

FACTORS IN DENTAL ENVIRONMENT RELATED TO DEVELOPMENT OF CHILD DENTAL FEAR AND PARENT-CHILD AGREEMENT ON ITS EVALUATION

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ABSTRACT

Introduction: Dental fear is considered one of the main reasons for the deterioration of oral health. There are numerous instruments for assessing dental fear for children and their parents. There is little information available concerning the extent of parent-child agreement on child dental fear.

Aim: The aim of this study is to investigate the factors in dental environment related to the development of child dental fear and the extent of parent-child agreement on its evaluation.

Material and methods: The study was conducted among 67 children between 6 and 12 years old and their parents, visiting the Department of Pediatric Dentistry, Plovdiv. The Dental Subscale of the Children's Fear Survey Schedule (CFSS-DS) was used to assess the dental fear of each patient. The children were asked to fill out the child version of CFSS-DS. The parents were asked to fill out the parental version of CFSS-DS on behalf of their children.

Results: Mean of CFSS-DS for children is 30.28 (SD= 9.59) and for parents 32.49 (SD= 11.60). Spearman correlation coefficient, used as a measure of agreement between the parental and child versions of CFSS-DS, is found to be $r=0.52$. Both children and parents report as most feared item the 'sight of injection' and as least fearful items 'people in white uniform' and 'having to open your mouth'. Significant difference in fear scores between children and their parents is found only in three items related to dental fear - 'choking' ($p<0.005$), 'dentists' ($p<0.005$) and 'having the dentists clean your teeth' ($p<0.001$).

Conclusions: The parent-child agreement on dental fear of 6-12-years-old children is moderate. Parents are reliable reporters of their child's dental fear during dental treatment. The most feared factor in dental environment is common in almost all people. Parents estimate the dental fear of their children higher in regard to several items, which are not found as risk factors for the development of dental fear in this age group.

Key words: dental fear, evaluation scales, children

INTRODUCTION

Dental fear is a normal emotional reaction to threatening stimuli in a dental treatment situation. Dental fear is considered one of the main reasons for the deterioration of oral health [3]. There are numerous instruments for assessing dental fear for children and their parents [9,15]. There is little information available concerning the extent of parent-child agreement on child dental fear [6,8,10].

The aim of this study is to investigate the factors in dental environment related to the development of child dental fear and the extent of parent-child agreement on its evaluation.

MATERIAL AND METHODS

The study was conducted on sixty-seven 6-12-years-old children and their parents, visiting the Department of Pediatric Dentistry in Faculty of Dental Medicine, Medical University-Plovdiv, Bulgaria during the period May 2013 – May 2014.

Before the dental visit, in the waiting room the parents were asked to sign a consent form for participation in the present study.

Dental fear was assessed using the Dental Subscale of the Children’s Fear Survey Schedule (CFSS-DS) in two versions – parental and child. The questionnaire consists of 15 items, related to different aspects of the dental treatment situation. A five-point scale ranging from 1(‘not afraid at all’) to 5 (‘very afraid’) is used to rate the level of patient’s dental fear for each item [Fig. 1]. The total possible score ranged from 15 to 75.

| Question № | How afraid is your child of | 1 | 2 | 3 | 4 | 5 |
|------------|---|---|---|---|---|---|
| 1. | dentists | 1 | 2 | 3 | 4 | 5 |
| 2. | doctors | 1 | 2 | 3 | 4 | 5 |
| 3. | injections | 1 | 2 | 3 | 4 | 5 |
| 4. | having somebody examining his/her mouth | 1 | 2 | 3 | 4 | 5 |
| 5. | having to open his/her mouth | 1 | 2 | 3 | 4 | 5 |
| 6. | having a stranger touch him/her | 1 | 2 | 3 | 4 | 5 |
| 7. | having somebody look him/her | 1 | 2 | 3 | 4 | 5 |
| 8. | the dentist drilling | 1 | 2 | 3 | 4 | 5 |
| 9. | the sight of the dentist drilling | 1 | 2 | 3 | 4 | 5 |
| 10. | the noise of the dental drilling | 1 | 2 | 3 | 4 | 5 |
| 11. | having put instruments in mouth | 1 | 2 | 3 | 4 | 5 |
| 12. | choking | 1 | 2 | 3 | 4 | 5 |
| 13. | having to go to the hospital | 1 | 2 | 3 | 4 | 5 |
| 14. | people in white uniforms | 1 | 2 | 3 | 4 | 5 |
| 15. | having the dentist clean his/her teeth | 1 | 2 | 3 | 4 | 5 |

