tool for assessing fear in children. Cuthbert and Melamed updated this tool to assess dental fear in their research⁷.

The CFSS-DS is one of the most often used scales for children, and it has better psychometric qualities than other scales because it assesses dental fear more precisely and covers more features of dental circumstances than other scales.

Wong et al. created the MCDAS, which is based on the Corah Dental Anxiety Scale. The MCDAS consists of eight questions that are used to assess dental anxiety related to certain dental procedures. Dental anxiety is measured using a 5-point Likert scale, with values ranging from "relaxed/not worried" (1) to "very worried" (5). The MCDAS has a total score range of 8 (no dental anxiety) to 40 (a lot of dental anxiety) (extreme dental anxiety). Validation studies have shown that it may be used to assess state child dental anxiety, even in very young children⁸.

Materials and Methods

A cross-sectional study was conducted on 55 children aged 4 to 14 years who attended the D Y Patil Dental School, Department of Pediatric and Preventive Dentistry, Pune, India. The institutional review board provided ethical approval. After discussing the study to the parents/caregivers in full, they gave their written consent to participate in the study.

Criteria for inclusion

Children aged 4 to 13 years who have given their parents/guardians written permission to participate.

Both the genders were considered

Criteria for exclusion

Children that are in need (bleeding, swelling, dental trauma, and acute toothache)

Children with chronic illnesses and comorbidities

Children with severe impairments and poor psychological development.

Children who had taken pain or allergy medication in the past 24 hours

Where consent was denied

The CFSS-DS questionnaire was utilised. The CFSS-DS comprises of 15 items that must be answered on a Likert scale ranging from 1 (not at all scared) to 5 (very afraid) (very afraid). As a result, the overall score ranges from 15 to 75, with a score of 38 or more being linked to clinical dental dread.

The MCDAS was utilised. It is made up of eight questions. Each item was rated on a Likert scale ranging from 1 (not at all afraid) to 5 (very afraid) (very afraid). The overall score varies from 8 to 40.

The FBRS was used to examine the behaviour of all 55 children who were enrolled in the trial during therapy. The Frankl scale is a 4-point scale in which 1 represents "definitely negative" (i.e., the child cries violently and refuses treatment), 2 represents "negative" (i.e., the child is hesitant to accept treatment), 3 represents "positive" (i.e., the child accepts treatment but may be cautious), and 4 represents "definitely positive" (i.e., the child accepts treatment but may be cautious), and 4 represents "definitely positive" (i.e., the child exhibits unique behaviour and seems happy).

P <0.05 was used for all statistical thresholds. Internal consistency was calculated using Cronbach's alpha, it was found to be 0.8.

Descriptive and inferential statistical analyses were carried out in the present study. Results on continuous measurements were presented on Mean \pm SD and results

on categorical measurement were presented in number (%). Level of significance was fixed at $p=0.05$ and any value less than or equal to 0.05 was considered to be statistically significant. Student t tests (two tailed, unpaired) was used to find the significance of study parameters on continuous scale between two groups. Analysis of variance (ANOVA) was used to find the significance of study parameters between the groups (Inter group analysis). Further post hoc analysis was carried out if the values of ANOVA test were significant. The Statistical software IBM SPSS statistics 20.0 (IBM Corporation, Armonk, NY, USA) was used for the analyses of the data and Microsoft word and Excel were used to generate graphs, tables etc.

30 (55.6 percent) of the 55 children who completed the questionnaires were male, while 24 (44.4 percent) were female. Cronbach's alpha coefficient was used to examine the internal consistency and reliability of the CFSS-DS and MCDAS questionnaires.

The CFSS-DS had a Cronbach's alpha of 0.74 while the MCDAS had a Cronbach's alpha of 0.8, indicating great reliability.

