УДК: 616.31:614.2-0-53.9-084(470.67)

PREVENTION OF DISEASES OF HARD TISSUES OF TEETH IN CHILDREN UNDER THE INFLUENCE OF ADVERSE ENVIRONMENTAL FACTORS

Ochilova G.S.[1]

[1] Bukhara State Medical Institute named after Abu Ali ibn Sino, Uzbekistan. E-mail: gulrukh.ochilova.81@inbox.ru
https://orcid.org/0000-0001-6928-779X

Abstract. Protecting the health of the able-bodied population in the world is one of the most important tasks of medical personnel. The article discusses and analyzes the main methods and means of preventing caries of temporary and permanent teeth in preschool and school-age children, describes the methods of evaluation and the percentage ratio of the effectiveness of caries prevention methods. Discussion. Reducing the number of receptions of easily digestible carbohydrates up to five times a day and daily two-time individual brushing of teeth with the use of fluoride-containing paste, selected according to the age of the child and standard equipment, in most cases are sufficient and give a pronounced anti-carious effect.

Keywords: caries, fluoride-containing agents, remineralization, risk factors, therapeutic and preventive measures, germatization of fissures.

For citation:

Ochilova G.S. Prevention of diseases of hard tissues of teeth in children under the influence of adverse environmental factors. — *Integrative dentistry and maxillofacial surgery.* — 2022; 1(1):84-86

ПРОФИЛАКТИКА ЗАБОЛЕВАНИЙ ТВЁРДЫХ ТКАНЕЙ ЗУБОВ У ДЕТЕЙ ПРИ ВОЗДЕЙСТВИИ НЕБЛАГОПРИЯТНЫХ ФАКТОРОВ СРЕДЫ

Очилова Г.С.[1]

[1] Бухарский государственный медицинский институт имени Абу Али ибн Сино, Узбекистан. E-mail: gulrukh.ochilova.81@inbox.ru
https://orcid.org/0000-0001-6928-779X

Аннотация. Охрана здоровья трудоспособного населения в мире является одной из важнейших задач медицинского персонала. В статье рассмотрены и проанализированы основные методы и средства профилактики кариеса временных и постоянных зубов у детей дошкольного и школьного возраста, описаны способы оценки и процентное соотношение эффективности методов профилактики кариеса. Обсуждение. Снижение количества приемов легкоусваиваемых углеводов до пяти раз в день и ежедневная двухразовая индивидуальная чистка зубов с применением фторсодержащей пасты, подобранной соответственно возрасту ребенка и стандартной техники, в большинстве случаев достаточны и дают выраженный противокариозный эффект.

Ключевые слова: кариес, фторидсодержащие средства, реминерализация, факторы риска, лечебно-профилактические мероприятия, герматизация фиссур.

Для цитирования:

Очилова Г.С. Профилактика заболеваний твёрдых тканей зубов у детей при воздействии неблагоприятных факторов среды. — *Интегративная стоматология и челюстно-лицевая хирургия.* — 2022; 1(1):84-86

THE RELEVANCE of carious dental diseases in childhood in the modern world remains an urgent problem, Despite significant advances in cariesology, the increase in caries is increasing, which requires the creation of a new generation of preventive measures. The leading cause of the progression and "rejuvenation" of caries is a low sanitary culture, and weak motivation of parents and, accordingly, their children to prevent dental diseases. It is possible to increase the dental level of health only through mass education and preventive work, using all available methods and means. It is known that caries is a multifactorial disease. The main reason for the development of caries is a change in the microbiocenosis of the oral cavity arising under the influence of various local and general cariesogenic factors [2]. It is known that the process of enamel formation proceeds in three stages: the stage of secretion and primary mineralization of enamel, the stage of enamel maturation, the stage of final mineralization of enamel. The first two stages take place in the perinatal period, the third - in the postnatal period. The impact of a negative factor can lead to a violation of any stage of mineralization, which, in turn, leads to a violation of the development of the tooth structure [5]. Dental caries is the most common chronic disease among the child population. A special place in the structure of this pathology is occupied by caries of milk teeth. Despite the improvement in the quality and expansion of the volume of preventive and curative measures, the level of intensity and severity of early childhood caries in our country and in the Bukhara region in particular remains at a very high level [1]. One of the reasons for the high prevalence of this disease lies in the features of the histological structure and condition of the hard tissues of the baby teeth at different age periods of the child, which is not taken into account when carrying out

therapeutic and preventive measures. Early childhood caries is a complex multifactorial disease [3].

