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Patterns of Dental Anxiety in Primary Schoolers Attending Oral Health Education Program

Ağız Sağlığı Eğitim Programına Katılan İlköğretim Okulu Öğrencilerinde Dental Kaygı Paterni

Çiğdem Elbek Çubukçu[1], Zeynep Ceren Çelik[2]

[1]Bursa Uludag University Faculty of Dentistry Department of Pedodontics, Bursa, Türkiye
[2]Bursa Uludag University Faculty of Dentistry Department of Restorative Dentistry, Bursa, Türkiye

Abstract

Aim: Dental anxiety is a common problem which develops mostly in childhood. This study aimed to determine the level and the patterns of dental anxiety perceived by the attendants of oral and dental health education in their classroom environment using Facial Image Scale (FIS).

Material and Method: FIS were applied to 163 third-grade primary schoolers while they were having oral health education course in an interactive way. Gender, white dental attire, and past dental experience(s) were pre-determined variables evaluating the pattern of dental anxiety in the third-grade primary schoolers in this study.

Results: The overall anxiety level in children was 46.01%, with no significant difference observed between genders (p=0.4593). Students who were educated by instructors wearing white dental attire were more likely to have a 1&2 FIS score (OR: 3.9 (1.3-11.7); p=0.0156). However, students who had past dental experience expressed significantly more 4&5 FIS scores (OR: 4.38 (2.17-8.85); p < 0.001).

Conclusions: Regardless of gender white dental attire created a positive perception in 9-year-old students, but the presence of past dental experience and a experience of a tooth extraction especially under local anesthesia caused negative perception in the study.

Keywords: Dental anxiety, child, dental attire, tooth extraction, facial image scale

Öz

Amaç: Dental anksiyete çoğunlukla çocukluk çağında gelişen yaygın bir sorundur. Bu çalışma, sınıf ortamında gerçekleştirilen ağız ve diş sağlığı eğitim programına katılan öğrencilerinin dental anksiyete düzeyinin ve paterninin Görsel Yüz Skalası (GYS) ile belirlemeyi amaçlamaktadır.

Gereç ve Yöntem: Programa katılan 163 üçüncü sınıfa giden ilkokul öğrencisine ağız ve diş sağlığı eğitimi dersi verilirken interaktif bir şekilde GYS uygulandı. Dental anksiyete paterninin değerlendirilmesinde: cinsiyet, beyaz diş hekimi önlüğü ve geçmiş diş tedavisi deneyimleri değişkenleri ele alınmıştır.

Bulgular: Yaş ortalaması 9.05±0.54 bulunan katılımcı popülasyonunun genel dental anksiyete düzeyi %46.01 olup, cinsiyetler arasında anlamlı fark gözlenmemiştir (p=0.4593). Beyaz diş hekimi önlüğü giyen eğitmenlerle etkileşen öğrencilerin GYS skorlarının pozitif (1&2) olma olasılığı anlamlı ölçde yüksek bulundu (OR: 3.9 (1.3-11.7); p=0.0156). Bununla birlikte, geçmiş diş tedavisi deneyimi bulunan öğrenciler anlamlı olarak daha fazla 4&5 FIS puanı ifade etmişlerdir(OR: 4.38 (2.17-8.85); p < 0.001).

Sonuç: Cinsiyetten bağımsız olarak, beyaz diş hekimi önlüğü 9 yaşındaki öğrencilerde olumlu bir algı yaratmış, ancak geçmiş diş hekimliği deneyiminin ve özellikle lokal anestezi altında diş çekimi öyküsünün varlığı çalışmada olumsuz algıya neden olmuştur

Anahtar Kelimeler: Dental anksiyete, çocuk, beyaz önlük, diş çekimi, görsel yüz skalası

Corresponding *(İletişim)*: Zeynep Ceren ÇELİK, Bursa Uludag University Faculty of Dentistry Department of Restorative Dentistry, Bursa, Türkiye.
E-mail *(E-posta)*: zeynepceren@uludag.edu.tr
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INTRODUCTION

Dental anxiety is a common problem which develops mostly in childhood and adolescence seen in the dental operation room, and especially challenging for pediatric dentists.[1] Approximately half of children have 10%-20% high levels of dental anxiety.[2,3] It should be recognized that the nature of a child's dental anxiety can vary significantly and some children present with fears or phobias in relation to previous dental and medical experiences, frequency of dental visits, type of a dental procedure and specific dental stimuli (e.g. needle or drill)[4-6] and other children report more generalized anxiety associated with the dental setting and dental attire.[7-8]

Children with high dental anxiety have been found to have poorer oral health status and less dental visits.[9,10]

