


Evaluation of Relationship between the Children's Dental Fear with the Parental State-Trait Anxiety

Zahra Bahrololoomi ¹, Tahereh Sadeghiyeh ², Nahid Maghsoudi ³, Shirin Pajouhandeh ^{4*}

1. Department of Pediatric Dentistry, Social Determinants of Oral Health Research Center, School of Dentistry, Shahid Sadoughi University of Medical Sciences, Yazd, Iran
2. Child and Adolescent Psychiatrist, Researcher of Center of Addiction and Behavioral Sciences, Shahid Sadoughi University of Medical Sciences, Yazd, Iran
3. Postgraduate Student, Department of Pediatric Dentistry, School of Dentistry, Shahid Sadoughi University of Medical Sciences, Yazd, Iran
4. Postgraduate Student, Department of Pediatric Dentistry, School of Dentistry, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

Article Type:

Original Article

Article History:

Received: 17 Oct 2021

Revised: 10 Dec 2021

Accepted: 15 Dec 2021

*Correspondence:

Shirin Pajouhandeh
Postgraduate Student, Department
of Pediatric Dentistry, School of
Dentistry, Shahid Sadoughi
University of Medical Sciences,
Yazd, Iran

shirinpaj2@yahoo.com



DOI: [10.29252/jorjanibiomedj.9.4.65](https://doi.org/10.29252/jorjanibiomedj.9.4.65)

Abstract

Background and Objective: Children's dental fear is one of the most important challenges that pediatric dentistry faces. Several factors play an important role in children's dental fear. Home quarantine, changes in routine life and economic disadvantages have resulted in emotional changes in parents and children during COVID-19 pandemic. The aim of this study is to evaluate the levels of children's dental fear, parental anxiety and their possible correlation during the COVID-19 pandemic.

Material and Methods: The present cross-sectional study comprised one hundred and four children aged 6-12-year-old and their parents. The level of parental anxiety was evaluated using Spielberger state-trait anxiety inventory. CFSS-DS (Children Fear Schedule Survey-Dental Subscale) questionnaire assessed the child's dental fear. Independent t-test, ANOVA and Pearson correlation coefficient were used for data analysis.

Results: There were significant correlations between the level of parent's state and trait anxiety and child's dental fear (respectively P value=0.009 and P value=0.000). However girls showed insignificant higher levels of dental fear compared with boys (P value=0.175), children younger than 9 years old and children with a previous dental treatment had significantly higher dental fear scores (respectively P value=0.006 and P value=0.002). Age, gender and level of education did not show a significant effect on the level of parental anxiety (respectively P value=0.630, P value=0.874 and P value=0.198).

Conclusion: The study has resulted in a significant correlation between parental state-trait anxiety and children's dental fear.

Keywords: Dental Anxiety [[MeSH](#)], COVID-19 [[MeSH](#)], Pediatric Dentistry [[MeSH](#)]

Highlights

- The relation between parental anxiety and children's dental fear is more considerable for parental trait anxiety.
- Age younger than 9 years and previous dental treatment significantly increases the levels of dental fear.
- No statistically significant differences were found in the mean score of dental fear between boys and girls

Introduction

Dental fear has been found as a major concern of dental patients. It has been ranked fifth among common fears. Dental environment is considered as a stressful place not only for children but also for adult patients (1). Several studies have proved as age increases the level of dental anxiety and fear decreases. Anxiety and fear play a crucial role in avoidance behavior, by increasing the perceived likelihood of pain and exacerbating negative dental experiences. Anxious individuals tend to avoid dental treatments, and when they do seek treatment, there are fewer treatment options available. Infrequent dental attendance has several impacts including dental pain, abscess, early loss of primary or permanent teeth and malocclusion (2). Prevalence estimates of dental anxiety range from approximately 5% to 20%. The difference between these estimates may be the result of variables including culture or different assessment tools (3).

