

COMPARATIVE ASSESSMENT OF DENTAL ANXIETY AMONG CHILDREN AGED 3-14 YEARS USING PICTURE AND NON-PICTURE TESTS**Gawthaman M.¹, Kamatchi M.*², Patil Disha², Veerabhadran Mahesh Mathian³, Vinodh S.⁴, Manoharan M.⁵**¹Professor, Department of Pedodontics and Preventive Dentistry, Vivekanandha Dental College for Women, Tiruchengode, Tamilnadu, India.^{2,5}Senior Lecturer, Department of Pedodontics and Preventive Dentistry, Vivekanandha Dental College for Women, Tiruchengode, Tamilnadu, India.³Professor And Head Of The Department, of Pedodontics and Preventive Dentistry, Vivekanandha Dental college for Women, Tiruchengode, Tamilnadu, India.⁴Reader, Department of Pedodontics and Preventive Dentistry, Vivekanandha Dental College for Women, Tiruchengode, Tamilnadu, India.

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ABSTRACT

Background: Child dental anxiety is stressful problem among the children as well as the dentist. So, the dentist must be able to determine their anxiety levels prior to treatment. For this purpose official assessment measures are necessary. **Aim:** To assess and compare the levels of dental anxiety among children aged 3 to 14 years using picture tests like Venham picture test and Facial image scale and non-picture tests like Corah's dental anxiety scale and Modified dental anxiety scale. **Materials and methods:** A total number of 100 healthy children aged 3 to 14 years during their first dental visit were randomly selected for the study. Childs anxiety level was measured using Venham picture test, facial image scale, Corah's dental anxiety scale and modified dental anxiety scale and they were compared with each other. **Statistical analysis:** Student's 't' test was used to compare the mean anxiety ratings and Pearson correlation test was done to correlate the anxiety levels of children. **Results:** In the age group of 3-6 years, drastic difference was observed in anxiety levels compared between picture and non picture tests, whereas moderate difference was observed among the age group of 7-10 years. Furthermore no difference was noted between anxiety levels of 11-14 years. 70% of the children reported picture scale was more convenient than non picture scale. **Conclusion:** This study suggests that picture scales may be more appropriate than the non-picture methodology in predicting dental anxiety in children.

KEYWORDS: Corah's dental anxiety scale, Dental Anxiety, Facial image scale, Modified dental anxiety scale, Venham picture test.

INTRODUCTION

Dental anxiety has been defined as an 'Abnormal fear or dread of visiting the dentist for preventive care or therapy and unwarranted anxiety over dental procedures' and may have psychological, cognitive, and behavioral consequences.^[1]

Dental anxiety among children has generated a lot of curiosity in pediatric dentistry and is noted as a potential problem in patient management. The effects of the dental anxiety can persist in adulthood, which may lead to dental neglect.^[2] It is important that dentists assess dental anxiety as early as possible in child patients so that they may categorize patients who are in unique need with regards to their fear. For this reason, proper assessment measures are essential.^[3]

Regarding the assessment of dental anxiety/fear in children, four main types of measures can be distinguished

(1) Psychometric scales (e.g., questionnaires with categorical response scales), (2) projective techniques (e.g., questionnaires with a continuous response scale), (3) physiological measures (e.g., heart rate), and (4) ratings of child behavior during dental visits.

These four types can be clustered into measurement techniques that rely on some form of self-report (types 1 and 2) and techniques that rely on remarks of reactions of the child by others (types 3 and 4).^[4]

Self-report measures are recurrently used in the appraisal of dental anxiety. One advantage of self-report measures

is the ease of direction, taking a relatively short period of time to complete and they can also assess the reaction to diverse aspects of the dental experience.^[5]

Many studies have been reported with the assessment of dental anxiety levels using either picture tests or non picture tests.^[2,3,5] However in this study, we used self report measures for the assessment of dental anxiety that comprises of comparison between picture and non picture tests. Picture tests include venham picture test and facial image scale. Non picture tests include Corah's dental anxiety scale and Modified dental anxiety scale. Childs dental anxiety level was measured using all the four tests and they were compared with each other.

