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ASSOCIATION OF PSYCHOSOCIAL CONCOMITANTS WITH DENTAL FEAR AND ANXIETY IN CHILDREN IN LUCKNOW

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ABSTRACT

OBJECTIVE: To study the prevalence and association of psychosocial concomitants with dental fear and anxiety (DFA) in children aged 3-18 years in Lucknow, Uttar Pradesh.

STUDY DESIGN: This observational study was conducted among children aged 3-18years who visited the Department of Pedodontics and Preventive Dentistry at Babu Banarasi Das College of Dental Sciences, Lucknow. A clearance for the study was obtained by the Institutional Research Committee. DFA levels for prevalence were assessed using Children Fear Survey Schedule-Dental Subscale (CFSS-DS). Psychosocial concomitants were recorded with the help of semi structured designed questionnaires separately for patients and parents by the psychologist. It dealt with socioeconomic factors, family situation, medical and psychosocial history, child's daily life, adjustments and interactions. Parent's questionnaire included the reason for visit, awareness about milk teeth, brushing schedule, family living style (nuclear or joint, number of children, education and occupation of parents). Obtained answers from the questionnaire were graded using the semantic scale and some with the dichotomized answers (yes or no).

RESULTS: The prevalence of DFA according to CFSS-DS was 57.5% in children aged 3-18 years. A significant correlations of DFA was seen with the age groups (p=<0.001), child's

feeling in hospital (p=<0.001) and after seeing dentist (p=<0.001), parental dental anxiety (p=0.001), reason for dental visit (p=0.001), parent's awareness about milk teeth and family style (p=0.016). DFA showed no association with socio economic status (SES), gender and number of children in the study.

CONCLUSION: Pre treatment assessment of psychological factors related with DFA helps in customizing the behaviour and dental treatment in the best possible manner in the pediatric patients.

KEYWORDS: Dental Fear and Anxiety, Prevalence, Psychosocial Concomitants.

INTRODUCTION

DFA pose a considerable challenge for the practice of clinical dentistry as these are the problematic entities in the management of the child patients and present a potential barrier to the utilization of oral health care services. The reported prevalence of DFA among children and adolescents in different countries ranged from 5 to 33% .[1,2,3,4] Children with DFA often try all means to avoid or delay dental treatment, resulting in deterioration of their oral health.[5] They also demonstrate poor cooperation during dental visits, which compromises the treatment outcomes, creates occupational stress on dental staff, and causes discord between dental professionals and their parents.

Fear of the dentist has been ranked fourth among the common fears.[6] Despite of the evolving trends in dentistry, anxiety and feeling of fear still persists for dental treatment in general population, especially in children and adolescents. The concepts of dental fear, dental anxiety, and dental phobia are often used interchangeably within dental literature. It was speculated that parents' DFA might exerts an influence on their children's DFA through modeling and information.[7] Many adults with DFA may verbalize their fearful feelings in front of their children, creating a negative impression on dental treatment.[5] Most children at early school age begin to emulate their parents who are looked upon as models.[8] They are very likely to internalize their parents' values, attitudes and worldviews, which would gradually become a part of their own belief system.[8] Some of the overlooked factors associated with DFA is our surroundings ,daily activities and related psychological background with it. Thus, this study was designed to highlight the various psychosocial factors associated with DFA in children.

MATERIALS AND METHODOLOGY

A total of 160 children aged 3-18 years and their parents who attended the Department of Pedodontics and Preventive Dentistry, Babu Banarasi Das College of Dental Sciences (BBDCODS), Lucknow agreed to participate in the study which involved an interview session both with patient and parents through designed questionnaires regarding various aspects of their fear related to dental care.

In the current analysis, we were interested in studying the correlation of few psychosocial variables like child fear and anxiety associated with fear of dentists and associated feelings with dental treatment in hospital, child gender, age, parental dental anxiety, reason for visit, family

style (nuclear or joint) and number of children, awareness and knowledge of parents about primary teeth, parental dental anxiety and socio economic status of parents with DFA. Semi structured questionnaires were meaningful in collection of data both for patient and parents. All data was available in English language and was translated in hindi as local language verbally if required by the operator.

In order to evaluate each child's self reported fear and anxiety, we employed the Children's Fear Survey Schedule- Dental Subscale (CFSS-DS). The CFSS-DS is based on fifteen Likert items, each scored 1-5. 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), "somewhat afraid" (3), "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). The CFSS-DS questionnaire was administered in English only to the child by study personnel shortly before the provision of dental treatment. Dental treatment plan was made for the child after the data was collected.