Child's dental anxiety and fear are active processes and studies have found several factors associated with this condition including general emotional characteristics, temperament, specific dental procedures, parental anxiety, previous dental experience, poor oral health, etc (4). Among these, parental factors play an exclusively significant role. Pediatric dentistry triangle relies on a one-to-two relationship among the dentist, the patient and the parents, and the possible impact of parental anxiety on the child's dental fear. The evidence is clear that children's experiences in their early years strongly influence

the development of fear or anxiety and its succeeding adverse effect on dental health (5). State anxiety reflects the psychological and physiological transient reactions directly related to stressful situations at a specific moment. In contrast, the term trait anxiety refers to a trait of personality, describing individual differences related to a tendency to present state anxiety (6). Therefore, it is crucial to consider their differences while evaluating their consequences. Parent psychopathology has been theorized to be an important risk factor for children's behavior and social skills (7). Although the role of parental dental fear in the development of child's dental anxiety has been evaluated in several studies (8), there are fewer studies on the impact of parental trait anxiety and more importantly parental state anxiety on child's dental fear during COVID-19 pandemic (9).

The rapidly spreading COVID-19 pandemic has forced numerous countries to implement nationwide home quarantines and social distancing to the decrease transmission rates. Under such circumstances, and particularly lockdown isolation, significant public distress can be seen (10). High percentage of moderate to severe anxiety, psychological problems, and sleep disorders have been reported as the COVID-19 pandemic consequences (11, 12). Furthermore, it is shown that the quarantine recommended due to COVID-19 pandemic has an impact on dental appointments and adult patients' anxiety (13).

The aim of this study is to evaluate the level of children's dental fear, parental anxiety levels and their possible correlations during the COVID-19 pandemic.

Materials and Methods

The present cross-sectional study was conducted on 6-12-year-old children and their parents who referred to pediatric dental clinic of Shahid Sadoughi University of Medical Sciences between November 2020 and March 2021. The study protocol was supervised and approved by Ethics Committee of the university with an ID of IR.SSU.REC.1399.228. Children without any

medical disease, psychological or cognitive disorders accompanied by at least one parent who was informed about study protocol and signed the informed consent were included into the study. Children whose parents refused to participate and uncooperative children were excluded.

Based on a confidence level of 95% ($\alpha=0.05$), power of 80% ($\beta=0.2$), $d=1.5$ and standard deviation of 8.7 (14) for the score of children's dental fear, the number of individuals was estimated 104. Thus a total of one hundred and four eligible children enrolled into the study.

In this study, the level of parental anxiety was evaluated before starting the treatment using Spielberger state-trait anxiety inventory (STAI). STAI provides reliable, quick, self-report measurement of state and trait anxiety. It has got excellent psychometric properties for a wide age range from students to elderly patients. STAI strongly discriminates the degree of anxiety as a momentary affective state and personal differences in anxiety as a stable personality trait (15). Also the Persian version of the STAI demonstrated reliability, internal consistency, and validity. The Cronbach's alpha for internal consistency was 0.886 for trait anxiety and 0.846 for state anxiety. The convergent validity between STAI-Y and Beck Anxiety Inventory (BAI) was 0.612 for trait anxiety and 0.643 for state anxiety ($P < 0.001$) (16). This questionnaire consists of 40 items from which 20 are related to measuring state anxiety and the remaining 20 measure trait anxiety. Both state and trait subscales are assessed using a four-point scale, from "not at all" to "very much so" for the trait anxiety, and from "almost never" to "almost always" for the state anxiety. The overall score ranges between 20 and 80. The total scores for state anxiety were 20-31 as mild, 32-42 as moderate to low, 43-53 as moderate to high, 54-64 as relatively severe, 65-75 as severe, and more than 76 as extremely severe anxiety. The total scores in trait anxiety were interpreted as follows: 20-31 as mild anxiety, 32-42 as moderate to low anxiety, 43-52 as moderate to high anxiety, 53-62 as relatively severe anxiety, 63-72 as severe anxiety, and more than 73 as extremely severe anxiety (17).

Child's parent answered the questions in the waiting room before the dental session. The parent was asked to choose the option that best described his/her emotional state. If both parents were present, the one who had a closer emotional relation to the child took the anxiety test.

