Assessment of Dental Anxiety In Children And Their Caregivers Using Norman Corah's Dental Anxiety Scale

Nanda J[1], Sharma D[1], Vashista K[1], Sandhu M[2]

Abstract

Background: Dental anxiety in children still remains a major reason for avoidance of dental treatment. It is challenging for a pediatric dentist to manage such anxious children. Therefore, assessment of anxiety in children would help the professional to modify the child's behaviour and deliver the treatment effectively and efficiently**. Aim:** This study was aimed at assessing the correlation between the dental anxiety level in children and their caregivers and to evaluate the dental procedure which elicits the maximum anxiety in both children and their caregivers. **Materials and Method :** The study comprised of 120 children aged 8-14yrs and 120 adults *i.e* their caregivers. The Norman Corah's Dental anxiety scale (DAS) was used to measure dental anxiety and Dental Concern Assessment scale was used to evaluate the maximum anxiety-eliciting procedure amongst children as well as their caregivers. **Statistical Analysis:** Frequency distribution method and Pearson coefficient test were used to assess the correlation and association, respectively, between dental anxiety level in children and their caregivers. Pearson Chi Square test was also used to test the association between the dental procedures eliciting maximum anxiety in children and their caregivers. **Results and Conclusion:** There was not a significant correlation between anxiety level in children and caregivers using Norman Corah DAS. But a significant correlation was found between the procedure eliciting maximum anxiety in both children and their caregivers ($r = 0.384$, $p = 0.00$), as both were most anxious about injections, followed by tooth extractions in case of children and sound and vibration of the drill in case of caregivers.

Key words: Dental anxiety, Norman Corah's scale, Caregiver, Children

Introduction

Fear is an individual's response to a life threatening event or dangerous situation to protect himself or herself. Dental anxiety, dental fear and dental phobia are three different terminologies used in dental literature to describe apprehension. Dental fear is considered to be aroused by a real, immediately present, specific stimulus (needles, drilling noise), whereas in dental anxiety the source of threat is unclear, ambiguous and not immediately present. However in both situations individual's emotional reactions are same[1].

Amongst these, dental anxiety is one of the most commonly reported[2]. Approximately 6-15% of the population suffer from high dental fear worldwide[3]. Prevalence of childhood dental fear varies from 3%-43% in different populations[4].

Corresponding Author : Dr. Jasmine Nanda, PG Student, Department of Pedodontics and Preventive Dentistry, ITS Centre for Dental Studies and Research, Murad Nagar, Ghaziabad. **(M)** : 08744881800 **Email- id :** dr.jasminenanda@gmail.com.

1. PG Students, Department of Pedodontics and Preventive Dentistry, I.T.S Centre for Dental Studies and Research,Ghaziabad.
2. Professor, Dept of Pedodontics and Preventive Dentistry, C-4, Staff residence, ITS Center for Dental Studies and Research, Ghaziabad.

Dental anxiety is a state of unpleasantness with an associated fear of danger from within or is a learned process of one's own environment[3]. Factors related to dental anxiety includes age, gender, parental anxiety, etc[4]. Painful or negative dental experience is the most common causes of dental anxiety[5].

The onset of anxiety is thought to originate in childhood, and the effect of this fear persists into adulthood[6]. As a result, anxious individuals postpone dental treatment, are quite uncooperative during dental visits and develop lower pain threshold.

Therefore, careful assessment of child's anxiety is an important step for proper patient management and delivery of good quality of dental care. Also, assessment of the caregiver's anxiety might be very helpful to form an understanding of the basis of the child's anxiety.

The aim of this study was to assess correlation between the dental anxiety level in children and their caregivers and to evaluate the dental procedure which elicits the maximum anxiety in both children and their caregivers.

Materials and Methods

The present cross-sectional study was conducted in the Department of Pedodontics and Preventive Dentistry, ITS Centre for Dental Studies & Research, Muradnagar, Ghaziabad, UP. Study population consisted of 240 subjects. It comprised of 120 children aged 8-14yrs and 120 adults i.e parents.

