

Prevalence of Dental Anxiety Among Children In Sullia & Factors Associated With It – A Cross Sectional Study

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Abstract

Background: Dental anxiety has been recognized as a source of problem in management of child patient and various behavior management techniques have been proposed to control such fear reaction to dental procedures. Therefore it is essential to identify the anxious children at the earliest age possible rather than simply deal with them later. Hence a normative data on the prevalence of child dental anxiety in that particular population needs to be obtained. Since the expression of dental anxiety in children is known to be affected or modified by various other factors like the age, gender, culture and predominantly the maternal dental anxiety, the association of these factors also need to be explored.

Aim: To determine the prevalence of dental anxiety among 5 to 10 year old children in Sullia and to find out

the association of dental anxiety in children with children’s age, gender and maternal dental anxiety

Methodology: Questionnaires consisting of dental anxiety scales were distributed to 462 mother-child pairs participants in this cross sectional study among which 222 were female and 240 were male children. Children fear survey schedule-dental sub scale was used to assess child anxiety and Corahs dental anxiety scale was used to measure maternal dental anxiety. Age and gender was also recorded as part of the study to check the correlation of these factors with the child dental anxiety.

Results: Data was analyzed using SPSS software. Fisherman exact test and spearsons correlation test was applied. The cutoff score for CFSS-DS was 36. The prevalence of dental anxiety was 24.5% among 5 to 10 year old children. Although a statistically significant

association was found between maternal and child dental anxiety($P=0.000$), no significant association existed between age, gender and child dental anxiety.

Conclusion: The prevalence of dental anxiety was 24.5% in the child population of Sullia. Maternal dental anxiety was found to significantly influence child dental anxiety as compared to age, gender or religion.

Keywords: Prevalence, Dental anxiety, Maternal dental anxiety, Dental fear, Children

Introduction

“The act of birth is the first experience of anxiety, and thus the source and prototype of the affect of the anxiety” - Sigmund Freud

Mild fear and anxiety are expected experiences, consistent with normal development, but they become a concern and potentially in need of treatment when the anxiety is disproportionate to the actual threat and daily functioning becomes impaired.¹ Dental anxiety is defined as the feeling of apprehension about dental treatment that is not necessarily connected to a specific external stimulus. Its presence has been recorded in early childhood and different countries and amongst very ethnic groups.² It denotes a state of apprehension that something dreadful is going to happen in relation to dental treatment and is coupled with a sense of losing control.¹

A child ridden with dental anxiety presents a challenging situation for any novice or even to a advanced dental practitioner as well as to parents and the health care system. Dentists consider the fearful disruptive child to be among the most problematic in their clinical work and are eventually forced to treat these children in such ways that do little to reduce the anxiety of that child and in some cases cause dental anxiety to increase.³ This leads to deteriorating dental health.⁴

The etiology of dental anxiety is multifactorial, with factors acting in synergy to affect its expression. For

children age and gender may play fundamental role in its expression. However these two factors are modulated by other variables such as culture which may influence the context in which anxiety is experienced and in the interpretation of its meaning and responses to it.² Parents especially mothers are known to subtly transmit anxiety to the children.⁵ Since cultural and social norms of behavior can also affect the development and expression of children’s anxiety , and as dental care systems can be modified considerably, normative data on prevalence, factors affecting child dental anxiety like the age, gender, culture, and maternal dental anxiety are needed .

Child dental anxiety is a significant factor in the provision on pediatric health care. Anxious children tend to avoid dental care and tend to have worse oral health, they are likely to have a less productive and enjoyable dental care experience⁶ are likely to report with caries⁷ and tend to miss appointments.⁸ They are also likely to experience other behavioural or emotional problems which leads to reduction in their overall health and well being. In order to prevent the worsening the health related consequences from occurring, preferably by means of appropriate pediatric management techniques, it is imperative to identify the dentally anxious child at the earliest age possible individually or in the larger population to assess the possible etiological factor so as to help the child cope up with or overcome dental anxiety in initial stages. Thus the aim of this study was to recognize the prevalence of dental anxiety among 5 to 10 years old children in the sub population of India in Sullia with the possible contributing factors like age, gender, culture and maternal dental anxiety on child dental anxiety.

Objectives

To determine the prevalence of dental anxiety among 5 to 10 year old children of Sullia representing a subset of Indian population

To find out the association of child dental anxiety with the age, gender, culture and maternal dental anxiety.