Corah's Dental Anxiety Scale (DAS), was used to measure self-reported parental anxiety associated with their own dental visits (75). The DAS questionnaire is comprised of four Likert items scored 1 to 5, with possible responses ranging from "mild anxious" (1), "moderate anxious" (2), "highly anxious" (3), "severe anxious" (4). A total DAS score can range from 9 to 20. This was completed by the parent with the help of dentist according to the situations given in the questionnaire and answers were recorded accordingly.

Socio economic status of parents was assessed by Modified Kuppuswamy scale (proposed 2017) which comprised of three Likert items as main variable including "education of head of family", "occupation of head of family" and "monthly income of family" followed with sub variables in each respectively. The scores range from "less than 5" as lower to "26-29" as upper, ranging under five socio economic class.

Standard statistical methods, including frequency distributions, correlations, chi square tests, and obtained p value, were used to analyze study data. Age, CFSS-DS, DAS scores were analyzed as either continuous or categorical variables depending upon the specific analysis. In addition to its continuous form and as in previous studies, the CFSS-DS score was also dichotomized using a cut-point of 38+ to identify children who were highly anxious in the dental setting15-17 .Child age was categorized as 3-5, 6-9, 10-12 and 13-18 years respectively.

RESULTS

A total of one hundred sixty children and their attending parents provided complete data for each of the study questionnaires, and the analysis was restricted to those parent/child pairs. The distributions of children according to age, gender and CFSS-DS scores are presented in table 1. All 160 study subjects were divided in 4 age groups i.e.: 3-5 years, 6-9 years, 10-12 years and 13-18 years with 40 subjects in each group respectively.

CFSS- DS scores were calculated for 160 subjects and according to age groups both to find prevalence of DFA overall and according to age groups. Overall prevalence was 57.5%

prevalence of DFA in dental clinic according to age groups were recorded and it was found that maximum dental anxiety and fear was present in 3-5years i.e.; out of 40 subjects 39 subjects (97.5%) showed dental fear. In 6-9 years; out of 40 subjects 23 subjects (57.5%) showed dental anxiety and fear. In 10-12 years i.e.; out of 40 subjects 17 subjects (42.5%) showed dental anxiety. In 13-18 years; out of 40 subjects 13 subjects (32.5%) showed dental anxiety and fear which was minimum in above all age groups**.** A strong association ($p<0.001$) of DFA with age was seen**.**

Child fear and anxiety associated with fear of dentists and associated feelings with dental treatment in hospital are presented in table 2. It depicts the association of child with DFA in hospital or clinic.

Out of 160 subjects, 85 (53.1%) subjects behaved or responded normally, 52 (32.5%) subjects were afraid and 23 subjects were very afraid in hospital or clinic which was recorded with the help of the self designed questionnaire. Out of 85 normal subjects, 27 (31.8%) subjects were fearful according to CFSS-DS. Out of 52 afraid children, 42 (80.8%) subjects were fearful according to CFSS-DS. Out of 23 subjects, all 23 (100%) subjects were fearful according to CFSS-DS. Thus, a highly significant (<0.001) association of child with dental fear and anxiety in hospital or clinic was seen in children after application of chi sq test.

Association of child's DFA after seeing or meeting the dentist was recorded. Out of 160 subjects, 76 (47.5%) subjects behaved or responded normally recorded with the help of the self designed questionnaire after seeing or meeting dentist, in which 20 (26.3%) subjects were fearful which was recorded with the help of the CFSS-DS. 51 (31.8%) subjects were afraid in hospital or clinic with the help of the self designed questionnaire in which 40 (78.4%) subjects were fearful recorded with the help of CFSS-DS and 33 (20.6%) subjects were very afraid in hospital or clinic recorded with the help of the self designed questionnaire in which 32(97%) subjects were fearful. Thus, a highly significant (<0.001) association was seen with feeling of child after seeing or meeting dentist with dental fear and anxiety the CFSS-DS.

