



PREVENTION OF DENTAL CARIES IN PRE-SCHOOL AGE

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ABSTRACT

Dental caries affects all age groups, but especially children who are of preschool age. The disease is socially significant and affects the quality of life. Various interventions are used to prevent dental caries - water fluoridation, fluoride toothpaste, sugar restriction, antimicrobials, regular preventive examinations and, last but not least, oral hygiene.

We have developed a health education program (conversation, discussion, film, practical activity) with the aim of preventing dental caries among children who are at the age of 5. The training was presented by 20 children attending the 'Prolet' kindergarten in the city of Pleven. A discussion was held among the children, a film was shown, proper brushing of the teeth was demonstrated, and they were given the opportunity to practice the technique shown to them. Parents were presented with an information board illustrating dental caries and its consequences; they were given flyers showing possibilities for its prevention.

In this report, we show the changes in children's behavior (according to their parents) after the realization of the program.

A positive effect of the program conducted among the children was reported. In conclusion, we can say that health education is an important element in the prevention of dental caries.

Keywords: dental caries, preventing, children, health education,

INTRODUCTION

Dental caries affects all age groups, but mostly that of children, especially in preschool age [1]. The disease is socially significant. Worldwide, it is one of the most common in childhood [2]. Compared to other childhood diseases, it is five times more common than asthma and seven times more common than hay fever [3]. As of 2010, over 600 million children worldwide are affected by this disease [4]. Dental caries in early and preschool age is associated with pain, impaired growth, reduced weight gain, negative effects on quality of life, poor school performance and future tooth loss [5]. This disease is a preventable condition in children [6].

Sugar plays a major role in the development of caries, especially in the first years of life [7]. Combined with poor oral hygiene, the chance of tooth decay increases tremendously.

For the prevention of dental caries, various interventions are applied - water fluoridation, fluoride toothpaste, limiting sugar or introducing its substitutes, antimicrobial agents, silanization, regular preventive examinations and, last but not least, oral hygiene [8].

Regarding preventive examinations as a preventive measure, Mühlemann A, et al. (2021) suggested that it is ineffective in children at higher risk of caries [9]. Alves APS, et al. (2018) compared the oral health of three groups of children aged 3-5 years. The results of their study show that the group that never had preventive examinations had the highest incidence of caries. With their study, they prove that the public oral health prevention and promotion program is effective in preventing caries, gingivitis and malocclusion in children under 5 years of age [10].

Hutchison C. (2021) also concluded that regular preventive examinations are one of the main protective factors against caries [11].

In relation to caries prevention in New Zealand, the government endorses recommendations to limit the consumption of refined sugar and promote the intake of full-fat dairy products by children [12]. Bernabé E, et al. (2020) also recommend avoiding refined sugar, especially in early and preschool age [13].

Brushing teeth is also an important but neglected behavior that affects children's oral health. In their paper,

Khan IM, et al. (2021) found a significant relationship between improper oral hygiene and poor oral health [14].

Within the framework of the National Program for the Prevention of Oral Diseases in Children aged 0-18 years, a large-scale study was conducted in Bulgaria in 2010. One of the main goals is to establish the frequency and prevalence of dental caries among 5-6-year-olds. Only 29% of this age group of children in the country are caries-free, and the more the age increases, the more the relative share of caries-free children decreases. In the same study, it was found that the oral hygiene of all subjects was unsatisfactory. In 2014, the Council of Ministers adopted/accepted the National Program for the Prevention of Oral Diseases in Children from 0 to 18 Years of Age in the Republic of Bulgaria 2015-2020 [15]. The program examines the preventive measures that are being taken in our country. Special attention is paid to the silanization of teeth. A new epidemiological study was planned, which, due to the COVID-19 pandemic, has been postponed [16]. In 2021, the Council of Ministers adopted a draft of the National Program for the Prevention of Oral Diseases in Children from 0 to 18 Years in the Republic of Bulgaria 2021 - 2025, which is based on statistically reliable epidemiological data and a situational analysis of the oral health of children in our country in 2011. The program is a natural continuation of the previous one. It presents the results of silanization of the teeth. One of the main priorities set in the new program is raising the level of health culture of children and their parents, with the aim of caries prevention [17].

Health behavior has been shown to be influenced and dependent on the level of health culture [18].

PURPOSE

The aim of the research is to determine the effect of health education activities implemented among preschool children on their motivation for healthy behavior aimed at caries prevention.

MATERIAL AND METHODS: SOCIOLOGICAL METHODS:

- Documentary method for research and analysis of the available literature on the problem;
- Survey method: Two questionnaires were developed to survey the opinion of parents whose children are included in health education. Each survey contains 9 original questions. Through them, it was established what the children's health behavior was before and after their training.

PEDAGOGICAL METHODS:

A health and educational program (conversation, film, practical activity) has been developed for the prevention of dental caries among children aged 5 years.

STATISTICAL METHODS

The survey data were processed with STATGRAPHICS statistical software packages; SPSS 19 and EXCEL for Windows. The results are described by tables, graphs and numerical indicators for structure, frequency, averages, correlation coefficients and others.

RESULTS

In order to obtain informed consent from the parents for the implementation of the program, originally developed information boards illustrating dental caries and their consequences were presented to their attention; flyers with the possibilities of profiling. 22 children aged 5 years attending full-day kindergarten 'Spring' in Pleven took part in the training.