Methodology

Source of data: Child's dental anxiety was assessed using children's fear survey schedule dental subscale (CFSS-DS), which consisted of 15 items related to different aspects of dental treatment. Data on age, gender and religion of child was also recorded. Corah's dental anxiety scale (DAS) was used to assess dental anxiety among mother's of respective children.

Methods of collection of data: 462 Children along with their mother's participated in this study. Written informed consent was obtained from parents before proceeding with the study. Male and female children from 5 to 10 year age group belonging to different religions were randomly selected from government and unaided schools of Sullia. Children were asked to rate their dental anxiety on CFSS-DS. Data regarding child's age, gender and religion was also recorded in the CFSS-DS questionnaire. Similarly mother's of respective children were also asked to rate their dental anxiety on DAS. The items of the anxiety scales were read out to the participants in their regional language and participants were asked to tick the answers which closely fit their attitude. After a kind cooperation by the study subjects, questionnaires were collected back and scorings were tabulated.

Survey Tool

Children's Fear Survey Schedule-Dental Subscale questionnaire: Child's own dental fear will be recorded using Children's Fear Survey Schedule-Dental Subscale. This is a psychometric method of assessing dental fear in children developed by Cuthbert and Melamed. The scale consists of 15 items related to various aspects of dental treatment, such as drilling, injections, having to open the mouth. Each item is scored on a 5-point Likert scale from 1 (not afraid at all) to 5 (very afraid).

These were divided into:

Fear of invasive procedures

Fear of potential victimization (eg:- from strangers, being afraid of hospitals in general)

Fear of non invasive dental procedures

The children will be asked to fill the Children's Fear Survey Schedule-Dental Subscale which consists of 15 items, before commencement of dental treatment. The score can range from 15 to 75 and scores of 38 and above are indicative of dental fear. The cut off score for CFSS-DS was 36 in our study, above which was considered high dental anxiety and below was no dental anxiety.

Corah's dental anxiety scale (DAS) : The most well known dental anxiety scale designed to assess adult dental anxiety. It is used to present study to assess maternal dental anxiety. The DAS contains 4 multiple choice items dealing with the patient's subjective reaction to dental situation.

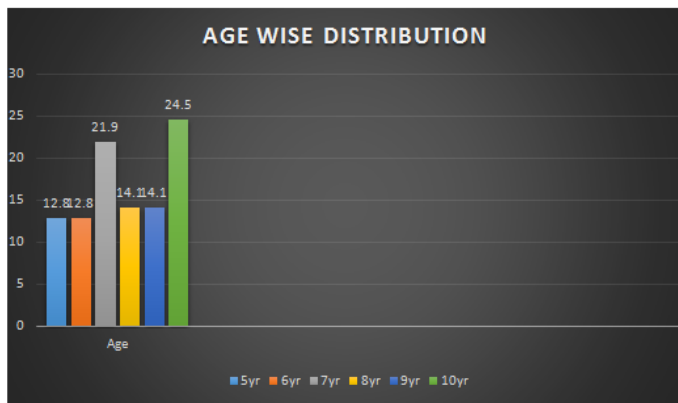
- a) Anticipating a visit to dental clinic
- b) Waiting in the dental office for dental treatment
- c) Drilling of teeth
- d) Scaling of teeth

Five possible answers in ascending order from 1 to 5 are provided, each question carrying a possible maximum score of 5, with a total possible maximum score of 20 for the entire scale. The cut off score was 13 in our study.

The questionnaires were translated in to native language for the convenience of the study subjects.

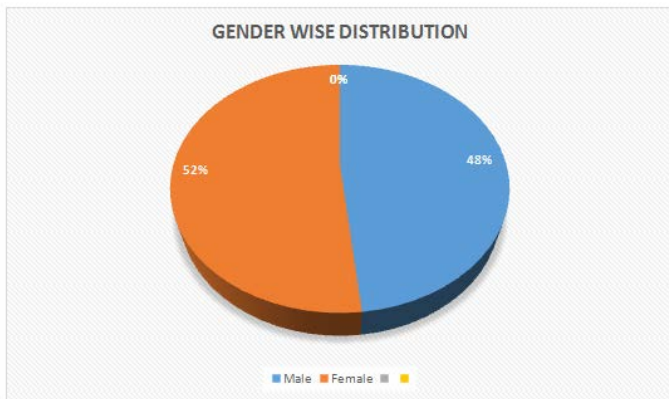
Age wise distribution in children

Graph 1: Of the total participants 59(12.8%) children were 5 years old, 59(12.8%) children were 6 years old, 101 (21.9%) of 7 years old, 65 (14.1%) of 8 years old, 65(14.1%) were 9 years and 113 (24.5%) children were 10 years old.