Sample Selection

The sample size consisted of 120 healthy children and their caregivers who were willing to participate in the study. Children and their parents were informed about the study design & written consent was obtained after explaining the contents of the questionnairs. Each questionaire was translated into hindi language as well. Children and their caregivers suffering from any systemic disease, or handicapping conditions were excluded from the study.

Corah's Dental Anxiety Scale (DAS) and Dental concern assessment scale were used to assess dental anxiety and procedural anxiety, respectively, in children and their caregivers. Corah's DAS is a well known psychometric scale that was developed in 1969[2]. It is simple, easy to use, has high reliability and predictive validity[5]. Dental concern assessment scale was developed by J. H. Clarke and S. Rustvold in 1993.

Measuring Dental Anxiety

The questionnaire was translated and given to each child and caregiver pair. It comprised of four multiple choice questions, each having 5 options, which were scored as A = 1, B = 2, C = 3, D = 4, E = 5; with (A) being a level of no anxiety and (E) representing the maximum level of anxiety felt towards a specific dental situation or procedure. The total score for the Norman Corah scale ranges from 4 to 20 and anxiety ratings are classified as: 4 to 8 = no anxiety, 9 to 12 = moderate anxiety, 13 to 14 = high anxiety, 15 to 20 = severe anxiety.

Measuring procedural anxiety:

Apart from Norman Corah's questionnaire, Dental Concerns Assessment scale, developed by J. H. Clarke and S. Rustvold in 1993, was also used. This questionnaire included a set of 26 situations and procedures encountered at the dental office during the treatment. Both children and caregivers were asked about these procedures, like extraction, injection, rubber dam, cost of treatment, sound of drill, root canal treatment, gagging, fear of being injured, etc., that elicit maximum anxiety in them.

Statistical Analysis

The data was analyzed using SPSS software 16.0. Frequency distribution method and

Pearson coefficient test were used to assess the correlation and association, respectively, between dental anxiety level in children and their caregivers. Pearson Chi Square test was also used to test the association between the dental procedures eliciting maximum anxiety in children and their caregivers. The level of significance was set at < 0.05.

Results:

A total of 120 child-caregiver pairs participated in the study. The results (table 1) show that the majority of participating children (55%) suffered from moderate anxiety and the percentage of caregivers suffering from moderate anxiety was 30%. The Pearson coefficient between child and caregiver anxiety is 0.266, and p value was 0.734

Table 1: Percentages of anxious children and caregivers.

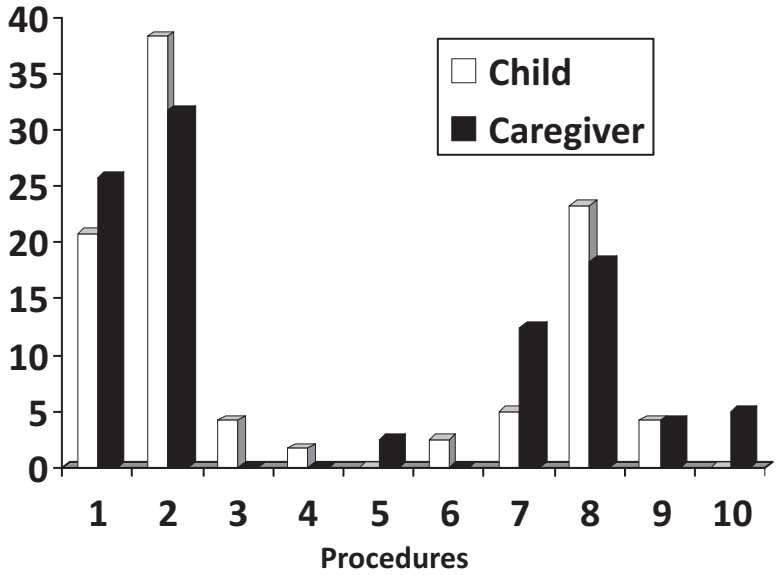
Level of anxiety	Children (%)	Caregivers (%)	P value	Pearson coefficient
No anxiety	18.3	58.3	0.734	0.266
Moderate anxiety	55.0	30		
High anxiety	16.7	11.7		
Severe anxiety	10.0	0		
Total	100.0	100.0		

