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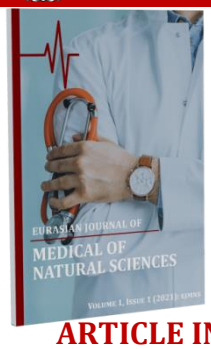

PREVENTION OF DENTAL CARIES IN CHILDREN

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ABSTRACT

A two-year program of controlled brushing of teeth conducted among junior schoolchildren of secondary schools No. 8 and No. 2 of the Samarkand region, Nurabat river showed high efficiency. There was a decrease in the growth of caries of permanent teeth by an average of 49.5%. There were no significant differences between the effectiveness of remineralizing toothpastes without fluoride, pastes with aminofluoride and sodium fluoride in this study. When comparing the data obtained with the results of a similar program that covered a much larger number of primary school children, a similar tendency to decrease the increase in caries of permanent teeth was noted, which allows us to conclude that the results obtained are reliable. However, the anti-carious effect of the same toothpastes in the previously conducted program is somewhat lower - within 32%. This difference is due to the different levels of motivation and discipline of participants in ongoing preventive programs.

Introduction: In most countries of the world, in the last 20-30 years, there has been a decrease in the intensity and prevalence of dental caries in children [1]. This phenomenon of the late XX — early XXI century coincides with the widespread introduction of programs for systemic fluoridation and local application of fluorides to teeth in the form of varnishes, gels and toothpastes. Fluoride—containing toothpastes deserve special attention, the consumption of which has increased by 29.7% in the world since 2000, by 45.4% in Western Europe, and by 90.6% in Eastern Europe [2]. Recognizing the fact that the decrease in the intensity of carious disease coincides with an increase in the consumption of fluoride-containing toothpastes in general, it is impossible not to notice the minimal effect of global fluoridation of toothpastes on residents of Eastern Europe and Russia. However, the medical effect of this method of preventing dental caries is small: the average CPI of permanent teeth in 12-year-old children living in the Russian Federation is 2.5. The analysis of the prevalence of caries shows the early onset of persistent dental caries in children, and an increase in its prevalence in adulthood (WHO analysis results). Groups: 6 years - 44.19%; 7 years - 53.57%;8 years - 60.00%; 9 years - 77.55%; 10 years - 86.00%; 11 years - 84.31%; 12 years - 78.43%; 13 years - 89.58% .[8] A similar trend is observed in the CIS countries [3], which is about 2 times higher than in the USA and 2.6 times higher than in Germany [4]. It follows from these data that total fluoridation of

toothpastes does not solve the problem of dental caries properly. One of the possible reasons for the insufficient anti-carious effectiveness of hygiene products may be a formal attitude to oral hygiene and the lack of perception of it as an important factor in prevention, not only of dental diseases, but also of so-called seasonal infections and exacerbations of chronic diseases. Regular and careful oral care leads to a decrease in the frequency of common diseases, primarily colds and allergies [5].Currently, the market offers a wide variety of hygiene products designed for oral care. Their advantages or disadvantages are widely discussed in the media, as well as in the professional press. Much less attention is paid to their proper use, although conscientious implementation of the recommendations laid down by the manufacturer makes a significant contribution to improving the effectiveness of a particular remedy. For example, it is known that the average brushing time should take at least 2-5 minutes. However, according to chronometric studies, most people (about 90%) brush their teeth for 25-40 seconds [5]. During such a period of time, many active components of hygiene products do not have time to have the proper effect. An example is the widely used sodium fluoride, which begins to act only 60 seconds after the start of brushing teeth [6]. The results of cleaning the oral cavity are also very often unsatisfactory: plaque, food residues remain on the lingual, palatine and chewing surfaces of the teeth [5]. This creates additional difficulties in the penetration of active substances to the tooth surface, which undoubtedly affects their anti-carious effectiveness. The purpose of this work was to clinically evaluate the anti-carious efficacy of three commercial samples of toothpastes with various active substances (without fluoride mineralizing complex, AmF and NaF) and to identify the dependence of the effectiveness of these hygiene products on the conscientiousness of preventive measures.

Research materials and methods. As part of the implementation of this study, secondary schools No. 8 and No. 2 in the Samarkand region, Nurabat river, were selected, where preventive measures are carried out every 2 years, and the school administration actively supports and monitors their implementation. All primary school children aged 8-9 were involved in the supervised dental cleaning program with parental consent. After the initial dental examination conducted as part of the planned annual preventive examinations, children of grades 2 and 3 aged 8-9 years were divided into 4 equivalent groups in accordance with the initial indices of dental status. In the group ≪And≫ were 97 children (mean age 8.4 years), the group ≪B≫ — 98 (mean age 8.5 years) in the group ≪C≫ — 101(mean age 8.4 years). The schoolchildren included in the study were provided with children's toothpastes for the entire duration of the program: in group A, the active ingredient is Mineralin without fluoride (Siberian health "lively thing"), the group ≪ B ≫ — the active ingredient AmF,500 ppm F- (R. O. C. S. Kids ≪Raspberry–Strawberry≫); in the group ≪ C ≫ — active component NaF, 1000 ppm F-(toothpaste Colgate Junior). All of these toothpastes are registered and approved for use in the Republic of Uzbekistan. 96 schoolchildren from another school in the region were included in the study as a control group. From Samarkand at the age of 8-9 years, united in the group "D". In this group, there was no active intervention in the oral hygiene regime in the form of controlled brushing of teeth. All the children in the "D" group were given a rehabilitation program and dental health lessons. The choice of toothpastes by children (parents), the regularity and quality of tooth brushing in the D group were not controlled, however, given the structure of the toothpaste market in the Republic of Uzbekistan, it can be assumed that the

