

ORIGINAL RESEARCH



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Fear and dental anxiety in children: a study of the contributing factors.

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Abstract

Introduction: Dental fear and anxiety are an important issue affecting children's oral health and clinical management, and also an insufficiently studied subject in dentistry.

Aim of the study: The aim of this study was to better understand the child patient - dentist versus dentist - child patient relationship and study the dental fear and anxiety of children in order to improve the dental office practice.

Material and methods: In this study a personalized questionnaire was created and applied on a number of 333 children, in 4 schools from Mures county, Romania, on girls and boys between the ages of 8 and 13. The questionnaires used emoticons alongside words in order to better determine the state of anxiety created by the dental appointment and everything that it entails. All data and results obtained were analyzed using Excel and Graph Pad Prism 5.0 software.

Results: Out of 333 patients, 133 subjects (40%) were 8-10-year-old, 143 subjects (42.9%) 11 - 13 years and 57 subjects (17.1%) were over 14 years. 175 girls (52.6%) and 158 boys (47.4%) demonstrated their courage and desire in participating in our study. It was determined that fear of dental appointments was caused in children over 14 years of age. The state of relaxation is generally enjoyed by urban children (45%) and those aged 11-13 years (37.1%); the percentage of boys in this category is an interesting aspect (40.5%).

Conclusion: Dental anxiety is multifactorial and is far more complex than can be explained by a single contributing factor. The direct involvement of the child from the perspective of maintaining dental health, leads to the elimination of the state of fear and anxiety. Regular visits to the dental office, on the initiative of the child patient itself can reduce the anguish.

Keywords: child behavior, oral health, questionnaire, dental anxiety.

Introduction

The presence of the child patient in the dental office, has to become a custom. In order to achieve this, the dentist has the duty to prevent fear and anxiety, which are the main issues affecting children's oral health and clinical management [1]. In this context, when considering the communication and relationship of the dentist with the child patient in the dental office, the following are indicated:

- detecting/identifying the problem;
- empowering and making the child aware that there is a situation that must be resolved together;
- proceed into solving the problem situation as soon as possible;
- developing an appropriate positive attitude, conduct and behavior towards the medical act itself [2].

It is believed that at the basis of the doctor-child patient vs. child patient-doctor communication and relationship, there are elements of knowledge, acceptance, understanding and mutual help [3].

To this dual equation (dentist-child patient) a third element is added, the family. We will thus have a triad in which we will be able to identify the parties that will position themselves either in the "partnership" or "conflict" relationship. Thus, we could have the following situations:

- doctor versus child-parent, characterized by the support of the child-parent team in front of the doctor, who remains alone;
- child-doctor versus parent, where the child-doctor alliance determines a positive attitude towards the medical act itself, the team being beneficial, the parent

conforming to the new situation created in this context;

- child versus doctor-parent, where the child is alone and does not understand the doctor-parent alliance, his conduct is not always the most appropriate, so that the desired result of success is not the expected one, the state of fear being triggered and present;
- child-doctor-parent versus parent-child-doctor, versus doctor-child-parent, the ideal situation in which there is at least one meeting, so that the understanding, acceptance and involvement in solving the problem situation, is fully resolved, avoiding over time, the fear of going to the dentist [4].

In this context, we can answer to the following group of questions: How much? Where? How? Who? And Why?, regarding the attitude, conduct and behavior of the child patient in the dental office. This leads to a certain attitude of the child patient towards everything that happens / will happen in the dental office, which will manifest itself in the form of: recalcitrant behavior; slow negative conduct; docility with the tendency of "seduction" of the doctor; the appearance of the "run away" element as an escape from the hostile environment; regression [5].

Aim of the study

The aim of this study was to better understand the child patient - dentist versus dentist - child patient relationship and study the dental fear and anxiety of children in order to improve the dental office practice.

