International Journal of Dental Sciences
www.dentaljournal.in
E-ISSN: 2663-4708, P-ISSN: 2663-4694
Received: 01-09-2020; Accepted: 15-09-2020; Published: 04-10-2020
Volume 2; Issue 4; 2020; Page No. 01-05

Analysis of emotional experiences of children using dental anxiety scales

Srinivasan[1*], P Lakshmi Prasanna[2], Peddengatagri Suresh[3]
[1] Associate Professor, Department of Pedodontics and Preventive Dentistry, CKS Theja Institute of Dental Science and Research, Tirupati, Andhra Pradesh, India
[2] Assistant professor, Department of Pedodontics and Preventive Dentistry, Govt Dental College and Hospital, Kadapa, Andhra Pradesh, India
[3] Professor and HOD, Department of Periodontics, Govt Dental College and Hospital Kadapa, Andhra Pradesh, India

Abstract
Background: Dental fear (DF) is a challenging problem in Pediatric dentistry and poses a severe problem in rendering treatment to the child. Therefore, identifying fearful children is of great importance as they present problems in patient management which will eventually affect the quality of dental treatment.
Aim: To evaluate dental fear and anxiety among children using fear measurement scales.
Methods and Materials: A questionnaire compiling Children's Fear Survey Schedule-Dental Subscale (CFSS-DS) were distributed to a total of 392 children, age between 10 to 14 years visiting hospitals and clinics. Children who scored more significant than 38 were included in the 'with dental fear' group and those who scored less than 38 were assigned to the 'without dental fear' group. Collected data were analyzed and tabulated.
Results: Total CFSS-DS scores were calculated, and the relationship between socio-demographic variables and anxiety level was determined. The CFSS-DS mean total score was 44.3 ± 16.48 in males, and 48.1 ± 15.42 in females. Fear scores were highest for 'injections', 'choking', 'noise of dentist drilling', 'dentist drilling which was not significant between boys and girls but item, 'having somebody look at you' showed that significant differences in fear scores between boys and girls in the present study.
Conclusion: The assessment of dental fear is a handy tool to identify and manage children with dental fear and anxiety. There is a need for further research to form better measurements for assessing dental fear and anxiety for understanding and management of both the patients and dentists.

Keywords: children's fear survey schedule-dental subscale, dental anxiety, dental fear, anxiety, survey schedule

Introduction

A normal unpleasant emotional reaction to a known specific threat which is associated with dental treatment, which involves a fight-or-flight response when confronted with the threatening stimulus, is known as dental fear [1]. Fear of the dentist has been ranked fourth among common fears [2].

There are varied and multiple causes of dental fear in children that can be correlated to personality, general fear, previous painful dental experiences, dental fear in parents, age, and gender. Boys and older children report being less fearful than do girls and younger children [3]. The Dental Subscale of the Children's Fear Survey Schedule (CFSS-DS) was developed to provide an instrument for assessing dental fear in children [4].The CFSS-DS is a revised form of the Fear Survey Schedule for Children (FSS-FC) to include specific dental fear items as one of its subscales [5]. Children's Fear Survey Schedule (CFSS-DS) developed by Cuthbert and Melamed in1982. It consists of fifteen items that differentiate patients with high and low dental fears [6].

Anxiety derived from the Latin word "angustus" means stiff and "ango, anci", means choking. Freud stated that anxiety is an ego function to warn an individual about the probability of incoming danger, so one can readily prepare appropriate adaptive reaction. the function of anxiety is as a mechanism that protects the ego, because it gives a signal to us that there is danger, and therefore, if there is no appropriate action, then the danger will increase until the ego is lost [7].

AIM

The study aimed to investigate the level of dental fear and anxiety for the development of dental fear among children.

Subjects and Methods

Internal consistency

This research was a descriptive observational research, which aimed to describe a situation based on the result of direct observation [8]. The sample comprised of 392 children (197 male and 195 female) who were 10 to 14 years old [9], both visiting the

Clinic and hospitals for three months.

Inclusion and exclusion criteria

Inclusion criteria

a. Children aged 10-14 years.
b. Children who were cooperative during the study.
c. First-time visitors.
d. Reason for the dental visit – regular dental examination.
e. Signed informed consent form from parents for participation in the study.