CFSS-DS (Children Fear Schedule Survey-Dental Subscale) questionnaire was used to assess child's dental fear. This is a standard measure consisting of 15 items related to different aspects of dental treatment which were scored as follows: Not afraid = 1; a little afraid = 2; fairly afraid = 3; quite afraid = 4; and very afraid = 5. Total scores thus ranged from 15 to 75. According to their total scores, children were divided into 3 groups: high fear (38 or higher), moderate fear (33 to 37) and low fear (32 and lower) (18). The Persian version of CFSS-DS which possesses adequate validity and reliability evaluated children's dental fear. The percentage of agreement was more than 80% for all the questions. In each question, Kappa was evaluated as moderate to good and ICC was good to very good (more than 0.4) (19).

Before the dental session, the questions were read to the child participated in the study (aged 6-12) by an identified post graduate student of pediatric dentistry in a quiet room with the presence of the parents and the answers were recorded. If the child have had no previous dental experience or was not familiar with certain concepts, they were explained to him considering his level of understanding or if necessary, the instrument in question was shown to him.

The data were analyzed in SPSS 25 (SPSS Inc, Chicago IL, USA). Independent t-test was used to evaluate the relation between children's dental fear and history of previous dental treatment, gender or age. Also it determined the relation between parental state-trait anxiety and their age or gender. The significance between different education levels of parents was assessed using ANOVA. Pearson correlation coefficient evaluated the correlation between parental state-trait anxiety and children's dental fear. The significance level was set at 0.05.

Results

The mean age of participants was 9.8±0.78. The mean score of children’ CFSS-DS was 35.48±10.84 which is rated as moderate level of fear. Mean scores of children’s dental fear with regards to the age; gender and dental history are shown in [Table 1](#). However independent t-test showed insignificant higher levels of dental fear in girls compared with boys (*P* value=0.006), younger children and children with a previous dental treatment had significantly higher dental fear scores (respectively *P* value=0.006 and *P* value=0.002) [Table 2](#).

The total scores of parental state and trait anxiety were 41.14±9.03 and 41.42±8.39, respectively. These scores are rated as moderate to low anxiety. Mean parental state and trait anxiety scores regarding their age, gender and level of education are presented in [Table 2](#). Based on ANOVA analysis for parental education (*P* value=0.198) and independent t-test for age and gender, none of demographic factors showed a significant effect on the level of parental anxiety (respectively *p* value=0.630 and *P* value=0.874).

Table 1. Mean of child’s dental fear score (CFSS-DS) by their age, gender and history of previous dental treatment

| Demographic Data | Group | N | Percent | Mean | **SD | Level | *P-value |
|--------------------------------------|--------|-----|---------|-------|-------|----------|----------|
| Age | 6-9 | 51 | 49.0 | 38.73 | 10.05 | High | 0.006 |
| | 10-12 | 53 | 51.0 | 32.37 | 10.76 | Low | |
| Gender | Male | 53 | 51.0 | 33.97 | 10.72 | Moderate | 0.175 |
| | Female | 51 | 49.0 | 37.20 | 10.86 | Moderate | |
| History of previous dental treatment | Yes | 54 | 51.9 | 38.30 | 11.43 | High | 0.002 |
| | No | 50 | 48.1 | 31.89 | 10.05 | Low | |
| Total | - | 104 | 100 | 35.48 | 10.84 | Moderate | - |

*Independent t-test **Standard Deviation

Table 2. Mean of parental state and trait anxiety scores by their age, gender and education