Material and methods

In the present study a number of 333 children, girls and boys between the ages of 8 and 13, were included from 4 schools in Mures county. The study was conducted by 6 specialist dentists, on a 1-year period, from January 2019 until December 2019. Ethics approval was sought and obtained from the local Ethical Committee before the commencement of the study. The parents and caretakers of all selected children patients understood and signed the written informed consent prior the initiation of this research.

Using our personalized questionnaires, we have identified some key features which, at the perception level of the child patient, can create a certain attitude towards the environment of the dental office and also towards the dentist himself. In view of this, by taking into account the age features of the child patient, the conversation and questionnaire were used as the psychological investigation methods, which will be the basic and working tool of our medical-psychological investigation.

The study group consisted of 333 subjects identified by:

- age: 5-7 years / 8-10 years / 11- 13 years / over 14 years
- sex: boys /girls
- the living environment: urban / rural.

The original conception and realization of the two questionnaires where emoticons were used alongside words represent not only a novelty in the approach, but also a thorough knowledge of the age characteristics of the child patient.

Basically, the use of emoticons at this age leads to a higher and complex level of understanding, encoding and decoding responses, being more enlightening.

Made in the form of image(emoticon)-word correlation, the questionnaire was comprised of five questions that included the entire complex of manifestations as well as elements identifying the target group under study:

1. *How would you feel if you were to go to the dentist tomorrow for a check-up?* – the answer choices being (emoticon - word): relaxed, confused, I would be afraid, I would be very afraid;
2. *How do you feel when you're waiting in the waiting room to undergo a dental check-up/treatment?* - the answer choices being (emoticon - word): relaxed, a little restless, tense, fearful, very fearful with moments of sweating, so fearful that I would almost be physically sick, so fearful that I would leave the waiting room and do not come back;
3. *How do you feel when you are in the dental chair waiting for the dentist to prepare his treatment instruments?*- the answer choices being: relaxed, a little restless, tense, fearful, very fearful with moments of sweating, so

fearful that I would almost be physically sick, so fearful that I would leave the waiting room and do not come back;

4. *Imagine that you are in the dental chair and are about to undergo a treatment. How do you feel?*- the answer choices being: relaxed, a little restless, tense, fearful, very fearful with moments of sweating, so fearful that I would almost be physically sick, so fearful that I would leave the waiting room and never come back;
5. *How do you feel when you arrive in the waiting room and you have to wait a little bit longer?*- the answer choices being: I prefer to make another appointment, I stay relaxed, I





become tense, I keep waiting but I become relentless, my fear is heightened.








It is noted that there is a similarity between the variants of items 2,3,4, they are gradually structured in the following form: item 2 = you are in the waiting room and waiting; item 3 = you are in the dental chair and wait for the dentist to prepare the instruments; item 4 = you are in the dental chair and you are waiting to undergo the treatment. We set out to assess the patient's state of fear in the situations outlined above, reaction, conduct and behavior starting from the verb "to wait" (Figure 1).








QUESTIONNAIRE








Choose an answer and mark it with an X in the free columns of the following tables:

Please mark with an 'X' all your personal data			
Age:			
5-7 years	8-10 years	11-13 years	Over 14 years
Gender:			
Female		Male	
Living environment:			
Urban		Rural	

1. How would you feel if you were to go to the dentist tomorrow for a check-up?	
	Relaxed
	Confused
	I would be afraid
	I would be very afraid

2. How do you feel when you're waiting in the waiting room to undergo a dental check-up/treatment?	
	Relaxed
	A little restless
	Tense
	Fearful
	Very fearful with moments of sweating
	So fearful that I would almost be physically sick
	So fearful that I would leave the waiting room and do not come back

3. How do you feel when you are in the dental chair waiting for the dentist to prepare his treatment instruments?	
	Relaxed
	A little restless
	Tense
	Fearful
	Very fearful with moments of sweating
	So fearful that I would almost be physically sick
	So fearful that I would leave the waiting room and do not come back

