Dental Anxiety in Children Aged 6-15 years

ABSTRACT

Introduction: Dental anxiety and fear are the source of serious health problems in children. The prevalence of dental anxiety in children and adults widely ranges from 5-40%.

Aims of the study: The aim of this study was to determine the level of dental anxiety among school aged children and to point out these issues in school children, in order to get better understanding and management of treatment in these children, and take appropriate preventive measures.

Patients and Methods: The study was conducted on 70 children (42 males and 28 females) in age of 6-15 years, in „Health“ Kneževu during period of March/April 2014. Children were divided into two groups according to their age. First group consisted of children aged 6-10, and the second one 11-15 years old. We studied the prevalence of dental anxiety, gender and age distribution, the degree of dental anxiety, and the impact of previous dental experience. The assessment of dental anxiety was obtained using Dental anxiety scale (DAS).

Results: Average DAS in children was 9.94. There was no statistically significant difference in the occurrence of dental anxiety in relation to sex and age of a child. In 18.57% of the children, severe dental anxiety was identified. Previous negative dental experience significantly affects the level of anxiety in children.

Conclusion: Dental anxiety is an actual and widespread problem. A negative dental experience has a great impact on the development of dental anxiety.

Key words: dental anxiety in children, the prevalence, negative dental experience

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Introduction

The major barriers for dental treatment in the pediatric age are fear and anxiety, and if they are not eliminated in a short time, they can develop into dental phobia and, as a consequence, patients will avoid dental treatment. Fear and anxiety are recognized as a source of serious health problems in children.

Fear is the immediate response that falls within the sphere of emotional behavior, and the result is an emotional response to a real threat. The intensity of anxiety is stronger than fear. The difference is that it has unreal characteristics, its intensity and duration are amplified and can lead to a state of panic / phobia. Fear is formed and defined by the way children understand and accept reality, perception, danger and risk.

Fears in children vary based on acquiring knowledge, developing knowledge and experience. Dental anxiety is acquired at an early age (especially in adolescence) and is relatively common in children and adults.¹⁻³ As the main causes of its occurrence are: the lack of dental awareness, traumatic dental experience, dental trauma / injuries of teeth, the anxiety of parents, socioeconomic status, personality traits, and the influence of the environment and the media.⁴ Research have shown that chronological age may have significant impact on the acceptance of dental treatment by a child.⁵

The high level of dental anxiety is proportional to poor oral health, that is, more dental pathology.⁶ It has been proven that dental anxiety is clearly linked to the avoidance of dental treatment which has detrimental effects on oral health, and further enhances the expressiveness of dental fear, creating a vicious circle.

Available worldwide literature testifies that the prevalence of dental anxiety in children and adolescents varies widely from about 5% to 40%.⁷⁻¹¹ A possible reason for the large range in assessing the incidence lies in the way the phobia is defined. In fact, most authors report two key indicators: the feeling of extreme fear and behavioral response that is reflected in not visiting the dentist. Also, the techniques of measurement and definition of fear and avoidance of going to the dentist in the literature are very different. However, it should be noted that there is a fairly high correlation between the measurements of differently defined fears about dental and medical procedures according to the different questionnaires.

Until now, on the territory of the Republic of Srpska, a small number of scientific research which deal with the frequency of dental anxiety and the factors affecting it was published.

Aims of the study

The goal of this scientific research was to determine the prevalence of dental anxiety in school age children.

Patients and methods

The study included 70 children aged 6-15 years (average of 10.11 years) of both genders (42 boys and 28 girls), who visited the dental clinic PHI "Dom zdravlja" Kneževu in March and April 2014. The subjects were divided into two groups, the first group consisted of children aged 6-10 years ($n = 32$, 45.71%), and another group were children aged 11-15 years ($n = 38$, 54.29%). Children who had come alone (without parents), and children with diseases and disorders that could possibly hinder or completely disable cooperation were excluded from the research. The research was conducted with the approval of the Ethics Committee of the Institution. Written informed parents' consents were obtained.

