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Original Article

Assessment of Moroccan Children's Dental Anxiety at Ibn Rochd Dental University Center

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Abstract

Objective: The aim of this study was to evaluate dental anxiety in a group of children undergoing dental treatment in the Pedodontics Department at Ibn Rochd Dental University Center in Casablanca.

Materials and Methods: Dental anxiety was assessed in different ways in a cohort of 150 children aged 4-13 years, stratified by age group. In the first group, aged 4-8 years, a self-report based on the Facial Image Scale (FIS) was used. In the second group, aged 8-13 years, a Dental Anxiety Scale (DAS) was employed. All children underwent a heteroevaluation based on the Modified Venham Scale. Factors that might account for the presence of dental anxiety were identified through an interview with the parents. Statistical analyses were performed using the SPSS software at the Laboratory of Community Health, Epidemiology and Biostatistics at the Faculty of Dental Medicine in Casablanca.

Results: Of the children aged 8-13 years, 5.3% reported to have moderate anxiety (DAS score ranging from 13 to 17), with 1.7% reporting reluctance to clinical examination. Of the children aged 4-8 years, 24% considered themselves unhappy or very unhappy (FIS=4 or 5) at the time of consultation, with 14% reported reluctance to clinical examination.

Conclusion: The presence of dental anxiety across the children tested suggests the need for combining sedation with psychological interventions to control for anxiety-related variables potentially affecting dental children's treatment outcomes.

Keywords: Children, dental anxiety, dental care, epidemiology, etiology, Moroccan children, pediatric dentistry, stress

Introduction

Anxiety can be broadly characterized as an unpleasant emotional state in which fear is a central component. An anxious individual usually suffers from an inability to adapt to a given situation. In dentistry, anxiety can be stimulated by different factors. However, the existence of a traumatizing medical or dental experience, or maternal anxiety, remains the most frequently reported factor.[1]

Dental anxiety prevents the patient from cooperating with the medical examiner during the consultation.[2] This complicates dental care, often leading the examiner to modify their therapeutic plans at the risk of compromising the planned treatment procedure.[3] Several studies evaluated the prevalence of anxiety during dental care to justify the need for combining sedation with cognitive-behavioral techniques.[2,4,5]

There is a significant dearth of examination of the prevalence of dental anxiety in Moroccan children, and this research proposes to address that need. The purpose of our study was to evaluate the prevalence of dental anxiety among a cohort of Moroccan children

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undergoing dental treatment at Casablanca Center for Dental Consultation and Treatment and describe their overall oral status.

Materials and Methods

A cross-sectional study was conducted among 150 Moroccan children aged 4-13 years, reporting for their first dental visit to the Pedodontics Department of Casablanca Dental Center. Children were considered for inclusion in the study if they reported being in good general health and if their parents signed informed consent. The evaluation of dental anxiety was based on a self-report for which two scales were used. The Facial Image Scale (FIS) was administered to children aged between 4 and 8 years. Children who selected the figure corresponding to an unhappy (4) or very unhappy (5) face were considered, according to the criteria of the scale, as suffering from anxiety.[3,6-8]

The Dental Anxiety Scale (DAS) was administered to children whose age ranged from 8 to 13 years. Children who obtained a total score of less than 10 were considered mildly anxious, a score between 10 and 13 as moderately anxious, and a score higher than 17 as severely anxious.[2,8-11]

Using the Modified Venham Scale (MVS), a heteroevaluation was carried out to describe the child's behavior at different testing points: during the first contact with the examiner, during the process of getting set on the dental chair, during the dental examination, and during the prophylactic brushing performed for each child at the end of the clinical examination. Children who were classified as reluctant (score 3), disturbed (score 4), or totally disconnected (score 5) were considered partially or not cooperating.[8,10,12]

An interview with the parents was conducted a priori to collect information on the child's temperament, its behavior at the pediatrician's office, its reaction to the announcement of the visit to the dentist, the existence or lack thereof of a traumatic experience, and maternal anxiety.