4. Imagine that you are in the dental chair and are about to undergo a treatment. How do you feel?	
	Relaxed
	A little restless
	Tense
	Fearful
	Very fearful with moments of sweating
	So fearful that I would almost be physically sick
	So fearful that I would leave the waiting room and do not come back






5. How do you feel when you arrive in the waiting room and you have to wait a little bit longer?	
	I prefer to make another appointment
	I stay relaxed
	I become tense
	I keep waiting but I become relentless
	My fear is heightened

Figure 1. Child specific questionnaire, pg.1
Source: www.pixabay.com [6]

An encoding of the factors that can trigger the state of fear of the child patient has been created using different degrees of appreciation (low, moderate, high, I do not know, I do not care), starting from:

- 1. Anesthetic injection;
- 2. Fear that I will not be sufficiently "numb";
- 3. The noise caused by the high/low speed hand piece;
- 4. Vibration of the bur;
- 5. Dental extraction;

- 6. Tired sensation of the jaws;
- 7. Fear of being hurt;
- 8. Not having the freedom to ask questions;
- 9. The smell of the ambient in the dental office;
- 10. Fear of the cost of the treatment;
- 11. Transport to the dental office;
- 12. Previous unpleasant experiences;
- 13. Doctor’s expertise;
- 14. The doctor's reaction to my problem (Figure 2).

Nr.Crt.	Fear factors. Please evaluate your fear level towards the following dental procedures, by marking your preference with an X.
1.	Anesthetic injection
2.	Fear that I will not be sufficiently "numb"
3.	The noise caused by the high/low speed handpiece
4.	Vibration of the bur
5.	Dental extraction
6.	Tired sensation of the jaws
7.	Fear of being hurt
8.	Not having the freedom to ask questions
9.	The smell of the ambient in the dental office
10.	Fear of the cost of the treatment
11.	Transport to the dental office
12.	Previous unpleasant experiences
13.	Doctor’s expertise
14.	The doctor's reaction to my problem

Level of fear				
Low	Moderate	High	I don't know	Not interested

Thank you for the time and patience in completing this questionnaire.



Figure 2. Child specific questionnaire, encoding of trigger factors, pg.2
 Source: www.pixabay.com [6]

Results

We have identified several series of variables, equations and connotations, evolutionary or not, related to the state of fear, manifested as the identity of the child patient in the dental office.

Regarding the first variable, namely the age, the most important percentage was among children between 11-13 years of age, followed by middle age children 8-10 years old, the desire to answer such an interesting questionnaire being an important aspect to our study.

- 8 - 10 years: 133 subjects (40%)
- 11 - 13 years: 143 subjects (42.9%)
- Over 14 years: 57 subjects (17.1%).

In regard to the second variable, the gender, the girls were more interested in completing the questionnaire (175 girls, 52.6%) than boys (158 boys, 47.4% percentage) demonstrating their courage and desire in participating in our study of the knowledge of fear in the dental office.

Related to the living environment, the interest shown by rural children is 55.3% (184 subjects), compared to those in urban areas (149 subjects), and the positive attitude of rural children towards maintaining their oral health is also appreciated.

To the first question: *How would you feel if you were to go to the dentist tomorrow for a check-up?* the decoding is shown in the table below:

Table 1.

State	Age – nr - %	Gender – nr - %	Environment – nr - %
Relaxed	8-10 years – 105 - 73,4%	F- 121 - 68,1%	R – 129 – 70,1%
	11-13 years – 103 – 77,4%	M – 118 -74,7%	U – 110 – 73,8%
	Over 14 years – 31 – 55,4%		
Confused	8-10 years – 11 – 8,3%	F – 17 – 9,7%	R – 19 – 10,3%
	11-13 years – 14 – 9,8%	M – 19 – 12%	U – 17- 11,4%
	Over 14 years – 11 – 19,3%		
I would be afraid	8-10 years – 13 – 9,8%	F – 31 – 17, 7%	R – 30 – 16,3%
	11-13 years – 17 – 11,9%	M – 14 -8,9 %	U – 15 – 10,1%
	Over 14 years -15 – 26,3%		
I would be very afraid	8-10 years – 6 – 4,5%	F- 6 – 3,4%	R – 6 – 3,3%
	11-13 years- 7- 4%	M – 7 – 4,4%	U – 7 – 4,7 %
	Over 14 years - 0 - %		