Children's Fear Survey Schedule–Dental Subscale - CFSS-DS

Mean age was 8.509 ± 2.5633 . CFSS (Mean \pm SD) is 38.37 ± 13.643 . Males had a mean CFSS-DS score of 36.40, while females had a score of 40.83. Using Student's t-test ($t = 1.191$, P value = 0.239), it was discovered that there was no statistically significant difference in mean CFSS-DS scores between males and females. The mean CFSS-DS score for children aged 4–7 years was 43.20 ± 13.643 , which was the highest of all age groups. One-way ANOVA was used to calculate the difference in mean CFSS-DS scores. The mean difference between the groups was statistically significant (P = 0.041).

Modified Child Dental Anxiety Scale (Child Dental Anxiety Scale)- MCDAS

Males had an average MCDAS score of 16.43 ± 6.243 while females had an average MCDAS score of 17.29 ± 4.244 . Using Student's t-test ($P = 0.056$), it was discovered that there was no statistically significant difference in mean MCDAS scores between males and females. The mean MCDAS score in different age groups. The mean MCDAS score for children aged 4–7 years was 18.70 ± 6.243 , which was the highest of all age groups. One-way ANOVA was used to calculate the difference in mean MCDAS scores. The mean difference between the groups was statistically significant ($P = 0.0009$).

Frankl' Behaviour Rating Scale - FBRS

55 (70.6 percent) participants showed Frankl's rating 3 (positive), 9 (16.3 percent) participants showed Frankl's rating 2 (negative), 6 (10.4 percent) participants exhibited Frankl's rating 4 (certainly positive), and only 1 (2.7 percent) participant showed Frankl's rating 1 (negative) (definitely negative).

Results

Table 1: Descriptive statistics (N=54)

Variables	Sub-groups	n	%
Age group	4-7 years	20	37.0
	8-10 years	21	38.9
	11-14 years	13	24.1
Gender	Male	30	55.6
	Female	24	44.4
Age (Mean ± SD)		8.509 ± 2.5633	
CFSS (Mean ± SD)		38.37 ± 13.643	
MCDAS (Mean ± SD)		16.81 ± 5.667	

Table 2: Comparison of Modified Child Dental Anxiety Scale (MCDAS) & Children's Fear Survey Schedule - Dental Subscale (CFSS) in terms of {Mean (SD)} among males and females using unpaired t test

Variables	Gender	N	Mean	Std. Deviation	t value	P value
MCDAS	Male	30	16.43	6.224	0.549	0.585
	Female	24	17.29	4.974		
CFSS	Male	30	36.40	14.778	1.191	0.239
	Female	24	40.83	11.922		

Table 3: Comparison of Modified Child Dental Anxiety Scale (MCDAS) in terms of {Mean (SD)} among different age groups using ANOVA test

Age group	N	Mean	Std. Deviation	F value	P value
4-7 years	20	18.70	6.174	2.458	0.0096
8-10 years	21	16.52	4.813		
11-14 years	13	14.38	5.516		
Total	54	16.81	5.667		

(Tukey's post hoc analysis)

	4-7 years	8-10 years	11-14 years
4-7 years	-	0.423	0.082
8-10 years	0.423	-	0.519
11-14 years	0.082	0.519	-

Table 4: Comparison of Children's Fear Survey Schedule - Dental Subscale (CFSS) in terms of {Mean (SD)} among different age groups using ANOVA test

Age group	N	Mean	Std. Deviation	F value	P value
4-7 years	20	43.20	13.489	3.392	0.041*
8-10 years	21	38.29	12.459		
11-14 years	13	31.08	13.370		
Total	54	38.37	13.643		

($p < 0.05$ - Significant*, $p < 0.001$ - Highly significant**)

(Tukey's post hoc analysis)

	4-7 years	8-10 years	11-14 years
4-7 years	-	0.456	0.032*
8-10 years	0.456	-	0.271
11-14 years	0.032*	0.271	-

Discussion

Fear of dental treatment in children can create major health problems and can last into puberty, resulting in disruptive behaviour during dental treatment⁹. It becomes a key responsibility to recognise worried youngsters as soon as possible so that disruptive behaviour can be avoided.