DAS scores of the accompanying parent with child's DFA is presented in table 3. It shows association of parental DFA with child's DFA. Out of 160 parents, mild anxiety was seen in 50 parents of whom 19 (38%) children were fearful, moderate anxiety was seen in 97 parents of whom 61 (62.9%) children were fearful, higher anxiety was seen in 7 parents of whom 6(85.1%) children were fearful and severe anxiety was seen in 6 parents of whom all 6(100%) children were fearful**.** Highly significant association ($p<0.001$) of parental dental anxiety was found with child dental fear after applying chi square test.

Association of child dental fear and anxiety with parent's reason to visit dentist was recorded in table 4. It shows the association of child's dental fear and anxiety with the parents reason to visit the dentist. In 3-5 years age group out of 40 subjects the main reason to visit dentist was tooth decay with pain or trauma as responded by 35 (87.5%) respondents and maximum anxiety was seen in this group which was recorded as 97.5% while in the age group 6-9 years out of 40 subjects 29 (72.5%) subjects visited the dentist for aesthetics which showed less anxiety as (57.5%). In higher groups i.e.; in 10-12 years and 13-18 years both reasons

including aesthetics and tooth decay with pain or trauma were in almost in equal proportion. In 10-12 years out of 40 subjects, 21 (52.5%) subjects main reason for visit was aesthetics and in 13-18 years out of 40 subjects, 23 (57.5%) subjects main reason was again the aesthetics. When all the reason were reviewed main reason to visit dentist was tooth decay with pain or trauma for 80 (50%) subjects out of 160 subjects followed by aesthetics for 73 (45.6%) subjects and 7 (4.4%) subjects visited dentist for tooth decay without pain. There was highly significant association ($p<0.001$) between the child age (3-5years) and reason to visit dentist (tooth decay with pain or trauma).

Association of child dental fear with number of children and family style is shown in table 5. It shows association of child dental fear with number of children and family style. The child dental fear was non significant ($p=0.491$) with the number of children but it showed significant association ($p=0.0160$) with the family style. Dental fear and anxiety was found more in children who stayed in joint family (69.4%) than in children who stayed in nuclear family (50.0%).

Association of socio-economic status with parent's awareness and knowledge of milk teeth is shown in table 6. Among the 160 respondents, only 76 (47.5%) respondents had awareness and knowledge about the milk teeth and according to them it was important. Awareness of milk teeth was seen maximum in Upper class 12 subjects (57.1%) followed by upper middle 49 subjects (54.4%) followed by lower middle 8 subjects (32%) then upper lower 7 subjects (31.8%) and last was lower class which were least aware about the milk teeth.

There was highly significant association ($p<0.001$) between the awareness and knowledge about milk teeth and socio-economic status (Socio-Economic Status).

Table –1: Variables of study participants included in the study

VARIABLES			***n***	**%**	**PREVALENCE**	**CHI - SQUARE**	**p VALUE**
AGE(YEARS)							
3-5	-		40	-	-	-	-
6-9	-		40	-	-	-	-
10-12	-		40	-	-	-	-
13-18	-		40	-	-	-	-
GENDER (CFSS-DS)	**<38**	**38+**					
Male	39	46	85	53.1	-	0.849	0.357
Female	29	46	75	46.9	-		
CFSS-DS							
Less than 38	-		68	42.5	-	-	-
More than 38	-		92	57.5	-	-	-

AGE (CFSS-DS)	**<38**	**38+**					
3-5	1	39	40	-	97.5	40.10	<0.001
6-9	17	23	40	-	57.5	-	-
10-12	23	17	40	-	42.5	-	-
13-16	27	13	40	-	32.5	-	-
Total	68	92	160	-	57.5	-	-

Table 2: Association of CFSS-DS score with child's feeling in hospital and after meeting dentist

	n	**<38**	**38+**	**CHI SQUARE**	**p VALUE**
VARIABLES					
Child's feeling in hospital					
Normal	85	58	27	51.16	<0.001
Afraid	52	10	42		
Very Afraid	23	0	23		
Child feeling after seeing dentist					
Normal	76	56	20	60.42	<0.001
Afraid	51	11	40		
Very Afraid	33	1	32		

Table 3: Association of parental dental anxiety (Corah's dental anxiety scale) with child dental fear (Children Fear Survey Schedule Dental Subscale)

Variable		**PARENTAL DENTAL ANXIETY (Corah's Dental Anxiety Scale)**								**Total**
		Mild anxiety (N=50)		**Moderate Anxiety (N=97)**		**Higher Anxiety (N=7)**		**Severe Anxiety (N=6)**		
CHILD DENTAL FEAR	**More than 38 (Fearful)**	19	38.0%	61	62.9%	6	85.7%	6	100.0%	92