F: female, M: male, U: urban, R: rural

The following aspects are noted:

- there is a general state of tranquility which may be the consequence of the guarantee of just a check-up being carried out instead of an intervention: age, gender and the living environment highlight this fact;
- anxiety arises after the age of 14, because children are aware that they might undergo a treatment, and that there is a problem, which will correlate with a state of confusion (19.5% - in boys, 12% in urban

areas), uncertainty being the cause of these feelings;

- confusion can occur, the percentages being quite close, a state of fear is caused in children over 14 years of age; 26.3% annihilates however, I would be very afraid, making the difference between them (11 -13 years: 17.9% - Idem 4%).

On the second question: *How do you feel when you're waiting in the waiting room to undergo a dental check-up/treatment?* the decoding is presented as follows:

Table 2.

State	Age – nr - %	Gender – nr - %	Environment – nr - %
Relaxed	8-10 years – 62-46,8%	F – 62 – 35,4 %	R – 68 – 37,0%
	11-13 years – 55- 38,5%	M – 81 - 51,3%	U – 75 – 50,35
	Over 14 years – 2- 45 %		
A little restless	8-10 years – 56 - 42,1%	F – 81 – 46,3%	R – 90 – 48,9%
	11-13 years – 71- 49,7%	M – 64 – 40,5%	U – 55 – 36,9%
	Over 14 years -1 - 31%		
Tense	8-10 years – 6 - 4,5%	F – 17 – 9,7%	R – 13 – 7,1%
	11-13 years – 8 – 5,6%	M – 4 – 2,5%	U – 8 – 5,4%
	Over 14 years -7 - 12%		

Fearful	8-10 years – 4 - 36,4%	F – 10 – 5,7%	R – 4 – 2,2%
	11-13 years – 1 – 9,1%	M – 1 – 0,6%	U – 7 – 4,7%
	Over 14 years - 6 - 10%		
Very fearful with moments of sweating	8-10 years – 2 - 1,5%	F – 4 – 2,3%	R – 6 – 3,3%
	11-13 years – 6 – 4,2%	M - 4 - 2,5%	U – 2 – 1,3%
	Over 14 years – 0 - 0%		
So fearful that I would almost be physically sick	8-10 years – 2 - 1,4%	F – 1 – 0,6%	R – 3 – 1,6%
	11-13 years – 2 – 1,5%	M - 3 - 1,9%	U – 1 – 0,7%
	Over 14 years - 0 - 0%		
So fearful that I would leave the waiting room and do not come back	8-10 years – 1 - 0,8%	F – 0 – 0%	R – 0 – 0%
	11-13 years – 0 - 0%	M - 1 - 0,6%	U – 1 – 0,7%
	Over 14 years - 0 - 0%		

F: female, M: male, U: urban, R: rural

The following aspects are noted:

- the state of relaxation is present at all ages regardless of gender and the living environment, the state of normality being the main feeling, the procedure being just a check-up;
- slight anxiety occurs (49.7% in children aged 11-13 years and 42.1% in children 8-10 years old) because they will undergo a dental treatment, girls being more "courageous" (46.3%);
- confidence is minimal (10% of children over 14 years are fearful), due to the feeling

of unknown in what can happen especially in case of girls (5.7%), while eliminating the other states (bad general state and leaving the room without returning);

- the bad general state is not perceived; only the middle aged (1.4% children aged 8-10 years) perceive this state, not posing a danger, not being aware.

On the third question: *How do you feel when you are in the dental chair waiting for the dentist to prepare his treatment instruments?* the decoding is presented in the following table:

Table 3.