Statistical analyses were performed using SPSS software version 21 (IBM Corp., Armonk, NY, USA) at the Laboratory of Community Health, Epidemiology and Biostatistics at the Faculty of Dental Medicine in Casablanca.

The Chi-squared test was carried out to investigate the study population variable factors. Please note that if the p-value is lower than the significance level (5%), the results will be reported as statistically significant.

Table 1. Distribution of the sample according to the FIS and the DAS

	n	%
FIS (n=75)		
1	37	49.3
2	14	18.7
3	6	8.0
4	3	4.0
5	15	20.0
DAS (n=75)		
<10	48	64.0
10–13	23	30.7
13–17	3	4.0
>17	1	1.3

FIS: Facial Image Scale for children aged between 4 and 8 years. DAS: Dental Anxiety Scale for children aged between 8 and 13 years.

Results

Descriptive statistics

During the 18 months of the study, we were able to examine 150 children. Of these, 75 (50%) pertained to the 4-8 years age group, and 75 (50%) belonged to the 8-13 years age group (Table 1). Of the children examined, 67 (44.7%) were girls and 83 (55.3%) were boys.

Prevalence of dental anxiety by self-report

The mean FIS score for the children tested was 2.267±1.58. Fifty-one children (68%) selected Figure 1a or 1b, 6 (8%) selected Figure 1c, and 18 children chosed (24%) Figure 1d or 1e. As a result, 24% of the children aged 4-8 years were considered anxious. The mean DAS score was 8.2±2.833. The number of children with a score below 10 was 48 (64%), a score between 10 and 13 was 23 (30.7%), a score above 13 was 3 (4%), and a score above 17 was 1 (1.3%).

Therefore, 30.7% of children aged 8-13 years had mild dental anxiety, 4% had moderate dental anxiety, and 1.3% had severe dental anxiety.

Heteroevaluation

Of the children examined, 32 (42.7%) in the age range 4-8 years and 4 (5.3%) in the age range 8-13 years were deemed as partially or not cooperating, obtaining a score of 3-5 on the MVS during the consultation (Table 2).

Self-rated anxiety/heterorated anxiety

In both age groups, the comparison of FIS and DAS means in cooperating children (MVS of 0, 1, or 2) and partially or not cooperating children (MVS of 3, 4, or 5) showed a statistically significant difference.

Table 2. Distribution of the sample according to the results of the heteroevaluation

	n	Mean FIS (SD) (4-8 years)	p	n	Mean DAS (SD) (8-13 years)	p
Cooperating (Modified Venham Score: 0-1-2)	43	1.791 (1.39)	<0.05	71	8.028 (2.757)	<0.05
Partially or not cooperating (Modified Venham Score: 3-4-5)	32	2.906 (1.614)	<0.05	4	11.25 (2.754)	<0.05

FIS: Facial Image Scale, SD: Standard deviation, DAS: Dental Anxiety Scale

Table 3. Study of dental anxiety according to the parameters noted during the interview with the parents

	n	Mean FIS (SD) (4-8 years)	p	n	Mean DAS (SD) (8-13 years)	p
Temperament						
Hyperactive	52	2.4 (1.059)	>0.05	39	8.205 (2.876)	>0.05
Disciplined	19	1.09 (1.150)		30	8.333 (2.682)	
Restless	4	2.25 (1.093)		6	7.5 (3. 674)	
Attitude toward the pediatrician						
Positive	52	2.058 (1.461)	<0.05	55	7.782 (2.839)	>0.05
Negative	10	2.5 (1.716)		9	9.667 (3.162)	
Very negative	10	3.5 (1.716)		0	0 (0)	
Reaction when the visit was announced						
Positive	63	1.968 (1.448)	<0.05	74	8.162 (2.833)	-
Negative	12	3.833 (1.337)		1	11 (0)	
Previous traumatic medical and/ or dental experience						
Yes	41	2.341 (2.530)	>0.05	29	7.724 (6.921)	>0.05
No	34	2.176 (2.513)		46	8.5 (8.656)	
Maternal anxiety						
No	25	2.2 (1.555)	>0.05	26	7.615 (2.483)	>0.05
Yes or little	33	2.45 (1.679)		25	9.240 (3.205)	
Do not know	17	2 (1.458)		24	7.750 (2.575)	