Figure 1. Dental Subscale of the Children’s Fear Survey Schedule (CFSS-DS)

In the waiting room each parent was asked to fill out the parental version of the Dental Subscale of the Children’s Fear Survey Schedule on behalf of their children (Fig. 1).

| Question № | How afraid is you of | 1 | 2 | 3 | 4 | 5 |
|------------|--|---|---|---|---|---|
| | |  |  |  |  |  |
| 1. | dentists | 1 | 2 | 3 | 4 | 5 |
| 2. | doctors | 1 | 2 | 3 | 4 | 5 |
| 3. | injections | 1 | 2 | 3 | 4 | 5 |
| 4. | having somebody examining your mouth | 1 | 2 | 3 | 4 | 5 |
| 5. | having to open your mouth | 1 | 2 | 3 | 4 | 5 |
| 6. | having a stranger touch you | 1 | 2 | 3 | 4 | 5 |
| 7. | having somebody look at you | 1 | 2 | 3 | 4 | 5 |
| 8. | the dentist drilling | 1 | 2 | 3 | 4 | 5 |
| 9. | the sight of the dentist drilling | 1 | 2 | 3 | 4 | 5 |
| 10. | the noise of the dental drilling | 1 | 2 | 3 | 4 | 5 |
| 11. | having put instruments in mouth | 1 | 2 | 3 | 4 | 5 |
| 12. | choking | 1 | 2 | 3 | 4 | 5 |
| 13. | having to go to the hospital | 1 | 2 | 3 | 4 | 5 |
| 14. | people in white uniforms | 1 | 2 | 3 | 4 | 5 |
| 15. | having the dentist clean his/her teeth | 1 | 2 | 3 | 4 | 5 |

Figure 2. Faces version of the Dental Subscale of the Children’s Fear Survey Schedule (CFSS-DS_F)

The children were asked to fill out the child Faces version of the Dental Subscale of the Children's Fear Survey Schedule (CFSS-DS_F) in the dental treatment room. The pictorial version of CFSS-DS is developed by the addition of a faces analogue scale, which corresponds to the 5-point Likert scale, anchored above the original numeric form [Fig. 2]. Each child was asked to point to the face or choose the number which most closely depicted its fear for each item

