

# Pick the Pic- A Novel Fear Survey Tool to Assess Pre - Operative Fear in Planning and Aiding Behavior Management Among Children in a Dental Setup - A Clinical Trial

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**Abstract:** ***Aim:** The aim of this study was to evaluate novel pick the pic scale for pre - operative dental fear assessment for children with first dental visit. **Material and methodology:** The content and construct validity of the "Pick the Pic" fear scale were evaluated prior to the study involving 25 children aged 6 - 10 from the KVG Dental College and Hospital. Each child completed both the Pick the Pic scale and the Children's Fear Survey Schedule - Dental Subscale (CFSS - DS) before their oral examination. Participants rated their fear for each picture on the Pick the Pic scale and each question on the CFSS - DS using a scale from 1 (least fearful) to 5 (most fearful). The results were then tabulated for comparison between the two scales, facilitating an assessment of fear levels in a dental context. **Results:** In the study, the gender distribution included 11 males (44%) and 14 females (56%), with a p - value of 0.548 indicating no significant difference between genders. The mean age of participants was 9.8 years (SD = 1.7), with no significant age differences observed between genders (p = 0.855 for males). Fear and anxiety levels were assessed using two scales: the CFSS - Dental subscale, which yielded a mean score of 3.24 (±1.61) out of a maximum of 15, and the Pick the Pic scale, with a mean score of 1.96 (±1.30) out of 6. Among participants, 88% reported little or no fear on the CFSS scale compared to 68% on the Pick the Pic scale (p = 0.0878), indicating no statistical significance. Moderate fear was reported by 12% on the CFSS scale versus 24% on the Pick the Pic scale (p = 0.269). No participants reported high levels of fear on the CFSS scale, while 8% did on the Pick the Pic scale (p = 0.149), further supporting the lack of significant differences in fear perception between the two scales. **Conclusion:** The findings indicate that pediatric dental patients generally experience manageable levels of fear during dental procedures, with no significant differences in fear levels based on gender or age. This suggests that these demographic factors do not critically influence anxiety among children in a dental setting. The study emphasizes the need for ongoing assessment and effective management strategies to enhance children's dental experiences and promote better oral health outcomes. Additionally, the "Pick the Pic" scale has been validated as a viable alternative to the CFSS - DS for assessing fear, aiding in behavior management for pediatric patients.*

**Keywords:** Fear assessment scales, child dental fear and anxiety, first dental visit

## 1. Introduction

Fear is an unpleasant emotional state consisting of psychological and psychophysiological changes in response to real external threat or damage. Anxiety is an emotion similar to fear but arising in an emotion similar to fear but arising without any objective source of damage<sup>1</sup>. The fear and anxiety in children during the dental visit could not only affect the quality of the outcome of treatment but also the attitude of a child toward the dental profession. It has been found that fear of pain is primary source of anxiety and a major obstacle to seeking dental care<sup>2</sup>.

Avoidance of dental treatment due to fear or anxiety is common and appears to be associated with extreme oral and dental health problems. The development of dental fear can originate in childhood, adolescent or even later in life<sup>3</sup>.

Thoroughly assessing patients and identifying the source and level of their fear can empower pediatric dentists to determine appropriate management strategies. There exists wide array of multi - item questionnaires self - report scales and single - item questionnaires like dental subscale of children's fear survey Schedule (CFSS - DS), Venham's picture test, Facial image scale<sup>4</sup>. The drawbacks of these scales are that they are

more time consuming, making it difficult to use in young patients. In order to overcome these drawbacks we are tailor making a new scale "Pick the pic" fear scale. This scale evaluates fear by utilizing the pictures which aids dentist in recognising this emotion in children. The present study is an attempt to check the reliability as well as Validity of Pick the Pic A novel fear survey tool to assess pre - operative fear in planning and aiding behavior management among children in a dental setup.

## 2. Materials and Methods

### Collection of sample

The present study was carried out in the Department of Pedodontics and Preventive Dentistry, Faculty of Dental Sciences, KVG Dental college and Hospital, Sullia, Karnataka, India.

