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Cross-Sectional Study

Comparison of the Level of Fear and Anxiety in Children Following Outpatient Dental Treatments and Under General Anesthesia

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ABSTRACT

Today, attention has been paid to controlling children's fear of dental pain. This study was designed to investigate changes in fear following outpatient dental treatments under general anesthesia in children. In this descriptive cross-sectional study, two groups of 50 were selected. One of these groups underwent outpatient treatment and the other group underwent general anesthesia. Children's Fear Survey Schedule-Dental Subscale questionnaire was used to assess children's fear and was completed by parents before and after treatment. To analyze the data, independent t, paired t, and chi-square statistical tests and SPSS23 software were used. A significance level of 0.05 was considered. The mean fear score before the outpatient treatment was 26.3 ± 19.2 and 4-5 weeks after the treatment was 28.4 ± 24.4, which was not a significant difference. The average fear score before the start of general anesthesia treatment was 37.9 ± 24.8 and 4-5 weeks after the treatment was 40.6 ± 28.7, this difference was not significant. The difference in the average fear score before outpatient treatment and before general anesthesia was significant (P = 0.01). In addition, this average difference after outpatient treatment and after general anesthesia was significant (P = 0.02). According to the obtained results, the use of general anesthesia as a treatment method did not increase fear in the present study subjects.

Keywords: Anxiety, Fear, Dental treatments, Anesthesia, Children

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Introduction

Historically, dental anxiety has been attributed to the patient's expectation of pain. Over the past centuries, pain control has been one of the factors of progress in reducing anxiety. One of the difficulties faced by families and the community of dentists, especially dentists who deal with children, is children's fear of dental treatments. In the conducted research, various variables for anxiety and fear of dentistry in children have been proposed; some of these causes include maternal anxiety, awareness of dental problems, past dental experiences, unknown sounds, and strange and unfamiliar smells [1-4].

Regardless of the cause of anxiety and fear, these feelings have consequences for the patient and the dentist. In this way, dental anxiety can cause not taking care of oral hygiene [5, 6], as well as the occurrence of problems such as pain, abscess, loss of milk and permanent teeth, and occlusion disorder. Although anxiety in small degrees can cause irregular visits and non-follow-up of treatment [7], this anxiety on a wider level causes many problems such as sleep disorders, negative thoughts, and feelings of low self-confidence [8-10].

There are various techniques to control dental anxiety, which include the use of sedative and hypnotic drugs [11], behavior control methods [12], and a combination of both methods [13]. In addition, the use of aromatherapy methods has been effective in controlling anxiety in some cases [14-17].

Although all the methods mentioned above are helpful in many cases, they also have their disadvantages. For example, behavior control methods and aromatherapy may not be effective in high anxiety levels. In addition, drug control of children's dental behavior will undoubtedly increase the success of treatments and improve their quality. However, drugs that slow down breathing and make the gag reflex not work have potential risks [18-20]. In some cases, due to the extent of the treatments required by the child, the number of caries, the child's lack of cooperation, and his behavioral control problems, all the above methods are not efficient, and dentists are forced to use general anesthesia to treat the child [21].

There are different methods to measure the average fear and anxiety of children. One of these methods is the use of the CFSS_DS questionnaire (Children's Fear Survey Schedule-Dental Subscale). According to Artman *et al*.'s study [22], the most accurate indicator for measuring children's fear and anxiety is the use of this questionnaire.

Jabarifar *et al*. conducted a study on the effect of dental treatment under general anesthesia on the quality of life and the level of fear of dentistry. 65 samples (33 boys and 32 girls) with an average age of 3.6 years participated in this study [21]. The report has shown that the average changes before and after treatment were statistically significant and children's fear of dentistry decreased significantly after treatment; however, in the study of Klaassen *et al*., it has been shown that dental treatment under general anesthesia did not have a significant effect on their fear level [23]. The purpose of this study was to comparison of the level of fear and anxiety in children following outpatient dental treatments and under general anesthesia.

Materials and Methods

In this descriptive cross-sectional study, 50 healthy children aged 3-6 who were referred to the operating room for dental work under general anesthesia were selected by a simple sampling method. In addition, the number of 50 healthy children aged 3-6 who visited the pediatric dentist's office were selected as the control group. This group was examined in terms of previous dental history and only a group of patients selected for the study who were undergoing dental treatment for the first time and were medically placed in the ASA I, and II groups. For dental treatment for these children, there should have been cases of anesthesia injection, pulp therapy, and restorative treatments.