Cultural and societal norms of behaviour may influence the development and expression of children's fear, and dental care systems may differ significantly across cultures; normative data in each culture is required¹⁰. The purpose of this study was to determine the level of dental fear and anxiety among children who visited the department. The CFSS-DS and the MCDAS showed good internal consistency.

According to statistics, people in low socioeconomic categories have a higher level of dental dread than those in high socioeconomic groups. An Icelandic study found a 10% prevalence of significant dental fear and anxiety, while it was slightly greater in the Singaporean community (17.1 percent)¹¹. In cross-cultural research of Chinese and Danish patients, 30% of Chinese and 15% of Danish participants indicated moderate to high dental dread. A study of dental fear prevalence in the Netherlands¹², it was discovered that 24.3 percent of the participants had moderate to severe dental phobia. The country with the highest rate of dental phobia appears to be Japan, where 42.1 percent of students and adults in a study of 3041 had dental fear¹³.

Cainetti et al., conducted a meta-analysis about therapies used to reduce dental fear and anxiety, which are powerful negative emotions linked with dental care, particularly among children and adolescents¹⁴. Pharmacological and non-pharmacological approaches were investigated. Improved communication skills, rapport, and trust building; behaviour modification

approaches; cognitive behavioural therapy; and physical constraints are all examples of nonpharmacological therapies¹⁵.

Dental phobia was seen in 55 children with CFSS-DS (7 [12.5 percent] males and 11 [21.21 percent] females). A score of higher than or equal to 38 indicates severe dental phobia, and these patients may exhibit substantial behavioural issues during dental treatment. Dental phobia in young children, on the other hand, may be influenced by certain settings, scenarios, and temperamental variables. To put it another way, a fearful youngster does not always imply that he or she would be a difficult patient throughout dental treatment.

The mean CFSS-DS score was 28.18 ± 11.21 , which was similar to results ranging from 21.0 to 37.0 in prior research. However, certain studies, such as those conducted by Beena *et al.* and in Singapore, obtained higher scores (30.6)¹⁶.

Males had a mean CFSS-DS score of 27.15 ± 9.92 , while females had a score of 29.5 ± 12.45 . Although girls have a higher fear score, there were no significant differences in fear scores between boys and girls in this study¹⁷. Similar findings were also obtained by Akbay Oba *et al.* in 2009. Girls had substantially higher scores (33.92) (SD = 12.3) than boys (30.57) (SD = 10.1) (t-test, $P = 0.031$, mean difference 3.353)¹⁸, according to Salem *et al.* in 2012. the relationship between gender and age was not significant¹⁹.

In the age group of 4–7 years, the mean CFSS-DS score was 31.71 ± 12.69 , in the age group of 8–10 years, it was 26.63 ± 9.8 , and in the age group of 11–14 years, it was 24.29 ± 9.63 . In this study, we discovered that dental dread decreased as people got older. Other trials with similar outcomes were conducted. Rantavuori et al., on the other hand, found that dental fear was higher in 12- and 15-year-old adolescents than in younger ones²⁰. It's

possible that the decrease in dental fear with age is attributable to the growth of cognitive abilities and changes in the expression of fears, including dental fear. A cultural difference, on the other hand, cannot be underestimated.

Males had an average MCDAS score of 18.21 ± 6.29 , while females had an average MCDAS score of 19.09 ± 6.7 . There was no discernible difference. In their study, Wong *et al.* discovered that girls had more dental anxiety than boys of all ages.

The mean MCDAS score for children aged 4–7 years was 20.24 ± 6.37 , which was the highest of all age groups. In the age group of 8–10 years, the mean score was 18.30 ± 6.21 , and in the age group of 11–14 years, it was 16.11 ± 6.94 . Dental phobia appears to decrease with age in this study as well, which is consistent with earlier research²¹.

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Conclusions

This study had certain drawbacks. When the children were asked questions and their replies were recorded, they were not asked about their previous dental experiences. According to earlier research, a bad dental encounter in the past can cause dental fear and anxiety.