The aim of this study was to compare the levels of dental anxiety among children using picture tests like Venham picture test and Facial image scale and non-picture tests like Corah's dental anxiety scale and Modified dental anxiety scale and also to determine which among these was the most easiest method for the child patient.

MATERIALS AND METHODS

A total of 100 healthy children between 3 to 14 years of age, reporting to the Department of Pedodontics and Preventive Dentistry during their first dental visit were randomly selected for the study. Children with previous dental experience and children with mental or physical disability were excluded from the study. Children and their parents were informed regarding the study and consent was obtained.

Child's anxiety level in their first dental visit was measured using four different scales namely:

2 picture tests

1. Venham picture tests
2. Facial image scale

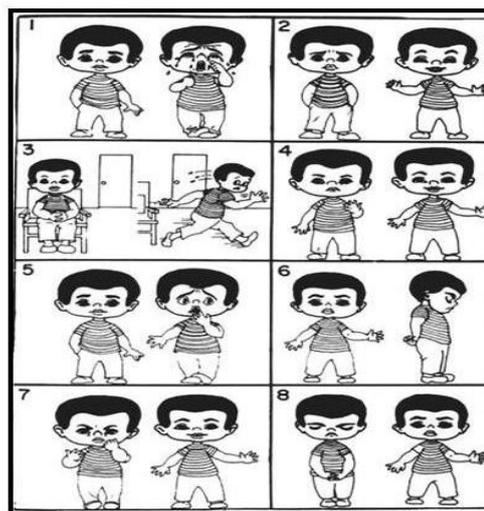
2 Non picture tests

3. Corah's dental anxiety scale
4. Modified dental anxiety scale

Venham Picture Test (VPT)^[6]

It comprises eight cards, with two figures on each card, one "anxious" figure and one "non-anxious" figure. The children were asked to point at the figure they felt most at that moment. All cards were shown in their numbered order. If the child pointed at the "anxious" figure a score of one was recorded, if the child pointed at the "non-anxious" figure a score of zero was recorded. The number of times the "anxious" figure chosen was summed up to give a final score (minimum score, zero; maximum score, eight). (Fig 1).

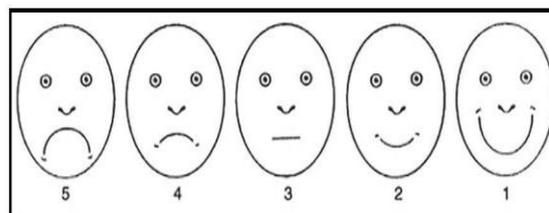
Figure 1: Venham picture test



Facial Image Scale (FIS)^[3]

Comprises a row of five faces ranging from very happy to very unhappy. The children were asked to point a face they felt like themselves at that moment. The scale is scored by giving a value of one to the most positive face and five to the most negative face. (Fig 2).

Figure 2: Facial image scale



CORAH DENTAL ANXIETY SCALE^[7,8]

Questionnaire

1. If you had to go to the dentist tomorrow, how would you feel about it?
 - a. I would look forward to it as a reasonably enjoyable experience.
 - b. I wouldn't care one way or the other.
 - c. I would be little uneasy about it.
 - d. I would be afraid that it would be unpleasant and painful.
 - e. I would be very frightened of what the dentist might do.
2. When you are waiting in the dentist's office for your turn in the chair, how do you feel?
 - a. Relaxed
 - b. A little easy
 - c. Tense
 - d. Anxious
 - e. So anxious that I sometimes break out in a sweat or almost feel physically sick.

3. When you are in the dentist's chair waiting while he gets his drill ready to begin working on your teeth, how do you feel?

- Relaxed
- A little easy
- Tense
- Anxious
- So anxious that I sometimes break out in a sweat or almost feel physically sick.

4. You are in the dentist's chair to have your teeth cleaned. While you are waiting and the dentist is getting out the instruments which he will use to scrape your teeth around the gums, how do you feel?