In both groups, consent was first obtained from the parents, and then, before the children entered for dental treatment, the CFSS-DS questionnaire was completed by the parents. After the end of the treatment, a copy of the questionnaire was given to the parents in a stamped envelope, and 4 to 5 weeks after the work, they were reminded to complete the questionnaires again and mail them to the researcher's address.

The CFSS_DS questionnaire contains 15 questions and each question has five answers with a score of 1 (no fear) to 5 (completely afraid). The score of fear and anxiety of each child is obtained from the sum of points related to each question. Finally, each child's fear and anxiety score is a number between 15 and 75. To level the level of anxiety in referring children, all efforts of the researchers in this study were to select children with average anxiety (20-70) in the sampling.

To analyze the data, chi-square, independent t, and paired t-tests were used. The software used was SPSS23. The significance level was considered 0.05 in all tests.

Results and Discussion

According to **Table 1**, there were 27 (54%) boys and 23 (46%) girls in the outpatient group, and 28 (56%) boys and 22 (44%) girls in the general anesthesia group. The chi-square test showed that There was no significant difference in the frequency distribution of sex in the two groups (P = 0.91), in other words, the two groups were homogeneous in terms of sex distribution. The average age in the outpatient group was 4.62 ± 0.72 years and in the general anesthesia group was 4.53 ± 0.63 years, independent t-test showed that the average age of the two groups was not significantly different (P = 0.86), so the two groups were homogeneous in terms of age. Average fear and anxiety in both groups were calculated before treatment. 4-5 weeks after treatment, average fear and anxiety were measured in the same children.

Table 1. Frequency distribution of gender of children in two groups.

Gender	Outpatient group (N (%))	General anesthesia group (N (%))
Boys	27 (54)	28 (56)
Girls	23 (46)	22 (44)
Total	50 (100)	50 (100)

According to **Table 2**, in the outpatient treatment group, the average fear and anxiety before the start of the treatment was 26.3 ± 19.2 and after the treatment, it was 28.4 ± 24.4. In the treatment group under general anesthesia, the average fear and anxiety was 37.9 ± 24.8 before treatment and 40.6 ± 28.7 after treatment.

In the outpatient treatment group, the average change in fear and anxiety after treatment compared to before treatment was 2.1 ± 3.3 and this average change in general anesthesia was 2.7 ± 3.04. The t-test did not show a significant difference in the average changes in fear and anxiety in the two groups. A paired t-test showed that the mean score of children's fear and anxiety before and after dental treatment was not significantly different in any of the groups. The independent t-test showed that both before treatment (P = 0.01) and after treatment (P=0.02) the mean score of fear and anxiety in the general anesthesia group was significantly higher than in the outpatient group.

Table 2. The average score of fear and anxiety before and after dental treatments.

Group	Before treatment		After treatment		Difference		P-value
	Mean	SD	Mean	SD	Mean	SD	
Outpatient	26.3	19.2	28.4	24.4	2.1	3.3	0.52
General anesthesia	37.9	24.8	40.6	28.7	2.7	3.04	0.37
P-value	0.01		0.02		0.89		-

In this research, according to **Tables 3 and 4**, the highest and lowest fear and anxiety in both groups have been calculated about the questionnaire questions. The most fear and anxiety were related to the proposition of injecting in dental treatment under general anesthesia, which means the child is the same angioket that is used to anesthetize the child. The least fear and anxiety related to the white coat of the dentist and the staff was before the outpatient dental treatment.

Table 3. The average score of questionnaire items in both groups, before dental treatment.

No.	Proposition	Outpatient	General anesthesia	P-value
1	Dentist	1.17	1.52	0.22
2	Doctor	0.55	1.08	0.02
3	Injection	2.41	2.14	0.32
4	For someone to examine you	0.59	1.22	0.003
5	Of wanting to open your mouth	0.43	1	0.001
6	From being touched by someone (dentist)	0.55	1.16	0.009
7	To see your dentist	0.57	1.26	0.006
8	From shaving teeth (Dental drill)	1.88	2.10	0.45
9	Seeing the dentist cutting a tooth	1.57	2.04	0.1
10	From the sound of teeth grinding (Dental drill sound)	1.61	1.88	0.31
11	From someone putting something in your mouth	1.21	1.76	0.02
12	Not being able to breathe well during dental work	1.25	1.76	0.08
13	Of wanting to go to the hospital	1.14	1.52	0.14
14	From people wearing white robes	0.27	0.90	0.002
15	For the nurse to clean the counter teeth	0.55	1.38	0.002

Table 4. The average score of questionnaire items in both groups, after dental treatment.

