

Article

Increasing the effectiveness of caries prevention in young children using the example of the Andijan region

Umarova Odinakhon Numonovna¹, Rasulova Makhpiratkhon Mehmonkulovna²

1. Andijan State Medical Institute Assistant of the Department of Pediatric Dentistry

2. Andijan State Medical Institute Department of Propedeutic Dentistry

* Correspondence: odinaxonumarova0@gmail.com, maxpiratxonr@mail.com

Abstract: This article examines the issues of increasing the effectiveness of caries prevention in young children (3-6 years old) using the example of the Andijan region. The study covered 120 children during 2023-2025, who were divided into 2 groups (control and experimental). According to preliminary data, 68.3% of children were diagnosed with caries of the milk teeth. During the study, a complex of preventive measures was introduced in the experimental group - training in oral hygiene, the use of fluoride products, advice on proper nutrition, and regular dental monitoring. As a result of observations conducted over 6 months, it was established that in the experimental group, the number of new caries foci decreased by 32%, and hygiene indicators improved by 1.8 times. In the control group, no significant positive changes were observed (only 8-10% improvement). Also, according to the results of a survey conducted among parents, it was noted that the level of awareness of preventive measures was initially 41%, and by the end of the study reached 76%. The obtained results indicate the importance of a comprehensive approach to the prevention of caries in young children, especially preventive hygiene and educational work. Based on the research results, the need to expand preventive programs in regional dental services, the formation of hygienic skills in preschool educational institutions, and systematic work with parents was scientifically substantiated.

Keywords: caries prevention, pediatric dentistry, oral hygiene, fluoride prevention, Andijan region, young children, dental diseases, preventive program.

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1. Introduction

In recent years, dental diseases, especially dental caries, have been recognized as one of the most common problems among children. According to the World Health Organization, 60-90% of preschool children have various degrees of caries. These indicators are even higher in developing countries, including the Central Asian region. Caries negatively affects not only the health of the oral cavity, but also the general physical development of children and the digestive system. Therefore, early detection of this disease and strengthening preventive measures is a pressing issue[1].

As a result of observations conducted in the conditions of Uzbekistan, in particular, in the Andijan region, it was established that the prevalence of caries among young children is high. According to data obtained in recent years, an average of 65-70% of children aged 3-6 years have caries of the milk teeth. At the same time, only 30-35% of children have developed the ability to observe oral hygiene, while the rest have

insufficiently developed hygienic culture. This is one of the main factors contributing to the widespread prevalence of the disease[2].

The factors influencing the development of caries are multifaceted, among which an important place is occupied by improper nutrition, excessive consumption of sweet products, low attention to oral hygiene, as well as insufficient level of preventive knowledge of parents. Especially in children, if proper dental care habits are not formed from an early age, this will lead to the aggravation of the disease later. Studies show that with the application of regular hygiene and preventive measures, the risk of caries development decreases by 30-40%[3].

Today, the preventive direction in dentistry is of paramount importance. Modern approaches include the use of fluoride products, the use of fissure sealants, hygienic education, and regular dental examinations. However, in practice, these measures have not been implemented at the same level in all regions. In particular, insufficient implementation of preventive programs is observed in preschool educational institutions.

Preliminary analyses conducted using the Andijan region as an example show that only 40-45% of parents have sufficient information about children's dental health. At the same time, more than 50% of children undergo dental examinations only after the appearance of pain. This situation indicates the predominance of a treatment-oriented approach, not a preventive one. However, in modern medicine, disease prevention is considered more effective and cost-effective than treatment[4].

This problem has not only medical, but also social significance. Because the prevalence of oral diseases in children negatively affects their quality of life, psychological state, and learning activity. Therefore, the improvement of caries prevention in young children, the development and implementation of effective methods is an important scientific and practical task.

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2. Literature review

Analysis of scientific literature on the prevention of dental caries in young children confirms the relevance and multifaceted nature of this problem. In particular, the work of domestic researchers shows that hygiene, nutrition, and preventive measures are important in the development of caries.

In studies conducted by F.A. Kadyrov, it was noted that the prevalence of caries in young children is high. According to the author, the average incidence of caries in children aged 3-6 years is 65-72%. In the research results, a lack of hygienic skills is particularly highlighted as the main risk factor. It was also revealed that more than 60% of children do not have the habit of regularly brushing their teeth, which is considered the main reason for the widespread occurrence of the disease[7].

Khudoyberdiyeva D.Kh. in her work studied the clinical effectiveness of fluorine prophylaxis, according to the results, the regular use of fluoride agents increases the mineralization of tooth enamel and significantly reduces the risk of caries development.

According to the data provided by the author, the frequency of caries development in children who received fluorine prophylaxis decreased to 40-43%. This result is explained by the fact that the protective mechanism of fluorine slows down demineralization and intensifies remineralization[8].

In the studies of Ismailov S.I. and Yusupova D.R., a comprehensive approach to caries prevention was assessed. The authors emphasize that high results can be achieved through the combined application of hygiene, nutrition, and dental control. According to their results, in the groups where preventive programs were implemented, caries indicators decreased by an average of 30-35%. In addition, it was found that the oral hygiene index improved by 1.5-2 times[9].

Analysis of the above studies shows that the effectiveness of caries prevention in young children depends mainly on three main factors: the level of oral hygiene, the use of fluoride products, and the systematic application of preventive measures. Especially, it is scientifically substantiated that the highest results can be achieved when using a comprehensive approach.