A total of twenty five subjects of age 6 - 10 years visiting dental hospital for the first time were included in the study. Children with previous dental experience, psychological or cognitive disorders and systemic disease that have an effect on normal physiology were excluded from the study.

**Study design**

A total of 25 children were selected based on inclusion and exclusion criteria from Department of Pedodontics and Preventive Dentistry, KVG Dental college and Hospital, Sullia. These children were given Pictorial scale and CFSS - Ds before oral examination

The selected children were assessed using novel pick the pic scale and also standard children fear survey - dental subscale. The efficacy of Pictorial scale with the standard scale was compared.

CFSS - DS developed by Cuthbert and Melamed in 1982 and

has been shown to be reliable and valid. The CFSS - DS consists of 15 items covering different aspects of the dental situation was used in the study. The CFSS - DS consists of 15 items related to different aspects of dental treatment which were scored as follows: Not afraid = 1; a little afraid = 2; fairly afraid = 3; quite afraid = 4; and very afraid = 5. Total scores thus ranged from 15 to 75. Seventy - five indicating maximal fear

**Development of Fear scale**

Pick the Pic is a novel pictorial scale containing 6 pictures of different aspects of the dental situation. Patient is asked to mark whichever they are afraid of.



**Ethical Considerations**

The study was commenced after obtaining ethical clearance from the Institutional Ethics Committee from KVG dental college and Hospital (IECKVGDCH/SS07/2024 - 25). Written consent was obtained from each parent and child who participated in the study.

**3. Methodology**

The content validity and construct validity of the Pick the pic fear scale was assessed before the start of the study. A total of 25 children were selected based on inclusion and exclusion criteria from Department of Pedodontics and Preventive Dentistry, KVG Dental college and Hospital, Sullia. All the 25 children were given Pick the pic scale and CFSS - DS before oral examination. Pick the pic scale was shown to children and they were asked to rate fear for each picture on a scale of 1 - 5, 1 being the least and 5 being the most fearful. The questions from CFSS - DS scale was asked to children and they were asked to rate fear for each question on a scale of 1 - 5, 1 being the least and 5 being the most fearful. The values were tabulated and fear assessment was carried out. The results from pick the pic scale was compared with that of CFSS - DS scale.

**Statistical Analysis**

Frequency and percentage were calculated for each variable paired and unpaired t test was used to test the significance of each variable in the study. P<0.05 was considered as statistically significant

**4. Results**

In the study, the gender distribution of participants was 11 males (44%) and 14 females (56%). The p - value for this comparison was 0.548, indicating no statistically significant difference between the genders, as a p - value of less than 0.05 is considered significant.

The overall mean age of participants was 9.8 years with a standard deviation of 1.7. When analyzed by gender, the mean age for males was 9.72 years (±1.84), while for females it was 9.85 years (±1.65). The p - values for the age comparisons were 0.855 for males and did not apply to females, suggesting no significant difference in age distribution between genders.

Fear and anxiety levels among participants were assessed using two different scales. The highest possible score on the CFSS - Dental subscale was 15, with participants achieving a mean score of 3.24 (±1.61). In contrast, the Pick the Pic scale, which has a maximum score of 6, yielded a mean score of 1.96 (±1.30). These results indicate varying levels of fear and anxiety, although statistical significance was not specified.

When comparing fear perception measured by the CFSS - Dental subscale and the Pick the Pic scale among study participants, it was found that 22 participants (88%) reported little or no fear/anxiety on the CFSS scale compared to 17 participants (68%) on the Pick and Pick scale, with a p - value of 0.0878 indicating no statistical significance. Moderate fear/anxiety was reported by 3 participants (12%) on the CFSS scale versus 6 participants (24%) on the Pick the Pic scale, with a p - value of 0.269, also indicating no significant difference. Additionally, no participants reported high levels of fear/anxiety on the CFSS scale, whereas 2 participants (8%) did on the Pick the Pic scale; this comparison yielded a p - value of 0.149, further supporting the lack of significant differences in fear perception between the two scales. This narrative format presents the findings clearly and cohesively while maintaining essential statistical information