In the second questionnaire about the dental procedure which elicited the most anxiety, results (table 2 and graph 1) showed that children as well as their caregivers were most anxious about injections (38.3% in children and 31.7% in caregivers), followed by tooth extractions in case of children (23.3 %) and sound and vibration of the drill in case of caregivers (25.8%). With respect to the dental procedure eliciting maximum dental anxiety, the Pearson chi square coefficient is 0.384, which is highly significant as p< 0.005 (p = 0.00).

Table 2: Cross-tabulation between procedural anxious children and caregivers

		Number of anxious caregivers							
	Procedures	Sound of drill	Injection	Rubber dam	RCT	Extraction	Fear of being injured	No. of appointments	Total
Number of anxious children	Sound of drill	12	4	1	5	0	3	0	25
	Injection	8	29	1	4	1	1	2	46
	Sound of scaler	3	1	0	1	0	0	0	5
	Gagging	2	0	0	0	0	0	0	2
	Cold air hurts teeth	1	0	0	2	0	0	0	3
	RCT	1	2	1	0	1	0	1	6
	Extraction	2	1	0	3	20	1	1	28
	Fear of being injured	2	1	0	0	0	0	2	5
Total		31	38	3	15	22	5	6	120
Pearson chi square coefficient = 0.384; p value = 0.00.									

Graph 1: Various dental procedures eliciting anxiety in children and caregivers.



1	Sound of drill
2	Injection
3	Sound of scaler
4	Gagging
5	Rubber dam
6	Cold air hurts
7	RCT
8	Extraction
9	Fear of injury
10	No. of appointments

Discussion

Despite the technological advances in dentistry, dental anxiety and the fear of pain remains globally widespread and is considered a major barrier to dental treatment[2].The various problems arising due to this are: dental avoidance, which worsens oral health and quality of life, and dental phobia, which may affect dentist – patient relationship further leading to a compromised dental treatment. Moreover, anxiety causes sympathetic responses which might lead to vasovagal syncope, hypertension, tachycardia and cardiovascular problems[7].

Managing children suffering from dental anxiety is challenging for the dental professionals. Therefore, the purpose of our study was to evaluate the anxiety level in children and their caregivers, and also to find out the procedure eliciting maximum dental anxiety in children as well as caregivers using a dental anxiety scale.

Results of this study shows that 10% children suffered from severe anxiety, 16.7% from high anxiety and 55% suffered from moderate anxiety. 11.7% of caregivers showed high anxiety and 30% had moderate anxiety. There is no significant correlation between child and parental anxiety. But, it was observed that when caregiver's anxiety increases, child's anxiety tends to increase (r = 0.630).

Similar findings have been reported by Katayoun Salem et al. in 2012[8] in which no relationship was found between child's dental fear and parental dental or general fear using Child Fear Survey Schedule- Dental Subscale (CFSS-DS). However, in a study done by Alaki et al., 2012[9] and other authors[10,11], the results showed that there is a statistically significant correlation between parental and child's anxiety.

Results of our study also showed that 38.3% of the children suffered from highest anxiety when injections were to be given during the dental treatment. Similar findings were reported by Humphris et al., 2000[5] and other authors[12]. It was followed by tooth extraction (23.3%), sound of drill (20.8%), root canal treatment (5%), sound of scaler (4.2%), fear of being injured (4.2%), cold air (2.5%) and

gagging (1.7%). However, Alaki et al., 2012[8] showed that extraction was the most anxiety provoking procedure in children.

