The relationship between dental fear and cooperation of children during dental treatments with their parents’ general health

Seyedeh Hediyeh Daneshvar 1*, Saeedeh Azizi 2

1Assistant Professor, Dental Sciences Research Center, Department of Pediatric Dentistry, School of Dentistry, Guilan University of Medical Sciences, Rasht, Iran
2Dentistry Student, School of Dentistry, Guilan University of Medical Sciences, Rasht, Iran

Abstract

Objective: Dental fear is a common phenomenon in children and parents can have a key role in the development of child’s dental anxiety. There is moderate evidence to support the relationship between the parental general health and children’s dental fear. The aim of this study was to investigate the relationship between dental fear and cooperation of children during dental treatment with the general health of parents.

Methods: This cross-sectional descriptive study was done on 130 children aged 6 to 12 at the Department of Pediatric Dentistry, Guilan University of Medical Sciences from May to September 2020. The personality traits and general health of parents were assessed by using the General Health Questionnaire (GHQ-28). The Frankl’s behavior rating scale and Children’s Fear Survey Schedule Dental Subscale (CFSS-DS) were used to respectively assess the degree of cooperation during dental practices and children’s dental fear. Statistical approaches included T-test, Chi-square and Pearson Linear correlation. A significant level of differences was taken as \( P<0.05 \).

Results: 69.3 % of children behaved positively and definitely positively during dental treatment. 56 boys and 74 girls with mean age of 9.13 ±2.02 years participated in this study. There was a significant correlation between the children’s age with dental fear and cooperation level \( (P<0.001) \). There was no significant difference in dental fear score \( (P=0.63) \) and cooperation level \( (P=0.99) \) between boys and girls. There was not statistically significant relationship between the general health of the parents and the level of children’s cooperation and dental fear during dental treatment \( (P>0.001) \).

Conclusion: There was not relationship between parent’s general health with children’s dental fear and cooperation.

Keywords: Fear; Behavior; Health; Dentistry.

Introduction

Dental fear and anxiety (DFA) in children is a major issue affecting their oral health and behavior management and prevent children from cooperating well during dental treatment [1, 2].

Dental fear is a common problem that develops mostly in childhood and affects people of all ages [3]. Children with DFA often try all means to miss or postpone dental treatment, resulting in deterioration of their oral status which is not only distressing for the child and family but is also associated with poor oral health and an increased demand to more complex interventions [3,4]. Thus, the frequency of dental pain and unpleasant dental experiences is greater among uncooperative children with DFA in comparison to cooperative children [5].

To offer better dental care, the prevalence and causes of dental fear and anxiety should not be overlooked in clinical practice, especially in children. Strategies for the evaluation, prevention and control of dental fear should be implemented to
allow better treatment for children and adolescents [2].

The etiology of dental fear in children is multifactorial and has been related to age, gender, personality, increased general fears, past dental experiences, parental dental fear, ethnicity and culture, socioeconomic status and dental office environment [6]. It is better to have information about the influence of parental general health on children's behavior in clinical situations. Parents can provide an environment for children's psychosocial growth which could shape the children's behaviors. They can transmit feelings of fear and anxiety to their children [1].

Many children are likely to internalize their parents' values, attitudes through modeling and parents with DFA may transfer their fearful feelings to their children, causing a negative impact on their cooperation [3]. There is not enough evidence to support the relationship between parental and child DFA [5]. This study investigated the association between dental fear and cooperation of children during dental treatment with the general health of parents.

Material and Methods

Ethical Aspects

This cross-sectional descriptive study was approved by Guilan University of Medical Sciences (IR.GUMS.REC.1399.080) in 2020/5/27.

Sample

This study was done on 130 children aged 6-12, seeking dental treatment at the Department of Pediatric Dentistry, Guilan University of Medical Sciences from May to September 2020. Children with severe systemic diseases, physical or psychological disabilities were excluded.

Questionnaire

A single researcher (pedodontist) explained the objectives and procedures to the parents. Parents, who agreed to participate, signed a statement of informed consent and filled out General Health Questionnaire (GHQ) which assessed theirs' general health and personality traits [7].

The same dentist interviewed with the parents and filled out the questionnaire. The parents have time enough to answer the questions. This questionnaire comprises of 28 questions, each with a four-point likert scale (0-1-2-3) for responses “not at all”, “no more than usual”, “rathermore than usual” and “much more than usual”.

This questionnaire includes four subscales: Social signs, Anxiety and insomnia, Social dysfunction and Depression. Each subscale includes seven questions and the score ranges from 0-21. General health of parents with 0-9 score are defined optimal, 10-15 is considered marginal and 16-21 is defined as damaged health [7].

