Prevalence of dental anxiety in children treated at public health services in Valdivia, Chile.

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Abstract:

Objective: To determine the prevalence of dental anxiety (DA) in children between 6-10 years of age treated at public health services (PHS) in Valdivia, Chile.

Materials and Methods: An observational cross-sectional study was designed. The prevalence of DA before dental treatment was measured using the Facial Image Scale (FIS) in children between 6-10 years of age treated at public health services (PHS) of Valdivia, Chile, from March to June 2015.

Results: Of the 200 children surveyed, 22.5% had dental anxiety; 51% were girls (n=102); average age 7.9 ± 1.45.

Conclusion: The prevalence of DA in Valdivia is higher than that observed in a similar study conducted in Santiago, Chile. We suggest the implementation of FIS in pediatric dental care, to ensure better adaptation and adherence to the dental treatment.

Keywords: dental anxiety, prevalence, pediatric dentistry.

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Introduction

Anxiety is an emotion that acts as an adaptive psychological mechanism in the face of threat, fear or uncertainty. In some situations it translates into an unpleasant psychological sense of extreme concern about future events, causing the person to try to avoid them. Dental anxiety (DA) is described as an unpleasant or painful psychological feeling or emotion caused by the thought of undergoing dental care[1]. People with DA usually avoid care, which has a negative effect on their oral health[2].

Several studies have tried to explain the etiology of DA; it often begins during childhood or adolescence, generally triggered by a painful or negative past experience[3], establishing an association when the dental pain episode is experienced at the age of five or younger [3]. In addition, it has been shown that dental anxiety in parents increases that of children[5]. It has been observed that the prevalence of DA is higher in women than in men[6]. Moreover, some studies show that the highest DA levels are linked to lower income and educational levels[6,7], all of which indicates a multifactorial etiology in the development of DA.

In pediatric patients, DA makes providing care more difficult for the health care team, which will later on jeopardize treatment adherence[1].

DA prevalence rates in European countries ranges between 4% and 23%[1]. In Latin America, studies of preschool children show that the DA prevalence rate is 27%[2]. In Chile, a study undertaken in Santiago, the capital city, shows a prevalence rate of 5.4% in 6-year-old children[8].

There are different instruments to assess the presence and severity of dental anxiety in children. One of the most commonly used is the Children's Fear Survey Schedule-Dental Subscale (CFSS-DS), which has a children-reported version and second parent-reported version[9].

Experts recommend measuring instruments that use pictures for children under 13[10]. The following have shown good psychometric properties: Venham Picture Test (VPT), a scale

that pictures relaxed and anxious children[11] and the Facial Image Scale (FIS), which also uses representative pictures in a fixed-number scale of faces ranging from “very happy” to “very sad”. A study assessed the applicability of the FIS when compared to the VPT, and a strong correlation between both scales was reported[10].

Thus, the FIS has certain advantages when used with pediatric patients, as it is simple and practical to implement and it was recently used in a study in Santiago de Chile[8].

The aim of this study was to determine the prevalence of anxiety in children aged 6 to 10 treated at the Public Health Services (PHS) of Valdivia, Chile, in 2015, using the Facial Image Scale (FIS).

Materials and methods

To conduct the study, the approval of the Research Ethics Committee of the Health Services of Valdivia was required (Exempt Resolution No. 89), in addition to the authorization of the Municipal Health Department of the Municipality of Valdivia and that of the head of each health care facility.

An observational cross-sectional study was conducted following the checklist of the STROBE statement[12].

The target population were children aged 6 to 10 who were treated at the PHS of Valdivia from March to June 2015. The children studied were those accompanied by a responsible adult that would be able to sign an informed consent. Those suffering neurological disorders, cognitive deficit or any chronic systemic pathologies were excluded.

The variables identified were: sex, age, past dental care experience (good, bad, first appointment), reason for consultation (check-up, treatment or emergency), place of origin (urban or rural) and type of educational center (municipal, private/subsidized or private).

The sample size was 200 children as calculated by the online WinEpi calculator. The sample was obtained by cluster sampling for each health care center and by systematic sampling for

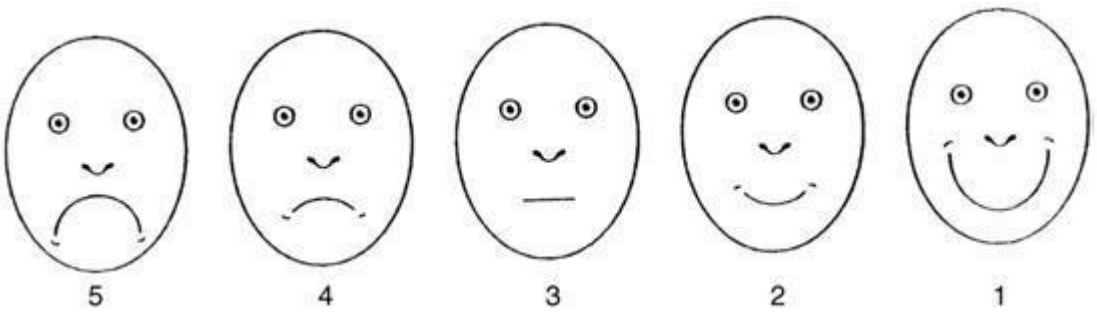
the patients who attended the different facilities. Health care centers were asked about the average number of patients treated each week, and based on this number a total of 35 surveys were conducted in 4 Primary Health Care facilities, Family Health Care Center (CESFAM) Dr. Jorge Sabat, CESFAM Angachilla, CESFAM las Ánimas and a private practice, and a total of 60 at the Base Hospital in Valdivia.