State	Age – nr - %	Gender – nr - %	Environment – nr - %
Relaxed	8-10 years – 52 – 39,1%	F – 58 - 33,1%	R – 55 - 29,9%
	11-13 years – 52 - 37,1%	M - 64 - 40,5%	U – 67-45,0%
	Over 14 years - 17 - 29,8%		
A little restless	8-10 years – 47 – 41,6%	F – 63 – 36,0%	R – 67- 36,4%
	11-13 years – 47 – 41,6%	M - 50 – 31,6%	U - 40- 30,9%
	Over 14 years - 19 - 16,8%		
Tense	8-10 years – 13 – 11,35	F – 19- 10,9%	R – 23- 12,5%
	11-13 years – 15 – 9,1%	M - 18 – 11,4%	U - 14- 9,4%
	Over 14 years - 9 – 15,8%		
Fearful	8-10 years – 6 - 4,5%	F – 26 – 33,1%	R – 21- 11,4%
	11-13 years – 17 – 11,9%	M - 64 – 40,5%	U - 14- 9,4%
	Over 14 years - 12 - 21,1%		
Very fearful with moments of sweating	8-10 years – 8 – 5,6%	F – 7- 4%	R – 10- 5,4%
	11-13 years – 8 - 6,9%	M – 9 - 5,7%	U - 6- 4,0%
	Over 14 years - 0 - 0%		
So fearful that I would almost be physically sick	8-10 years – 1 - 0,8%	F – 0 - 0%	R – 3- 1,6%
	11-13 years – 3 – 2,1%	M – 4 - 2,5%	U - 1 - 0,7%
	Over 14 years - 0 - 0%		
So fearful that I would leave the waiting room and do not come back	8-10 years – 2 – 1,4%	F – 2- 1,1%	R – 5- 2,7%
	11-13 years – 4 - 3%	M – 4 - 2,5%	U - 1 - 0,7%
	Over 14 years - 0 - 0%		

F: female, M: male, U: urban, R: rural

It is noted that:

- the state of relaxation is generally enjoyed by urban children (45%) and those aged 11-13 years (37.1%); the percentage of boys in this category is an interesting aspect (40.5%);
- anxiety occurs equally in children between 8-10 and 10-13 years (41.6%); 12.5% of children from rural areas become tense;
- pre-adolescents and adolescents (11.9% and 21.1%), boys (40.5%) become fearful, especially those in rural areas; when children patients know the procedure and

the evolution of the treatment or if they are at the beginning of the treatment this causes a new attitude of the patient;

- as a psychosomatic state, sweating occurs in children aged 8-13 years, excluding a bad general state and the intention to leave the waiting room; such manifestations occur when there is a stressful situation for the child patient in the dental chair;

On the fourth question: *Imagine that you are in the dental chair and are about to undergo a treatment. How do you feel?* the decoding is presented as follows:

Table 4.

State	Age – nr -%	Gender – nr - %	Environment – nr - %
Relaxed	8 -10 years – 66 – 49,6%	F – 56 – 32%	R – 69 – 37,5%
	11 – 13 years – 50 - 35,0%	B – 72 – 45,6%	U – 59- 39,6%
	Over14 years – 1 – 21%		
A little restless	8 -10 years – 51 – 26,3%	F – 64 – 36,6%	R – 55 – 29,9%
	11 – 13 years – 35 – 35,7%	M -48 – 30,4%	U – 57 – 38,3 %
	Over14 years -2 – 45%		
Tense	8 -10 years – 18 – 13,5%	F – 25 – 14,3 %	R – 28 -15,2 %
	11 – 13 years – 17 – 11,9%	M - 19 – 12%	U -16 – 10,7%
	Over 14 years -5 – 20%		
Fearful	8 -10 years – 11 – 7,7%	F – 18 – 10,3%	R – 16 – 8,7%
	11 – 13 years – 8 - 6,6%	M -17 – 4,4%	U – 9 – 6%
	Over14 years – 6 – 10 %		
Very fearful with moments of sweating	8 -10 years – 3 – 2,3 %	F – 9 – 5,1%	R – 11 – 6%
	11 – 13 years – 10 – 7,0%	M – 8 – 5,1%	U – 6 – 4%
	Over 14 years – 4 – 7 %		
So fearful that I would almost be physically sick	8 -10 years – 0 -0%	F – 0 – 0%	R – 0 - 0%
	11 – 13 years – 0 - %	M – 0 – 0%	U – 0 – 0%
	Peste 14 years – 0 - %		
So fearful that I would leave the waiting room and do not come back	8 -10 years – 3 – 2,3 %	F – 3 – 1,7 %	R – 5 – 2,7%
	11 – 13 years – 4 - 2,8%	M – 4 – 2,5 %	U – 2 – 1,3%
	Over 14 years -0 – 0 %		