- Relaxed
- A little easy
- Tense
- Anxious
- So anxious that I sometimes break out in a sweat or almost feel physically sick.

Points were assigned for the subject's (S's) choices, with one point for an (a) choice to five points for an (e) choice. Total scores ranged from 4 to 20.

MODIFIED DENTAL ANXIETY⁹¹

Can you tell us how anxious you get, if at all, with your dental visit?

1. If you had to go to your Dentist for treatment tomorrow, how would you feel?

Not Anxious *Slightly Anxious* *Fairly Anxious*

Very Anxious *Extremely Anxious*

2. If you were sitting in the waiting room (waiting for treatment), how would you feel?

Not Anxious *Slightly Anxious* *Fairly Anxious*

Very Anxious *Extremely Anxious*

3. If you were about to have a tooth drilled, how would you feel?

Not Anxious *Slightly Anxious* *Fairly Anxious*

Very Anxious *Extremely Anxious*

4. If you were about to have your teeth scaled and polished, how would you feel?

Not Anxious *Slightly Anxious* *Fairly Anxious*

Very Anxious *Extremely Anxious*

5. If you were about to have a local anesthetic injection in your gum, above an upper back tooth, how would you feel?

Not Anxious *Slightly Anxious* *Fairly Anxious*

Very Anxious *Extremely Anxious*

Each item scored as follows:

Not anxious	=	1
Slightly anxious	=	2
Fairly anxious	=	3
Very anxious	=	4
Extremely anxious	=	5

Total score is a sum of all five items, range 5 to 25: Cut off is 19 or above which indicates a highly dental anxious patient, possibly dental phobic.

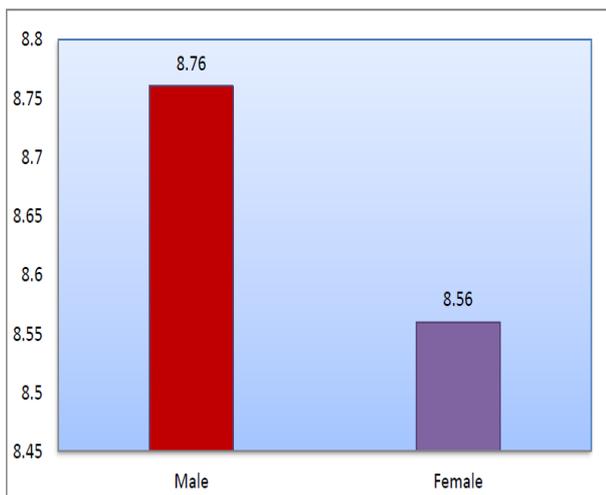
All the tests were shown to the children and they were explained about each test. They were asked to determine their anxiety levels. After completion of anxiety assessment from all the tests, children were also asked to point out the easiest among the four tests.

Statistical analysis

Data were analysed using SPSS software version 20. The mean anxiety ratings were compared using student's 't' test. The correlation between the anxiety rating scales were obtained using Pearson's correlation test. The level of significance was chosen to be 0.05. ($p < 0.05$).

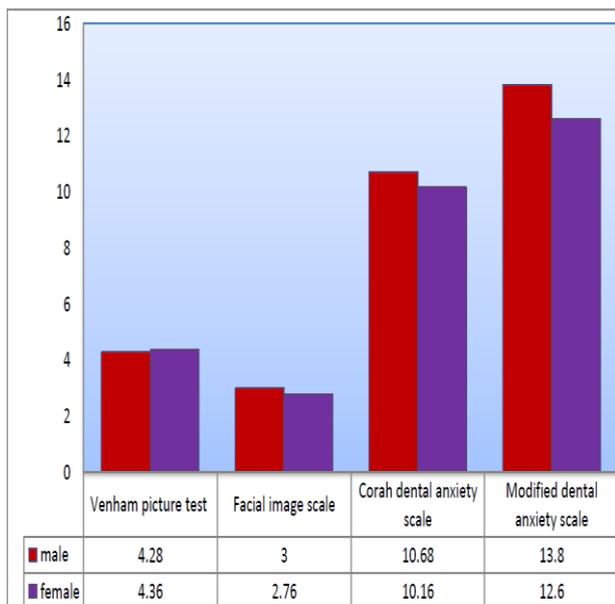
RESULTS

Among 100 children, 50 were boys and 50 were girls. The mean age of boys and girls was found to be 8.76 ± 2.88 years and 8.56 ± 2.44 years respectively, and the difference was not found to be significant. (Graph 1).



