Prevalence of Dental Anxiety and Associated Factors among Indian Children

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Abstract

Objective: To determine the prevalence of dental anxiety and associated factors among 5 to 10 years old Indian children. Material and Methods: In this cross-sectional study, the sample was composed by 462 children (240 male and 222 female). Questionnaires consisting of dental anxiety scales were distributed to mother-child pair participants. Children fear survey schedule-dental subscale was used to assess child dental anxiety and Corah’s dental anxiety scale was used to measure maternal dental anxiety. Age, gender, religion were also recorded to check the correlation of these factors with the child dental anxiety. Data was analyzed using SPSS software. Fisher’s exact test and Pearson correlation tests were applied. The level of significance was set at 5%. Results: The cut-off 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, culture (religion) and child dental anxiety (p>0.05). Conclusion: Prevalence of dental anxiety was high in the Indian child population. Maternal dental anxiety was found to significantly influence the child dental anxiety, as compared to age, gender or the religion.

Keywords: Prevalence; Dental Anxiety; Child; Behavior and Behavior Mechanisms.
Introduction

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 a 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 in different countries and amongst varying 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 an 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 the child and in some cases cause dental anxiety to increase [3]. This leads to deteriorating dental health [4].

The etiology of child dental anxiety is multifactorial with factors acting in synergy to affect its expression. For children age and gender may play fundamental roles 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 their 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 of pediatric oral 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 experience [6], are likely to report with caries [7] and tend to miss appointments [8]. They are also likely to experience other behavioral or emotional problems, which lead to reduction in their overall health and wellbeing [6].

In order to prevent the worsening of 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 etiologic factor so as to help the child cope up with or overcome dental anxiety in the initial stage.

Thus the aim of this study was to recognize the prevalence of dental anxiety among 5 to 10 year 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.

Material and Methods

Study Design and Sampling
A cross sectional study was conducted in 462 children from 5 to 10 years age along with their mothers belonging to different religions were randomly selected from Government and unaided schools of Sullia, India.

The inclusion criteria were: healthy children of 5 to 10 years age along with their respective mothers residing in Sullia and children with previous exposure to dental treatment. Exclusion criteria included medically compromised and special children.

Data Collection

Child 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 and Corah's dental anxiety scale (DAS) was used to assess dental anxiety among mothers of respective children.

Children were asked to rate their dental anxiety in CFSS-DS. Data regarding child's age, gender and religion was also recorded in the CFSS-DS questionnaire. Similarly mothers of respective children were also asked to rate their dental anxiety using Corah’s 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 suits 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 (CFSS-DS) Questionnaire: The most widely used method to measure dental anxiety in children is the Children's Dental Fear Survey Schedule (CDFSS) which asks children or the parents to rate child's fear of 15 situations on a five-point scale. These are divided into: Fear of invasive procedures; Fear of potential victimization (eg: from strangers, being afraid of hospitals in general) and Fear of non-invasive dental procedures. It is scored from 1 (not afraid) to 5 (very afraid). The total anxiety score ranges from 15 to 75. The cut off score for CFSS-DS was 36, above which was considered as having high dental anxiety.

Corah's Dental Anxiety Scale (DAS) - It was used in present study to assess maternal dental anxiety. The DAS contains four multiple choice items dealing with the patient's subjective reaction to the dental situation: Anticipating a visit to dental clinic; Waiting in the dentist's office for treatment; Drilling of teeth and 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. The Questionnaires were translated in local language for the convenience of study subjects

Data Analysis

Data was analyzed using SPSS software. Statistical tests used in this study were Fisher’s exact test and Pearson correlation tests and the level of significance (p-value)= 0.05
Ethical Aspects

This research was approved by the ethics and research committee at the KVG Dental College and Hospital. Written informed consent was obtained from parents before proceeding with the study.

Results

The prevalence of dental anxiety was 24.5%. With regard to dental anxiety, the highest value was found among children aged 6 years (30.5%) and the lowest among 10-year-old children (15%) (Figure 1).

Overall mean score was 29.4 (±12.0), median 28.0. Regarding the scores of the CFSS-DS Questionnaire, the highest values were described for "choking" (53.9%), followed by "injections" (46.2%), "having to open mouth" (40.4%) and "having somebody look at you" (38.5%) (Table 1).

Table 1. Distribution of children according to age, mean, median, standard deviation for dental anxiety.