Fear and Cooperation Evaluation

Fear and cooperation level of all children was evaluated in the first appointment during dental treatment by the same examiner (pedodontist). The Children's Fear Survey Schedule Dental Subscale (CFSS-DS) with good reliability and validity, developed by Cuthbert and Melamed in 1982 was used to evaluate the children’s dental fear.

CFSS-DS consists of 15 items about different aspects of the dental situation. For each item, the response ranges 1-5, from “not afraid at all” to “very much afraid”. The total score ranges from 15 to 75. Children with a total CFSS-DS score below 32 are defined as non-fearful; 32–39 is considered moderate fearful and >39 is defined as fearful [8].

Degree of cooperation of children during dental practices was assessed using Frankl's behavior rating scale (Definitely negative-1, negative-2, positive-3, definitely positive-4).

Definitely negative: Refusal of treatment, crying forcefully, fearful, or any other overt evidence of extreme negativism. Negative: Reluctant to accept treatment, uncooperative, some evidence of negative attitude but not pronounced (sullen, withdrawn).

Positive: Acceptance of treatment, at times cautious, willingness to comply with the dentist, at times with reservation, but patient follows the dentist's directions cooperatively.
**Definitely positive:** Good rapport with the dentist, interested in the dental procedures, laughing and enjoying [9].

**Statistical analysis**

The data obtained on the questionnaires were analyzed with the aid of the Statistical Package for the Social Sciences (SPSS®, Version24.0, Chicago, IL, USA). Comparing the dental fear and cooperation level of children among girls and boys was done using T-test.

Pearson correlation was used for evaluating the correlation between the children's age with dental fear. The relationship between the general health of the parents and the children's dental fear and cooperation was determined using the Chi-square. Results with P <0.05 were considered statistically significant.

**Results**

130 children, 56 boys and 74 girls, 6-12 years of age (average 9.13 ±2.02 years) participated in this study. 50.8% (66) of parents were male and 49.2% (64) were female with 22-58 year old (average 39.24 ±5.56 years).

According to CFSS-DS, 68.5 % of the children were considered non-fearful, 12.3% were moderate and 19.2 % were fearful. There was no significant difference in dental fear score between boys and girls (T-test, P=0.63).

Cooperation of 20.8%, 48.5%, 28.5% and 2.2 % of children were definitely positive, positive, negative and definitely negative respectively, according to Frankl's behavior rating scale. There was no significant difference in cooperation level between boys and girls (T-test, P=0.99)

There was a significant correlation between the children's age with dental fear (Pearson correlation, P<0.001), so that the dental fear decrease with increasing age. The personality traits and general health of parents, assessed by General Health Questionnaire (GHQ-28) has been shown in Table 1.

There was not statistically significant relationship between the general health of the parents and the children's dental fear according to CFSS-DS (Chi-square, P>0.05) Table 2. There was not a significant association between the parental general health and the cooperation level of children during dental practices according to Frankl's behavior rating scale (Chi-square, P>0.05) Table 3.

**Discussion**

This study explored the relationship between children’s dental fear and level of cooperation during dental practices with parental general
health. In contrast to the assumption of many people, the results showed that parental general health is not associated with children’s dental fear and cooperation.

Dental fear is more complex than can be explained by a single contributing factor and dentists must consider this issue to gain a better understanding of pediatric patients and their parents [2, 10]. There was no difference in dental fear and anxiety between genders which is in agreement with study by Kyritsi MA et al [11] in a population of Greek children in Athens and study by Raj S et al [8] in India, although some studies [12-14] reported that dental fear was seen more frequently in girls than boys.

This difference can be related to different culture, social beliefs and biological origin [11]. In the present study, the dental fear of children decreased with increasing age which can be related to losing the fear of the unknown with maturation of children. Some studies [15-17] reported that fear scores increased with age, likely due to the unpleasant past experiences and greater number of invasive treatments.

Similar to this study, in a study by Wu L and Gao X in Hong Kong, children’s DFA was not associated with parents’ DFA or parenting styles. Parents’ and child’s DFA were measured by using the Corah Dental Anxiety Scale (CDAS) and Children Fear Survey Schedule Dental Subscale (CFSS–DS) respectively [1].