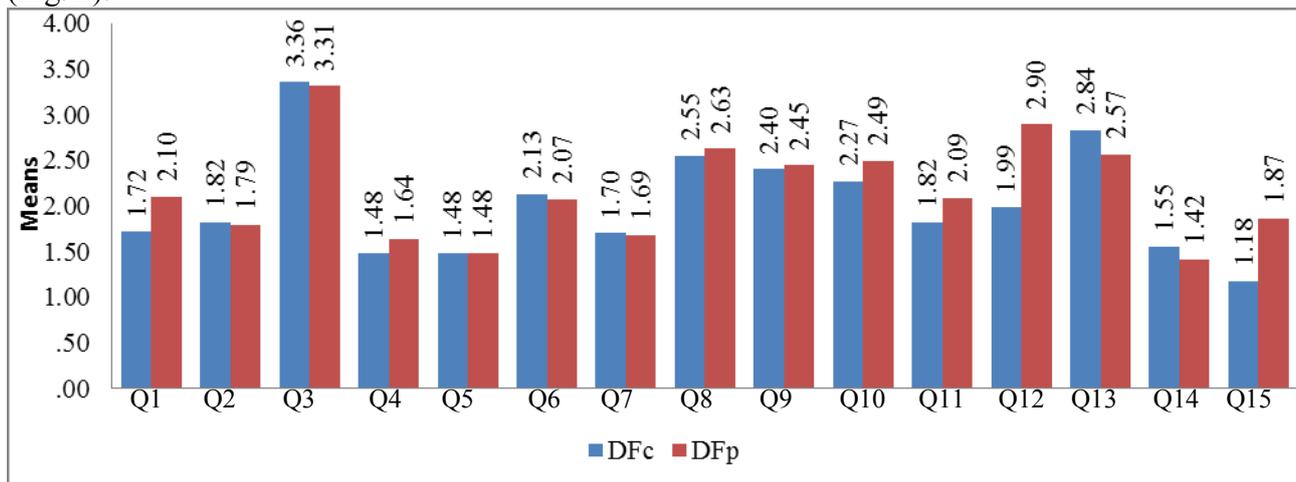
The obtained data were tabulated and subjected to statistical analysis using SPSS version 19.0.

RESULTS AND DISCUSSION

Dental Subscale of the Children's Fear Survey Schedule is one of the most frequently used measuring instrument for assessing dental fear in children. It is a well-known psychometric scale that is developed by Cuthbert and Melamed in 1982 [5]. The questionnaire is used in several countries and translated to several languages [12,14,16]. The CFSS-DS is an instrument that has good reliability and validity. It has been shown to be better in some situations than other scales [2]. As noted by Aartman et al. CFSS-DS is preferred because it possesses better psychometric properties, it measures dental fear more precisely and covers more aspects of the dental situation than other questionnaires [1].

The numeric rating scales are usually understood by children who are capable of good cognitive functioning. They require numeracy, the ability to think and express oneself in quantitative terms. Young children may provide numbers on a numeric rating scale that are idiosyncratic and unreliable because they have not yet developed an understanding of the quantitative significance of numbers. It is investigated that this type of scales is appropriate for use by children at 9 years and older [7]. In order to overcome these difficulties in studies among children under 9 years of age and older anxious patients it seems reasonable to modify the scale by the inclusion of a face scale that corresponds to the Likert one. The faces scale does not require the ability to estimate quantities. It only requires selecting a picture of a face that represents the degree of its dental fear [4].

In the present study for assessing dental fear of the investigated age group we developed for use a Faces version of the Dental Subscale of the Children's Fear Survey Schedule (CFSS-DS_F), (Fig. 2).



Graph 1. Comparison of mean CFSS-DS item scores rated by children (DFc) and their parents (DFp), Question (Q).

The results of the present study show that the most feared items rated both by children and their parents are 'injections' (item 3), 'dentist drilling' (item 8) and 'going to the hospital' (item 13). In contrast to children, parents identify one more factor for development of child dental fear – fear of choking (item 12), (Graph 1). The different degree of parental dental fear seems to explain the difference in child and parental answers regarding this item. Therefore, there is a need for more research to investigate the influence of the parental dental fear and anxiety on the child dental fear.

The least fearful items rated both by children and their parents are 'people in white uniforms' (item14) and 'having to open your mouth' (item 5). The results of the present study confirm the results obtained in a number of previous studies [11,15,16].

Spearman correlation coefficient, used as a measure of correlation between the scores of parental and child versions of CFSS-DS, is found to be $r=0.52$. This value shows a moderately strong correlation. The present results are in line with results obtained by Janneke et al. [10], who found moderate parent-child agreement on evaluation of child dental fear. However our results are different from the results obtained by the study by Gustafsson et al. [8] and Luoto et al. [13], who showed parental ratings exceeding self-ratings of their children.

