ORIGINAL RESEARCH ARTICLE

Facial Image Scale: An Innovative Scale for the Assessment of Child's Dental Anxiety

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ABSTRACT

Context: Dental fear denotes a normal but unpleasant emotional reaction to specific stimuli perceived as threatening to occur during the usual clinical practice in dentistry. **Aim and Objectives:** The present study was aimed to examine the children concerning dental anxiety (DA) using the modified child dental anxiety scale faces (MCDASf). **Materials and Methods:** The present cross-sectional study was performed among 10–14 years old in private schools, Vellore. The questionnaires were administered to the children to determine the DA. **Results:** The results of the present study showed that more than half of them responded: "Worried a lot/very worried." Females had a higher significant total mean MCDASf score as compared to males. There is an association between DA and oral health status. **Conclusion:** The present study suggests that many children with complex and additional support needs can communicate their DA using a simplified questionnaire format administered in a familiar classroom setting.

Key words: Children, dental fear, modified child dental anxiety

INTRODUCTION

Fear of the dentist has been ranked fourth among every day worries.[1] Dental fear/anxiety (DFA) is a condition that affects children and adolescents, as well as the adult population.[2] Dental fear denotes a normal but unpleasant emotional reaction to specific stimuli perceived as threatening to occur during the usual clinical practice in dentistry.[2,3]

Dental treatment is considered an unpleasant experience. Folayan and Fatusi define dental anxiety (DA) as a "feeling of apprehension about dental treatment, which is not necessarily connected to a specific external stimulus."[4] It is a common and distressing problem. The prevalence of DA among children ranges between 5% and 20%, with a mean incidence of 11%.[5]

DA remains a challenge in treating children and has significant implications for the child, parents, dental staff, and the health-care system. Treating children with DA is costly and time-consuming.[6] Apart from the disruptive behavior during dental treatment and the possible need for other behavior management measures (including sedation and general anesthesia), DA can also affect the child's oral health and general wellbeing. The effect of DA on individuals can range from irregular attendance to total avoidance.[7]

The etiology of Dental anxiety is believed to be multifactorial and complex.[8] Multiple risk factors have been identified by the previous studies, including parental fear, general fear, and previous negative dental experience of dental pain.[9]

Anxiety is usually the most likely response to dental stimuli and is most commonly seen in children during their first dental visit. Therefore, the dentists need to identify the severity of anxiety in children using an acceptable technique to measure it.[10] An anxious child in a dental clinic poses a problem not only for the child himself but also for his family. Besides, outcomes associated with poor oral health may be grave.[11] The present study was aimed to assess its psychometric properties in a sample of highly anxious dental patients applying for treatment at a dental fear clinic.

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MATERIALS AND METHODS

Research Design

It was an interventional kind of study that was examiner blind. The review was an in vivo crossover type. Clinical trials carried out at Vellore. Volunteers were selected, fulfilling the inclusion and exclusion criteria. Informed consent obtained from parents and birth certificates were checked to confirm the date of birth of the children.

Ethical Considerations

Confidentiality of cases records was maintained.

Inclusion Criteria and Exclusion Criteria

I. Inclusion Criteria
II. The following criteria were included in the study
    a. Children 10–14 years of age.
    b. All the children were in good general health.
III. Exclusion criteria
IV. The following criteria were excluded from the study
    a. Children who were above 14 years of age.
    b. Children with systemic conditions.

Study Sample

The sample consisted of 368 middle school-aged children aged between 10 and 14 years who were selected randomly from schools. The study adopted a child-centered approach, and as far as possible, attempted to collect data from children in participating schools to obtain measures of DA.

Survey Distribution

Participating schools were distributed an information letter, consent form, and parent's questionnaire to parents of children in the relevant classes. Once parental questionnaires had been returned, teachers administered the children's questionnaire as a class exercise at school. School staff felt children would be more relaxed and cooperative if a familiar figure introduced the questionnaire.

The questionnaire was administered and distributed to all children in the classroom setting by their school teachers and classroom assistants. The teachers and assistants provided support with reading and understanding of the questions but did not influence the children's answers. The child's questionnaire included an explanation of the study and its voluntary nature and asked for child consent to be indicated.

The Questionnaire

In the present study, the selected questions were revised by three experts in pediatric dentistry interested in behavior management of children. The study variables were assessed using two questionnaires. The first questionnaire was for the parents and included the consent form. The second questionnaire was to investigate the different factors affecting dental fear-facial image scale (FIS). The factors included: Pattern of previous dental exposure and the child's behavior during those visits. The questionnaire was designed in both in English and regional language (Tamil).