FIS: Facial Image Scale, SD: Standard deviation, DAS: Dental Anxiety Scale

Dental anxiety: Additional parameters

Additional parameters identified qualitatively during the interview with the parents are presented in Table 3. Findings indicated that of the children aged 4-8 years, those behaving negatively at the pediatrician's office or reacting negatively when the visit to the dentist was announced were significantly more anxious than those whose behaviors or reactions were more positive.

Discussion

Several studies support the subjective assessment of dental anxiety. However, more adequate and valid objective measures are needed to help clinicians identify modulating psychological factors, subsequently improving patient dental care management.[2,4,12-15] As a result, combining the two assessment techniques would be an effective method.

Several self-report instruments have been developed to assess children's dental anxiety, which include the Children's Fear Survey Schedule-Dental Subscale, the Children's Dental Fear Picture test, the Venham Picture Test, the FIS, and the DAS.[9,10,16] A self-report instrument must be reliable and valid; it must also be appropriate for use with children and practical for practitioners.[11] In the present study, Children's dental anxiety was measured using two scales: the FIS for children aged 4-8 years and the DAS for children aged 8-13 years.

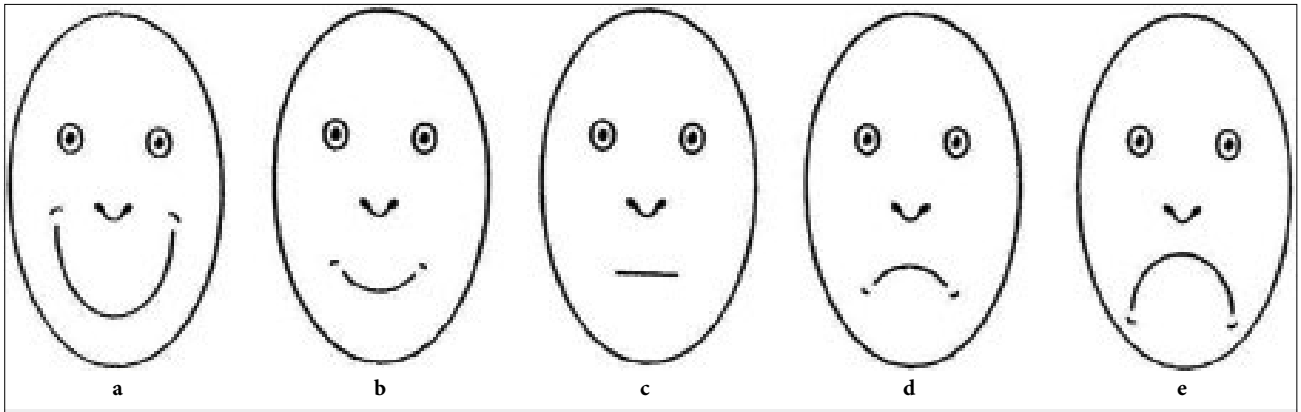

Figure 1. Facial image scale[7]

Many studies have shown that the FIS, a set of five faces, is a valid means of examining children's dental anxiety in clinical settings.[10,11] Similarly, the DAS has been translated into different languages and found to be a valid and reliable measure of anxiety in children aged 7 years and above.[10,17]

With respect to heteroevaluation, several assessment tools have been developed to investigate children's behavioral changes in clinical content, which include the Venham Behavior Rating Scale (VBRS), a scale of cooperative behavior developed to investigate children's reactions to dental anxiety. The clinical study we conducted used a modified scale called Venham Clinical Anxiety Scale (VCAS), which has been found to be a reliable and stable scale.[10]