The sample size is insufficient to accurately determine prevalence, and the sample is from a single institution, which does not represent the broader population of Pune aged 4–14 years.

For assessing dental anxiety and fear in young children, the CFSS-DS and the MCDAS are both trustworthy and valid scales.

The mean CFSS-DS score for children aged 4–7 years was 43.20 ± 13.643 , and the mean MCDAS score for children aged 4–7 years was 18.70 ± 6.243 , the highest of all age groups. In this study, we discovered that dental fear decreased as people got older.

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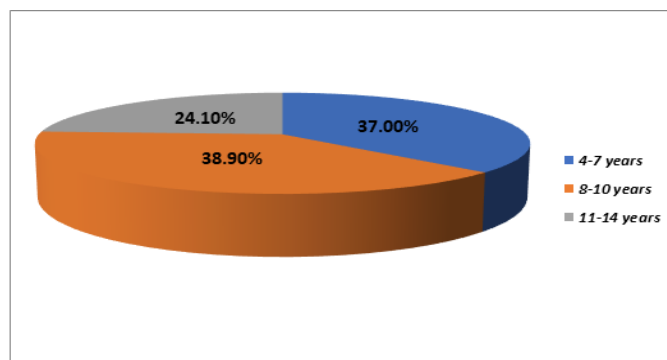
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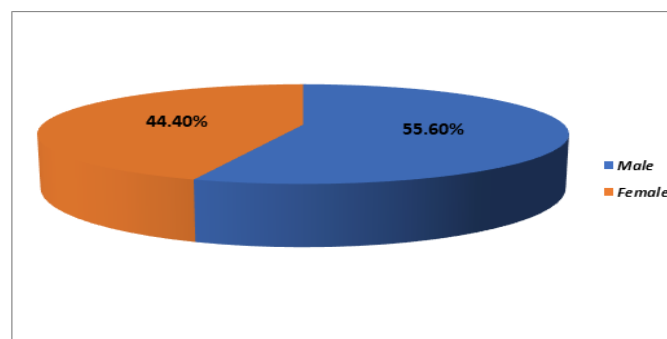
Figures

Figure 1: Descriptive statistics (N=54)

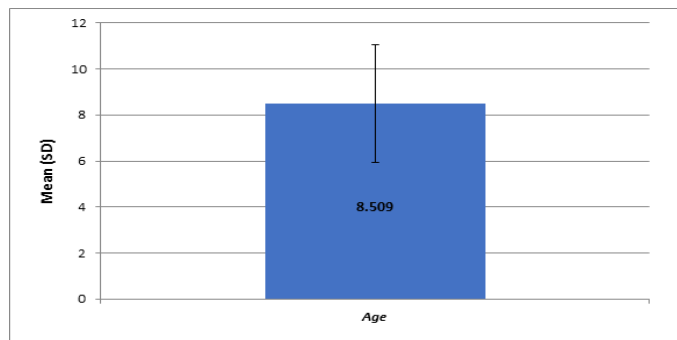
Age group



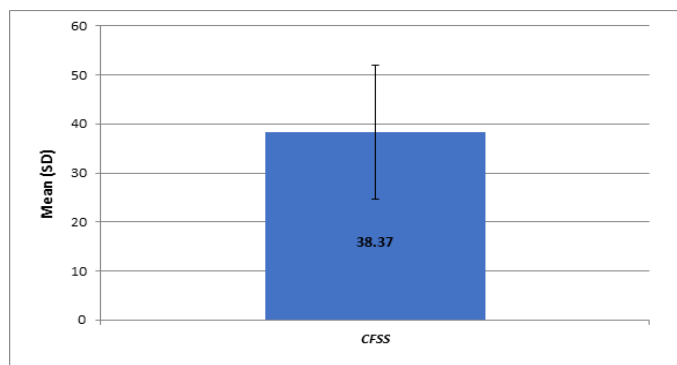
Gender



Age (Mean ± SD)



CFSS (Mean ± SD)



MCDAS (Mean ± SD)