| Demographic variables | Group | State Anxiety | | | | | Trait Anxiety | | | | |
|-----------------------|-------------|---------------|---------|-------|-------|---------|---------------|---------|-------|-------|---------|
| | | N | Percent | Mean | **SD | P-value | N | Percent | Mean | **SD | P-value |
| Age | 21-34 | 50 | 28.8 | 42.00 | 8.77 | 0.576 | 50 | 28.8 | 41.05 | 7.41 | 0.630* |
| | 35-57 | 54 | 51.9 | 40.87 | 9.06 | | 54 | 51.9 | 41.60 | 8.31 | |
| Gender | Male | 44 | 42.3 | 42.73 | 10.40 | 0.385 | 44 | 42.3 | 41.15 | 8.53 | 0.874* |
| | Female | 60 | 57.6 | 40.67 | 8.62 | | 60 | 57.6 | 41.50 | 8.41 | |
| Education | Primary | 14 | 13.4 | 38.72 | 7.64 | 0.310 | 14 | 13.4 | 39.81 | 9.83 | 0.198# |
| | Secondary | 15 | 14.4 | 45.36 | 9.4 | | 15 | 14.4 | 44.63 | 7.35 | |
| | High School | 34 | 32.6 | 40.07 | 10.69 | | 34 | 32.6 | 43.03 | 10.25 | |
| | University | 41 | 39.4 | 41.44 | 7.63 | | 41 | 39.4 | 39.58 | 5.95 | |
| Total | - | 104 | 100 | 41.14 | 9.03 | - | 104 | 100 | 41.42 | 8.39 | - |

*Independent t-test #ANOVA Test **Standard Deviation

Pearson correlation coefficient revealed significant correlation between the level of parent’s state and trait anxiety and child’s dental fear (respectively *P* value=0.009 and *P* value=0.000) [Table 3](#).

In subgroup analysis, 10-12-year-old children’s dental fear was significantly correlated to parental state anxiety (*P* value=0.001 and *r*=0.478). While, the level of dental fear in 6-9-year-olds had no correlation with it (*P* value=0.197 and

r=0.205). Furthermore, there was a significant correlation between parental state anxiety and child’s dental fear when child had a history of dental treatment (*P* value=0.003 and *r*=0.426). These results showed that child’s age and history of previous dental treatments significantly affect the correlation between parental state anxiety and the child’s fear. Child’s gender did not have any impact on this correlation (*P* value>0.05) [Table 3](#).

There was a significant relation between the level of parent's trait anxiety and the level of dental fear of children from any gender, age group or history of previous dental treatment (P

value <0.05). Therefore age, gender or history of previous dental treatments did not affect the correlation between parental trait anxiety and the child's fear (P value <0.05) [Table 3](#).

Table 3. Correlation between parental state-trait anxiety and the child's fear regarding age, gender and history of dental treatment

| Scale | Group | State Anxiety | | | Trait Anxiety | | |
|-----------------------------|--------|---------------|------------------------|---------|---------------|------------------------|---------|
| | | N | Pearson Correlation =r | P-value | N | Pearson Correlation =r | P-value |
| Age | 6-9 | 51 | 0.205 | 0.197 | 51 | 0.389 | 0.012 |
| | 10-12 | 53 | 0.478 | 0.001 | 53 | 0.356 | 0.019 |
| Gender | Male | 53 | 0.243 | 0.108 | 53 | 0.387 | 0.009 |
| | Female | 51 | 0.310 | 0.055 | 51 | 0.362 | 0.023 |
| History of dental treatment | Yes | 54 | 0.426 | 0.003 | 54 | 0.437 | 0.002 |
| | No | 50 | 0.110 | 0.512 | 50 | 0.364 | 0.013 |

Regression model was also used to identify the effect of parental and children ages and parental STAI score on CFSS-DS score of children .The analysis showed significant relations (with P -value ~ 0.00).The value of (R^2) R-squared =0.254 mans that 25.4% of the changes of the dependent variable are relevant to the independent variables. Children and parental age had significant effects on CFSS-DS score (respectively with a P -value of 0.001 and 0.048). However parental state and trait anxiety scores did not show any meaningful relation with the children's fear score (respectively with a P -value of 0.250 and 0.064). These results are reported while the effect of other independent variables have been omitted