Measurement of dental anxiety by scales is important not just for delivery of high quality clinical care but also for research in children. Understanding the factors and level of anxiety before examination or treatment will provide the dentist information to identify the anxious child in order to have better anxiety management.[11] The Facial Image Scale (FIS, **Figure 1**) is a self-reported dental anxiety scale commonly used in children. It consists of a row of five faces with varying expressions, ranging from very unhappy to very happy. Children are asked to indicate which face they feel most like at the present moment, with the idea that the face they choose represents their level of dental anxiety. The FIS is a simple and easy-to-use tool that can help dental professionals assess a child's anxiety level quickly and effectively. It has been shown to be a reliable and valid measure of dental anxiety in children, and it can be used in clinical and research settings to evaluate the effectiveness of interventions designed to reduce dental anxiety.[12,13]

Since community oral health education programs might help to prevent occurrence and/or recurrence of dental anxiety beforehand,[14,15] 9-year-old primary school students were evaluated in the present study in terms of dental anxiety levels during school education programs implemented by the Ministry of National Education of Türkiye in 2022 within the nation-wide project called "10,000 Schools in Basic Education Project". The Ministry is implementing a project to improve equal opportunities in education by providing supportive programs to improve the basic skills of students in primary schools. By targeting all primary schools included in the project, the Ministry is working to ensure that all students have access to these programs and can benefit from them equally. Strengthening basic skills is a key foundation for academic success, so this initiative has the potential to positively impact students' education and future opportunities.

The aim of the study is to assess the level of dental anxiety experienced by students during oral dental health education sessions conducted by instructors in a classroom environment. The study intends to use the Facial Image Scale (FIS) to measure the level of dental anxiety perceived by students and compare the results to predetermined categories of anxiety.

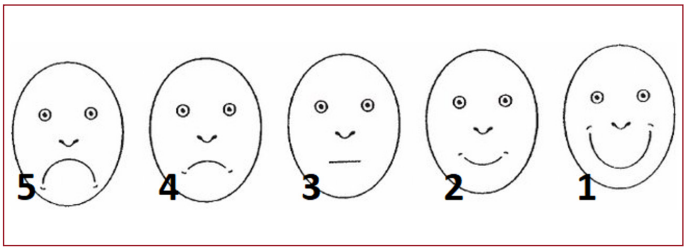

Figure 1: Picture of Facial Image Scale (FIS; From 5-Negative to 1-Positive) used for dental anxiety scoring in the study. From Buchanan ve Niven (2002)[13]

MATERIAL AND METHOD

The study was conducted withing the permission of the Ministry of National Education of Türkiye the nation-wide project entitled "10,000 Schools in Basic Education Project" and approved by the Bursa Governorship Provincial Health Directorate (Doc #: E-95210709319)

Second year faculty students (n=9) were participated within the scope of social responsibility and volunteering course in Bursa Uludag University, Faculty of Dentistry. The written approvals were obtained from the Provincial Directorate of the Ministry of National Education and the faculty education commission. Faculty students who were pre-educated about the Facial Image Scale (FIS) and received basic dental health education on topics such as oral hygiene instructions and cariogenic diet. The study then proceeded with standardized instructors who were divided into two groups who had white dental attire (n=5) and no attire (n=4).

The third-grade primary schoolers (n=163) in Gorukle Dumlupinar Primary School and their parents were informed by their school teachers in advance. An informed consent sheet was obtained from the parents for the education and the forms to be implemented.

On April 2022, children were randomly divided into two groups and received video-assisted dental health instructions in an interactive way. They informed about tooth brushing, the use of dental floss, the ingredients (especially fluoride) and amount of toothpaste and cariogenic foods that cause dental caries. The method of tooth brushing was shown to the children interactively.

Dental anxiety levels were measured using the validated FIS. The FIS scores of the students were recorded simultaneously by the other faculty students during the instruction and analyzed by coinciding with the dental experience form filled by their parents beforehand.

Statistical analysis

Data was analysed using SPSS program (Statistical Package for the Social Sciences, version 28,SPSS Inc, Chicago, Ill, USA). Percentages and descriptive statistics was calculated. The odds ratio (OR), its standard error and 95% confidence interval are calculated. $p < 0.05$ was considered statistically significant.

RESULTS

This study enrolled 163 third-grade primary school students with a mean age of 9.05±0.54. The overall anxiety level in children was 46.01%, with no significant difference observed between genders (p=0.4593). The study found that students who were educated by instructors wearing dental attire were more likely to have a positive FIS score (OR: 3.9 (1.3-11.7); p=0.0156) (**Table 1**).

Students who had past dental experience expressed significantly more negative FIS scores (p<0.001). Children who received only oral prophylaxis in their past dental experience showed significantly higher positive FIS scores in the study. Extraction with local anesthesia also increased the probability of negative FIS scores in the study (p<0.0001). Regardless of whether the dental treatment visit was single or multiple, the FIS scores of children did not differ significantly (p=0.6557).