The study was consisted of filling in the surveys immediately upon arrival of the patient in the dentist's office, or before performing dental treatment, in order to achieve maximum objectivity and avoid a potential impact of the intervention on the course of the response. The form contained the basic socio-demographic data, gender and age, as well as issues related to previous dental experience. Dental anxiety in children is measured by a shortened form of Korah dental anxiety scale (Corah Dental Anxiety Scale-CDAS) which was consisted of four questions, which were related to situations or actions that could have been encountered in practice. Answers are pre-structured and graded by a five-point Likert scale (1- without anxiety; 5-maximum level of anxiety). Thus, the total value of the results DAS ranged from 4-20. In other words, it was represented by the results: minimum 4 (no anxiety) and the maximum score 20 (very high anxiety). The results obtained were defined as follows: 4-7 normal, 8-11 mild anxiety, 12-16 moderate anxiety, and 17-20 severe anxiety.¹²

For statistical analysis we used software IBM SPSS Statistics 21.0. All results are presented in tables and graphs. Pearson-ov χ^2 contingency test was used to test the correlation between dental anxiety and factors such as gender, age and previous dental experience. To compare the mean values of the characteristics according to the different groups of subjects, the Mann-Whitney U-test for two independent samples was used. To determine the degree of correlation Spearman's correlation calculator was used. Values where $p < 0.05$ were considered statistically significant.

Results

The results showed that the average DAS in children was 9.94, and that there was no statistically significant difference in the DAS between boys and girls (Table 1.).

Table 1. Basic indicators of descriptive statistics for the DAS in children by gender of the child

DAS in child	Gender of child		
	Male n (%)	Female n (%)	All
Number of patients	42 (60%)	28 (40%)	70
Arithmetic mean	9,98	9,89	9,94
Mann-Whitney U test for independent samples			
$p = 0,976$			

Average DAS in the first group of respondents was 10.47, while in the second group of respondents it was 9.50. However, the difference between the value of DAS groups was not statistically significant (Table 2.).

Table 2. Key indicators of descriptive statistics for the DAS in child under the age of the children

DAS in child	Age of the children		All
	6 to 10 years n (%)	11 to 15 years n (%)	
Number of patients	32 (45,71%)	38 (54,29%)	70
Arithmetic mean	10,47	9,50	9,94
Mann-Whitney U test for independent samples			
p = 0,370			

Half of these children had a normal state of anxiety. 11.3% children had mild anxiety, 20% moderate, and 18.57% extremely severe anxiety (Figure 1.).

Figure 1. Percentage of the respondents according to the level of anxiety of the child

Pearson χ^2 test showed that there was no statistically significant difference in the level of anxiety among boys and girls ($\chi^2=0,260$; $p=0,967$) and there was no statistically significant difference in the level of anxiety among younger and older children ($\chi^2=2,050$; $p=0,562$). 41.43% of the examined children had a previous negative dental experience. There was a statistically significant effect of the previous negative dental experience on a higher level of anxiety in children. In fact, only one in four children with a normal state of anxiety or mild anxiety had a previous negative dental experience, while at the higher levels of anxiety, there was significantly increased proportion of children with a previous negative dental experience (Table 3).

Table 3. Frequency and percentage of patients by level of anxiety of the child and previous negative dental experience

Anxiety level of children	Previous negative dental experience in children				
	No		Yes		All
	n	%	n	%	n
Normal state	27	77,14	8	22,86	35
Mild anxiety	6	75,00	2	25,00	8
Moderate anxiety	5	35,71	9	64,29	14
Severe anxiety	3	23,08	10	76,92	13
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	c2	df	p		
	15,629	3	0,001		

Discussion

Dental anxiety is one of the reasons why children avoid dental appointments or show anxiety problems. Assessing the level of anxiety can be very useful for providing good quality of dental services and better management of the behavior of patients. In highly anxious patients, it may be necessary to administer more local anesthetic or even anxiolytic in the dental treatment. Therefore, the results of this study are valuable for better understanding, management and development of treatment strategies for these patients.

The study showed that DAS levels among kids was 9.94. The data showed that most respondents had normal anxiety. However, the total number of increased anxiety and abnormal subjects was equal to the number of normal anxiety. The prevalence of high dental anxiety in children was 18.57%, which was lower than results found in children from Iran (29.3%)⁷ and Saudi Arabian (34%)⁸, but much higher than research results by Olak et al. (6%).¹³ The study results must be interpreted with caution, because children's fear can exist even if the children do not report it, since it is often used as a defensive reaction term "I'm not afraid". At the same time, an inadequacy of the responses given by the children may be due to insufficient differentiation of the psychological structure of each child and frequent inability to separate the real from unreal. In addition, highly anxious patients avoid going to the dentist, until the occurrence of particular problems. This study included patients who volunteered for dental treatment.

