

## THE EFFECT OF PARENTAL PRESENCE ON THE DENTAL ANXIETY DURING CLINICAL EXAMINATION IN CHILDREN AGED 6-12 YEARS

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### SUMMARY

The aim of the present study is to evaluate the effect of parental presence on dental anxiety in children aged 6-12 years during clinical examination measuring subjective and objective parameters of stress.

The study was conducted on 48 randomly selected 6-12-years-old children, divided into two subgroups. Children in subgroup I were examined in parental presence and in subgroup II in parental absence. The dental anxiety degree was assessed using a combination of objective and subjective parameters including heart rate, oxygen saturation and self-report anxiety rating.

In each subgroup the mean heart rate is lowest on the dental chair before the examination and highest during the clinical examination itself with statistically significant difference ( $p < 0.001$ ). The self-report anxiety ratings are higher before the examination and lower after it in each subgroup with a statistically significant difference ( $p < 0.001$ ). The heart rate, oxygen saturation and self-report anxiety ratings show no significant differences between the two subgroups ( $p > 0.05$ ).

The most anxiety provoking situation was found to be the time of the clinical oral examination itself. After facing the stressful factor the anxiety degree reduces considerably. Parental presence or absence in the treatment room has no impact on anxiety level of children aged 6-12 years during their clinical examination.

**Key words:** parent, anxiety, pulse rate, oxygen saturation, scale

### INTRODUCTION

Dental anxiety can be defined as a feeling of apprehension about dental treatment, which is not necessarily connected to a specific external stimulus. It may lead to avoidance of dental care, increasing the risk of caries development and oral diseases [1].

Dentists have a wide variety of techniques available to them to assist management of child with anxiety [2]. The assessment of dental anxiety before dental treatment will help the dentist to facilitate proper technique for anxiety

management. There are four types of dental anxiety assessing scales in children are: psychometric scales, projective techniques, behavior evaluation and physiological measures [3]. In using a self-report measurement technique, only the cognitive component of the dental anxiety construct is covered [4]. Objective stress parameters can be obtained by measuring pulse rate, breath rate, skin resistance, blood pressure [5].

There is a debate on effect of parental presence in treatment room on children's dental anxiety. Studies in this research area conducted in children of different ages reported conflicting results [6-11]. Most children respond positively when their parent is in the treatment room [11, 12]. Occasionally, the presence of parent has a negative effect on the necessary communication between the child and the dentist [13].

The aim of the present study is to evaluate the effect of parental presence on dental anxiety in children aged 6-12 years during clinical examination measuring subjective and objective parameters of stress.

### MATERIAL AND METHODS

The study was conducted on forty-eight 6-12-years-old children (mean age =  $7.79 \pm 1.7$  years). A convenience sample of children was randomly selected from patients treated at the Department of Pediatric Dentistry in Faculty of Dental Medicine, Medical University - Plovdiv, Bulgaria during the period May - September 2013.

The inclusion criteria were:

- the children aged 6-12 years;
- signed informed consent form from the parent;
- native language of the child - Bulgarian.

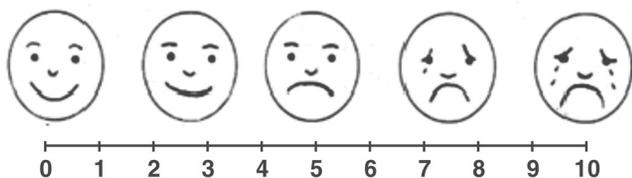
The exclusion criteria were:

- children with systemic diseases or physiological development delays;
- children with mental or cognitive problems;
- children undergoing medical treatment that might affect heart rate;
- children treated under general anaesthesia;
- present infectious diseases such as influenza, scarlet fever, etc.

The selected children were divided into two subgroups.

The first subgroup included those children whose parents were present during intraoral clinical examination. The second subgroup included those children whose parents were absent during the same procedure. Objective and subjective parameters were used to assess the degree of dental anxiety of children in the two subgroups.

The patient's subjective anxiety was recorded two times – before and after the intraoral clinical examination, using modified version of the self-report Faces Scale by LeBaron et al. [14], (Figure 1). It comprises a row of five faces ranging from 'relaxed' to 'very worried' in combination with a visual analogue scale of 0 - 10. Each child was asked to point to the face or choose the number which most closely depicted its state anxiety.



**Fig. 1.** Modified version of the self-report Faces Scale by LeBaron et al.

The present study investigated two physiological parameters of stress- heart rate and oxygen saturation, measured with pulse oximeter (Contec CMS50DL), at four different intervals:

1. In the waiting room.
2. Before the start of the examination on the dental chair (Fig. 2).
3. During the clinical examination.
4. After the examination.