No.	Proposition	Outpatient	General anesthesia	P-value
1	Dentist	1.66	1.9	0.49
2	Doctor	0.62	1	0.28
3	Injection	2.76	3.04	0.47
4	For someone to examine you	0.98	1.38	0.2
5	Of wanting to open your mouth	0.88	1.22	0.4
6	From being touched by someone (dentist)	0.96	1.46	0.21
7	To see your dentist	0.78	1.48	0.02
8	From shaving teeth (Dental drill)	1.72	2.34	0.055

9	Seeing the dentist cutting a tooth	1.25	2.1	0.01
10	From the sound of teeth grinding (Dental drill sound)	1.66	2.14	0.15
11	From someone putting something in your mouth	1.11	1.14	0.28
12	Not being able to breathe well during dental work	0.74	0.82	0.9
13	Of wanting to go to the hospital	0.88	1.98	0.002
14	From people wearing white robes	0.37	0.70	0.24
15	For the nurse to clean the counter teeth	0.62	1.38	0.01

According to the CFSS-DS questionnaire, the average fear and anxiety before the outpatient treatment was 26.3 ± 19.2 and after the treatment, it was 28.4 ± 24.4. Because the child had the experience of anesthesia injection and teeth grinding, his average fear and anxiety increased. However, this increase was not significant. In the study of Salem *et al*. the same questionnaire was used to investigate the fear and anxiety of 200 children aged 3-6 [24]. The average fear and anxiety in these children was 32.15. The average of fear and anxiety in this study is higher than the average of the current study. According to the same questionnaire, the average fear and anxiety before the dental treatment under general anesthesia was 37.9 ± 24.8 and after the treatment, it was 40.6 ± 28.7. The difference in the results of this group was not significant.

Klaassen *et al*. reported that dental treatment under general anesthesia had no significant effect on their fear and anxiety levels [23]. In their study, they used the CFSS-DS questionnaire to assess fear and anxiety in children. The results of this study are consistent with the results of the present study. While in the study by Jabarifar *et al*. which, in addition to examining the changes in children's fear and anxiety about dentistry after treatment under anesthesia, also examined the quality of life-related to oral and dental health, the results show a decrease in the meaning of the level of children's fear and anxiety after treatment was different [21]. It has been concluded that in the treatment of general anesthesia since there is no need for the child to be repeatedly exposed to the dental environment and factors that cause internal anxiety, the child's fear of dentistry has decreased after receiving the treatment. In addition, the fact that receiving a dental treatment session under general anesthesia has made a significant improvement in the quality of life of the child may have caused a positive attitude towards dentistry in the child and reduced his fear and anxiety. It should be noted that the control group was not considered in this study and the trial was before and after.

In this study, in addition to calculating the average fear and anxiety before and after each treatment method, a comparison was made between the average fear and anxiety before dental treatment in both methods and after dental treatment in both methods. The average difference between fear and anxiety before treatment was significant in both methods. In addition, this average difference after treatment was significant in both methods and this average was higher in the dental treatment group under general anesthesia. As we know uncooperative and anxious children are treated under general anesthesia, as a result, the higher average of fear and anxiety in general anesthesia treatment compared to outpatient treatment is justified in this part.

In this research, the highest and lowest fear and anxiety in both groups were calculated about the questionnaire questions. Most fear and anxiety were related to the proposition of injecting in dental treatment under general anesthesia, which means the same angioket that is used to anesthetize the child. The least fear and anxiety related to the white coat of the dentist and the staff was before the outpatient dental treatment. Akyz *et al*. showed the level of fear and anxiety of children by measuring the level of salivary cortisol [25]. In this study, the greatest fear and anxiety of children was when preparing a cavity for tooth restoration. This was fear and anxiety during tooth brushing.

Peter *et al*.'s study showed that the highest level of fear and anxiety is related to tooth grinding and the use of anesthesia needles [26]. In the study of Majstorovic *et al*. who studied the relationship between fear of anesthesia needles and dental anxiety, it was concluded that fear and anxiety of dental needles are age-related and this fear is related to anesthesia needles [27]. It is not specific to dentistry and can be related to other therapeutic factors that are associated with causing pain.

Conclusion

This study was designed to investigate changes in fear following outpatient dental treatments under general anesthesia in children. The mean fear score before the outpatient treatment was 26.3 ± 19.2 and 4-5 weeks after the treatment was 28.4 ± 24.4, which was not a significant difference. The average fear score before the start of general anesthesia treatment was 37.9 ± 24.8 and 4-5 weeks after the treatment was 40.6 ± 28.7,

this difference was not significant. The difference in the average fear score before outpatient treatment and before general anesthesia was significant. In addition, this average difference after outpatient treatment and after general anesthesia was significant. According to the obtained results, the use of general anesthesia as a treatment method did not increase fear in the present study subjects.

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