Exclusion criteria

a. Children with disabilities.
b. Children who had received dental treatment?

Survey Instrument

After obtaining consent from the participants and their parents, the questionnaires were asked one by one to them, and completed questionnaires were collected immediately on site. The prepared questionnaire consists of demographic details of the patient such as age and gender, chief complaint and whether or not they have visited a dental clinic for treatment before. The next portion of the questionnaire is a compilation of fear measurement scales-the English version of the Children's Fear Survey Schedule–Dental Subscale (CFSS-DS) [4].

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; very afraid = 5. Total scores thus ranged from 15 to 75.

Total scores range from a minimum of 15 to a maximum of 75. Significant dental fear is when the score is above 38. All values are tabulated, and the mean CFSS-DS scores were calculated for the study population and also for girls and boys of all different age [9-10]. The CFSS-DS was translated into the local language. To fit the conditions of dental procedures, the item 'Having the nurse cleans your teeth' was changed to 'Having the dentist cleans your teeth' [11].

The purpose of this study was explained to the parents, and written informed consent was also provided. The CFSS-DS questionnaire was given and completed by the parents before dental treatment. A pretest approach was performed for reliability verification during within 10 days period between the tests to explore the consistency of participants in answering the questionnaire [12].

Data Analysis

Data management and analyses were conducted using SPSS version 21.0. (SPSS, Inc., Collected data were analyzed and tabulated in Microsoft Excel 2018. Chicago, Ill., USA).

Two, t-tests, were used in statistical analysis. ANOVA was performed to test for group differences in the CFSS-DS scores for children between genders.

Results

A total of 392 children participated in this study. The response rates of the participants were 100%. Out of the total 392 respondents, 197 (50.2 %) of them were females, and 195 (49.7%) of them were males, aged between 10 to 14 years with a median age of 10.4 years as seen in *Table 1*.

Table1: Demographic data- Children's Fear Survey Schedule - Dental Subscale (CFSS-DS)

Individual scenario				
Variables		**Frequency (%)**	**Mean ± SD**	**Inferential Statistics**
Total.	392/400	392 (98)		
Age (years).	10-12	216 (55.1)	10.45 ± 0.49	P < 0.0001 HS
	13-14	176 (44.8)		
Gender.	Male	197 (50.2)	1.49 ± 0.49	P < 0.0001 HS
	Female	195 (49.7)		
Body mass index.	Under/Normal weight	256 (65.30)	1.34 ± 0.47	P < 0.0001 HS
	Overweight/obese	136 (34.6)		
Birth order.	First	228 (58.1)	1.46 ± 0.59	P < 0.0001 HS
	Second	144 (36.7)		
	Third	20 (5.1)		
Number of Siblings.	No Sibling	166 (42.3)	1.62 ±-0.57	P < 0.0001 HS
	One sibling	208 (53.0)		
	More than One Sibling	18 (4.5)		
Marital status of parents.	Married/Cohabiting	340 (86.7)	1.13 ± 0.33	P < 0.0001 HS
	Divorced/Separated	52 (13.2)		

Citation: Warhekar Shilpa., et al. "Influence of Parental Dental Anxiety on Dental Health Outcomes and Utilization of Dental Services of their Children" Acta Scientific Dental Sciences 2.7 (2018): 07-12. HS: Highly significant

179 (45.6) participants reported having their first visit to the dentist while the remaining 213 (54.3%) have visited a dentist in the past for dental treatment. Most of the common chief complaints reported by the parents of the child participants were an experience of tooth pain200 (51.0). The results were gathered through the questionnaire, and the results are as followed, as seen in *Table 2*.