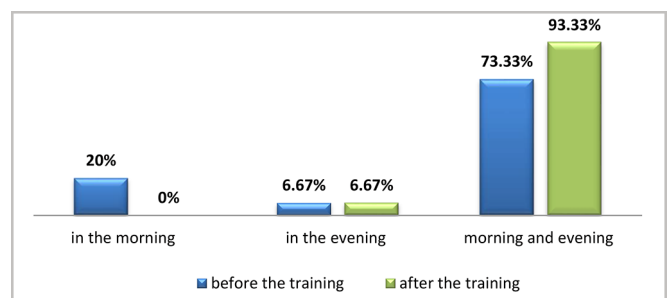
A discussion was held among the children. The questions focused on their eating habits and the implications for their teeth. As expected, children as a mass- 90.91% (20) report that they enjoy eating sweets (cakes, biscuits, chocolates, candies, etc.), even though they know that they are unhealthy for their health. Not a small share (68, 18%, n=22) believe that drinking water after eating protects them from caries. After the discussion, an animated film was shown. The didactic tool was adapted to the age of the children. It illustrates the impact of sugar consumption combined with lack of hygiene on oral health and dental caries prevention activities. This was followed by a discussion with the children and a demonstration of a technique for proper tooth brushing. Each child was provided with a toothbrush and toothpaste to practice. After brushing, 5 of the children (selected randomly) were checked for residual dental plaque using a ready-made staining solution. With 3 of them, there was none. Therefore, they have brushed their teeth properly.

15 parents took part in the intended survey to determine the changes in children's behavior that occurred as a result of the training.

All respondents (100%, n=15) stated that their children were very impressed by the implemented health and educational activity. More than half of the parents (60.00%, n=15) stated that they noticed a change in their child's behavior. Before the training took place, 53, 36% (n=15) of the respondents indicated that they had to remind their children to brush their teeth. After that, 93.38% (n=15) shared that their children showed a desire for oral hygiene themselves. This difference of 40% eloquently testifies to the strength of the interaction with the children during the health and educational activities. A significant relationship was observed ($p=0.04$; $r=0.62$). In support of this are the following results.

After the training, the number of children who brush their teeth both in the morning and in the evening increased by 20% (Figure 1).

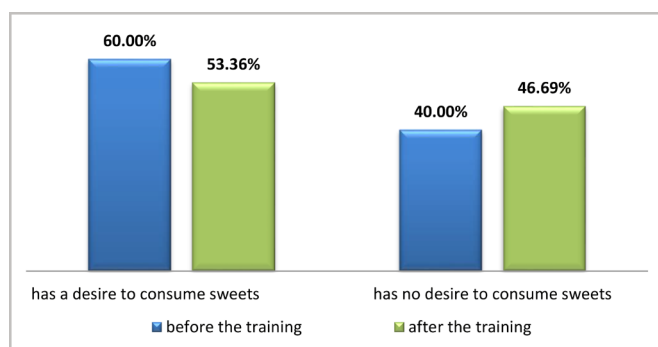
Fig. 1. Children's teeth brushing frequency before and after training (n=15)



A little more than half of the parents - 53.36% (n=15) noted that after the implementation of the health education activities, they noticed their children trying to brush their teeth with circular movements in the direction from the gum down and up - technique, which was demonstrated to them during the training.

Unfortunately, no significant change was observed in the children's eating habits regarding the consumption of sweets - according to their parents (Figure 2).

Fig. 2. Unhealthy eating habits before and after training (n=15)



However, parents categorically (100%, n=15) define the training as useful.

DISCUSSION

The results show a positive effect of the health-educational interaction carried out with the children. We managed to get them to brush their teeth regularly and properly. A significant factor in the prevention of dental caries. The relationship between the widespread prevalence of dental caries among 3–5-year-old children and the lack of oral hygiene habits has been proven by Guan M, et al. (2021), but they also add the negative attitude of parents to oral health, as well as some poor behavioral factors. They conclude that public awareness of the problem should be raised, and oral hygiene habits should be formed [19]. In support of this, Satyarup D, et al. (2021) found that in cases where access to primary health care and preventive

examinations is limited, it is essential to educate children on habits to maintain oral health [20]. Aliakbari E, et al. (2021) also have the opinion that the main preventive tool for preventing dental caries in children is brushing, but they recommend that until the age of 8 years under parental control [21].

But with regard to the consumption of foods containing refined sugar, the measures did not lead to the desired result. The reason why has not been investigated.

The children believe that drinking water after eating protects them from caries. Unfortunately, this is only true in cases where fruit is consumed. In these situations, it is necessary to rinse the oral cavity with water to reduce the risk of caries. It is not enough to swallow water to reduce plaque build-up.

Efforts must be made to solve this problem because it has been shown that frequent consumption of carbohydrates in the form of simple sugars increases the risk of dental caries significantly [22].

We believe that preventive measures should target dietary habits and behaviors related to oral health. In support of our thesis, Ugolini A, et al. (2018) state that oral health promotion should include an oral hygiene education program and dietary guidelines focused on preschool children's daily sugar intake [23]. Huk-Wieliczuk E, et al. (2020) claim the same [24].

CONCLUSION

In conclusion, we can say that health and educational activity is a catalyst of the motivation for dental caries prevention. It is important to promote oral health at an early and preschool age in order to form skills for its maintenance. The poor condition of health severely impairs the quality of life, and its recovery imposes a serious economic burden.

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