F: female, M: male, U: urban, R: rural

It should be noted that:

- the level of relaxation is maintained in the idea that treatment might require a follow-up in children 8-10 years (49.6%), boys (45.6%) which proves a certain confidence, everything being an imaginary and future situation if it does not refer to the present;
- children over 14 years of age do not panic, are slightly fearful (10%) because the imaginary can become reality, but not in a near future;

- bad general state not planned (0%);
- psychosomatic states (sweat) are common in ages 11-13 years (7%) and girls (5.1%), but also in rural children (6%);
- the borderline attitude of leaving the dental office without returning is irrelevant.

On the fifth question: *How do you feel when you arrive in the waiting room and you have to wait a little bit longer?* The decoding is presented as follows:

Table 5.

State	Age – nr - %	Gender– nr - %	Environment – nr - %
I prefer to make another appointment	8-10 years – 13 – 9,1%	F – 20 – 11,4%	R – 18 – 9,8%
	11-13 years – 13 – 9,8%	M – 13 – 8,2 %	U – 15 – 10,1%
	Over 14 years - 21 – 12%		
I stay relaxed	8-10 years – 67 – 50,4%	F – 77 – 44%	R – 86 – 46,7%
	11-13 years – 83 – 58%	M – 91 – 57,6%	U – 82 – 55 %
	Over 14 years - 1 – 31%		
I become tense	8-10 years – 15 – 11,3%	F – 11 – 9,7 %	R – 16 – 8,7 %
	11-13 years – 8 – 5,6%	M – 11 – 7%	U – 12 – 8,1%
	Over 14 years - 5 – 8%		
I keep waiting but I become relentless	8-10 years – 31 – 27,1 %	F – 54 – 30,9 %	R – 59 – 32,1 %
	11-13 years – 36 – 21,7%	M – 40 – 25,3 %	U – 35 – 23,5 %
	Over 14 years - 2 – 47%		
My fear is heightened	8-10 years – 2 – 1,5%	F – 7 – 4%	R – 5 – 2,7%
	11-13 years – 8 – 5,6 %	B – 3 – 1,9%	U – 5 – 3,4 %
	Over 14 years - 0 - 0 %		

F: female, M: male, U: urban, R: rural

- children between the ages of 8-13 remain relaxed, a sign that the time spent waiting is filled with something else, they have other concerns (television, magazines, telephone, internet) or perceive the unit waiting time differently;
- few children want a new appointment in the idea that they consider the visit to the dentist without purpose;
- waiting associated with restlessness occurs frequently;
- fear subsides, even disappears in subjects over 14 years of age;

Discussions

Numerous studies using the questionnaire as their working tool, have been carried out to assess the impact and influence of many specific factors on dental anxiety among children.

Our study shows that the injection causes a state of fear, but if the intervention is optimally moderate, it can lead to an element of carelessness, a feeling of "comes and passes" (8.7% in subjects over 14 years). The fear of not being numb enough creates some discrepancy in the idea that I do not know, do not care and low response, with a percentage of 55.5%, compared with the moderate and high response (44.4%, the least affected being the group of 8-10 years, especially boys, generally rural).