Method of Data Analysis

The child's questionnaire included the modified child dental anxiety scale (faces) (MCDASf). The scale covers eight items ranging from attendance at the dentist to extractions and general anesthetic.[12]

Teachers in the participating schools felt that many of the children would have difficulties with the original MCDASf five-face scale.

- Not worried = 1
- Very slightly worried = 2
- Fairly worried = 3
- Worried a lot = 4
- Very worried = 5.

A three-faces scale was used, with equivalent scoring (not worried = 1; fairly worried = 3; and very worried = 5). The three-face scale was also used to measure reported anxiety at the most recent dental visit.[13]

Statistical Tools Used for the Study

Completed surveys were coded, and spreadsheets were created for data entry and were analyzed using Statistical Package for the Social Sciences version 21.0. ANOVA test was applied with a $P < 0.05$ considered being statistically significant. Findings were presented with the help of statistical analysis.

Analysis and Interpretation of Data

The survey results were manually entered into a personal computer by a research assistant who was not aware of the study objectives. The data were "cleaned" by checking for entries outside of legitimate ranges and for inconsistent codes; the necessary corrections were made by manually rechecking the surveys. Percentages for each variable were based on the number of respondents for the corresponding question.

RESULTS

Descriptive Statistics

The consent form and parent questionnaires were distributed to 375 children; out of which 368 children had completed, the questionnaires the MCDASf were included in the statistical analysis. Thus, the response rate for all children was 98%.

There were 180 (49%) male participants and 188 (51%) female participants. All children were aged between 10 and 14 years with a mean age of 12 ± 1.4.

Table 1 shows the demographic backgrounds and dental histories of the study population. Tables 2 and 3 show the mean values for all items of MCDASf scales. According to MCDASf, having an injection in the gum, having a tooth taken out, having a filling, and being put to sleep to have a treatment were the most fearful items. Table 4 shows the mean score comparison of MCDASf score based on variables among the gender.

Table 1: Socio-demographic variables of respondents

Individual scenario - Modified child dental anxiety scale (faces)			
Variables	**Frequency *n* (%)**	**Mean±SD**	**Inferential statistics**
Total	368/375`	98.1%	
Age (years)			
10–14 years	11.9±1.4		*P*<0.0001 HS
Gender			
Male	180 (48.9)	184±4	*P*<0.0001 HS
Female	188 (51.08)		
Body mass index			
Under/Normal weight	232 (63.04)	184±48	*P*<0.0001 HS
Overweight/obese	136 (36.9)		
Birth order			
First	108 (29.3)	122.6±48.47	*P*<0.0001 HS
Second	188 (51.08)		
Third	72 (19.5)		
Number of siblings			
No sibling	143 (38.8)	122.6±52.2	*P*<0.0001 HS
One sibling	174 (47.2)		
More than one sibling	51 (13.8)		
Child dental visit			
Fist	242 (65.7)	122.6±84.6	*P*<0.0001 HS
Second	71 (19.2)		
More than two times	55 (14.9)		
Marital status of parents			
Married/cohabiting	326 (88.5)	184±142	*P*=0.1971 NS
Divorced/separated	42 (11.4)		
Main caregiver			
Mother	149 (40.4)	92±54.5	*P*<0.0001 HS
Father	133 (36.1)		
Grandparents	76 (20.6)		
Guardian	10 (2.71)		

(Contd...)

Table 1: *(Continued)*

Individual scenario - Modified child dental anxiety scale (faces)			
Variables	**Frequency *n* (%)**	**Mean±SD**	**Inferential statistics**
The child is accompanied by			
Mother	189 (51.3)	122.6±47.0	*P*<0.0001 HS
Farther	85 (23.2)		
Both	94 (25.54)		
Parental dental anxiety			
Low	114 (30.9)	122.6±76.9	*P*<0.0001 HS
Moderate	221 (60.05)		
High	33 (8.9)		
Child comfortable talking to			
Receptionist	45 (12.2)	92±66.1	*P*<0.0001 HS
Dental assistant	188 (51.08)		
Dentist	117 (31.7)		
None	18 (4.8)		
How did the dental phobia start?			
Don't know	194 (52.7)	122.6±50.9	*P*<0.0001 HS
Bad experience	78 (21.1)		
I heard of a family member	96 (26.08)		

Citation: Shilpa W. Influence of parental dental anxiety on dental health outcomes and utilization of dental services of their children. Acta Scientific Dental Sciences 2018;2.7:7-12. NS: Not significant; HS: Highly significant

Table 2: Responses to modified child dental anxiety scale (faces): Child report-male

Individual scenario				
Variables	**Frequency *n* (%)**	**Response (n)**		
		Not worried (score 1)	**Fairly worried (score 3)**	**Very worried (score 5)**
				