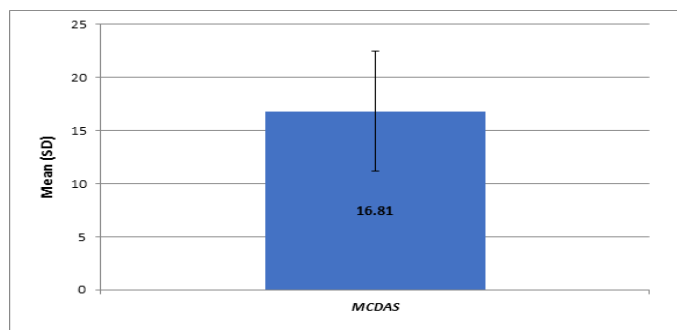
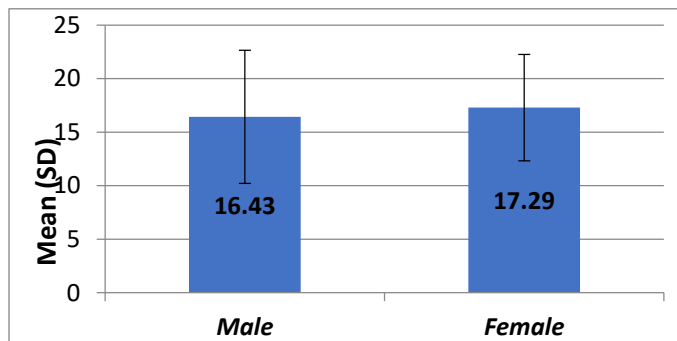


Figure 2: Comparison of Modified Child Dental Anxiety Scale (MCDAS) & Children’s Fear Survey Schedule - Dental Subscale (CFSS) in terms of {Mean (SD)} among males and females using unpaired t test

MCDAS



CFSS

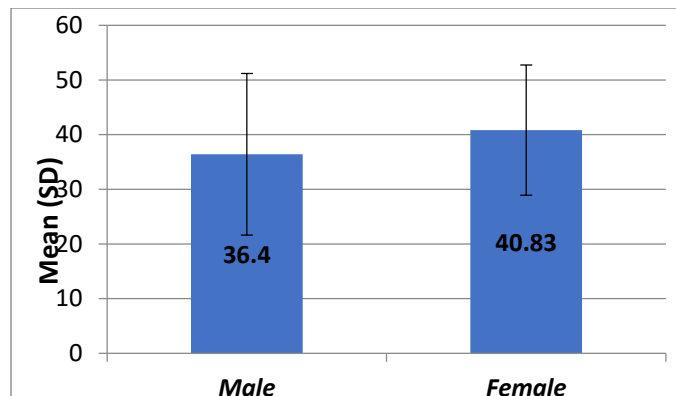


Figure 3: Comparison of Modified Child Dental Anxiety Scale (MCDAS) in terms of {Mean (SD)} among different age groups using ANOVA test

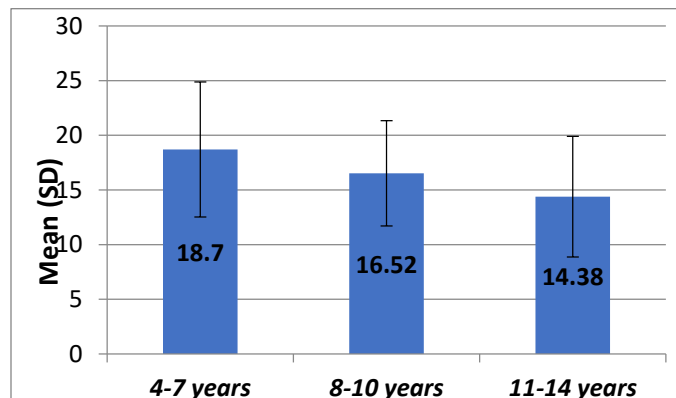


Figure 4: Comparison of Children’s Fear Survey Schedule - Dental Subscale (CFSS) in terms of {Mean (SD)} among different age groups using ANOVA test

