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Child dental anxiety and its associated factors

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Abstract

Objectives: We assessed the association of age, gender, mother's education and income with child dental anxiety.

Study design: Parents and their children were interviewed at the, Department of Pedodontics and Preventive Dentistry College of Dental Sciences, Davangere. To evaluate child self-reported anxiety, Children's Fear Survey Schedule - Dental Subscale (CFSS-DS) was used; the Modified Dental Anxiety Scale (MDAS) measured self-reported parental anxiety when the parent received dental treatment.

Results: 80 children and their parents completed the questionnaires. Majority of the children (80%) had CFSS-DS score less than 38. Only 20% of the children had CFSS-DS score more than 38. Insignificant Correlation were found between CFSS-DS and child age (8-10 yrs, $r = 0.105$, $p=0.502$ and for 11-14yrs, $r=0.094$, $p=0.591$). There was no statistically significant results found with the gender $p=0.408$. We found significant positive correlation with the income ($r=0.448$, $p=0.000$), mother's education showed low positive correlation $r=0.391$, $p=0.000$.

Conclusion: Income significantly influences the child dental anxiety.

Keywords: Children's dental anxiety, maternal anxiety, CFSS-DS

Introduction

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 [1]. 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 [2].

The notion of Dental anxiety, Dental fear and Dental phobia are apparently identical and are often used interchangeably. Dental fear is a normal emotional reaction to one or more specific threatening stimuli in the dental situation. Dental phobia is a severe type of dental anxiety and is characterized by marked anxiety in relation either to clearly discernable situations/objects or to the dental situations [2].

Freud made a distinction between 'realistic anxiety' and 'neurotic anxiety'. Realistic anxiety was something quite rational and was observed as the flight, fright and fight reaction associated with an external dangerous situation. Whereas neurotic anxiety is rather different. Children experience neurotic anxiety the source of which is an internal danger. The internal danger that children experience are associated with fears of loss of mother, fear of bodily hurt and helplessness [3].

For a child, a visit to a dental clinic involves contact with unfamiliar people and many potentially threatening and invasive situations. More vulnerable children may be unable to cope with these new experiences and may become dentally anxious. This leads to deteriorating dental health that arises as a complication of anxiety. Also anxiety may persist into adulthood and some of these children could grow up to become parents with dental anxiety, which they may pass on to their children [4].

Studies show a strong correlation of dental anxiety with age and gender. Some studies show decrease in the dental anxiety with increasing age [8] however few of the studies do not show any changes of dental anxiety with age [7].

Parenting plays a significant role in children's emotional and behavioural development [6]. So influence of maternal dental anxiety on the child's dental anxiety needs to be further explored. Some studies have shown that there is a relationship between high level of dental anxiety and low socioeconomic status [5] where as others reported opposite conclusion [8].

In spite of dental anxiety being a worldwide problem, the understanding regarding child's dental anxiety is not clear. Hence the present study was done to determine the associated factors like age, gender, mother's education and income among 8-to-14-year old children.

Materials and Method

A total of 80 children aged 8 to 14 years and their parents who attended the Department of Pedodontics and Preventive Dentistry, College of Dental Sciences, Davangere agreed to participate in the study which involved answering questions regarding various aspects of their fear related to dental care were included in the study. Four variables i.e., child age, gender, mother's education and income were analysed. In order to evaluate each child's self-reported anxiety, we employed the Children's Fear Survey Schedule - Dental Subscale (CFSS-DS). The CFSS-DS is based on an instrument using fifteen Likert items, each scored from 1 to 5. For example, one item states "I am afraid of dentists" while another reads "I am afraid of injections." All responses are scored as follows: "not afraid at all" (1), "afraid a little" (2), "Fairly afraid" (3), "Quiet afraid" (4), or "very afraid" (5). The total Likert scale score is obtained by summing the individual item scores and can range from 15 (lowest) to 75 (highest) [16]. The CFSS-DS questionnaire was administered in English only to the child by study personnel shortly before the provision of dental treatment and explained in Kannada if necessary.

The Modified Dental Anxiety Scale (MDAS), a modification of the Corah Dental Anxiety Scale (CDAS) [20-23], was used to measure self-reported parental anxiety associated with their own dental visits. The modification to the CDAS was accomplished by adding a fifth item that relates to fear of injection. The MDAS questionnaire is comprised of five Likert items scored 1 to 5, with possible responses ranging from "not anxious" (1), "slightly anxious" (2), "fairly anxious" (3), "very anxious" (4), and "extremely anxious" (5). A total MDAS score can range from 5 to 25. The MDAS has been shown to be highly reliable, valid, more comprehensive than other anxiety questionnaires, and simple to complete [24]. The MDAS was provided in English only. Data were collected on mother's age, education, occupation and family income.

Standard statistical methods, including regression analysis and correlations study, were used to analyze study data. The study was approved by the Institutional Review Board of College of Dental Sciences, Davangere. Written consent was obtained from the accompanying parent, and also from the children.