Table 2. Frequency distribution of parental general health by children’s dental fear

| Variables               | Score | Non-fearful N (%) | Moderate fearful N (%) | Fearful N (%) | *P-value |
|-------------------------|-------|-------------------|------------------------|--------------|----------|
| Social signs            | 0-9   | 8(61.6)           | 2(15.4)                | 3(23)        | 0.78     |
|                         | 10-15 | 54(72)            | 7(9.3)                 | 14(18.7)     |          |
|                         | 16-21 | 27(64.3)          | 7(16.7)                | 8(19)        |          |
| Anxiety and insomnia   | 0-9   | 9(53)             | 3(17.6)                | 5(29.4)      | 0.61     |
|                         | 10-15 | 42(73.4)          | 6(7.8)                 | 9(15.8)      |          |
|                         | 16-21 | 38(67.8)          | 7(12.5)                | 11(19.8)     |          |
| Social dysfunction      | 0-9   | 8(88.8)           | 1(11.2)                | 0(0)         | 0.46     |
|                         | 10-15 | 62(70)            | 10(11.2)               | 17(18.8)     |          |
|                         | 16-21 | 19(60)            | 5(15.6)                | 18(24.4)     |          |
| Depression              | 0-9   | 4(100)            | 0(0)                   | 0(0)         | 0.74     |
|                         | 10-15 | 25(65.7)          | 5(13.1)                | 8(21.2)      |          |
|                         | 16-21 | 60(68.1)          | 11(12.5)               | 17(19.4)     |          |

*P-value was based on Chi Square (p<0.05)

There was not relationship between dental anxiety and personality traits in this population [18]. Salem et al examined the relationship between dental fear and concomitant factors in children aged 3-6.

Results showed that general anxiety of Iranian parents had no effect on the child’s dental anxiety, which is in the favor of conditioning theory which emphasizes more on personal experiences rather than parental influence [12, 14, 19].

It is often thought that parental dental fear is associated with children’s dental fear. Such association was supported by a study conducted in the Madrid
The relationship between dental fear and cooperation of children during dental treatments with their parents' general health

(Spain) by Lara A et al which used CFSS-DS questionnaire for evaluating the dental fear of schoolchildren and their parents. It was shown that family member's levels of dental fear are significantly correlated with children's dental fear [20].

Findings of this study suggest that the influence of parents on the development of children's dental fear is not as straightforward as previously suspected. As dental fear in children may lead to a disruptive behavior and postpone the dental treatment, it is imperative to identify the possible negative factors and make necessary efforts to prepare children for dental visits.

This study was done on children in Iran and the results cannot be directly generalized to all other populations, although some useful information can be drawn especially for populations with similar cultures [1]. The age range of 6 to 12 years old may be a limitation of this study, once younger or older children may have other results.

**Conclusion**

There was not relationship between parent's general health and personality traits with children's dental fear and their level of cooperation during dental practices. There was no significant difference in cooperation level between the genders and the dental fear decreased with increasing age.

**Acknowledgements**

We would like to thank Department of Pediatric Dentistry, School of Dentistry, Guilan University of Medical Sciences for their great support.

**Conflicts of interest**

The authors deny any conflicts of interest in regards to the current study.

**References**

**Table 3. Frequency distribution of parental general health by cooperation level of children**

| Variables       | Score | Definitely negative N(%) | Negative N(%) | Positive N(%) | Definitely positive N(%) | *P*-value |
|-----------------|-------|--------------------------|---------------|--------------|--------------------------|-----------|
| Social signs    | 0-9   | 0 (0)                    | 7(54)         | 5(38.4)      | 1(7.6)                   | 0.21      |
|                 | 10-15 | 1(1.3)                   | 21(28)        | 39(52.1)     | 14(18.6)                 |           |
|                 | 16-21 | 2(4)                     | 9(21.5)       | 19(45.2)     | 12(29.3)                 |           |
| Anxiety and insomnia | 0-9 | 0(0)                     | 7(41.1)       | 7(41.1)      | 3(17.8)                  | 0.12      |
|                 | 10-15 | 0(0)                     | 20(35)        | 28(50)       | 9(15)                    |           |
|                 | 16-21 | 3(5.3)                   | 10(18.8)      | 28(52.8)     | 15(23.1)                 |           |
| Social dysfunction | 0-9 | 0(0)                     | 3(33.3)       | 5(55.5)      | 1(11.2)                  | 0.87      |
|                 | 10-15 | 3(3)                     | 26(30)        | 42(47.1)     | 18(19.9)                 |           |
|                 | 16-21 | 0(0)                     | 8(25)         | 16(50)       | 8(25)                    |           |
| Depression      | 0-9   | 0(0)                     | 1(25)         | 3(75)        | 0(0)                     | 0.26      |
|                 | 10-15 | 1(2)                     | 13(34.2)      | 21(55.2)     | 3(8.6)                   |           |
|                 | 16-21 | 2(2)                     | 23(26.1)      | 39(44.7)     | 24(27.2)                 |           |

*P-value was based on Chi Square (p<0.05)
1. Children’s dental fear and anxiety: exploring family related factors. Wu L, Gao X. BM C oral health. 2018 Dec 1;18(1):100. doi: 10.1186/s12903-018-0553-z

2. The relationship between dental anxiety in children, adolescents and their parents at dental environment. Assunção CM, Losso EM, Andreattini R, de Menezes JV. J Indian Soc Pedod Prev Dent. 2013 Jul 1;31(3):175. doi:10.4103/0970-4388.117977.