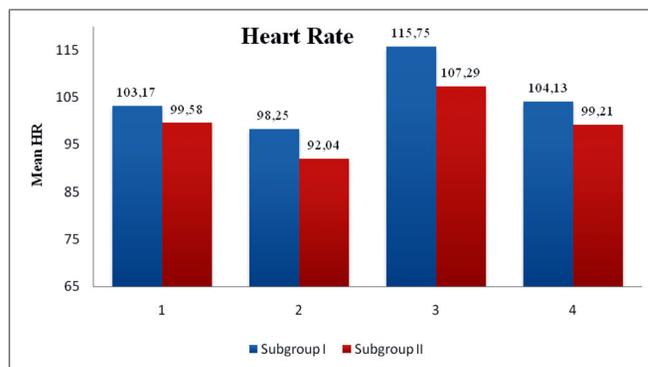
**Fig. 2.** Photograph of a child in normal dental setup prior clinical examination

The data obtained were tabulated and subjected to

statistical analysis. SPSS 19.0 was used for t-test and independent t-test in data analyses. The level for statistical significance was set at  $P < 0.05$ .

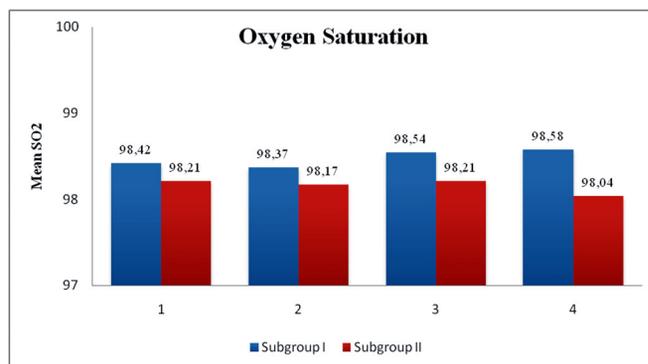
## RESULTS

The results show that in the two subgroups the mean heart rate of the child is lowest on the dental chair before the start of the examination, while it is highest during the clinical examination itself with statistically significant difference between the two intervals ( $p < 0.001$ ). (Graph 1).



**Graph 1.** Intergroup comparison of mean heart rate at four different intervals

There is no statistically significant difference in oxygen saturation levels between any other groups and also between different intervals (Graph 2).



**Graph 2.** Intergroup comparison of mean oxygen saturation levels at four different intervals

The heart rate and oxygen saturation levels show no significant differences between the two subgroups.

The self-report dental anxiety ratings are higher before the examination and lower after it in each subgroup with a statistically significant difference between the two intervals ( $p < 0.001$ ). The degrees of self-report dental anxiety show no significant differences between the two subgroups ( $p > 0.05$ ), (Table 1).

**Table 1.** Degree of dental anxiety of children in the two subgroups before and after examination

	<b>Subgroup I with a parent present</b>	<b>Subgroup II without a parent present</b>	<b>P</b>
<b>Before examination</b>	4.58	3.54	0.30
<b>After examination</b>	2.12	1.13	0.15

## DISCUSSION

The visit to the dentist's office is a stressful event for many children that can elicit feeling of anxiety [15]. Our study shows that the mean heart rate at the four different intervals is greater compared with the age-related normal mean value for children between 6 and 12 years [16]. The years between 6 and 12, the middle childhood, are a time of important developmental advances that establish children's sense of identity, cognitive skills, personality and motivation [17]. As physiological indexes alone have not been successful in assessing anxiety [9], thus we used a combination of objective and subjective parameters to assess the degree of dental anxiety in children. Heart rate was chosen for analysis because it is the simplest biological parameter to measure and because an increase in heart rate is the most common physiologic indicator for anxiety and fear [18]. It has been shown that this index is more in line with the anxiety experienced in dental visits than the other physiological parameters [1,2]. The results of our study show that dental visit is a stressful event for children and the most anxiety provoking situation was found to be the time of the clinical oral examination itself in comparison to the child's feelings in the waiting room, before and after the examination. The oxygen saturation remained unaltered. The results of the simultaneous measurement of the objective and subjective parameters of stress in children between 6 to 12 years are comparable.

The results of the present study have shown that the parental presence or absence in the treatment room has no impact on the anxiety level of the children aged 6-12 years during their clinical examination in both self-report dental anxiety and heart rate measurement. Our results confirm the

results obtained by Lewis and Law [9], Allen and Evan [8], Venham et al [10], as well as the study by Pfefferle et al [11], and study by Fenlon et al [8] that found lack of parental influence on children's cooperation and objective stress parameters. However, our results are different from the results obtained by the study by Croxton [8], and study by Marzo et al [7] that showed a negative impact on child's dental anxiety and behavior for parent's presence. The different design of studies is considered to be the possible reason.

The present results are in line with child's intent at this age to separation from parents, enhancing self-confidence and self-control as well as obtaining social experiences when facing strangers without any affective consequences. In cases when parents request to be present in the treatment room, it can be predicted that their presence has no negative impact on anxiety of their children. This gives the opportunity to discuss the individual treatment plan with parent in a timely manner. When children respond positively when their parent is in the treatment room, the dentist should tolerate the situation.

## CONCLUSION

The dental visit is a stressful event for children. The most anxiety provoking situation was found to be the time of the clinical oral examination itself in comparison to the child's anxiety in the waiting room, before and after the examination. After facing the stressful factor the degree of dental anxiety reduces considerably. The parental presence or absence in the treatment room has no impact on the anxiety level of the children aged 6-12 years during their clinical examination.

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