Table 2: Mean dental fear scores concerning dental history. (n=392)

Individual scenario			
Variables	**Frequency (%)**	**Mean ± SD**	**Inferential Statistics**

Previous dental exposure.	Yes	213 (54.3)	1.45 ± 0.49	P < 0.0001 HS
	No	179 (45.6)		
Why didn't your child visit the dentist last year?	Child fear	185 (47.1)	1.85 ± 0.96	P < 0.0001 HS
	No pain	109 (27.8)		
	No time	69 (17.6)		
	Not needed	29 (7.3)		
Frequency of dental visits.	Regular	51 (13.0)	2.41 ± 0.92	P < 0.0001 HS
	With pain	200 (51.0)		
	Sometimes	70 (17.8)		
	Never	71 (18.1)		
Previous dental treatment Examination.	Examination	121 (30.8)	2.51 ± 1.21	P < 0.0001 HS
	Prophylaxis	44 (11.2)		
	Filling	159 (40.5)		
	Anaesthesia	42 (10.7)		
	Extraction	26 (6.6)		
Child behaviour during previous visits.	Crying	30 (7.6)	3.49 ± 1.00	P < 0.0001 HS
	Screaming	20 (5.1)		
	Resistant	107 (27.2)		
	Cooperative	196 (50.0)		
	Happy	39 (9.9)		
Pain during previous dental treatment/s.	Yes	138 (35.2)	1.64 ± 0.47	P < 0.0001 HS
	No	254 (64.7)		

Citation: Scherer MW, Nakamura CY. A fear survey schedule for children (FSS-FC): a factor analytic comparison with manifest anxiety (CMAS). Behav Res Ther 1968; 6:173–182.HS: Highly significant

Dental fear with CFSS-DS ≤ 38 was identified in 195 children [99 (50.2%) male and 96 (49.2% female]. A total of 197 children [98 (49.7%) male and 99 (50.7%) female] had CFSS-DS ≥ 38.

There was no statistically significant difference between gender distribution and CFSS-DS (P > 0.05) as seen in Table 3.

Table 3: Gender distribution according to CFSS- DS score.

Individual Scenario						
Variables	**Males**		**Females**		χ^2	**Inferential Statistics**
	Frequency (N)	**Response rate (%)**	**Frequency (N)**	**Response rate (%)**		
≤ 38	99	50.2	96	49.2	0.041	0.83 P<0.05 NS
≥ 38	98	49.7	99	50.7		
Total						

Citation: Beena, JP. The dental subscale of children's fear survey schedule and dental caries prevalence. Eur J Dent 2013; 7:181-5. NS: Not Significant

Table 4: Comparison of mean scores between Males and Females. The overall mean score of CFSS-DS in our study was 46.2 ± 15.95 the mean CFSS-DS scores for males were 44.3 ± 16.48 and for females was 48.1 ± 15.42. There was a statistically significant difference in the mean scores between the males and females for any of the parameters mentioned above ($P > 0.05$).

It was observed that females showed the highest CFSS-DS scores, with a maximum score of 48.1. Fear scores were highest for "Injections" (3.77 ± 0.41), "Dentist drilling" (4.05 ± 0.34) and "Choking," (4.61 ± 0.82) among males. Among females fear scores were highest for "Seen by others" (3.88 ± 1.33), "Dentists" (2.93 ± 1.26) and "Touched by a stranger" (4.07 ±1.06)

Table. 4. Comparison of mean scores of CFSS- DS between Males and Females. (n=392)

Individual scenario						
Question	**Overall**	**Males**	**Rank**	**Females**	**Rank**	**Inferential Statistics**
	Mean ± SD	**Mean ± SD**		**Mean ± SD**		
Dentists.	2.43 ± 1.13	1.93 ± 0.68	4	2.93 ± 1.26	2	P < 0.0001 HS
Doctors.	1.72 ± 0.81	1.62 ± 0.69	12	1.82 ± 0.91	11	P < 0.0001 HS
Injections. (shots)	4.28 ± 0.67	3.77 ± 0.41	1	3.8 ± 0.45	4	P < 0.0001 HS
Mouth being examined	2.38 ± 1.11	1.98 ± 0.76	14	2.78 ± 1.24	8	P < 0.0001 HS
Told to open mouth.	1.65 ± 0.76	1.66 ± 0.79	10	1.64 ±0.74	9	P < 0.0001 HS
The stranger touched me.	2.97 ± 1.49	1.88 ± 0.98	8	4.07 ±1.06	3	P < 0.0001 HS
Others see me.	2.89 ± 1.55	1.91 ± 1.06	13	3.88 ± 1.33	1	P < 0.0001 HS
The dentist drilling.	3.92 ± 0.70	4.05 ± 0.34	2	3.79 ± 0.92	5	P < 0.0001 HS