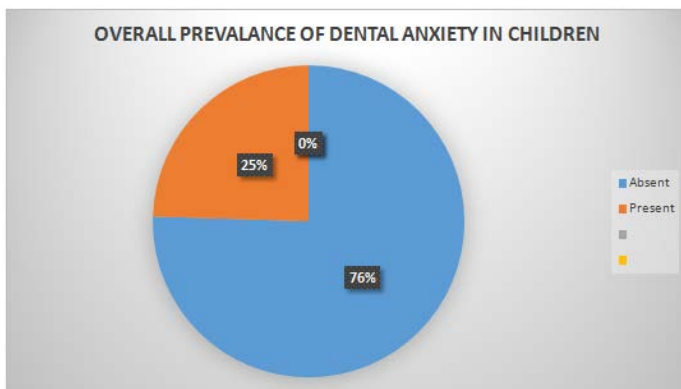


Gender wise distribution in children

Graph 2: Out of 462, 222(48.1%) were females and 240(51.9%) were male children.

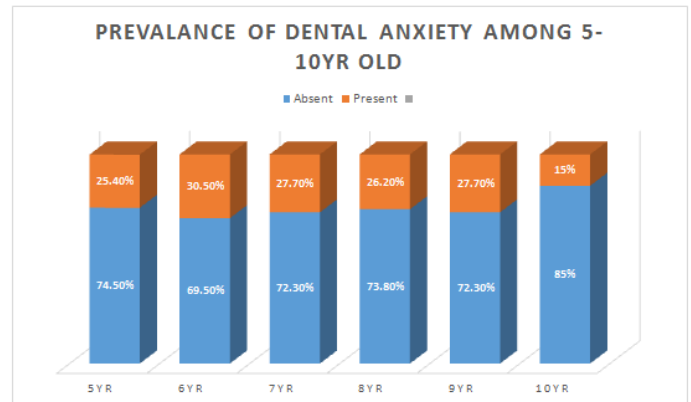


Graph 3: Overall prevalence of dental anxiety in children



Out of 462 children, 113 were found to be anxious. The cut off score for CFSS-DS were 36 , above which were considered as high dental anxiety and below which as no dental anxiety. The prevalence of dental anxiety was about 24.5% in children.

Graph 4: Dental anxiety was 25.4% among 5 years, 30.55 among 6 years, 27.7% among 7 years, 26.2 % among 8 years, 27.7 % among 9 years & 15% among 10 years old.



Overall mean score was 29.4, Median score of 28.00 with interquartile range (20 to 36) for child dental anxiety and standard deviation of 12.0459.

Table 1: Mean, Median, Standard deviation & percentiles for maternal anxiety

N	Valid	462
	Missing	0
Mean		9.9913
Median		10.0000
Standard deviation		3.91614
	25	7.0000
	50	10.0000
	75	13.0000

Items scoring on highest on Corah’s Dental Anxiety scale (DAS)

Item scoring highest were “ having to go dentist”(54%), followed by “waiting in dental chair when dentist is getting ready the drills ready” (37.5%) and least scored item was “when you are waiting in dental office for your turn” (33.6%).

Table 2: Association of maternal anxiety with child dental anxiety

		Maternal dental anxiety		
		Absent	Present	Total
Child dental anxiety	Absent	294	55	349
		79.7%	59.1%	75.5%
	Present	75	38	113
		20.3%	40.9%	24.5%
	Total	369	93	462
		100%	100%	100%

Fischerman exact test shows a statistically significant association between child dental anxiety and maternal dental anxiety with p value 0.000 which is lesser than 0.0

Table 3: Association of gender with child dental anxiety

		Gender		
		Male	Female	Total
Child's dental Anxiety	Absent	183	165	348
		76.7%	74.7%	75.5%
	Present	57	56	113
		23.8%	25.3%	24.5%
	Total	240	221	461
		100%	100%	100%

Fischers exact test shows no statistically significant association between gender and child's dental anxiety ($p = 0.745 > 0.05$).

Table 4: Association between child's age and child dental anxiety.