The basis of primary prevention of dental caries is the use of methods and means aimed at eliminating risk factors and causes of the disease, as well as optimization and intensification of all therapeutic and preventive dental measures [6]. The methods of primary prevention include dental education of the population, individual oral hygiene, rational nutrition, endogenous use of fluorides, local use of remineralizing agents. Let's look at these methods in more detail and evaluate their effectiveness. Dental education includes informing parents of children about the risk factors for caries and ways to eliminate them; teaching the rules of rational hygienic care and nutrition of children, motivation for regular visits to the dentist at least 2 times a year. The method of assessing the effectiveness of dental education can be a survey of the population, changes in indicators that determine the level of oral hygiene and the condition of the hard tissues of the child's teeth [4,7]. Individual oral hygiene of a child implies thorough and regular removal of dental deposits from the surface of teeth and gums using various means 2 times a day in the morning and in the evening 30 to 40 minutes after eating, rinsing the oral cavity after each meal. These procedures are carried out by children and their parents' using toothbrushes, toothpastes, dental floss, mouthwashes, chewing gum, interdental brushes. Professional oral hygiene, as an integral part of dental prevention, is carried out by a dentist or a hygienist, they also give recommendations on the correct method of cleaning teeth and the use of hygiene products. Rational nutrition in children includes a reduction in the diet of easily fermentable carbohydrates and sugars; the use of solid foods, prevention of alimentary deficiency of mineral elements and vitamins by using vitamin and mineral complexes on the recommendation of a doctor [8].