Similarly 31.7% of caregivers also showed maximum anxiety when injections were to be admistered. But in contrast, sound of drill was the second most common anxiety provoking factor, followed by extraction(18.3%), root canal treatment (1.5%), number of appointments (5%),fear of being injured(4.2%), and rubber dam (2.5%).

Few authors have also suggested that dental fear and anxiety is an important predictor of dental caries and may become a potential risk factor for children (Kruger et al., 1998)[13]. Significant correlation was found between dental fear and DMFT scores by Aylin et al., 2009[4]. Possible reason for this is that because of anxiety, children and their parents avoid dental treatment, which further worsens their oral health.

Dental anxiety is a serious problem which negatively affects the oral health, general health and psychological development of children. Thus, early detection of the causes of fear is very important to reduce anxiety levels in pediatric patients. Child and parental counseling, routine dental health examination and most importantly dental health education programs would be highly useful methods in reducing dental anxiety in children in a sequential manner. Also, attention needs to be paid to the use of caries assessment tools such as caries activity tests and early intervention by preventive treatment methods such as pit and fissure sealants[4].

The information obtained from this study can be quite helpful for the pediatric dentists to accordingly modify the behavior management techniques and the manner in which the dental procedure would be effectively delivered to instill a positive attitude in children, which would help in making them better and healthy individuals for the future.

References

1. Jaakkola S, Rautava P, Alanen P, Aromaa M, Pienihäkkinen K, Räihä H, Vahlberg T, M.-L. Mattila ML, Sillanpää M. Dental Fear: One Single Clinical Question for Measurement. Open Dent J 2009; 3:161-166.
2. Marya CM, Grover S, Jnaneshwar A, Pruthi N. Dental anxiety among patients visiting a dental institute in Faridabad, India. West Indian Med J 2012;61(2):187-190.
3. Hemalatha R. Anxiety assessment in pediatric dental practice.SRM Univ J Dent Sci 2010;1(1):75-78.
4. Oba AA, Dülgergil CT, Sönmez IS.Prevelance of dental anxiety in 7-11 year old children and its relationship to dental caries. Med Princ Pract 2009; 18:453-457.
5. Ilgüy D, Ilgüy M, Dincer S, Bayirli G. Reliability and validity of the modified dental anxiety scale in Turkish patients. J Int Med Res 2005; 33:252-259.
6. Buchanan H, Niven N. Validation of a facial image scale to assess child dental anxiety. Int J Paediatr Dent. 2002; 12:47-52.
7. Facco E, Zanette G, Manani G. Italian version of corah's dental anxiety scale: Normative data in patients undergoing oral surgery and relationship with the ASA physical status classification. Anesth Prog 2008; 55:109-115.
8. Salem K, Kousha M, Anissian A, Shahabi A. Dental fear and concomitant factors in 3-6 year-old children. J Dent Res Dent Clin Dent Prospects 2012; 6(2):70-74.
9. Alaki S, Alotaibi A, Almabadi E, Alanquri E. Dental anxiety in middle school children and their caregivers: Prevalence and severity. J Dent Oral Hyg 2012; 4(1):6-11.
10. Themessl-Huber M, Freeman R, Humphris G, Macgillivray S, Terzi N. Empirical evidence of the relationship between parental and child dental fear: a structured review and meta-analysis. Int J Paediatr Dent. 2010;20:83-101.

11. Yildirium E, Karacay S, Evaluation of anxiety level changes during the first three months of orthodontic treatment. Korean J Orthod 2012;42(4):201-206.
12. Chhabra N, Chhabra A, Walia G. Prevalence of dental anxiety and fear among five to ten year old children: a behaviour based cross sectional study. Minerva Stomatol 2012;61(3):83-89.
13. Kruger E, Thomson WM, Poulton R, Davies S, Brown RH, Silva PA. Dental caries and changes in dental anxiety in late adolescence. Community Dent Oral Epidemiol 1998;26(5):355-359.