**Table 1:** Comparison of Gender distribution among study participants

Gender	Frequency and percentage	p - value
Males	11 (44%)	0.548
Females	14 (56%)	

P < 0.05 is considered as statistically significant

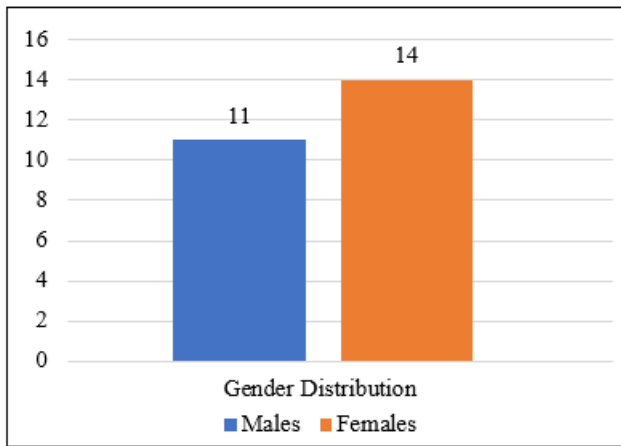


Figure 1: Comparison of Gender Distribution among study participants

Table 2: Comparison of age distribution among study participants

Age distribution (in years)	Mean age and standard deviation	p - value
Overall	9.8 ± 1.7	-
Males	9.72 ± 1.84	0.855
Females	9.85 ± 1.65	

P < 0.05 is considered as statistically significant

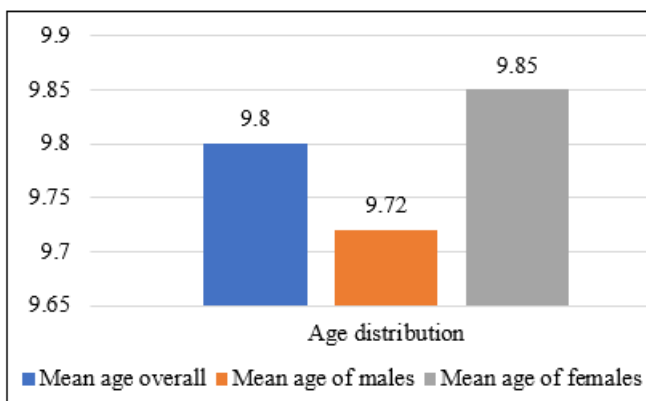


Figure 2: Comparison of Age Distribution among study participants

Table 3: Comparison of mean scores of fear and anxiety among participants measured using two different scales

Scale used	Highest possible score	Mean score observed
Cfss - Dental subscale	15	3.24 ± 1.61
Pick and pick scale	6	1.96 ± 1.30

P < 0.05 is considered as statistically significant

Table 4: Comparison of fear perception measured using two scales among study Participants

Level of fear or anxiety	Cfss - Dental subscale (n=25)	Pick and pick scale (n=25)	p - value
Little or no fear/anxiety	22 (88%)	17 (68%)	0.0878
Moderate fear/anxiety	3 (12%)	6 (24%)	0.269
High level of fear/Anxiety	0	2 (8%)	0.149

P < 0.05 is considered as statistically significant

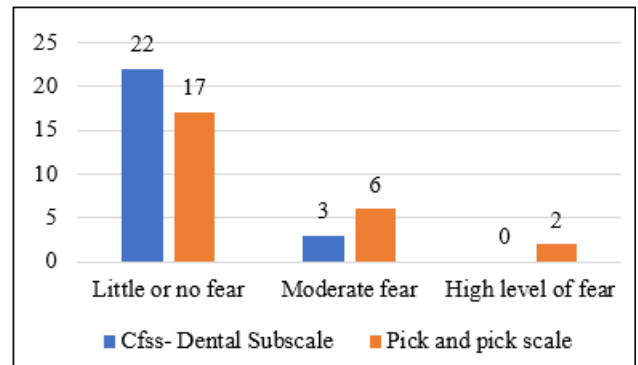


Figure 3: Comparison of fear perception measured using two scales among study Participants