Reducing the number of receptions of easily digestible carbohydrates up to five times a day and daily two-time individual brushing of teeth with the use of fluoride-containing paste, selected according to the age of the child, and standard equipment, in most cases are sufficient and give a pronounced anti-carious effect. Probiotics are a new direction in the prevention of carious diseases in children. The most common in pediatrician's practice are lactobacilli and bifidobacteria. These bacteria, being representatives of the normal microflora of the oral cavity, do not play a role in initiating the development of carious diseases, even though they belong to sugar-lytics and ferment carbohydrates [7]. The conducted studies on the analysis of the incidence of dental caries in young children revealed that in children with a violation of the stereotype of eating behavior and the presence of nicotine intoxication, the prevalence of caries is 6 times higher, and the intensity is 16 times higher than in children with a proper diet and not exposed to passive smoking [10]. Endogenous systemic use of fluoride preparations in preschool and school-age children provides for the intake of fluorides into the body with food (fluoridation of drinking water, milk, salt) or ingested drugs (sodium fluoride tablets) as prescribed by a doctor. The effectiveness of the method is estimated by reducing the intensity of caries by 50-60% with prolonged use [4,9]. Local application of fluoride-containing products includes the use of toothpastes (from 2-3 years), fluoride-containing lacquers (Duraphat, Bifluorid 12, Fluor Protector), gels (Fluocal Gel, Nurpo APF, Elmex), sodium fluoride solutions for flossing (from 6 years) and for applications, enamel-germitizing liquid, fluoride-based rinses (from 6 years old). The course of application is recommended by the dentist 1-2 times a year. The effectiveness of the method is estimated by reducing the intensity of caries by 30-40%. Many young children have increased anxiety, fear of doctors and anxiety, they are not able to stay in the dentist's office for a long time during preventive measures [11]. It was for such children that an effective remedy for the treatment of caries in the stage of a chalky spot at home was invented and investigated, which received the name - polymer dental film "Diplen F". It contains sodium fluoride and chlorhexidine bigluconate in equal amounts of 0.01— 0.03 mg/cm2. Sodium fluoride increases the resistance of tooth enamel to caries, and chlorhexidine bigluconate suppresses the vital activity of pathogenic bacteria. The low concentration of fluoride is not toxic, the structure of the film prevents the release of active components from the film into the oral cavity and their entry into the gastrointestinal tract. When the Diplen F film was combined with ROCS baby toothpaste, the enamel structure of the temporary teeth was restored in all the examined children. The use of remineralizing agents in preschool and school-age children, as a result of which a partial restoration of the density of damaged enamel occurs and its caries resistance increases, is carried out by applying preparations containing calcium, phosphate and fluoride compounds to the surface of the teeth. Effective drugs widely used in dentistry are calcium gluconate solution, remodent, GC Tooth Mousse, Rocs gel, etc.). The course of prevention prescribed by a doctor ranges from 1 week to 1 month. The effectiveness of this method is estimated by reducing the intensity of caries by 50-60% [4]. Studies have revealed that the local use of calcium–phosphate-containing products "R.O.C.S. Medical Minerals" for two years makes it possible to achieve a significant reduction in the growth of dental caries in children. Sealing of fissures, as a method of primary prevention in children, consists in isolating weakly mineralized fissures of permanent teeth during enamel maturation by creating a physical barrier that prevents micro-organisms from the oral cavity that can cause demineralization from entering the retention areas of enamel. Effective materials are Fissurit F, Esterfil Ca/F, Tetric Flow, etc. To achieve the greatest effectiveness of caries prevention (78 - 92%), sealing is carried out immediately or within a year after the eruption of permanent teeth. The sealing effect and, accordingly, the prevention of the development of caries in this area of the tooth, is usually achieved for a period of 1-2 to 7-8 years [5]. The high clinical effectiveness of deep fluoridation for the prevention of dental caries is shown in the work of S. Knappwost et al., who found that after 4-5 years after sealing the fissures of 715 permanent teeth by deep fluoridation, 95.2% of them remained intact [6]. It has been experimentally proved that 6 months after deep fluoridation with "Enamel-sealing liquid" in children aged 6-7 years, 95.3% of the first permanent molars remain with unchanged fissures, and after sealing the fissures with the "Fissurit F" silant, the safety of the sealant and its loss while maintaining intact fissures are observed in 29.2% and 25.0% of teeth [9]. According to I.V. Kravchuk [8], the use of the deep fluoridation method for the prevention of caries of permanent and temporary teeth fissures in children aged 6-8 years can achieve 66.9% and 74.6% reduction of caries growth in 1.5 years. 18 months after deep fluoridation of the enamel of temporary teeth, the development of caries occurs in 22.8% of cases, more often in children with a high activity of the carious process (37.7%), with an unsatisfactory hygienic condition of the molars (34.2%) and in molars with a chewing surface of type 1 (open weakly mineralized fissures, the study allows to conduct comprehensive assessment of the main risk factors for the development of dental caries with its various types. The data obtained make it possible to improve the quality of its conservative treatment and prevention in school-age children [7]. Despite the use of various methods of prevention and treatment of dental caries, the prevalence of this disease in our country is increasing every year. Thus, various toxic and chemical substances, in particular, pesticides, mineral fertilizers and other industrial wastes (sulfur dioxide, nitrogen dioxide, aromatic hydrocarbons) pollute environmental objects and through the body of pregnant and nursing mothers, along with changes in the general state of the body, have an adverse effect on the dental system of children, expressed in an increase in dental caries. In connection with the above, we have set the goal of the work.

CONCLUSION

Thus, at present there is a fairly wide range of various means and methods of preventing dental caries in preschool and

school-age children, but none of them gives a full guarantee of its prevention, but with the disciplined conduct of preventive measures on the recommendation and under the supervision of a dentist, the carious process can be stabilized or moved to a longer term psychologically difficult methods for the treatment of carious diseases for a child.

CONFLICT OF INTERESTS

The authors declare no conflict of interests.

SOURCES OF FUNDING

The authors declare no funding for this study.

AVAILABILITY OF DATA AND MATERIALS

All data generated or analysed during this study are included in this published article.

AUTHORS' CONTRIBUTIONS

All authors contributed to the design and interpretation of the study and to further drafts. All authors read and approved the final manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

All applicable international, national, and/or institutional guidelines for the care and use of animals were followed.

CONSENT FOR PUBLICATION

Not applicable.