The sound caused by the high/low-speed hand piece can become for some children a

real threat, namely a sound of discomfort, a psychological abuse. The 8-10 years age category is the most affected (high - moderate), 36.9% of less disturbed subjects being over 14 years of age.

The vibration of the bur also encodes a certain state of fear, within optimal limits (low - moderate - I am not interested): 74.7% children between 8-13 years, regardless of gender and background.

The extraction of primary teeth is no longer a problem in inducing the feeling of fear because most children had education when the first group of teeth was replaced.

The tiredness of the jaws due to induced fear was highlighted in children between 8-10 years (11.1%), the girls being more sensitive. The percentage of those with low response – moderate – I do not know, I do not care was 50.1%.

According to the results obtained in our study, the smell in the dental office is not a trigger of the feeling of fear (89% of subjects, regardless of age, background, gender have no olfactory discomfort).

Fear of previous unpleasant experiences is generally manifested at the age of over 14 (43.7% rural girls). The switch between I don't know and I don't care (27.5%) comes close to the area where the above did not leave any change (low score 35.7%).

Regarding the medical expertise of the dentist, our study reveals that few children are interested in this aspect (80.4%). 19.3% are

interested in the performance and competences of the dentist, through the prism of their parents.

A major impact on dental anxiety in children, is the age of the child patient. Similar to the results obtained in our study, other studies have revealed that younger children tend to be more anxious in the dental office compared to older children. This is most likely due to the feeling of the unknown and the feeling of abandonment among younger children. A higher ability to adapt and understand occurs when the child's age increases resulting in a greater cognitive ability. Thus, dental anxiety is indirect proportional to the age of the child patient. On the other hand, some studies have found that there is no difference in the severity of dental anxiety when comparing the age groups of the patients [7].

However, there have also been reports that have concluded that anxiety is directly proportional to age, due to a clearer awareness of the child patient of the situation and associated factors and the existence of possible previous painful experiences. According to these reports dental anxiety increases with age [8].

In terms of patient gender correlated with the different levels of anxiety, the studies were mostly inconsistent [9]. Compared to the results reported in our study, most studies showed higher levels of anxiety in girls than in boys, while some reported that there were no differences in anxiety between the two genders [10].

Dental anxiety has been shown to be related to dental procedures and associated with dental treatments. Thus, depending on the type of dental treatment that will be carried out during the dental appointment, dental anxiety can increase or decrease. Procedures such as dental extractions, dental anesthesia, use of rotative hand pieces, can increase the level of dental anxiety, compared to oral prophylaxis procedures that revealed lower levels of anxiety [11].

Dental anxiety levels have decreased in children who have already experienced dental treatments, especially when dental visits have been rare and the interval between visits was long.

Other studies, however, have reported higher levels of dental anxiety in children who have experienced dental procedures in the past than in those who have not. This can be explained by the fact that those children are familiar with unpleasant dental procedures. But there have also been many studies that have supported the contrary. Unpleasant experience with painful or invasive dental procedures will increase the level of dental anxiety [12,13].

The correlation between the dental environment and the level of dental anxiety was also investigated. Similar to the results obtained in our study, the literature showed that higher dental anxiety is associated with the sound made by rotative hand pieces, associated with the moment of waiting in the waiting room. Also, the noise of other children who undergo dental procedures in the dental office can lead to anxiety in children waiting for their turn. A higher level of dental anxiety has been shown to be caused by the shape of the dental instruments and the smell of the dental office environment, all these factors associated with the dentist's attire and gender [14].

Conclusions

Children attractions like television, magazines, telephone, internet can be used to create a state of relaxation and to improve the dental management in all cases.

The idea that the treatment might require a follow-up in the case of half of the children, proves a certain confidence, everything being an imaginary and future situation as long as it does not refer to the present moment of dental appointment.

The responsibility and direct involvement of the child from all categories of gender, age and location, from the perspective of maintaining the dental health, leads to the elimination of the state of fear and can determine regular visits to the dental office.

Conflict of interest: None declared.

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