(According to Children's Fear Survey Schedule-CFSS-DS)	**Less than 38 (Non Fearful)**	31	62.0%	36	37.1%	1	14.3%	0	0.0%	68
Significance	chi sq	15.647								
	p-value	**0.001(Highly Significant)**								

Table –4: Association of child dental fear and anxiety with parent's reason to visit dentist

Variable			**PARENT'S REASON TO VISIT DENTIST**			**chi sq**	**p-value**
			Aesthetics	**Tooth decay without pain**	**Tooth decay with pain or trauma**		
Age groups	**3 - 5 years**	No.	0	5	35	51.6	**<0.001 (Very Highly Significant)**
		%	0.0%	12.5%	87.5%		
	6 - 9 years	No.	29	1	10		
		%	72.5%	2.5%	25.0%		
	10 - 12 years	No.	21	1	18		
		%	52.5%	2.5%	45.0%		
	13-18 years	No.	23	0	17		
		%	57.5%	0.0%	42.5%		
Total		No.	73	7	80		
		%	45.6%	4.4%	50.0%		

Table –5: Association of child dental fear with number of children and family style

Variable			**CHILD DENTAL FEAR** (According to Children's Fear Survey Schedule-CFSS-DS)		**chi sq**	**p-value**
			More than 38 (Fearful)	**Less than 38 (Non Fearful)**		
No. OF CHILDREN	One	No.	17	14	2.413	0.491
		%	54.8%	45.2%		
	Two	No.	67	52		
		%	56.3%	43.7%		

	Three	No.	7	2		
		%	77.8%	22.2%		
	More than Three	No.	1	0		
		%	100.0%	0.0%		
FAMILY STYLE	Joint Family	No.	43	19	5.824	**0.016 (Significant)**
		%	69.4%	30.6%		
	Nuclear Family	No.	49	49		
		%	50.0%	50.0%		
Total		No.	92	68		
		%	57.5%	42.5%		

Table 6: Association of socio-economic status with parent's awareness and knowledge of milk teeth

Variable			**PARENT'S KNOWLEDGE ABOUT MILK TEETH**			**chi sq**	**p-value**
			Yes, it is important	**No, it is not important**	**Don't know**		
SES (Socio-Economic Status Kuppuswamy Scale 2017)	**Upper Class**	No.	12	8	1	88.3	**<0.001 (Very Highly Significant)**
		%	57.1%	38.1%	4.8%		
	Upper Middle Class	No.	49	40	1		
		%	54.4%	44.4%	1.1%		
	Lower Middle Class	No.	8	17	0		
		%	32.0%	68.0%	0.0%		
	Upper Lower Class	No.	7	15	0		
		%	31.8%	68.2%	0.0%		
	Lower Class	No.	0	0	2		
		%	0.0%	0.0%	100.0%		
Total		No.	76	80	4		
		%	47.5%	50.0%	2.5%		

DISCUSSION

The way how a child is nurtured is determined by environmental differences and multicultural approach, which are parts of Indian society and culture. This study was conducted to relate the various psychological factors in children with DFA as it is considered as the main barrier in the

successful completion of dental treatment in children. There are many psychosocial factors which are known to persuade dental anxiety in children, which directly or indirectly plays a major role in the success of dental treatment and helps in guiding a pediatric dentist in delivering the best of services to a child patient for a healthy oral care.

In the present study, a self designed psychosocial questionnaire was used which was made with the help of Psychologist both for patient and accompanying parent. Likewise a similar study was conducted by Gustaffason A et al. (2007)[9] which was evaluated with the help of questionnaire concluded that many children and adolescents referred because of dental behavioral management problems (DBMP) have a burdensome life and family situation on which attention should be paid. This would help dentist to pre-assess the psychological factors which would guide in providing a better dental treatment.