PUBLISHER'S NOTE

Journal of "Integrative dentistry and maxillofacial surgery" remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Article received on 02.06.2022
Accepted for publication on 08.07.2022

КОНФЛИКТ ИНТЕРЕСОВ

Авторы заявляют, что данная работа, её тема, предмет и содержание не затрагивают конкурирующих интересов.

ИСТОЧНИКИ ФИНАНСИРОВАНИЯ

Авторы заявляют об отсутствии финансирования при проведении исследования.

ДОСТУПНОСТЬ ДАННЫХ И МАТЕРИАЛОВ

Все данные, полученные или проанализированные в ходе этого исследования, включены в настоящую опубликованную статью.

ВКЛАД ОТДЕЛЬНЫХ АВТОРОВ

Все авторы внесли свой вклад в подготовку исследования и толкование его результатов, а также в подготовку последующих редакций. Все авторы прочитали и одобрили итоговый вариант рукописи.

ЭТИЧЕСКОЕ ОДОБРЕНИЕ И СОГЛАСИЕ НА УЧАСТИЕ

Были соблюдены все применимые международные, национальные и/или институциональные руководящие принципы по уходу за животными и их использованию.

СОГЛАСИЕ НА ПУБЛИКАЦИЮ

Не применимо.

ПРИМЕЧАНИЕ ИЗДАТЕЛЯ

Журнал "Интегративная стоматология и челюстно-лицевая хирургия" сохраняет нейтралитет в отношении юрисдикционных претензий по опубликованным картам и указаниям институциональной принадлежности.

Статья получена 02.06.2022 г.
Принята к публикации 08.07.2022 г.

ЛИТЕРАТУРА / REFERENCES

1. Marsh P.D. Antimicrobial strategies in the prevention of dental caries. Caries research. 2013, Vol. 27, Suppl. 1. pp. 72-76. 2. Ademuwagun L.A. Information and motivation in Health Education. Health Education Journal 2012. Vol. 31, N 8. pp. 58-61.
2. Pakhomov G.N., Ivanova K., Moller I.J. Dental caries-reducing effects of a milk fluoridation project in Bulgaria. Journal of Public Health Dentistry. 2005, Vol. 55. pp. 234-237.
3. Волков Е.Ф., Янушевич О.О. Терапевтическая стоматология. Болезни зубов, часть 1. М.: Геотар Медицина. 2012. С. 27-165. 5. Frencken J.E., Peters M.C., Manton D.J., Leal S.C., Gordan V.V., Eden E. Minimal intervention dentistry for managing dental caries – a review. International Dental Journal. 2012. Vol. 62, iss. 5. pp. 223-243. DOI: 10.1111/idj.12007
4. FAO/WHO. First Global Forum of Food Safety Regulators. Geneva/ Rome, 20 Dec. 2001. PR 01/101.
5. Simark-Mattsson C., Emilson C.G., Hakkansson E.G. Jacobsson C., Roos K., Holm S. Lactobacillus-mediated interference of mutans streptococci in caries-free vs. caries active subjects. European Journal of Oral Sciences. 2007, vol. 115, iss. 4. pp. 308-314. DOI: 10.1111/j.1600-0722.2007.00458.x
6. Meurman J.H. Probiotics: do they have a role in oral medicine and dentistry? European Journal of Oral Sciences. 2005, vol. 113, iss. 3. pp. 188-196. DOI: 10.1111/j.1600-0722.2005.00191.x
7. Sookhee S., Chulasiri M., Prachyabrued W. Lactic acid bacteria from healthy oral cavity of Thai volunteers: inhibition of oral pathogens. Journal of Applied Microbiology. 2001. 90(2), pp. 172-179.
8. Семенькова О.В., Пылков А.И. Оценка эффективности применения программы профилактики кариеса у детей раннего возраста // Медицина и образование в Сибири: сетевой журнал. 2014, N6. URL: http://ngmu.ru/cozo/mos/article/pdf.php?id=1593 (дата обращения: 07.12.2015)
9. Dotsenko A., Kuzminskaya O. Psychological management of junior children's behavior in dental anxiety. Archives of Medical Science. 2014; 2, suppl. 1. pp. 43-44.