Discussion

Home quarantine, lockdown and emotions like discrimination and loneliness have resulted in anxiety increase in individuals during the COVID-19 pandemic. Also reduced social contacts, changes in life style, economic disadvantages and excessive information and news about COVID-19 received from television and social media may develop mental health problems in adults. Such emotional changes in parents, school closure, isolation from friends and real contacts significantly influence the children causing increased anxiety and distress [\(12, 20\)](#). On the other hand, dentists experience increased

anxiety levels during COVID 19 outbreak because of the highest risk of virus transmission in dental setting [\(21\)](#). Such psychological distresses found in children, parents and dentists may result in complexities in treatment planning, dentist-child communication and behavioral guidance in pediatric dental care. It is quite essential for a dentist to be aware of emotional and mental status of the patients to establish an appropriate communication with children and their family. Studies have reported elevated levels of children's anxiety in dental setting during the COVID-19 pandemic but there is no research investigating children's dental fear and there are different predictors for dental fear and dental anxiety [\(10\)](#). Therefor the aim of this study was to assess the correlation between parental state-trait anxiety and children's dental fear between November 2020 and March 2021 that was simultaneously with the COVID-19 pandemic.

In the present study no statistically significant differences were found in the mean score of dental fear between boys and girls (P -value >0.05). This was consistent with the results of Paryab & et al, Shindova & et al and Townend & et al [\(22-24\)](#). However females showed higher scores of CFSS-DS. A number of studies have reported that women report significantly more being fearful in dental setting. Different hypothesis are proposed for these

differences; a study has suggested stronger memories of dental painful experiences in females compared with males (25). Locker & et al found greater tendency of pain expression in women than men and Salem & et al stated social and cultural acceptance of girls being more fearful than boys (26, 27). The relation between gender and dental fear and anxiety is not as clear. Studies with larger pool of patients are required for more comprehensive interpretations.

Children with a history of visiting a dentist reported significantly higher scores of CFSS-DS. Paryab & et al, Lee & et al and Mohebi & et al reported similar results (22, 28, 29). Irregular dental visits and history of intensive pain during first dental treatment have been important risk factors of increased dental fear and misbehavior in children (28). Irregular dental appointments may cause missing of caries-preventive interventions, poor oral hygiene, and caries extension and as a result need for aggressive dental treatments such as tooth extraction. These may aggravate the child's fear and anxiety as described by Townend & et al; there are higher dental pathologies in anxious children especially the number of missing or decayed teeth (24).

Higher levels of dental fear were observed in children younger than 9 years old compared with older children. Several previous studies have confirmed this difference (22, 28, 29). Separation anxiety in the dental setting, insufficient perception of dental procedures and inadequate cognitive and emotional development in younger children (≤ 8) make them suffer higher levels of fear when facing a dentist (30). The ego control, cognitive abilities, communication and coping skills become mature and developed, as the child grows older. However psychological development, which is influenced by children's personality, familial and cultural factors, must be assessed as more important predictive factors of dental fear or anxiety compared with chronological age. Evaluation of children's temperament and personality in relation to dental anxiety or fear in future researches would be of great value (30).

There were not any significant differences in parental state-trait anxiety in terms of gender, age or education levels. Mohebi & et al, Salem et al and Dahlander & et al similarly reported no negative impact of parental demography on children's dental fear or anxiety (27, 29, 31).

There was significant correlation between CFSS-DS scores and parental state and trait anxiety. Some studies reported no correlation between parental state anxiety and children's dental fear or anxiety. Contrarily, Dahlander & et al, Lee & et al and Olszewska & et al found significant correlations between maternal dental fear or anxiety and children's dental fear (10, 28, 31). Wide range of scales varying from behavioral assessment scales to different anxiety or fear questionnaires have been used in these researches. All the mentioned researches have been conducted before COVID-19 pandemic except the study of Olszewska & et al. Olszewska & et al suggested stronger correlation between parental anxiety and children's dental anxiety during COVID-19 pandemic compared with the pre-pandemic time. However they did not assess dental fear of children or parents (10).