Results

A total of 80 children and their mother provided complete data for each of the study questionnaires, and the analysis was restricted to mother /child pairs.

Table 1 illustrates CFSS-DS score and MDAS score. Majority of the children (80%) had CFSS-DS score less than 38. Only 20% of the children had CFSS-DS score more than 38. However 60% of the mother had MDAS score more than 11 and 40% of the mother had MDAS score less than 10. There was no statistically significant correlation found between CFSS mean and age as shown in (Table 2). One Way Anova test (Table 3) revealed slightly higher CFSS mean for girls (29.57±8.15) than boys (27.89±9.87) but it was insignificant $p=0.408$. Regression analysis revealed significant association of income with child dental anxiety

(Table 4) $P=0.000$. Other variables are excluded as their significance is less than 95% confidence level in affecting CFSS Scores in the regression model (Table 5). However separate correlation study has been carried out to know the actual correlation between CFSS scores and all variables under study (Table 6) in which income showed moderate positive correlation ($r=0.448$, $p=0.000$) and mother's education showed low positive correlation $r=0.391$, $p=0.000$. We did not consider occupation as most of the mothers were unemployed.

Discussion

Dental anxiety in children has been recognised as a source of problems in patient management Kleiman, 1982; Chellappah *et al.*, 1990; Alwin *et al.*, 1991, 1994; Peretz and Efrat, 2000; Buchanan and Niven, 2002. Dentists have had some difficulty in identifying the stimuli that lead to dental anxiety in the dental office. It is accepted that the aetiology of dental anxiety is a problem made up of a number of different components, Klingberg *et al.* [8] and Rantavuori *et al.* [10].

Age, gender and socio-economic status play important roles as determining factors in dental anxiety; of these, age is the best known factor for dental anxiety [8]. Several studies have implicated the relationship between age and dental anxiety as a decrease in dental anxiety with increasing age [7, 8]. On the other hand, this relationship becomes less important as the child reaches 6-7 years of age or older. After this age the child can cope better with potentially anxiety-provoking experience [8]. We selected age group 8-14 years because children in this age group can read and understand the questions in the CFSS-DS form and express their feelings.

Another aetiological factor of dental anxiety that remains controversial is gender. The interaction of age and gender in the manifestation of dental anxiety has been highlighted by many researchers Klienhect *et al.*, 1973; Corah *et al.*, 1978; Corkey and Freeman, 1988; Chellappah *et al.*, 1990; Alvesolo *et al.*, 1993. For example, Klingberg [8] (1995) found that boys aged between 9 and 11 years tend to score higher on dental anxiety than girls of the same age. Gender may not predict dental anxiety by itself, but interaction with the other variables could predispose children to the problem.

It is known that Parents transmit feelings of fear and mothers with high anxiety levels have most often been shown to exert a negative influence on their children's behaviour in the dental office than father and it has been suggested that one can understand, predict and influence a child's dental behaviour through the mother's attitude towards dental care. One underlying reason for this effect on the child may be the traditional division of family tasks, which usually results in the mother rearing the child and accompanying the child to the dentist [25]. Patients with higher educational levels may have better oral health or visit the dentist more regularly [26]. In some studies it was demonstrated that increased educational level result in decreased dental anxiety. Other studies have shown no significant association with the education. Hence we studied effect of mothers education on child dental anxiety.

Klingberg [8] and Bedi [5] *et al.* have reported that there is a relationship between high levels of dental anxiety and low socio-economic status, whereas others have come to the opposite conclusion Klingberg [8] 1995; Folayan [4] *et al.*, 2003; Folayan [1] *et al.*, 2004. Variation in dental anxiety with the income is not clear, it needs to be investigated. So we studied association of parents income with the child dental anxiety. Kuppaswamy's socioeconomic status scale was used

for defining the socioeconomic status. Dentists do not usually screen dental fear. A study in England showed that only 20% of dentists who were interested in treating patients with dental fear, had used a screening method to evaluate their patient’s level of fear [27]. Prior to treatment, dentists should be able to detect patient’s level of anxiety and fear so that they can use appropriate management options [28]. several scales have been developed for this intention. The CFSS-DS is based on an instrument using fifteen Likert items, each scored from 1 to 5. For example, one item states “I am afraid of dentists” while another reads “I am afraid of injections.” Another scale is Corah’s Dental Anxiety Scale (CDAS) [29]. This scale does not contain any questions about local anesthetic injection, which is a major anxiety source for some patients [30]. Modified Dental Anxiety Scale (MDAS), is established by Humphris *et al.* [31]. based on the CDAS and comprises a question about local anesthetic injection. MDAS is the most accepted questionnaire for assessing dental anxiety in the UK [32]. It is valid, reliable and has good psychometric properties. Answering is easy, quick, not anxiety provoking and therefore suitable for clinical uses [33]. Use of MDAS is limited to adults because in younger children vocabulary understanding and emotions are not fully developed [34].