Overall, prevalence of dental anxiety and fear in children in the present study was 57.5% in 3-18years which was assessed using the Children fear survey schedule dental subscale (CFSS - DS). Folayen et al. (2004)[10] reported a worldwide prevalence of 3 to 43% aged in 5-10 years, Bedi et al. (1992)[11] reported a prevalence of 7.1% aged in 10-14 years in Scotland and Morgan et al. (1980)[12] reported a prevalence of 10.5% for USA in young adults. These showed comparatively low prevalence according to data obtained from our study. Children of younger age groups showed highest dental anxiety and fear which decreased gradually as age increases. Our results were in concordance with Ollendick et al. (1991)[13], Klingberg et al. (1994)[14] and Muris et al. (1996).[15] The difference in factors explaining dental anxiety between the age groups might be due to a change in the nature of dental anxiety as the child grows older. In the youngest group dental anxiety seems to be merely a matter of a straightforward cause-consequence relation than the anticipation of a perceived pain of discomfort. Apart from this, other factors might be involved in the late onset of dental anxiety as stated by Locker et al. (1999).[16]

In the present study, there was a significant association between dental fear and anxiety with child's visit to the clinic or hospital**.** According to Busato P et al. (2017)[17] it has been reported that dental anxiety among children is influenced by many factors like personal traits, general anxiety and psychological status, previous dental and medical experiences and frequency of dental visits, clinical and dental environment. Indeed, it has been reported that higher dental anxiety is associated with drilling sounds, followed by long waits in the waiting room as concluded by Muppa R et al. (2013).[18]

A statistically significant association was seen between dental fear and anxiety of a child after seeing or meeting the dentist**.** As explained by Asokan A et al. (2016)[19] dental anxiety results from the different shapes of the dental instruments, and the smell of the atmosphere, additionally associated with the dentist's attire and gender. Dental anxiety is expected more in children on their first visit to the dentist as stated by El-Housseiny AA et al. (2015)[20] which was similar to our study.

In the present study, there was a significant association between parent dental anxiety using Corah's Dental anxiety (DAS) scale and child dental fear with Children Fear Survey

Schedule- Dental Subscale (CFSS-DS). Similarly, according to Tickle et al. (2009)[21] children whose parents are anxious are more likely to report anxiety which was similar to our finding.

In the present study, a highly significant result was seen between dental fear and anxiety and tooth decay with pain or trauma. Fakhruddin et al. (2008)[22] shows that children with dental trauma or pain, treated promptly and with good aesthetic results show no negative social behavior in their everyday life. Cortes et al. (2002)[23] reported that aesthetics rather than functional limitation was a serious issue for children with tooth fractures.

In the present study, no significant association of dental anxiety and fear in children according to number of siblings but a significant association of dental fear and anxiety with family style (nuclear or joint family) was seen. In contrary to our study according to Milsom KM et al. (2017)[24] and Abanto J et al. (2017)[25] dental anxiety level has been found to be associated with increased number of siblings. This is more especially in preschool children from larger families, with three or more siblings according to explanations by Abanto J et al. (2017)[25]. The explanation for this could be that children with more number of siblings might be exposed to information about their siblings' dental treatments or they could observe their siblings displaying anxious behaviour during dental treatments as concluded by Porritt J et al. (2012)[26]. On the contrary, Aminabadi NA et al. (2011)[27] showed that a single child in a family had higher dental anxiety compared to children with siblings.

In the present study, there was a strong association (< 0.001) with knowledge education and awareness about importance of milk teeth in children .The education level of parents and the social class of the child's family have long been considered as the factors that affect the dental anxiety level of children according to Abanto J et al. (2017)[25]. On the other hand, it has been reported that high education level is associated with severe dental anxiety. One explanation offered is that children from families with a higher income can more easily access information on dental procedures as stated by Busato P et al. (2017)[17]. In contrary certain studies reported a very weak association regarding these factors like Yildirim TT (2016)[28] nor no association between the dental anxiety of children and the various educational levels as explained by Ekanayake L et al. (2003).[29]

Thus, the outcome of the results of this study showed that DFA is associated with various psychological factors which are needed to be pre assessed for a successful treatment in pediatric patients.

CONCLUSION

Based on the results of this study, the following conclusions can be drawn:

1. DFA showed no association with gender but it showed significant association with age, feelings of child with hospital environment and meeting with dentist, parental dental anxiety, family style and awareness and knowledge of parents for primary teeth.
2. Age of the child had a relatively modest impact on their risk of severe dental anxiety.
3. The results provide a foundation upon which the provider can decide which behavior guidance techniques would be best suited for an individual patient.

Thus it is important to communicate with the child patient briefly at the beginning of a dental appointment to establish rapport and trust both with patient and parent which would help in rendering possible dental treatment with positive aspects.

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