Table 1: Relation between the FIS scores of the participants and predetermined categories of anxiety.

	FIS Scores*			
	1&2 -Positive- n(%)	3 -Neutral- n(%)	4&5 -Negative- n(%)	OR (95 % CI)**
Gender				
Boy	26 (34.6)	17 (22.6)	32 (42.6)	1.32 (0.63-2.75) p=0.4593
Girl	27 (30.6)	18 (20.4)	43 (48.8)	
Instructors with dental attire				
Yes	59 (69.4)	4 (4.4)	22 (25.9)	3.9 (1.3-11.7) p=0.0156
No	17 (21.8)	8 (10.2)	53 (67.9)	
Past dental experience				
Yes	29 (28.4)	13 (12.7)	60 (58.8)	4.38 (2.17-8.85) p<0.001
No	21 (64.4)	25 (40.9)	15 (24.6)	
Purpose of dental visit				
Oral prophylaxis	15 (51.7)	1 (7.6)	4 (6.7)	15.0 (4.30- 52.29) p<0.0001
Dental treatment (single visit)	7 (24.1)	7 (53.8)	12 (20.0)	1.27 (0.44 - 3.67) p=0.6557
Dental treatment (multiple visit)	4 (13.8)	2 (15.4)	17 (23.3)	0.40 (0.12 - 1.34) p=0.1381
Extraction with local anaesthesia	3 (10.3)	3 (23.0)	27 (45.0)	0.14 (0.04 - 0.52) p=0.0031

*Percentiles (%) with no decimal rounding; **Odds ratios (OR) and 95% confidence intervals (CI)

DISCUSSION

It is important to note that a FIS scores 1 and 2 indicates a lower level of dental anxiety, while a FIS score 4 and 5 indicates a higher level of dental anxiety. Therefore, the study's findings suggest that past dental experience and extraction with local anesthesia may increase anxiety in children participated in present study. However, instructors wearing white dental attire may help reduce anxiety levels in students.

The facial image scale is a commonly used tool for assessing pain in children and has been validated for use in a variety of age groups. The present study used validated facial image scale Bucharan et al.[13] to assess the dental anxiety attending to oral health program.

Evaluating the 'gender' as a contributing factor in dental anxiety in children Alsadat et al. reported that girls aged 6-12 years had more dental fears compared to their boy peers.[16] Likewise, Gaber et al. evaluated dental anxiety in 126 children aged 6-10 years and stated higher percentage of girls (30.5%) compared to boys (15.0%) were anxious.[17] In our study, dental anxiety was assessed using the FIS, and it was found that 48% of girls and 42% of boys indicated scores of 4 or 5, which did not differ significantly between the two groups in accordance with the studies indicating no significant relation between gender and dental anxiety.[18,19] Differences in methodology, sample size, and other factors can also influence the results obtained from different studies.

Examining the effect of dentists' attire on dental anxiety, there are studies reporting that child-friendly coat may be appropriate in anxious children.[20,21] The meta-analysis included data from 3706 children across various studies examining the children's perceptions of dentists's attire and environment indicated no significant difference between white coat and child-friendly attire on children's dental anxiety. In accordance with our study, Similarly, there are studies white coat attire might be more appropriate for anxious children.[22,23] Thus, Kamavaram Ellore et al. reported %70 of examined children had favored traditional white coat attire.[23]

Vishwnath et al. stated that negative attitudes and dental anxiety might be be influenced by previous negative experiences, such as painful or traumatic dental procedures.[24] However, a study examining a dental fear by visual analogue scale in a 1303 French childred aged 5-11 years (mean: 8.12 years) were stated past dental experience of the dental setting can act as a positive component of dental fear.[25] The present study reports higher anxiety levels in children having past dental experience.

In addition, extraction procedure with local anesthesia can be a source of anxiety individuals. However, local anesthesia is a safe and effective way to numb the area around the tooth being extracted, which can help minimize discomfort and pain during the procedure. In a recent study, anxiety was significantly with needle-related treatments.[26] In accordance, the present study reported significant relation between dental anxiety and extraction experience with local anesthesia, however other dental treatments regardless being performed in a single or multiple visits were not significantly associated with the reported dental anxiety levels by FIS.

CONCLUSION

By evaluating the level of dental anxiety experienced by third-grade primary schoolers during oral dental health education, the study may provide valuable insights about the patterns related to dental anxiety. Regardless of gender, white dental attire created a positive perception in 9-year-old students, but the presence of past dental experience and a history of tooth extraction especially under local anesthesia caused negative perception in the study.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was carried out with the permission of the Bursa Governorship Provincial Health Directorate (Doc #: E-95210709319).

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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