<table>
<thead>
<tr>
<th>Age (in years)</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>59</td>
<td>30.00</td>
<td>10.52</td>
<td>28</td>
</tr>
<tr>
<td>6</td>
<td>59</td>
<td>31.68</td>
<td>15.07</td>
<td>28</td>
</tr>
<tr>
<td>7</td>
<td>101</td>
<td>30.07</td>
<td>12.81</td>
<td>29</td>
</tr>
<tr>
<td>8</td>
<td>65</td>
<td>28.50</td>
<td>13.00</td>
<td>25</td>
</tr>
<tr>
<td>9</td>
<td>65</td>
<td>30.38</td>
<td>10.55</td>
<td>28</td>
</tr>
<tr>
<td>10</td>
<td>113</td>
<td>26.98</td>
<td>10.20</td>
<td>24</td>
</tr>
</tbody>
</table>

SD = Standard Deviation.

In relation to maternal anxiety, the mean score was 9.9, median 10 and SD = 3.9. Regarding Corah's dental anxiety scale (DAS), the items with the highest scores were "having to go to dentist" (54%), followed by "waiting in dental chair when the dentist is getting the drills ready" (37.5%) and least scored item was "when you are waiting in the dentist's office for your turn" (33.6%).

There was a statistically significant association between child dental anxiety and the maternal dental anxiety (p<0.05) (Table 2).
Table 2. Association of maternal anxiety with child anxiety.

<table>
<thead>
<tr>
<th>Child Dental Anxiety</th>
<th>Maternal Dental Anxiety</th>
<th>Total</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absent</td>
<td>N</td>
<td>294</td>
<td>79.7</td>
<td>55</td>
<td>59.1</td>
</tr>
<tr>
<td>Present</td>
<td>N</td>
<td>75</td>
<td>20.3</td>
<td>38</td>
<td>40.9</td>
</tr>
<tr>
<td>Total</td>
<td>N</td>
<td>369</td>
<td>100.0</td>
<td>93</td>
<td>100.0</td>
</tr>
</tbody>
</table>

However, no statistically significant association between gender and child dental anxiety (p>0.05) was observed (Table 3).

Table 3. Association of gender with child dental anxiety.

<table>
<thead>
<tr>
<th>Child Dental Anxiety</th>
<th>Gender</th>
<th>Total</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absent</td>
<td>N</td>
<td>183</td>
<td>76.3</td>
<td>165</td>
<td>74.7</td>
</tr>
<tr>
<td>Present</td>
<td>N</td>
<td>57</td>
<td>23.8</td>
<td>56</td>
<td>25.3</td>
</tr>
<tr>
<td>Total</td>
<td>N</td>
<td>240</td>
<td>100.0</td>
<td>221</td>
<td>100.0</td>
</tr>
</tbody>
</table>

According to Pearson's correlation no statistically significant association between age of child and the dental anxiety in children (p>0.05) (Table 4).

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

<table>
<thead>
<tr>
<th>Child Dental Anxiety</th>
<th>Child's Age (in Years)</th>
<th>Total</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absent</td>
<td>N</td>
<td>5</td>
<td>44</td>
<td>74.6</td>
<td>41</td>
</tr>
<tr>
<td>Present</td>
<td>N</td>
<td>6</td>
<td>15</td>
<td>25.4</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td>N</td>
<td>11</td>
<td>59</td>
<td>100.0</td>
<td>59</td>
</tr>
</tbody>
</table>

No statistically significant association between religion and child dental anxiety (p=0.085) was observed (Table 5).

Table 5. Distribution of children according to religion and child dental anxiety.

<table>
<thead>
<tr>
<th>Child Dental Anxiety</th>
<th>Religion</th>
<th>Total</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absent</td>
<td>Christian</td>
<td>N</td>
<td>10</td>
<td>90.9</td>
<td>216</td>
</tr>
<tr>
<td>Present</td>
<td>Hindu</td>
<td>N</td>
<td>1</td>
<td>9.1</td>
<td>62</td>
</tr>
<tr>
<td>Total</td>
<td>Muslim</td>
<td>N</td>
<td>11</td>
<td>100.0</td>
<td>278</td>
</tr>
</tbody>
</table>