Going to the dentist, generally	180 (97.8)	135	20	25
Having your teeth looked at	180 (97.8)	162	6	12
Having your teeth scraped and polished	169 (91.8)	140	19	10
Having an injection in the gum	179 (99.4)	40	20	119
Having a filling	174 (94.5)	87	66	21
Having a tooth taken out	178 (96.7)	43	24	111
Being put to sleep to have treatment	169 (91.8)	29	30	110
Having a mixture of gas and air, which will help you to feel comfortable for treatment but cannot put you to sleep	172 (93.4)	27	27	118

Citation: Howard KE, Freeman R. Reliability and validity of a faces version of the modified child dental anxiety scale. Int J Paediatric Dent 2007;17:281-8

DISCUSSION

The survey was conducted to identify DFA among children as it has been reported to be associated with a range of adverse behavioral and dental characteristics. Chellappah *et al*. conducted a study to identify the presence of dental fear

Table 3: Responses to modified child dental anxiety scale (faces): Child report-female

Individual scenario				
Variables	**Frequency *n* (%)**	**Response-(n)**		
		Not worried (score 1)	**Fairly worried (score 3)**	**Very worried (score 5)**
				
Going to the dentist, generally	188 (98.9)	133	33	22
Having your teeth looked at	182 (95.7)	149	15	18
Having your teeth scraped and polished	177 (93.1)	118	35	24
Having an injection in the gum	186 (97.8)	45	29	112
Having a filling	169 (88.9)	70	65	34
Having a tooth taken out	182 (95.7)	35	32	115
Being put to sleep to have treatment	167 (87.8)	40	21	106
Having a mixture of gas and air, which will help you to feel comfortable for treatment but cannot put you to sleep	176 (92.6)	36	24	116

Citation: Howard KE, Freeman R. Reliability and validity of a faces version of the modified child dental anxiety scale. Int J Paediatric Dent 2007;17:281-8

Table 4: Mean score comparison of modified child dental anxiety scale faces score based on variables

Individual scenario			
Variables	**Response**		**Inferential statistics**
	Male	**Female**	
	Mean±SD	**Mean±SD**	
Going to the dentist generally	60±53.07	62.6±49.9	*P*<0.0001 HS
Having your teeth looked at	60±72.1	60.6±62.4	*P*<0.0001 HS
Having your teeth scraped and polished	56.3±59.2	59±41.9	*P*<0.0001 HS
Having an injection in the gum….	59.6±42.7	62±35.9	*P*<0.0001 HS
Having a filling	58±27.53	56.3±15.9	*P*<0.0001 HS
Having a tooth taken out	59.3±37.3	60.6±38.4	*P*<0.0001 HS
Being put to sleep to have a treatment	59.3±37.9	55.6±36.4	*P*<0.0001 HS
Having a mixture of gas and air which will help you to feel comfortable for treatment but cannot put you to sleep	57.3±47.8	58.6±40.8	*P*<0.0001 HS

Citation: Howard KE, Freeman R. Reliability and validity of a faces version of the modified child dental anxiety scale. Int J Paediatric Dent 2007;17:281-8. HS: Highly significant

among children as it is considered to be the main barrier to the successful completion of dental treatment of child patients. The need for assessing and addressing childhood DFA at an early stage should be emphasized to enable identification of children with high dental fear and consequently to prevent the negative consequences of high dental fear in them.[14] The present study was aimed to evaluate the prevalence of dental fear in children and assess the various related factors and the impact of age and gender on the levels of dental fear.

Rajwar and Goswami reported a higher prevalence of dental fear among female children than compares to males, which were in par with the present study.[15] Sunil reported that the children who were having their first visit to the dentist showed a maximum response (28.6%) of FIS score 4, i.e., unhappy, which was in par with the present

study.[16] Rantavuori *et al.* reported that dental fear was higher among 12- and 15-year old children than among younger ones, which as per the present study.[17] In the present study, the dental fear scores had significantly varied between males and females.

CONCLUSION

DA is a multifactorial phenomenon that involves alterations that affect the quality of life of those patients suffering from it. Children are not free from its manifestations and consequences, which could become a barrier to receiving adequate dental care and improving the oral health of those who suffer from it.

Based on the results of this study, we recommend using a FIS before providing dental treatment to identify those patients who have higher anxiety levels to assist the decision-making process on how to approach this condition. It is done through adaptation and/or desensitization sessions before undergoing invasive treatments in the hopes of improving the timeliness and adherence to such procedures.

Limitations

The measure may not be suitable for children with severe learning disabilities.

Recommendation

Further work to conducted to examine the usefulness of MCDASf for children with severe learning disabilities.

Conflict of Interest and Source of Funding

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