Mean CFSS-DS score for child version is found to be 30.28 (SD= 9.59) and for parental one 32.49 (SD= 11.60). The results of the present study show that parents tend to rate their child's dental fear higher than the children do without significant difference ($p>0.05$). Our results confirm the results from a previous study by Janneke et al. [10]. On the other hand the present findings contradict to those of another study [8], which showed an opposite pattern in parental evaluation of child dental fear. The different degree of dental fear of the participants in the studies is considered to be the possible reason.

In regard to the categorization of patients based on the cut-off CFSS-DS scores [15] however, the investigated children are classified into two different categories-patients with no or low dental fear (self-rating) and patients with some degree of dental fear, who are at risk for developing high dental fear or phobia (parental rating). To investigate where the difference in classification comes from, children and parents are compared on the mean CFSS-DS item scores [Table 1]. Significant difference in fear scores between children and their parents is found only in three items related to dental fear - 'choking' ($p<0.005$), 'dentists' ($p<0.005$) and 'having the dentists clean your teeth' ($p<0.001$).

Table 1. Comparison of mean CFSS-DS item scores rated by children (DFc) and their parents (DFp), *P < 0.005

| Items | DFc | SD | DFp | SD | P |
|---|------|-------|------|-------|--------|
| Dentists | 1.72 | 1.042 | 2.10 | 1.046 | 0.003* |
| Doctors | 1.82 | 1.114 | 1.79 | 0.993 | 0.854 |
| Injection | 3.36 | 1.525 | 3.31 | 1.258 | 0.805 |
| Having somebody examine your mouth | 1.48 | 0.725 | 1.64 | 0.949 | 0.212 |
| Having to open your mouth | 1.48 | 0.927 | 1.48 | 0.804 | 1.000 |
| Having a stranger touch you | 2.13 | 1.301 | 2.07 | 1.063 | 0.759 |
| Having somebody look at you | 1.70 | 1.073 | 1.69 | 0.820 | 0.929 |
| The dentist drilling | 2.55 | 1.510 | 2.63 | 1.312 | 0.663 |
| The sight of the dentist drilling | 2.40 | 1.415 | 2.45 | 1.318 | 0.794 |
| The noise of the dentist drilling | 2.27 | 1.309 | 2.49 | 1.353 | 0.231 |
| Having somebody put instruments in your mouth | 1.82 | 1.154 | 2.09 | 1.111 | 0.118 |
| Choking | 1.99 | 1.482 | 2.90 | 1.468 | 0.001* |
| Having to go to the hospital | 2.84 | 1.473 | 2.57 | 1.406 | 0.196 |
| People in white uniforms | 1.55 | 1.034 | 1.42 | 0.873 | 0.296 |
| Having the dentist clean your teeth | 1.18 | 0.650 | 1.87 | 1.140 | 0.000* |

As can be seen in graph 1, these items are not reported by children as risk factors for the development of dental fear in this age group (Mean $DF_{c,12,15}<2$). It confirms the lack of significant difference between the mean total CFSS-DS scores rated by children and parents in the present study. Therefore, dentists do not have to consider parental overestimation of the dental fear of their children. It seems that in the assessment parents usually report risk factors related to the development of their own dental fear.

CONCLUSIONS

The parent-child agreement on dental fear of 6-12-years-old children is moderate. Parents are reliable reporters of their child's dental fear during dental treatment. Parents estimate the dental fear

of their children higher in regard to several items, which are not found as risk factors for the development of dental fear in this age group. The most feared factors in dental environment are the injections, the dental drill and the hospital. There is, therefore, a definite need for seeking an alternative method in pediatric dentistry that completely changes the conventional restorative treatment, reduces the need for injected local anesthesia and obtains very low to null likelihood of odontoblastic pain.