children of the control group mainly used fluoride-containing toothpastes. For groups of children ≪And≫, ≪B ≫ and ≪ C ≫ in the days of the school was organized cleaning teeth under the supervision of teachers, which was carried out after the second Breakfast in a specially equipped room with mirrors, shells, and warm water. The teachers gave out the toothpaste under study, applying it directly to the child's individual toothbrush in a volume approximately equal to 1 ml, monitored the dental cleaning procedure for 5 minutes and, if necessary, helped. The dental status study was carried out in school dental offices under standard conditions for lighting, instrument use, and data recording. Before starting the program , the oral hygiene index ≪OHI-S≫ and the gingival index ≪GI≫ were determined during the dental examination of children and the KPU index, which reflects the intensity of caries in permanent teeth. The follow-up for the purpose of this study was conducted 2 years after the start of the program. The results of the study were processed statistically in the Excel statistics program with the determination of average values and Student criteria t and p.

The results of the research and their discussion: Fully program-controlled six-month teeth cleaning in schools were 95 student (out of 97) of the study group ≪And≫, 98 student (out of 98) of the study group ≪ B ≫, 98 student (out of 101) of the study group ≪ C ≫ and 87 students (of 96) in the control group ≪ D ≫. The dropout of the program participants was due to a change of residence and school and a prolonged absence from school. According to the results of the examination, before the start of the program, the oral hygiene of 8–year-olds was assessed as "unsatisfactory". The average index of hygiene OHI-S was more than >1.7units. The average gingival index GI was 0.9, which indicated the presence of mild gingivitis in children. Caries of permanent teeth was detected in 25.5% of children. The average CP values in the four groups ranged from 0.47 to 0.52 ($p > 0.05$). By the end of the program-controlled brushing your teeth in the clinical groups ≪And≫, ≪ B ≫ and ≪ C ≫, indicators of oral hygiene has improved 44-45% of the original level (for hygiene index OHI-S) and thus, children who participated in the program, the level of hygiene of the mouth moved from ≪unsatisfactory≫ category ≪satisfactory≫. Simultaneously with the improvement in the level of oral hygiene in children, there was a decrease in the gingival index GI by an average of 31.2%, which is close to the real possibilities of gingivitis prevention in mass oral hygiene programs. Differences in oral hygiene and gum health in the studied groups of children had no statistical significance ($p > 0.05$). In this paper, we analyze the variation of intensity of caries in permanent teeth in DMF index in children study groups ≪And≫, ≪ B ≫, ≪ C ≫ in comparison with the control group ≪ D ≫. In the "A" group, where students in grades 2-3 used fluoride-free mineralizing baby toothpaste for oral hygiene, the KPU of permanent teeth (initially 0.42 Ґ 0.07) increased by 0.52 KPU to the level of 0.91 Ґ 0.15 ($p < 0.05$) by the end of the 1.5th year of controlled brushing. In group B, children who used baby toothpastes with the active component AmF(500 ppm F-) had an initial KPU of 0.49 Ґ 0.10 by the end of the program increased by 0.53 KPU to the level of 1.02 Ґ 0.15($p < 0.05$). In group B, where children brushed their teeth with a paste with the active component NaF (1000 ppm F-), the initial dental CP of 0.51 Ґ 0.09 increased to 0.97 Ґ 0.12 over the 2 years of the program ($p < 0.05$). Statistically significant differences between the final values of the Communist party of permanent teeth in groups ≪And≫, ≪ B ≫ and ≪ C is not obtained, which gives grounds to assume that these toothpastes are the same in their effect on the indicators of intensity of caries in permanent teeth in primary school.

It was important to compare the data obtained with the results of a similar program that covered a significantly larger number of children, but only the first grades aged 8-9 years.There is an identical tendency to decrease the increase in the intensity of caries of permanent teeth when using all three commercial samples of toothpastes with various active substances, which suggests a high reliability of the results obtained. However, the anti-carious effect of the same toothpastes in the previously conducted program is slightly lower (within 32%). This difference is due to the different levels of motivation and discipline of participants in ongoing prevention programs. In the first case, the dental health program was implemented in 7 schools, most of which had teachers and administrators participating in such a program for the first time. In the second case, a school was chosen to conduct a preventive program, where such programs have been implemented for about 2 years, all teachers are well trained, and the school administration is interested in improving the dental status of schoolchildren.

Conclusion: A long-term randomized "blind" clinical trial showed the high effectiveness of all three commercial samples of toothpastes with various active substances in the prevention of caries of permanent teeth in primary school-age children (8-9 years old) who participated in a supervised dental cleaning program at school under the supervision of teachers. The decrease in the increase in the CP of permanent teeth in children aged 8-9 years over 2 years was 47% for a fluoride-free mineralizing toothpaste, which is comparable to the medical effect in the prevention of dental caries in pastes containing minimal concentrations of aminofluoride (500 ppm F-) or generally accepted sodium fluoride (1000 ppm F-). There were no significant differences between the effectiveness of mineralizing toothpaste without fluoride, with AmF and NaF in this study, which gives reason to recommend mineralizing toothpastes with the active component Mineralin as an equivalent means of local prevention of dental caries along with well-known fluoride-containing products for oral hygiene. The anti-carious effectiveness of toothpastes depends not only on the active ingredients contained in them, but also on the regularity and correctness of the brushing technique.

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