The sight of the dentist drilling.	3.41 ± 1.37	3.05 ± 0.85	6	3.65 ± 0.96	6	P < 0.0001 HS
The noise of the dentist drilling.	3.26 ± 1.17	3.57± 0.87	5	2.94 ± 1.34	10	P < 0.0001 HS
I was having somebody put instruments in your mouth.	3.23 ± 1.32	3.00 ± 1.32	7	3.47 ± 1.28	7	P < 0.0001 HS
Choking.	4.19 ± 1.12	4.61 ± 0.82	3	3.76 ± 1.22	9	P < 0.0001 HS
Go to the clinic/hospital.	2.42 ± 0.97	2.12 ± 0.40	9	2.72 ± 1.24	15	P < 0.0001 HS
People in white uniforms.	2.31±1.03	1.95 ± 0.68	11	2.68 ± 1.19	12	P < 0.0001 HS
The dentist cleans your teeth.	3.24 ± 1.28	3.31 ± 1.28	15	3.17 ± 1.28	13	P < 0.0001 HS
Total CFSS-DS	46.2±15.95	44.3 ± 16.48		48.1 ± 15.42		P < 0.0001 HS

Citation: Cuthbert MI, Melamed BG. A screening device: children at risk for dental fears and management problems. ASDC J Dent Child. 1982; 49(6):432. HS: Highly significant

Discussion

Dental treatment has shown to induce and increase dental fear in children. In order to prevent this health-threatening anxiety, preferably employing suitable pediatric treatment, it is crucial to identify dentally anxious children at the earliest age possible. Of these fears, injections rank highest followed by dentist drills and the feeling of choking [13].

Dental phobia and dental anxiety are serious problems that negatively affect oral health in people of all ages [14].

The Dental Subscale of the Children's Fear Survey Schedule (CFSS-DS) is a well-known psychometric scale that was developed in 1982 for assessing dental fear in children [15].

Rajwar AS *et al.* reported a higher prevalence of dental fear among female children than compares to males which are in par with the present study [14].

According to Singh *et al*. [15] and Kleinberg [18], children with CFSS-DS scores ≥, 38 were classified as children of the high dental fear group.

The mean CFSS-DS scores for males (44.3 ± 16.4) were lower than females (48.1 ± 15.4), and the difference was observed to be statistically significant (P < 0.0001). This was per the studies done by Surabhi *et al*. [16] and Shehanaz [17], who reported higher dental anxiety levels in females than in males.

Klingberg and Broberg found higher anxiety levels in males than in females who were against the present study [18].

An assessment of the various factors which caused the most fear in children, it was observed that according to CFSS-DS, the factors which caused the most fear was "injections", followed by the "noise of dentist drilling" and then the "sight of dentist drilling" in the present study. This finding was similar to Domoto *et al*., which observed that injections and drilling were most fearful stimuli to children [19].

Injections are also reported to be the most feared item by Nakai *et al*. [20] and Rajwar *et al*. [14]

Schuurs AH *et al*., stated that the accessibility to such a significant number of dental fear and anxiety questionnaire might be due to dissatisfaction with the lack of specific criteria in the existing questionnaire as all questionnaires are open to criticism and feedback. Therefore, the use of more than one questionnaire is recommended in research related to dental fear assessment [21].

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.

Thus, further studies are necessary to research this problem and propose a structure of appropriate manner for children's preparation according to their age and individual characteristics.

Conclusion

The anxiety level of children patients during dental treatment was different based on their age and gender.

Acknowledgements

The author would like to thank all the teachers who helped in distributing the questionnaire and all the families who helped in completing the questionnaire.