Graph 1: Distribution of sample by Age and Sex.

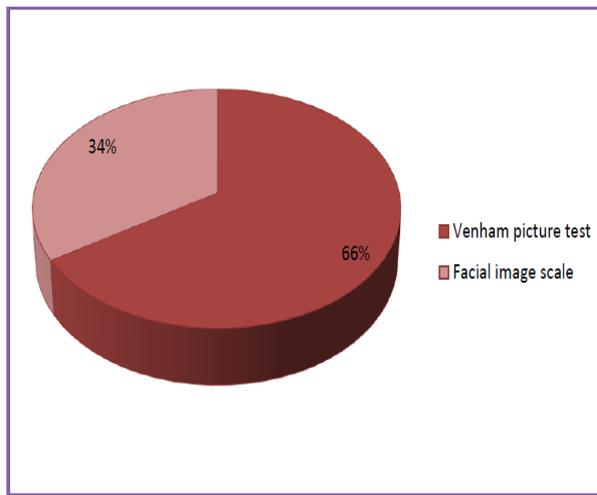
Graph 2 depicts the mean comparison of anxiety levels between males and females for all the 4 scales used.



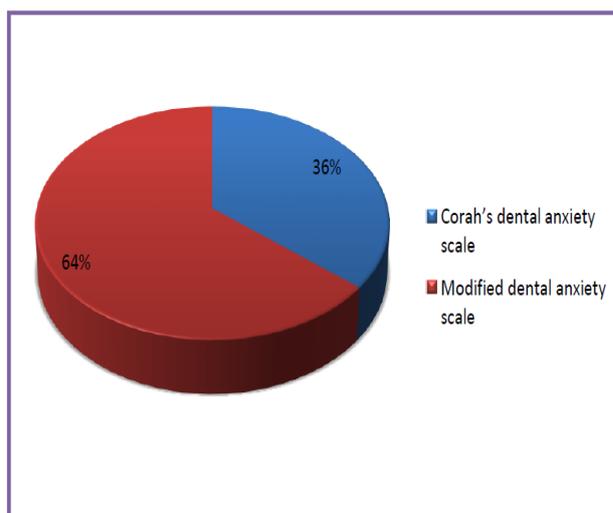
Graph 2: Sex wise comparison of individual scales.

Easiest test

Along with the assessment of anxiety from all the four tests used in this study, children were also asked to choose one of the anxiety rating tests which they found easy to understand and liked the most. Among the picture tests, VPT was considered as easiest test (Graph 3) and among non picture tests, Modified Dental Anxiety scale was considered as easiest test (Graph 4).

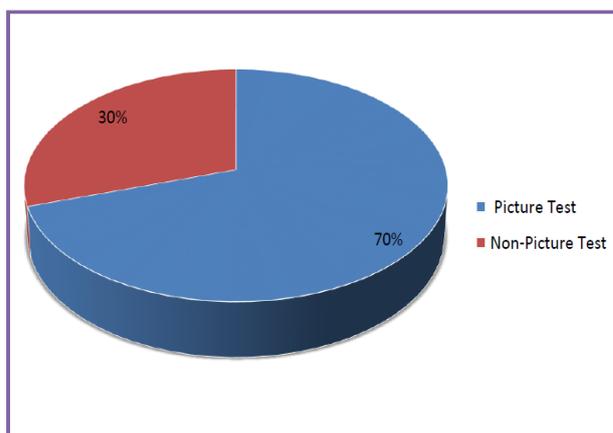


Graph 3: Comparison between picture scales.