3. Dental fear and anxiety in children and adolescents: qualitative study using YouTube. Gao X, Hamzah SH, Yiu CK, McGrath C, King NM. J Med Internet Res. 2013;15:e29. doi:10.2196/jmir.2290.

4. Understanding children’s dental anxiety and psychological approaches to its reduction. Porritt J, Marshman Z, Rodd HD. Int J Paediatr Dent. 2012;22:397-405. doi:10.1111/j.1365-263X.201101208.x.

5. Empirical evidence of the relationship between parental and child dental fear: A structured review and metaanalysis. Themessl-Huber M, Freeman R, Humphris G, MacGillivray S, Terzi N Int J Paediatr Dent. 2010;20:83-101. doi:10.1111/j.1365-263X.2009.00998.x.

6. Cross-cultural aspects of fears in African children and adolescents. Ingman KA, Ollendick TH, Akande A. Behav Res Ther. 1999 Apr;37(4):337-345. doi:10.1016/s0005-7976(98)00108-9.

7. The General Health Questionnaire-28 (GHQ-28) as an outcome measurement in a randomized controlled trial in a Norwegian stroke population. Hjelle EG, Bragstad LK, Zucknick M, Kirkevold M, Thommessen B, Sveen U. BMC Psychology. 2019 Dec 1;7(1):18. doi:10.1186/s40359-019-0293-0.

8. Evaluation of dental fear in children during dental visit using children’s fear survey schedule-dental subscale. Raj S, Agarwal M, Aradhya K, Konde S, Nagakishore V. Int J Clin Pediadr Dent. 2013 Jan;6(1):12. doi:10.5005/jp-journals-10005-1178.

9. Identifying dental anxiety in children’s drawings and correlating it with frankl’s behavior rating scale. Mathur J, Diwanji A, Sarvaiya B, Sharma D. Int J Clin Pediadr Dent. 2017 Jan;10(1):24. doi:10.5005/jp-journals-10005-1401.

10. Dental anxiety in children: A review of the contributing factors. Alasmari AA, Aldossari GS, mohAmmed S. Children. 2018 Apr 1;5:7. doi:10.7860/JCDR/2018/35081.11379.

11. Parental attitudes and perceptions affecting children’s dental behaviour in Greek population. A clinical study. Kyritsi MA, Dimou G, Lygidakis NA. Europ Arch Paediatr Dent. 2009 Jan;10(1):29-32. doi:10.1007/BF03262664

12. A clinical study of child dental anxiety. Townend E, Dimigen G, Fung D. Behav Res Ther. 2000 Jan;38(1):3146. doi:10.1016/S0005-7967(98)00205-8.

13. Dental fear/anxiety and dental behaviour management problems in children and adolescents: a review of prevalence and concomitant psychological factors. Klingberg G, Broberg AG. Int J Paediatr Dent. 2007 Nov;17(6):391-406. doi:10.1111/j.1365-263X.2007.00872.x.

14. Dental fear and concomitant factors in 3-6 year-old children. Salem K, Kousha M, Anissian A, Shahabi A. J Dent Res Dent Clin, Dent Prospects. 2012;6(2):70. doi:10.5681/jodd.2012.015.

15. Prevalence of dental anxiety among 5- to 8-year-old Taiwanese children. Lee CY, Chang YY, Huang ST. J Public Health Dent 2007;67:36-41. doi:10.1111/j.1752-7325.2007.00006.x.

16. Dental anxiety and temperament in 15-year olds. Stenebrand A, Wide Boman U, Hakeberg M. Acta Odontol Scand. 2013;71:15-21. doi:10.3109/00016357.2011.645068.
17. Dental fear and oral health and family characteristics of Finnish children. Rantavuori K, Lahti S, Hausen H, Seppä L, Kärkkäinen S. Acta Odontol Scand. 2004;62:207-13. doi:10.1080/00016350410001586.

18. The prevalence of dental anxiety in children from low-income families and its relationship to personality traits. Raadal M, Milgrom P, Weinstein P, Mancl L, Cauce AM. J Dent Res. 1995 Aug;74(8):1439-43. doi:10.1177/00220345950740080201.

19. Childhood dental fear in the Netherlands: prevalence and normative data. Ten Berge M, Veerkamp JS, Hoogstraten J, Prins PJ. Community Dent Oral Epidemiol. 2002 Apr;30(2):101-7. doi:10.1034/j.1600-0528.2002.300203.x.

20. Emotional contagion of dental fear to children: the fathers’ mediating role in parental transfer of fear. Lara A, Crego A, Romero-Maroto M. Int J Paediatr Dent. 2012 Sep;22(5):324-30. doi:10.1111/j.1365-26X.2011.01200.x.