Discussion

Dental anxiety has long-term implications because it is both reasonably stable and difficult to assuage [9]. Anxiety and fear of dental treatment has been recognized as potentially problematic, entities in patient management [10,11]. 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 is it important to recognize
this effect for the purpose of immediate management of the individual child but also the diagnosis and prompt management of dental anxiety in the childhood 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 3% to 43% in different population [10,12,13]. The need to explore dental anxiety in Indian children led to the development of current study. The normative data obtained in the present study showed that 24.5% of the small subset representative of Indian child population suffers from some degree of dental anxiety. The prevalence obtained in the present study is more than that reported by previous study with 20.6% dental anxiety among 5 to 8 years old children in Taiwan [14]. However the prevalence of the present study is not as high as 43.8% reported previously in 2.5 to 7 years old Chinese children [15]. The difference in prevalence estimates may partly be due to differences in methodologies, or partly it may also be partly a reflection of complex network and interplay of characteristics and variables affecting anxiety [2], age of child, gender, culture, maternal dental anxiety etc.

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 school [16]; thus the data for the present study was collected from school children along with their mothers. The CFSS-DS scale used in this study to determine child dental anxiety and corah's dental anxiety scale (DAS) used to determine maternal dental anxiety are both reliable and valid psychometric scales widely used in pediatric dentistry.

Previous study reported that CFSS-DS is reliable in Indian children, which extends the universal applicability of CFSS-DS [17]. Variable cut off scores have been reported for CFSS-DS employed on children. In other countries, cut off scores varied between 37 [18] to 42 [19]. In the present study the cut off score obtained was 36, 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, followed by "injections" and "having to open mouth" which is consistent with the previous study 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 [16], and 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 found by some authors suggests 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 previous authors, mothers with high anxiety levels have most often been shown to exert a 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 \[21,22\]. 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 \[5\]. 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 \[23,24\].

Hence we studied the association of maternal dental anxiety with the child dental anxiety and found out that a statistically significant relationship exists between maternal dental anxiety and dental anxiety (p<0.05) among 5 to 10 year old children. Mean anxiety score on Corah's dental anxiety scale was 9.9 median. The cut off score was determined to be 13 above this score was considered as high anxiety below as no anxiety. Highest scored item on DAS was "having to go to dentist tomorrow". This result is in agreement with previous studies that found that maternal anxiety had a predominant effect on dental anxiety of child than the paternal dental anxiety \[25,26\]. Similarly other authors confirm that dental anxiety of children under the age of 8 is significantly related to parental dental anxiety \[6\]. However, the literature shows that there is no 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 \[5\]. On the other hand, it was also reported that the child's behavior could not be predicted from maternal dental anxiety \[27\].

This research showed that there is no statistically significant association between child dental anxiety and the gender, who did not show any significance of gender difference \[5,28-32\]. However prevalence studies have shown that girls score higher on the CFSS-DS and they explained it on the fact that girls and younger children are more free in expressing and admitting their fears due to culture factors or associated stigmas \[15,33\]. On the other hand, some authors have reported a higher prevalence of dental fear among boys compared with girls \[8,34\].

It was also demonstrated that there was no association between child dental anxiety and the age. Similar studies have also 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 child dental anxiety and age were able to establish that dental anxiety was more pronounced in younger children (4-6 years) compared to older children (9-11 years) \[34,35\]. It was 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 so also impulse control is developed \[2\].
Childhood fears are often 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 stages, shows appropriate fears decreasing or disappearing as children grow older, due to increased ego strength and the development of cognitive abilities, providing a child with adequate coping style [2].

Culture will also influence the context in which anxiety is experienced as well as on the interpretation of its meaning and responses to it; it gives a twist to a simple universal phenomenon, trait anxiety related to the individual, giving rise to a state anxiety that is expressed with relative similarity in people with similar cultures. The investigations by Ingman et al. on the importance of the effect of culture on dental anxiety in children showed that within same region Christian children reported more fears than Muslims and culture influenced dental anxiety [36,37]. But present study did not find a statistically significant association between religion and child dental anxiety. Since culture is multidimensional, the other components like the food habitats, moral and spiritual values were not studied and the study sample obtained contained only three major religions.

Conclusion

A child first visit to a dentist plays a pivotal role in the reduction or expansion of dental anxiety. With the high prevalence of dental anxiety in children and the public health issues 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 the earliest age that could benefit both child and the field of dentistry. This study reveals that it is possible to identify the dentally fearful patients. Overall estimated prevalence of dental anxiety was 24.5% among children 5 to 10 years old 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. This study reveals a strong correlation between maternal and 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.

References