### 5. Discussion

In literature, for assessment of fear and anxiety various scales have been documented. Questionnaires or psychometric scales such as children’s fear survey schedule - dental subscale (Cuthbert and Melamed 1982), dominic questionnaire (Valla et al., 1994), koala fear questionnaire (Muris et al., 2003), etc., are beyond the cognitive skill of small children hence proxy is required. Quiles and Pedroche (2000) stated that the evaluation test must be attractive to child. Gunmeen Sadana et al, also introduced a scale named chota bheem chutki scale which features cartoon characters, that helps engage children better than traditional scales<sup>6</sup>. With the help of projective scale, a child can self - report their anxiety and fear for dental situation nonverbally. Various projective scales have been developed in past to assess fear and anxiety in children like Venham picture test by Venham 1979,<sup>7</sup> for children and Adolescents. Looking into the drawbacks of these scales there is need of a new projective scale that is easy to apply and give results quickly without tiring the child and dentist. This Pick the pic scale has been developed to overcome these drawbacks.

In the study, the gender distribution of participants revealed that 11 males (44%) and 14 females (56%). The p - value for this comparison was 0.548, indicating no statistically significant difference between the genders, as a p - value of less than 0.05 is considered significant. A study by Khatri, M., et al. examined gender differences in anxiety levels among children during dental visits and found no significant differences between male and female participants which is in accordance with the current study<sup>8</sup>.

The overall mean age of participants was 9.8 years with a standard deviation of 1.7. When analyzed by gender, the mean age for males was 9.72 years (±1.84), while for females it was 9.85 years (±1.65). The p - values for the age comparisons were 0.855 for males and did not apply to females, suggesting no significant difference in age distribution between genders which is consistent with the research done by AlMohareb, F., et al. which showed the correlation between age and dental anxiety in children, reporting similar mean ages and highlighting that younger children tend to exhibit higher levels of fear<sup>9</sup>.

Fear and anxiety levels among participants were assessed using two different scales. The highest possible score on the CFSS - Dental subscale was 15, with participants achieving a

mean score of 3.24 ( $\pm 1.61$ ). In contrast, the Pick the Pic scale, which has a maximum score of 6, yielded a mean score of 1.96 ( $\pm 1.30$ ). These results indicate varying levels of fear and anxiety, although statistical significance was not specified. A Study done by Armfield, J. M et al discusses various scales used to measure dental anxiety and fear, including findings that align with current results regarding low mean scores on fear scales among pediatric patients<sup>10</sup>.

When comparing fear perception measured by the CFSS - Dental subscale and the Pick the Pic scale among study participants, it was found that 22 participants (88%) reported little or no fear/anxiety on the CFSS scale compared to 17 participants (68%) on the Pick and Pick scale, with a p - value of 0.0878 indicating no statistical significance. Moderate fear/anxiety was reported by 3 participants (12%) on the CFSS scale versus 6 participants (24%) on the Pick the Pic scale, with a p - value of 0.269, also indicating no significant difference. Additionally, no participants reported high levels of fear/anxiety on the CFSS scale, whereas 2 participants (8%) did on the Pick the Pic scale; this comparison yielded a p - value of 0.149, further supporting the lack of significant differences in fear perception between the two scales. This narrative format presents the findings clearly and cohesively while maintaining essential statistical information. Kuthy, R. A., et al.1 compared different scales for measuring dental anxiety in children, finding that results were consistent across scales but highlighted variability in reported levels of fear<sup>11</sup>. A study by Cuthbert, M. I., & Melamed, B. G assessed the prevalence of dental anxiety among children and found that a significant number reported low to moderate levels of fear, similar to current findings<sup>12</sup>.

## 6. Conclusion

While there are variations in reported levels of fear and anxiety among pediatric dental patients, overall findings suggest that these children experience manageable levels of fear during dental procedures<sup>12</sup>. The lack of significant differences across gender and age indicates that these factors may not play a critical role in influencing fear levels in this population. These results highlight the importance of continued assessment and management strategies to ensure positive dental experiences for young patients, ultimately contributing to optimal oral health outcomes.

Pick the pic scale can be an alternative scale to CFSS - DS to assess fear in planning and aiding behaviour management among pediatric patients.

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