One of the most important factors for dental anxiety, which is mentioned by many researchers, is the child's age. The research results showed that there was no statistically significant difference in the prevalence of dental anxiety among children of different age groups. These results were similar to those found by Alaki and associates, which found no correlation between dental anxiety and children's

age⁸. In their 2007 study of children between ages 5 - 12, Bakarcic and associates found that there was a negative correlation between age and higher measurement of dental and medical fear.¹⁴ Our research was not in accordance to Majstorovic and associates 2004 study that noted lower percentage of dental phobia in boys (7.1%) and girls (9.2%) of older age, when compared to younger age (51.8% and 52.8%).¹⁵ Many studies have shown a decrease of dental fear as children get older.^{7,9,10,16,17} It is believed that in younger children, dental anxiety is part of a general anxiety. As they are growing up, they are able to control fear and anxiety to conceal the present existence of anxiety. In contrast to these findings, the study Raja et al.¹⁸ showed that dental fear increased with age. The reason for these results could be found in a higher number of painful dental experiences and complicated treatment.

In this study, there was no statistically significant differences in the prevalence of dental anxiety between boys and girls, which was consistent with the findings obtained by Yang et al.⁹ and Paryab et al.⁷ A number of researchers found a higher prevalence of dental fear in females.^{8,13,15,19} As a possible explanation, the authors offered cultural differences between males and females in expressing emotions. Males can not express their fears and anxieties as openly as females (girls freely show their feelings). The reason for contrast in our study may be the unequal distribution of the sample size between boys and girls. In addition, the gender balance among the different age groups was not equal.

Dental anxiety has a multifactorial origin, and, among external factors are previously negative dental experience significantly correlated with dental fear. 41.43% of the children in the study had negative dental experience, and with increased degree of anxiety, a percentage share of negative experiences grew. Hence, there was 76.02% of children with high dental anxiety. These results were in accordance with Brukiene et al.²⁰, which evaluated the relationship between dental anxiety and experiences of previous dental treatment and confirmed that adolescents without invasive dental treatment in the past were less anxious than those who had such an experience. Olak et al.¹³ in his research also found a link between the previous negative dental experiences and dental fear. In contrast to these results, Lygidakis found no significant effect of previous dental and medical experience to dental fear and behavior of children in the dental office.¹⁶ Negative dental experience is the greatest reason for dental anxiety but, the theory of "latent inhibition" suggests that a history of positive or neutral dental experience can serve as a protection from the development of a traumatic experience or anxiety.²¹

This study draws attention to a problem that has been neglected in modern dentistry and has a big impact on the success of dental treatment. This study has limitations,

which are primarily reflected in the small number of subjects. In order to obtain more precise data, more comprehensive study, which would include more subjects of different ages and gender, as well as from different living environments, is needed.

Conclusion

Dental anxiety is very real and widespread problem that must be resolved in order to provide adequate dental care. This study raises the need for greater awareness of dentists for "coaching" management of dental anxiety in patients, especially children. Consequently, proper management of dental anxiety in children would greatly reduce the difficulties in providing adequate dental care.

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Dentalna anksioznost kod djece uzrasta 6-15 godina

SAŽETAK

Uvod: Dentalna tjeskoba i strah su izvor ozbiljnih zdravstvenih problema kod djece. Prevalenca dentalne anksioznosti kod djece i odraslih dosta varira (5-40%).

Cilj rada: Utvrditi učestalost dentalne anksioznosti kod djece školskog uzrasta, radi boljeg razumijevanja i upravljanja tretmanom kod ovakve djece, te preduzimanja odgovarajućih preventivnih mjera.

Ispitanici i metode: Istraživanje je uključilo 70 djece (42 dječaka i 28 djevojčica), u dobi 6-15 godina, koja su posjetila stomatološku ordinaciju Doma zdravlja Kneževo tokom marta i aprila 2014. godine. Ispitanici su svrstani u dvije grupe, uzrast 6-10 godina i uzrast 11-15 godina. Ispitivana je prevalenca dentalne anksioznosti, polna i starosna distribucija, stepen dentalne anksioznosti, te uticaj prethodnog stomatološkog iskustva. Za procjenu dentalne anksioznosti je korištena Skala dentalne anksioznosti (DAS- Dental anxiety Scale).

Rezultati: Prosječan DAS kod djece je iznosio 9.94. Nije uočena statistički značajna razlika u javljanju dentalne anksioznosti u odnosu na pol i starost djeteta. Kod 18.57% djece je utvrđena teška dentalna anksioznost. Prethodno negativno stomatološko iskustvo značajno utiče na stepen anksioznosti kod djece.

Zaključak: Dentalna anksioznost je vrlo stvaran i rasprostranjen problem, a negativno stomatološko iskustvo ima veliki uticaj na njen razvoj.

Ključne riječi: dentalna anksioznost kod djece, prevalenca, negativno stomatološko iskustvo.