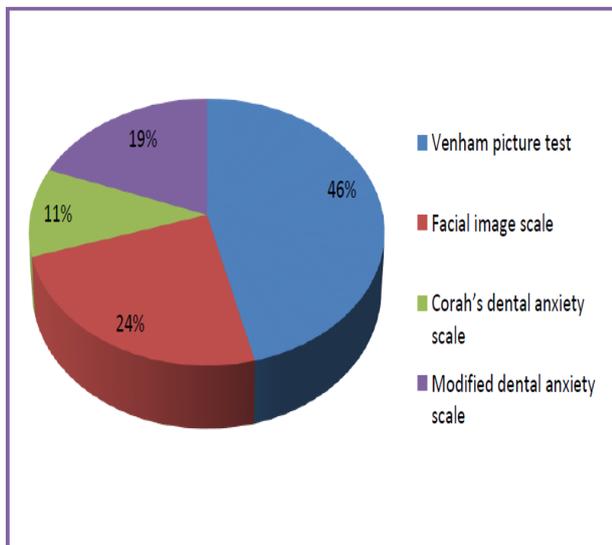
Graph 4: Comparison between non picture tests.

The children were also asked to choose that picture or non picture test is convenient for the assessment of dental anxiety scale. 70% of the children revealed picture scale was more convenient than non picture scale (Graph 5).



Graph 5: Comparison between Picture and Non picture test.

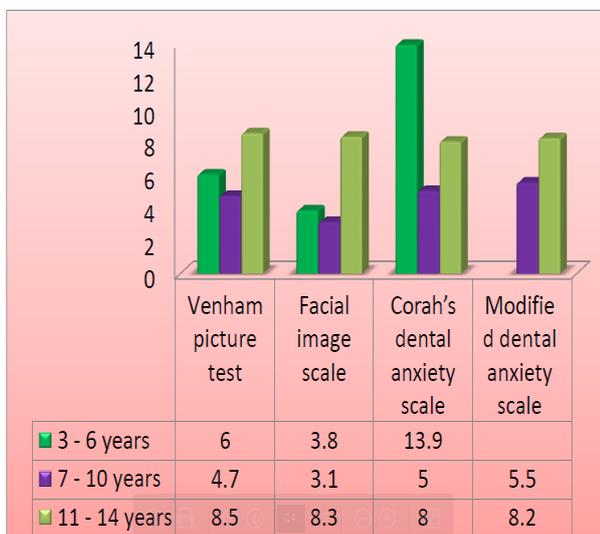
Among all the four tests, 46% of the children found venham picture test was the easiest one, 24% of the children found facial image scale was the easiest, 19% of them opted for modified dental anxiety scale whereas only 11% of the children liked corah dental anxiety scale.(Graph 6)



Graph 6: Easiest test among four test responded by the children.

Comparison of different test on various age groups

The total sample size of 100 was divided into 3 age groups namely 3-6 years, 7-10 years and 11- 14 years. The anxiety levels shown by the children differs in each age groups. The difference in the anxiety levels of picture and non picture tests revealed that there was drastic difference between them in the age group of 3-6 years, moderate difference in age group of 7-10 years. Furthermore no difference was noted between anxiety levels of 11-14 years when compared between picture and non picture tests. (Graph 7).



Graph 7: Comparison of different test on age groups.

DISCUSSION

Dental anxiety still poses a considerable problem for the practice of dentistry. It is necessary to recognize and enumerate the anxiety, in order to implement and screen the effect of treatment interventions. Dental anxiety may be a devastating factor that may lead to irregular dental turnout behaviour or even avoidance of care, that ultimately leads to poor oral health.^[10] Dental anxiety can be considered as a widespread phenomenon. The prevalence of dental anxiety among children between 5-10 years of age in a study population in India was found to be 6.3%.^[2]

The dentist's knowledge about the child's anxiety level prior to treatment prepares the dentist for the patient's reaction and allows dentist to take precautions to lessen the patient's anxiety level. There are many assessment scales to determine anxiety levels in children.