REFERENCES

1. Aartman IH¹, van Everdingen T, Hoogstraten J, Schuurs AH. Self-report measurements of dental anxiety and fear in children: a critical assessment. *ASDC J Dent Child*. 1998 Jul-Aug;65(4):252-8, 229-30.
2. Akbay Oba A, Dulgergil CT, Sonmez IS. Prevalence of dental anxiety in 7- to 11-year-old children and its relationship to dental caries. *Med Princ Pract* 2009;18:453-7.
3. Armfield JM¹, Stewart JF, Spencer AJ. The vicious cycle of dental fear: exploring the interplay between oral health, service utilization and dental fear. *BMC Oral Health*. 2007 Jan 14;7:1.
4. Champion GD, Goodenough B, von Baeyer CL, Thomas W. Measurement of pain by self report. In: Finley GA, McGrath PJ, editors. *Measurement of Pain in Infants and Children*. Seattle: IASP Press; 1998. pp. 123–60.
5. Cuthbert MI, Melamed BG. A screening device: children at risk for dental fears and management problems. *ASDC J Dent Child*. 1982 Nov-Dec;49(6):432-6.
6. Folayan MO¹, Idehen EE, Ojo O. Identified factors in child-dentist relationship important for the management of dental anxiety in Nigerian children. *Eur J Paediatr Dent*. 2004 Dec;5(4):225-32.
7. Gaffney A, McGrath P, Dick B. Measuring pain in children: Developmental and instrument issues. In: Schechter N, Berde CB, Yaster M, editors. *Pain in Infants, Children and Adolescents*. 2. Philadelphia: Lippincott Williams & Wilkins; 2003. pp. 128–41.
8. Gustafsson A, Arnrup K, Broberg AG, Bodin L, Berggren U. Child dental fear as measured with the Dental Subscale of the Children's Fear Survey Schedule: the impact of referral status and type of informant (child versus parent). *Community Dent Oral Epidemiol* 2010; 38: 256–266.
9. Ingman KA¹, Ollendick TH, Akande A. Cross-cultural aspects of fears in African children and adolescents. *Behav Res Ther*. 1999 Apr;37(4):337-45.
10. Janneke B Krikken; Jacob M ten Cate; Arjen J van Wijk; JSJ Veerkamp. Measuring dental fear using the CFSS-DS. Do children and parents agree? *International journal of paediatric dentistry / the British Paedodontic Society [and] the International Association of Dentistry for Children* 2013;23(2):94-100.
11. Klingberg G¹, Broberg AG. Temperament and child dental fear. *Pediatr Dent*. 1998 Jul-Aug;20(4):237-43., ten Berge M¹, Hoogstraten J, Veerkamp JS, Prins PJ. The Dental Subscale of the Children's Fear Survey Schedule: a factor analytic study in The Netherlands. *Community Dent Oral Epidemiol*. 1998 Oct;26(5):340-43.
12. Lee CY¹, Chang YY, Huang ST. Prevalence of dental anxiety among 5- to 8-year-old Taiwanese children. *J Public Health Dent*. 2007 Winter;67(1):36-41.
13. Luoto A¹, Tolvanen M, Rantavuori K, Pohjola V, Lahti S. Can parents and children evaluate each other's dental fear? *Eur J Oral Sci*. 2010 Jun;118(3):254-8.
14. Nakai Y¹, Hirakawa T, Milgrom P, Coolidge T, Heima M, Mori Y, Ishihara C, Yakushiji N, Yoshida T, Shimono T. The Children's Fear Survey Schedule-Dental Subscale in Japan. *Community Dent Oral Epidemiol*. 2005 Jun;33(3):196-204.
15. Raj, Sunil; Agarwal, Manisha; Aradhya, Kiran; Konde, Sapna; Nagakishore, V. Evaluation of Dental Fear in Children during Dental Visit using Children's Fear Survey Schedule-Dental Subscale. *Int J Clin Pediatr D* 2013;6(1):12-15.
16. ten Berge M¹, Veerkamp JS, Hoogstraten J, Prins PJ. Childhood dental fear in the Netherlands: prevalence and normative data. *Community Dent Oral Epidemiol*. 2002 Apr;30(2):101-7.