In the present study, effect of age, gender, mother’s education and income on child dental anxiety was assessed in 80 mother and child pair. CFSS-DS was used measure child dental anxiety just prior to the treatment during first visit and MDAS was used to assess mother’s anxiety based on their previous dental visit.

In the present study, we found no relationship between age and dental anxiety. Our results are similar to the study conducted by Folayan [4] *et al.* (2003) who showed no relationship between age and dental anxiety; this was attributed to the homogeneity of the age group studied. Several studies have reported that dental fear seems to decrease with increasing age [8, 9]. This reported decrease in fear might essentially represent a developmental change in children. Increasing age in children is related to the development of cognitive abilities and change in the expression of fear, that is children may learn to control the way they express their fear as they grow older and subsequently this may lead to decrease of inappropriate behaviour perceived by others [35].

The present study showed that there was no relationship between gender and dental anxiety, which is in agreement with other studies (Gatchel, 1989; Otto, 1994). In contrast to our study Bedi *et al.* [5], Moore *et al.* [6], Peretz *et al.* [11], Masoud Saatchi. [18], and Majstorovic *et al.* [16] showed higher

level of dental anxiety in girls compared to boys. It is not clear why some studies find that girls are more likely to show dental anxiety than boys, and others do not. These differences may exist due to potential variety of personality related cognitive traits, which are influenced by cultural background. It is possible that social and cultural views may play a role; for example, in some cultures, it is more socially acceptable for girls to exhibit or admit fearful behavior than boys. The gender-specific manifestation of fear may also have a biological origin, reflecting distinctive psychological functioning as well as differences in anticipating and reacting to stressful situations. However, differences could persist due to gender related differences determined by the specificity of conditioning process and learned responses that individuals have experienced throughout life [16].

In our study we did not find significant association of mothers education with dental anxiety however there was low positive correlation with the child dental anxiety. Our results are similar to the study conducted by Benjamin Peretz *et al.* [11], Masoud Saatchi [18], D locker *et al.* [36]. In contrast to our study Humphris *et al.* [37] Erten *et al.* [38] and Do Nascimento *et al.* [39] found that higher education leads to a reduction in dental anxiety.

We found significant results with the income. Correlation was moderately positive, ie higher anxiety was present in the children from the high income group. Our results are similar to the study conducted by Klingberg *et al.* [8] and Folayan *et al.* [4] However, Folayan *et al* noted a relationship between the type of the child’s school and dental anxiety. On the other hand, Bedi *et al.* [5] observed a significant relationship between child dental anxiety and low SES. However in their study father’s occupation was considered for defining the socioeconomic status.

The present study has been conducted on a limited population who visited College of Dental Sciences, Davangere during the study period, therefore further studies on larger populations are needed. Also, further studies with different designs should be accomplished to investigate different etiological factors of dental anxiety.

Table 1: CFSS-DS Score and MDAS score

CFSS –DS score (Child)	n	%
<38	64	80
38+	16	20
MDAS score (Mother)		
<10	32	40
11+	48	60

Table 2: CFSS mean and its correlation with age

Age	n	%	Mean	CFSS Mean	r	P- value	Significance
8-10 years	43	53.75	8.79+/-0.77	27.33+9.6	0.105	0.502	Insignificant
11-14 years	37	46.25	12.45+/-1.12	30.45±7.99	0.094	0.591	Insignificant

Table 3: One Way ANOVA (Gender)

Gender	n	%	CFSS Mean	F-Value	P-value	Significance
Boys	38	47.5	27.89±9.87	0.691	0.408	Insignificant
Girls	42	52.5	29.57±8.15			

Regression analysis

Table 4: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	21.686	1.840		11.788	.000
	Income	2.578	.582	.448	4.425	.000

Table 5: Excluded Variables from the regression model

	Model	Beta In	T	Sig.
1	Age	.164 ^b	1.626	.108
	Gender	.027 ^b	.259	.796
	Mothersedu	.194 ^b	1.497	.138
	Occupation	.029 ^b	.285	.777

Table 6: Correlation Study CFSS Scores Vs Other factors under study

Factors	n	(Mean ± S.D)	R	p-value	Remark
Age	80	10.47 ± 2.08	0.205	0.602	Weak +ve correlation; insignificant
Gender	80	1.47 ± 0.502	-0.129	0.408	Weak -ve correlation; insignificant
Occupation	80	1.11 ± 0.377	0.076	0.506	Weak +ve correlation; insignificant
Mother's Education	80	3.83 ± 1.28	0.391	0.000*	Low +ve correlation; significant
Income	80	2.15 ± 1.76	0.448	0.000*	Moderate +ve correlation; significant

Conclusion

Based on the data obtained from the present study it can be concluded that:

1. Age gender and mothers education is not associated with dental anxiety however there is low positive correlation with mother's education.
2. Income was significantly associated with dental anxiety. There was moderately positive correlation with income.

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