There is a huge amount of variability in the results of studies measuring the prevalence of dental anxiety. Findings differ depending on the context of the study, the population chosen, and the scale used.[2,4,13]

According to the results of a review synthesizing findings from 32 studies published between 1987 and 2006, 5.7% of Danish children and 19% of Norwegian children experienced dental anxiety.[9] Lee et al[18] found that dental anxiety prevailed in 20.6% of Taiwanese children aged 5-8 years, whereas Nuttall et al[19] showed that only 3%-4% of children in the United Nations had dental anxiety. In a large cohort study of 1303 French children aged 5-12 years, Nicolas and Bessadet reported moderate and severe dental anxiety in 16.7% and 7.6% of the children studied, respectively.[20]

In our study, 24% of children aged 4-8 years were anxious. For children aged 8-13 years, 30.7% showed mild anxiety, 4% moderate anxiety, and 1.3% severe anxiety. Of the children, 42.6% of the 4-8-year-old children and 5.3% of the 8-13-year-old children were partially or not cooperating during the specialized counseling session.

Comparing the anxiety subjectively reported by the child to the behavior observed during the consultation, we noticed that the partially or even uncooperative children were significantly more anxious than the cooperative children. Therefore, it was concluded that the children managed to adequately estimate their emotional state at the time of the self-assessment in the sense that those who experienced fear had difficulty allowing themselves to be examined during the consultation despite a good behavioral approach based on the tell, show, and do method.

Many studies have indicated that the levels of dental anxiety were significantly higher in girls compared with boys. This can be attributed to the fact that boys consider themselves stronger, being able to adapt to delicate situations.[20] Nevertheless, contrary to other studies, our study has shown that dental anxiety impacts both Moroccan boys and girls.

Several risk factors for dental anxiety were reported in the literature, including the child's age, temperament, previous medical or dental experience, general anxiety, and maternal anxiety.[2,4,13]

A prospective cohort study of 5- and 9-year-old English children showed that the majority of participants who reported an anxiety experience at age 5 had detached from their fear by age 9.[6] This phenomenon could explain the difference in prevalence found in our study for the two age groups.

Our results showed that in the age group of 4-8 years, children who usually adopted a very negative attitude toward their pediatrician and who reacted negatively to the announcement of the visit to the dentist were significantly more anxious than those evidencing more positive behaviors. Negative reactions may be explained by the unfavorable view of dental care held by children, often conveyed by the child's environment and amplified by popular beliefs.[4,21,22]

According to a meta-analysis by Themessl-Huber et al[23], the majority of studies (79%) confirmed the relationship between parental anxiety and their children's anxiety. This relationship was more evident in children under 8 years of age. Similarly, dental anxiety in the present study descriptively appeared to be greater in children with anxious mothers. However, this difference was not statistically significant.

On the basis of these results and to manage children with dental anxiety, we suggest the following recommendations:

- To raise parents' awareness of early consultation (i.e., through the organization of open days and information campaigns);
- To use cartoons to convey oral health behaviors;
- To increase the use of conscious sedation through training practitioners in the management of conscious sedation and the installments of the appropriate equipment.

Conclusion

This study reported a significant prevalence of dental anxiety among Moroccan children. Difficulty in cooperating compromises the smooth running of the treatment session and is one of the main causes of therapeutic failure. In these situations, psychobehavioral methods remain insufficient and hence the need to complement them with conscious sedation techniques, including sedation by inhalation of a mixture of oxygen and nitrous oxide. The latter has been shown to be an effective agent for conscious sedation during dental treatment.

Why is this document important for pediatric dentists?

- It highlights one of the main factors of care failure in pediatric dentistry.
- Provides estimates on the prevalence of dental care anxiety in children and highlights its importance.
- Challenges pediatric dental practitioners to find solutions to improve the quality of dental care and encourages them to use conscious sedation methods in noncooperating pediatric patients.

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