For the sake of randomization, patients were considered in a first-come-first-served order. The study began with the first patient of the day, who was included, the next one excluded, the third included and so on until the full sample was completed. Whenever the subject did not meet the inclusion criteria, we moved on to the next patient.

The survey was conducted in the waiting room of each health care facility, administered only once to each child by one interviewer. The questions related to the different variables were asked to the adult accompanying the child. Each survey was administered in approximately three minutes.

A Facial Image Scale sheet (see Figure 1) was used and the child was requested to point with his/her finger which face better represented how they felt before undergoing dental care. The answers were recorded considering the following codes: 1- Very happy; 2- Happy; 3- Indifferent; 4- Sad; 5- Very sad.

Fig. 1. Facial Image Scale (FIS)



For the sake of the analysis, the FIS 4 and 5 values were considered clinically relevant for Dental Anxiety[8].

Results.

Out of the 200 patients who met the inclusion and exclusion criteria, 51% were women (n=102); the average age was 7.9 ± 1.45 years. The frequency of the "Sad" face picture was 16%, and that of the "Very sad" face was 6.5%, for a total of 22.5% (see Table 1).

Table 1. Frequency distribution and dental anxiety level percentage.

Anxiety level	**n**	**%**
Very happy (FIS 1)	73	36.5
Happy (FIS 2)	43	21.5
Indifferent (FIS 3)	39	19.5
Sad (FIS 4)	32	16.0
Very sad (FIS 5)	13	6.5
Total	200	100

Of the patients, 79% lived in urban areas; 62.5% came from municipal educational centers. Sixty per cent of patients were seeking to continue treatment, 34% had gone for a check-up and the remaining 6% had had a dental care emergency. Out of the total, 84.5% reported having a good past experience in dental care and 12.5% a bad experience (see Table 2).

Table 2. Dental anxiety prevalence by sex, past experience, reason for consultation, place of origin and type of educational center.

	Total Freq. (%)	**DA Freq. (%)**
Sex		
Men	98 (49.0)	19 (19.4)
Women	102 (51.0)	26 (25.5)
Past experience		
None	06 (3.0)	01 (16.7)
Good	169 (84.5)	29 (17.2)
Bad	25 (12.5)	15 (60.0)
Reason for consultation		
Check-up	68 (34.0)	09 (13.2)
Treatment	120 (60.0)	33 (27.5)
Emergency	12 (6.0)	03 (25.0)
Origin		
Urban	158 (79.0)	35 (22.2)

Rural	42 (21.0)	10 (23.8)
Type of school		
Municipal	125 (62.5)	26 (20.8)
Priv. Subs.	64 (32.0)	15 (23.4)
Private	11 (5.5)	04 (36.4)

Priv. Subs: Private subsidized; Freq: Frequency

Discussion

DA prevalence in children aged 6 to 10 in Valdivia was 22.5%, which is substantially higher than in other studies. There is only one earlier article in Chile that shows a 5.4% DA prevalence in 6 year-old children[8]. Rivera & Parra observed a 15% DA prevalence in school children aged 6 to 12 in Honduras[13]. A study conducted in Brazil found a 16.8% DA prevalence rate in 5 year-old children. However, other articles have reported a higher prevalence rate: Bezabih et al. observed a moderate to severe DA prevalence rate of 74.1% in pediatric patients in Ethiopia[15], while Raja et al. reported a moderate to severe DA rate of 38% in children aged 5 to 10 in Pakistan[16].

In terms of gender, the highest DA frequency in this study was observed in women (25.5%) when compared to men (19.4%). Caycedo et al. also reported higher levels of dental anxiety in women than in men[17].

Past experiences can be a determining factor in the onset of DA, especially in childhood[18]. According to Guerra and Ilezarte, the dental care experiences of those close to the child are a significant factor in determining how the child first approaches a visit to the dentist, as if they are negative and transmitted to the child, children may feel anxiety[19].

Another determining factor is how the professional handles the first appointment of the patient[3]. Uribe states that children who have several sessions with the dentist before

undergoing a rehabilitation treatment show lower DA levels than those patients who had an invasive dental experience with no previous adaptation session[20].

As for the reason for consultation, the group that presented the highest levels of DA were the children who visited the dentist for a procedure that had been previously initiated, unlike patients who simply went in for a check-up. Nicolas et al. concluded that children who needed to undergo, at the very least, a restorative procedure, had a greater fear of the dentist when compared to children with no need for treatment[18].

Among the limitations of this study we can identify the risk of a social desirability and memory bias, as the patients surveyed may be influenced by third parties and the individual ability to remember past events.

Conclusion

Dental anxiety is a multifactorial phenomenon that involves alterations that affect the quality of life of those patients suffering from it. Children are not free from its manifestations and consequences, which could become a barrier to receiving adequate dental care and improving the oral health of those who suffer from it.

Based on the results of this study and the number of negative consequences associated to DA reported in the literature, we recommend using a FIS scale before providing dental treatment to identify those patients who have higher anxiety levels so as to assist the decision-making process on how to approach this condition. This may be done through adaptation and/or desensitization sessions before undergoing invasive treatments in the hopes of improving the timeliness and adherence to such procedures.

Further studies should be conducted to identify the different variables that may affect DA prevalence, so as to more clearly determine the role each one of these has in the manifestation and prolongation of DA and thus be able to act more efficiently in each clinical scenario.

Conflict of interest

The authors declare no conflict of interest.

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