Recent studies have mainly investigated the correlation between state anxiety of the parents at the dental environment and child's dental fear. Parental trait anxiety has been noticed in a limited number of studies (27, 32). Alessandro & et al and Salem & et al measured children's fear using CFSS-DS and parental anxiety using state-trait anxiety inventory. As mentioned above they found no relation between parental state or trait anxiety and children's dental fear (27, 32). These different results may be attributed to different age groups, cultural differences and possible emotional changes in parents during nationwide quarantine induced by poor social life and physical activity, transient or permanent unemployment and subsequent economic problems, pathologic internet use and etc. Children spend all day with their families in home quarantine; as a result they will have more intimacy and conflicts with their parents, so it is possible that the quality of the parents'

temperament and personality affect the children (11).

In sub group analysis, parental trait anxiety was correlated to children's CFSS scores at any age, gender or history of previous dental treatment. Also there were significant correlations between parental state anxiety and children older than 9 years and also children with a previous dental treatment. Children older than 9 years may notice the possible risk of virus transmission in dental setting from parents, social media or television or maybe they perceived the increased anxiety of their parents at the dental setting. Children younger than 9 years old may not have such clear perceptions.

There is a serious need for dentist's awareness of children's dental fear and discomfort to establish a safe and confident relation between dentist and child in order to acquire high standards of oral health in the patients. Parents should be instructed by the dentist to properly prepare their child before the dental appointment according to their age and personal characteristics. The dentist's sensitivity and empathetic behavior when facing a fearful child are also effective to modulate the behavior of an anxious child. Children and parents always appreciate friendly guidance and behavior of the dentist, especially in the present stressful situation of COVID-19 pandemic (30). Also psychologic consultation may help parents and children struggling with the high levels of dental anxiety or fear particularly at the present outbreak.

The first limitation of the present study was the limited sample size, due to the restrictions of COVID-19 pandemic we could not access to a larger population of samples. Also we didn't have any data concerning the pre-pandemic dental anxiety or fear level of the present research population. In order to attribute the relationship between parental anxiety and children's fear to COVID pandemic, a comparison with pre-pandemic evaluation is needed.

Conclusion

The study has resulted in a significant correlation between parental state-trait anxiety and children's dental fear. This relation is more considerable for parental trait anxiety and child's dental fear. Age younger than 9 years and previous dental treatment significantly increases the levels of child's dental fear.

Conflict of interest

The authors declare that they have no competing interests

Funding source(s)

Not applicable

Ethics approvals and consent to participate:

The study protocol was supervised and approved by Ethics Committee of the university with an ID of IR.SSU.REC.1399.228

Acknowledgments

Not applicable

References

1. Curzon M. Child Taming: How to Manage Children in a Dental Practice. *British Dental Journal*. 2004;196(4):239-. [[view at publisher](#)] [[DOI](#)] [[Google Scholar](#)]
2. Newton JT BD. Anxiety and pain measures in dentistry: a guide to their quality and application. *The Journal of the American Dental Association*. 2000;131(10):1449-57. [[view at publisher](#)] [[DOI](#)] [[PMID](#)] [[Google Scholar](#)]
3. Seligman LD, Hovey JD, Chacon K, Ollendick TH. Dental anxiety: An understudied problem in youth. *Clinical psychology review*. 2017;55:25-40. [[view at publisher](#)] [[DOI](#)] [[PMID](#)] [[Google Scholar](#)]
4. Soares FC, Lima RA, de Barros MV, Dahllöf G, Colares V. Development of dental anxiety in schoolchildren: A 2-year prospective study. *Community dentistry and oral epidemiology*.