Reference

1. Cianetti S, Lombardo G, Lupatelli E, Pag ano S, Abraha I, Montedori A, *et al.* Dental fear/anxiety among children and adolescents. A systematic review. European journal of paediatric dentistry: official journal of European Academy of Paediatric Dentistry. 2017; 18(2):121.
2. Milgrom P, Weinstein P. Dental fears in General Practice: New Guidelines for assessment and treatment. Int Dent J. 1993; 43:288- 93.
3. Shim YS, Kim AH, Jeon EY, An SY. Dental fear and amp; anxiety and dental pain in children and adolescents; a systemic review. J Dent Anesth Pain Med. 2015; 15:53-61.
4. Cuthbert MI, Melamed BG. A screening device: children at risk for dental fears and management problems. ASDC J Dent Child. 1982; 49:432-436.
5. Scherer MW, Nakamura CY. A Fear Survey Schedule for Children (FSS-FC): a factor analytic comparison with manifest anxiety (CMAS). Behav Res Ther. 1968; 6:173-182.
6. Klingberg G. Reliability and validity of the Swedish version of the Dental Subscale of the Children's Fear Survey Schedule, CFSS-DS. Acta Odontol Scand. 1994; 52:255-256.
7. El-Housseiny AA, Merdad LA, Alamoudi NM, Farsi NM. Effect of Child and Parent Characteristics on Child Dental Fear Ratings: Analysis of Short and Full Versions of the Children Fear Survey Schedule-Dental Subscale. OHDM. 2015; 14(1):9-16.
8. Klingberg G, Berggren U, Noren JG. Dental fear in an urban Swedish population; prevalence and concomitant factors. Community Dent Health. 1994; 11:208-214.
9. Lee CY, Chang YY, Huang ST. Prevalence of dental anxiety among 5- to 8-year-old Taiwanese children. J Public Health Dent. 2007; 67:36-41.
10. Nakai Y, Hirakawa T, Milgrom P, Coolidge T, Heima M, Mori Y, *et al.* The children's fear survey schedule-dental subscale in Japan. Community Dent Oral Epidemiol. 2005; 33(3):196-204.
11. Wogelius P, Poulsen S. Associations between dental anxiety,

dental treatment due to toothache, and missed dental appointments among six to eight-year-Old Danish children: A cross-sectional study. Acta Odontol Scand. 2005; 63:179-82.
12. D'Alessandro G, Alkhamis N, Mattarozzi K, Mazzetti M, Piana G. Fear of dental pain in Italian children: Child personality traits and parental dental fear. J Public Health Dent. 2016; 76:179-83.
13. Nakai Y, Hirakawa T, Milgrom P, Coolidge T, Heima M, Mori Y, *et al.* The Children's Fear Survey Schedule-Dental Subscale in Japan. Community Dent Oral Epidemiol. 2005; 33:196-204.
14. Rajwar AS, Goswami M. Prevalence of dental fear and its causes using three measurement scales among children in New Delhi. Journal of Indian Society of Pedodontics and Preventive Dentistry. 2017; 35(2):128.
15. Singh P, Pandey RK, Nagar A, Dutt K. Reliability and factor analysis of children's fear survey schedule-dental subscale in Indian subjects. J Indian Soc Pedod Prev Dent. 2010; 28:151-5.
16. Surabhi Jain R, Sarvana Pandian. Prevalence of Dental Fear and Anxiety among Orthodontic Patients. Pak Oral and Dent J. 2016; 8(9):1091-3
17. Shehenaz. Assessment of dental anxiety among 12-15 years old school children – A survey. The International Journal for Research Trends and Innovation, 2017.
18. Klingberg G, Broberg AG. Dental fear/anxiety and dental behaviour management problems in children and adolescents: a review of prevalence and concomitant psychological factors. Int J Paediatr Dent. 2007; 17(6):391-406.
19. Domoto PK, Weinstein P, Melnick S, Ohmura M, Uchida H, Ohmachi K, *et al.* Results of a dental fear survey in Japan: Implications for dental public health in Asia. Community Dent Oral Epidemiol. 1988; 16:199-201.
20. Nakai Y, Hirakawa T, Milgrom P, Coolidge T, Heima M, MoriY, *et al.* The children's fear survey schedule - dental subscale in Japan. Community Dent Oral Epidemiol. 2005; 33:196-204.
21. Schuurs AH, Hoogstraten J. Appraisal of dental anxiety and fear questionnaires: A review. Community Dent Oral Epidemiol. 1993; 21:329-39.