		Maternal dental anxiety		
		Absent	Present	Total
Child dental anxiety	Absent	294	55	349
		79.7%	59.1%	75.5%
	Present	75	38	113
		20.3%	40.9%	24.5%
	Total	369	93	462
		100%	100%	100%

According to Spearson's coefficient ($p = 0.175 > 0.05$) no statistically significant association between age of child and dental anxiety in children.

Discussion

As said by Jason et al dental anxiety has long term implications because it is both reasonably stable and difficult to assuage.²⁶ According to Kleiman and Chellappah anxiety and fear of dental treatment has been recognized as potential problematic entities in patient management.^{14,27} Information on the origin of dental anxiety and uncooperative behavior in a child patient prior to treatment may help the pediatric dentist to plan appropriate behavior management and treatment strategies. Not only its important to recognize this effect for the purpose of immediate management of the individual child, the diagnosis and prompt management of dental anxiety in the childhood also becomes pertinent in preventing such children growing up to become parents with dental fears which they subsequently pass on to their children. An understanding of the possible predisposing factors to dental anxiety in children therefore is of utmost importance.

The significance of dental anxiety as an issue in dentistry is magnified by the high prevalence of dental anxiety reported in many countries which varies between 3% to 43% in different population.^{14, 36, 41-42} The need to explore dental anxiety in Indian children led to the development of current study. The normative data obtained in the present study show that 24.5% of this small subset representative of Indian child population suffer from some degree of dental anxiety. The prevalence obtained in the present study is more than the prevalence of the dental anxiety reported by previous studies by Chen ye lee et al who reported 20.6% dental anxiety among 5 to 8 year old children in Taiwan⁹, Suprabha Aarthi Rao et al who reported prevalence to be 18.4% among 7 to 14 years old children in Mangalore, India¹⁶; prevalence of 6.7% among 4 to 6 and 9 to 11 year old children in Sweden reported by Klingberg¹²; and prevalence of 5.7% among 6 to 8 year

old children in Denmark reported by Wogelius et al. However the prevalence of the present study is not as high as 43.4% reported by Milgrom in 2.5 to 7 year old Chinese children²⁸. The difference in prevalence estimates may partly be due to differences in methodologies, or it may also be partly a reflection of complex network and interplay of characteristics and variables affecting anxiety, age of child, gender, culture, maternal dental anxiety etc.

According to Nakai et al community-based and other large studies conducted in schools or clinics typically rely on questionnaire data to assess the prevalence of dental fear, since school-based samples offer the advantages of faster data collection because the children can be surveyed in groups and better representation of children of that locale, because even dental avoiders are likely to attend school²⁹; thus the data for the present study was collected from school children along with their mother. The CFSS-DS scale used in the present study to determine child dental anxiety and Corah's dental anxiety scale(DAS) scale used to determine maternal dental anxiety are both reliable and valid psychometric scales widely used in pediatric dentistry.

Previous study by Singh.P et al reported that CFSS-DS is reliable in Indian children which extends the universal applicability of CFSS-DS.¹⁵ Variable cutoff scores have been reported for CFSS-DS employed on children in other countries, cutoff scores varied between 37 to 42 according to the studies by Klingman et al³⁰ and Cuthbert et al³¹ respectively. In the present study the cut off score obtained was³⁶ based on third quartile, above which is considered as having dental anxiety and below which as no dental anxiety. The mean score was 29.4 and median score was 28. Highest scoring items which scored 3(fairly afraid) and above 5 as (very afraid) were "choking" (53.9%), followed by "injections"(46.2%) and "having to open mouth" (40.4%) which is consistent with the

previous study by Aylin et al done on 7 to 11 year old children in Turkey, where children were most afraid of "choking", "injections" and "having somebody put instruments in mouth"²⁹ and studies by Nakai et al done on 8 to 15 year old Japanese children showed that children are most afraid of "injections" and "drilling".²⁰

Etiology of dental anxiety is multifactorial. Association of dental anxiety with age, gender, culture and more importantly with maternal dental anxiety has been studied since long, but the results obtained by various investigators have been varying on geographic and cultural backgrounds and have been inconclusive.