- 2017;45(3):281-8. [[view at publisher](#)] [[DOI](#)] [[PMID](#)] [[Google Scholar](#)]
5. Tickell C. The Early Years: Foundations for life, health and learning: an independent report on the early year's foundation stage to Her Majesty's government. 2011. [[Google Scholar](#)]
6. Leal PC, Goes TC, da Silva LCF, Teixeira-Silva F. Trait vs. state anxiety in different threatening situations. *Trends in psychiatry and psychotherapy*. 2017;39 (3):147-57. [[view at publisher](#)] [[DOI](#)] [[PMID](#)] [[Google Scholar](#)]
7. Breaux RP, Harvey EA, Lugo-Candelas CI. The role of parent psychopathology in the development of preschool children with behavior problems. *Journal of Clinical Child & Adolescent Psychology*. 2014;43(5):777-90. [[view at publisher](#)] [[DOI](#)] [[PMID](#)] [[PMCID](#)] [[Google Scholar](#)]
8. Themessl-Huber M, Freeman R, Humphris G, Macgillivray S, Terzi N. Empirical evidence of the relationship between parental and child dental fear: a structured review and meta-analysis. *International journal of paediatric dentistry*. 2010; 20(2):83-101. [[view at publisher](#)] [[DOI](#)] [[PMID](#)] [[Google Scholar](#)]
9. Assunção CM, Losso EM, Andreatini R, de Menezes JVNB. The relationship between dental anxiety in children, adolescents and their parents at dental environment. *Journal of Indian Society of Pedodontics and Preventive Dentistry*. 2013; 31(3):175. [[view at publisher](#)] [[DOI](#)] [[PMID](#)] [[Google Scholar](#)]
10. Olszewska A, Rzymiski P. Children's Dental Anxiety during the COVID-19 Pandemic: Polish Experience. *Journal of clinical medicine*. 2020; 9(9):2751. [[view at publisher](#)] [[DOI](#)] [[PMID](#)] [[PMCID](#)] [[Google Scholar](#)]
11. Carrillo Diaz M, Ortega Martínez AR, Romero Maroto M, González Olmo MJ. Lockdown impact on lifestyle and its association with oral parafunctional habits and bruxism in a Spanish adolescent population. *International Journal of Paediatric Dentistry*. 2021; 31(3): [[view at publisher](#)] [[Google Scholar](#)]
12. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, et al. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *International journal of environmental research and public health*. 2020;17(5):1729. [[view at publisher](#)] [[DOI](#)] [[PMID](#)] [[PMCID](#)] [[Google Scholar](#)]
13. Peloso RM, Pini NI, Sundfeld Neto D, Mori AA, Oliveira RC, Valarelli FP, Freitas KM. How does the quarantine resulting from COVID-19 impact dental appointments and patient anxiety levels?. *Brazilian oral research*. 2020 Jun 29;34. [[DOI](#)] [[PMID](#)] [[Google Scholar](#)]
14. Shafiei A. Supervising teacher: Mortazavi M. Evaluation of the effect of parental anxiety on the dental fear of primary school children. Thesis for the Partial Fulfillment of the Master of Science in Pediatric Dentistry, School of dentistry, Shiraz University of Medical Science, 2010.
15. Barnes LL, Harp D, Jung WS. Reliability generalization of scores on the Spielberger state-trait anxiety inventory. *Educational and psychological measurement*. 2002;62(4):603-18. [[view at publisher](#)] [[DOI](#)] [[Google Scholar](#)]
16. Abdoli N, Farnia V, Salemi S, Davarinejad O, Jouybari TA, Khanegi M, et al. Reliability and validity of Persian version of state-trait anxiety inventory among high school students. *East Asian Archives of Psychiatry*. 2020;30(2):44. [[view at publisher](#)] [[DOI](#)] [[PMID](#)] [[Google Scholar](#)]
17. Spielberger, C. D. "State-trait anxiety inventory. The Corsini encyclopedia of psychology." *Hoboken: Wiley* 1 (2010). [[DOI](#)] [[Google Scholar](#)]
18. Beena J. Dental subscale of children's fear survey schedule and dental caries prevalence. *European journal of dentistry*. 2013;7(2):181. [[view at publisher](#)] [[DOI](#)] [[PMID](#)] [[PMCID](#)] [[Google Scholar](#)]
19. Safari S, Gholami M, Razeghi S. Development of a persian version of the children's fear survey schedule-dental subscale (cfss-ds) among 8-12 year-old female students in Tehran.