According to Buchanan,^[3] an ideal anxiety assessment scale should be:

- a. Short in length to maximize the response from the children and minimize the time for its administration.
- b. Include items which are most relevant to the child's dental experience.
- c. Easily grab the attention of the child.
- d. Allow for limited cognitive and linguistic skills.
- e. Simple to score and interpret.

Various scales have been devised to estimate the dental anxiety which include the Children's Fear Survey Schedule-Dental Subscale (CFSS-DS), Venham Picture Test (VPT), the Short Dental Fear Question (SDFQ), the Facial Image Scale, Corah dental anxiety scale and Modified dental anxiety scale. The scales included in this study were Venham Picture Test (VPT), Facial Image Scale (FIS), Corah dental anxiety scale and Modified dental anxiety scale.

Venham Picture Test (VPT) is one of the few picture scales available that covers the above mentioned criteria^[11], and has been used in numerous studies to evaluate anxiety of children. The Facial Image Scale (FIS) is a state measure of children's dental anxiety^[12] and validation studies have shown that it is a suitable measure for assessing state child dental anxiety even in very young children.^[3]

Corah Dental Anxiety Scale (DAS) is one of the scales used most frequently to measure trait anxiety in paediatric patients and yields a fine total score range that can be used professionally in clinical settings. Modified Dental Anxiety Scale consists of five basic questions that can be answered by the patient themselves if they are competent to appreciate them. This is the most commonly used measure in the dental trait anxiety assessment because it takes only five minutes to answer, is very consistent, and has a prognostic value.^[13]

There are no studies so far in literature comparing the anxiety levels of picture and non picture tests. Therefore, in the present study we decided to determine the anxiety levels of the children by using the above mentioned four tests and to determine whether they are capable of determining their anxiety levels in a similar manner.

There was no difference between the anxiety levels of picture and non picture tests among the age group of 11-14 years and the anxiety levels determined by the children between the age group of 3-6 years was not similar between the picture and non picture tests. (Graph 7) For eg: the child aged 4 years had a score of 1 for Venham Picture Test (VPT) and Facial Image Scale (FIS), but score of 20 for Corah dental anxiety scale and 25 for Modified dental anxiety scale which shows that according to picture tests the child was not anxious but according to non picture tests the child was extremely anxious.

In the present study, moderate correlation was found between FIS and VPT, which was similar to the study conducted by Shetty RM *et al* in 2015.^[2] In contrary H. Buchanan & N. Niven in 2002^[3] showed strong correlation between the FIS and VPT and Krishnappa *et al* in 2013 showed weak correlation between the Facial Image Scale (FIS) and the Venham Picture Test (VPT).^[12]

Bhola and Malhotra in 2014 determined the degree of anxiety pertaining to dental procedures and various oral hygiene practices among the age group of 17- 20 years using Modified Dental Anxiety Scale.^[14] Similarly Appukuttan *et al* in 2015 studied dental anxiety among adults among the age group of 18-70 years using Modified Dental Anxiety Scale and concluded that extraction followed by drilling of tooth and receiving local anesthetic injection provoked more anxiety.^[15] Alaki *et al* in 2012 assessed the prevalence and severity of dental anxiety among middle school children aged 11-15 years in Saudi Arabia and concluded that children in public schools showed more severe anxiety than those in private schools.^[16]

Corah dental anxiety scale and Modified dental anxiety scale have been used in patients with more than 11 years of age.^[14-16] Corah dental anxiety scale and Modified dental anxiety scale are difficult to interpret anxiety levels by the child. Since the age limit of the study was from 3- 14 years, the children found difficulty in determining their anxiety levels using non picture tests. Since, 70 % of the children pointed that picture tests were more convenient than non picture tests and VPT was most easiest test among the four.

CONCLUSION

The findings of this study suggest that picture scales may be more appropriate than the non- picture methodology in predicting dental anxiety in children. Since the study was done in limited population, greater

number of population is necessary. Drawback of the study includes the use of non picture tests in small age groups, the children found difficulty in understanding the questionnaires even if it was explained to them. We recommend that there is a need for further study to find better methods for understanding and improving children's anxiety and behavior during their dental visits.

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