Evidence by Markus et al suggest that parents with high level of dental anxiety struggle to prepare their children adequately for dental visit and parental behavior and attitude significantly affect children's reactions to dental stressors.⁶ An assessment and management of anxiety level of mother may be necessary to adequately manage that of the child to break the vicious cycle of anxiety that may be set up in family regarding dental care.⁵

Parents are known to subtly transmit feelings of fear and anxiety to their children.⁵ According to Johnson et al and Bailey et al, of the two parents mothers with high anxiety levels have most often been shown to exert negative influence on their children's behavior in dental office and it has been suggested that one can understand, predict and influence a child's dental behavior through mother's attitude towards dental care.^{43,44} According to M. O. Folayan et al one underlying reason for this effect on the child may be the traditional division of family tasks, which usually results in mother rearing the child and accompanying the child to the dentist.⁵ According to Kleinkhecht at all and Corah, maternal influence on the child's dental anxiety could also have resulted from the fact that dental anxiety is more pronounced in women than in men.^{45,46} Hence we studied the association of maternal

dental anxiety with the child dental anxiety and found out that is statistically significant relationship exists between maternal dental anxiety and dental anxiety. (p=0.000) among 5 to 10 year old children. Mean anxiety score on Corah's dental anxiety scale was 9.9, median 10 and third quartile was 13. The cut off score was determined to be 13 based on third quartile, above this score was considered as high anxiety and below as no anxiety. Highest scored item on DAS was "having to go to dentist tomorrow" (54%). Our study was in accordance with previous studies by Klingberg and Shaw who found that maternal anxiety have a predominant effect on dental anxiety of child than the paternal dental anxiety.^{32,33} Similarly Markus et al confirms that dental anxiety of children under the age of 8 is significantly related to parental dental anxiety.⁶ However it is in contrary to the findings by M.O. Folayan who did not reveal any statistically significant association between mothers and child dental anxiety which is due to the fact that parents in that culture do not share their emotions with their children'. Klorman et al also reported that the child's behaviour could not be predicted from maternal dental anxiety.³⁴

Our study shows no statistically significant association between child dental anxiety and the gender (p=0.745 0.05) in the our study which is in accordance with the studies done by Milgrom et al, Wogelius et al, Ten berge et al, Otto et al, Gaichel et al and M. O. Folayan et al who did not show any significance of gender difference.^{35,13,10,36,37,5} However prevalence studies by Chellappah et al and Chen Yi Lee et al have shown that girls score higher on the CFSS-DS and they explained on the fact that girls and younger children are freer to express and admit their fears due to culture factors or associated stigmas.^{14,9} On the otherhand previous studies by Holst &

Crossner and Klingberg have reported a higher prevalence of dental fear among boys compared with girls.^{38,8}

Our study shows no statistically significant association between child dental anxiety and the age (p value 0.175 >0.05). Similarly Nakai et al did not find any meaningful age effects on the child dental anxiety.²⁰ Findings with this regard have been consistent in most studies, showing a strong correlation between the dental anxiety and age. Holst and Crossner and Klingberg et al were able to establish that dental anxiety was more pronounced in younger children (4 to 6 years) compared to older children (9-11 years).^{38,12} Crokey and Freeman also reported that dental anxiety begins to decrease by 6-7 years, with most children being able to cope with dental situations by that age and also impulse control is developed.²

Childhood fears are other related to developmental changes in children and the nature of fears prominent in child's life also seems to depend on a child's age. For a preschooler, attachment and separation anxiety often plays an important role, whereas at later age (from 8 years on) fear of bodily injury and social fears become more prominent. Most of these developmental age appropriate fears decrease or disappear as children grow older, due to increased ego strength and the development of cognitive abilities, providing a child with adequate coping style.²

Conclusion

A child's first visit to a dentist is a pivotal moment in the reduction or expansion of dental anxiety. With the high prevalence of dental anxiety in children and the public health problem it poses, an understanding on development of dental anxiety and the factors associated with it, will help us in implementing more of preventive strategies at an earlier age, that could benefit both the child and the field of dentistry. Through this study it is revealed that it is possible to identify the dentally fearful patients. Overall

estimated prevalence of dental anxiety was 24.5% among 5 to 10 year old children in Sullia. The fear and anxiety of an individual could affect the patient-dentist relationship and the dental treatment plan, hence these individuals need to be treated in ways to minimize the risk of aggravation of dental anxiety. The reveals a strong correlation between maternal & child dental anxiety. No association was found between age, gender and religion with dental anxiety. Since dental health deterioration arises as a complication of anxiety. The findings of this study can assist in conquering this problem.

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