Journal of Dental Medicine. 2018;31(2):98-108. [[Google Scholar](#)]

20. Jiao WY, Wang LN, Liu J, Fang SF, Jiao FY, Pettoello-Mantovani M, et al. Behavioral and emotional disorders in children during the COVID-19 epidemic. The journal of Pediatrics. 2020;221:264. [[DOI](#)] [[PMID](#)] [[PMCID](#)] [[Google Scholar](#)]

21. Ahmed MA, Jouhar R, Ahmed N, Adnan S, Aftab M, Zafar MS, et al. Fear and practice modifications among dentists to combat novel coronavirus disease (COVID-19) outbreak. International journal of environmental research and public health. 2020;17(8):2821. [[view at publisher](#)] [[DOI](#)] [[PMID](#)] [[PMCID](#)] [[Google Scholar](#)]

22. Paryab M, Hosseinbor M. Dental anxiety and behavioral problems: a study of prevalence and related factors among a group of Iranian children aged 6-12. Journal of Indian society of Pedodontics and preventive dentistry. 2013;31(2):82. [[view at publisher](#)] [[DOI](#)] [[PMID](#)] [[Google Scholar](#)]

23. Shindova MP, Blecheva AB, Raycheva JG. Dental fear of 6-12-year-old children-role of parents, gender and age. Folia medica. 2019;61:444. [[DOI](#)] [[PMID](#)] [[Google Scholar](#)]

24. Townend E, Dimigen G, Fung D. A clinical study of child dental anxiety. Behaviour research and therapy. 2000 Jan 1;38(1):31-46. [[view at publisher](#)] [[DOI](#)] [[Google Scholar](#)]

25. Eli I, Baht R, Kozlovsky A, Simon H. Effect of gender on acute pain prediction and memory in periodontal surgery. European Journal of Oral Sciences. 2000;108(2):99-103. [[view at publisher](#)] [[DOI](#)] [[PMID](#)] [[Google Scholar](#)]

26. Locker D, Shapiro D, Liddell A. Negative dental experiences and their relationship to dental

anxiety. Community dental health. 1996;13(2):86-92. [[view at publisher](#)] [[Google Scholar](#)]

27. Salem K, Kousha M, Anissian A, Shahabi A. Dental fear and concomitant factors in 3-6 year-old children. Journal of dental research, dental clinics, dental prospects. 2012;6(2):70. [[Google Scholar](#)]

28. Lee Cy, Chang Yy, Huang St. The Clinically Related predictors of dental fear in Taiwanese children. International journal of paediatric dentistry. 2008;18(6):415-22. [[view at publisher](#)] [[DOI](#)] [[PMID](#)] [[Google Scholar](#)]

29. Mohebbi S, Razeghi S, Gholami M, Kharazifard M, Rahimian S. Dental fear and its determinants in 7-11-year-old children in Tehran, Iran. European Archives of Paediatric Dentistry. 2019;20(5):393-401. [[view at publisher](#)] [[DOI](#)] [[PMID](#)] [[Google Scholar](#)]

30. Shim Y-S, Kim A-H, Jeon E-Y, An S-Y. Dental fear & anxiety and dental pain in children and adolescents; a systemic review. Journal of dental anesthesia and pain medicine. 2015;15(2):53. [[view at publisher](#)] [[DOI](#)] [[PMID](#)] [[PMCID](#)] [[Google Scholar](#)]

31. Dahlander A, Soares F, Grindefjord M, Dahllöf G. Factors associated with dental fear and anxiety in children aged 7 to 9 years. Dentistry journal. 2019;7(3):68. [[view at publisher](#)] [[DOI](#)] [[PMID](#)] [[PMCID](#)] [[Google Scholar](#)]

32. D'Alessandro G, Alkhamis N, Mattarozzi K, Mazzetti M, Piana G. Fear of dental pain in Italian children: child personality traits and parental dental fear. Journal of public health dentistry. 2016;76(3):179-83 [[view at publisher](#)] [[DOI](#)] [[PMID](#)] [[Google Scholar](#)]

How to cite:

Bahrololoomi Z, Sadeghiyeh T, Maghsoudi N, Pajouhandeh SH . Evaluation of Relationship between the Children's Dental Fear with the Parental State-Trait Anxiety, Iran (2016); *Jorjani Biomedicine Journal*. 2021; 9(4):65-73.