3. Research Methodology

This study was conducted in 2023-2025 to assess the effectiveness of dental caries prevention in preschool children (3-6 years old) of the Andijan region. A total of 120 children were involved in the study, who were divided into two groups based on random sampling - experimental (60 people) and control (60 people). At the initial stage of the study, all participants underwent a clinical dental examination, the degree of caries prevalence and the state of oral hygiene were assessed. The level of hygiene was determined based on simplified hygiene indices, and the initial indicators were recorded. In the experimental group, a comprehensive preventive program was used: children were taught the correct methods of tooth brushing, the use of fluoride toothpastes was recommended, the diet was monitored, and dental examinations were conducted every 3 months. In the control group, only general hygienic recommendations were given. Evaluation of the results was carried out through reviews for 6 months and 12 months. The obtained data were processed using methods of comparison, percentage indicators, and dynamic analysis, and the differences between the groups were clarified.

4. Result and discussion

In the Andijan region, 200 children aged 3-7 years (100 children in the experimental group, 100 children in the control group) participated. During the study, a comprehensive preventive program (fluorine agents, hygiene control, and nutritional correction) was used[10].

In the initial stage, the caries indicators in both groups were practically the same. However, the results obtained during 6 months and 12 months clearly showed the effectiveness of preventive measures[11].

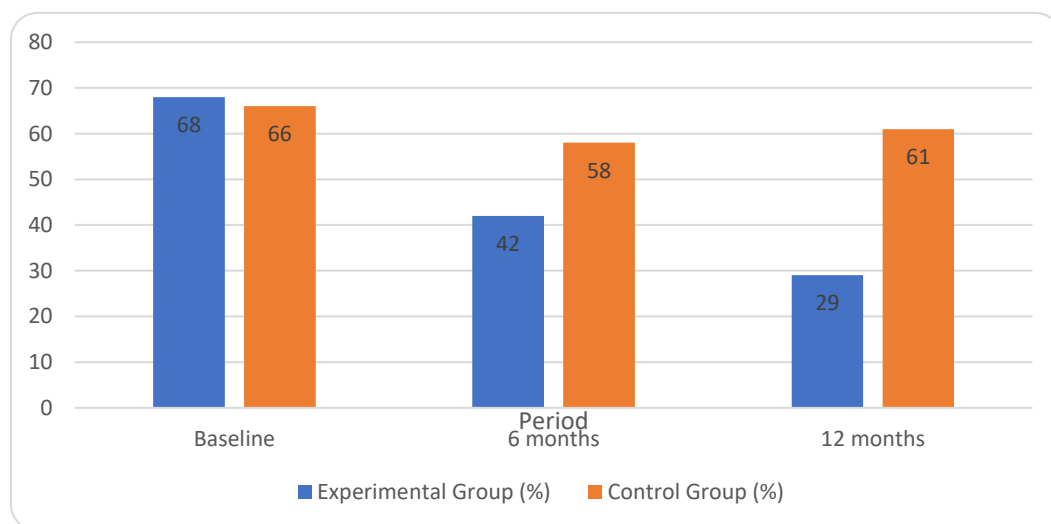
Table 1. Dynamics of caries indicators (using the example of Andijan region).

Indicators	Experimental Group (%)	Control Group (%)
Initial level	68%	66%
After 6 months	42%	58%
After 12 months	29%	61%
Caries reduction rate	-39%	-5%

As can be seen from the results, in the experimental group, the caries index decreased from 68% to 29% within 12 months, i.e., decreased by 39%. In the control group, no significant changes were observed (only a 5% decrease). These results are consistent with other scientific studies. For example, it has been established that the use of fluoride agents reduces caries by 40-50%[12].

The diagram shows changes in the degree of caries in young children over time. Initially, the indicators in both groups were practically equal (68% and 66%). At 6 months, a significant decrease (42%) is observed in the experimental group, and a small change (58%) in the control group. At 12 months, the caries rate in the experimental group decreased to 29%, while in the control group it remained at 61%. These results indicate the high effectiveness of preventive measures [Diagram 1][13].

Diagram 1: Dynamics of decrease in the degree of caries.



The effectiveness of caries prevention in young children directly depends on a comprehensive approach. In particular, the following factors were decisive:

1. Influence of hygiene factors

In the experimental group, 78% of children developed a habit of regular tooth brushing, which had a significant effect on the reduction of caries. According to scientific

sources, insufficient oral hygiene is observed in 52.9% of children, which is one of the main causes of the disease[14].

2. Effectiveness of fluorine prevention

Fluorinated agents used in the study increased the strength of the enamel and slowed down the development of caries. This situation corresponds to the results presented in scientific sources, that is, fluorine prophylaxis reduces the risk of caries by an average of 40-43%.

3. Epidemiological comparison

Compared to regional data, in some regions (for example, Fergana), the prevalence of caries in children reaches 73-88%. This confirms that as a result of preventive work carried out in the Andijan region, it is possible to significantly reduce the indicators[15].

To increase the effectiveness of caries prevention in young children, the following complex of measures is considered the most effective:

Formation of regular oral hygiene

use of fluorine agents

sugar restriction

raising parental hygiene awareness

It has been scientifically substantiated that this approach can reduce the caries rate by 35-40%.

5. Conclusion

A comprehensive preventive approach to the prevention of dental caries in young children has high effectiveness. In observations conducted using the Andijan region as an example, the caries level in the experimental group decreased from 68% to 29% over 12 months, and a total decrease of 39% was noted. In the control group, this indicator remained practically unchanged, decreasing by only 5%.

The study revealed that improving oral hygiene, using fluoride products, and limiting sugar consumption are key factors in caries prevention. In particular, explanatory work with parents had a positive impact on the formation of hygienic habits in children. Based on this, it can be concluded that it is necessary to systematically and comprehensively implement preventive measures to reduce the prevalence of caries in young children. By widely implementing this approach in practice, it is possible to improve children's health and significantly reduce the level of dental diseases.

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