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Section 1. Clinical medicine

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Evaluation of oral hygiene status of the children based on their diet

Abstract: The rapid increase of the children's dental diseases is still high, which actualizes the prophylactic treatment. It's well-known that the right oral hygiene is a pledge of health, especially children's, which presupposes everyday care of the teeth and tooth gums, preventive measures, and also medical cure of the diseases at the primary development stages. The aim of the research is to investigate the children's oral hygiene status based on their diet peculiarities. 112 children aged from 10 to 16 took part in the scientific experiment: 36 secondary school students who bought food on their own, and 76 students of the boarding school "The multi-profile lyceum for the talented children", who have school meals according to the everyday menus. The investigation includes the index evaluation of the oral hygiene due to Fedorov-Volodkina, the RMA index, and also evaluation of the caries increase and intensity.

Keywords: oral hygiene, index, caries increase, caries intensity.

The rapid increase of the children's dental diseases is still high, which actualizes their prophylactic treatment. It's well-known that the right oral hygiene is a pledge of health, especially children's, which presupposes everyday care of the teeth and tooth gums, preventive measures, and also medical cure of the diseases at the primary development stages. The whole range of the preventive measures of the dental diseases is the pledge for the dental and periodontal diseases decrease among the children. These factors are favorable for the dental diseases' development: society urbanization, an unbalanced diet, excess carbohydrate intakes, lack of vitamins and essential proteins, microelements, like fluorine, calcium and phosphorus in the optimum relationship, oral hygiene.

It's worth to admit a prominent role of the mouth liquid which greatly influences the dental health. The mouth cavity epithelium is influenced by different chemical and physical factors, connected to meals, the mouth liquid protects the epithelium of the upper part of the digestive tract and the hard tissues of

the tooth and the form of this protection is maintenance and support of the pH-environment in the mouth cavity, which depends on the salivation intensity, metabolites of the microorganisms, and the effect of the buffer capacity of saliva [1, 148–151].

In the mouth cavity the buffer capacity is presented by three buffer systems: bicarbonate, phosphate and protein; in the mixed saliva they form a factor of protection against the acid and alkali effect on the mouth cavity tissues, besides they have capacity limits, for instance the phosphate — is the most active with pH 6,8–7,0, bicarbonate — with 6,1–6,3, and the protein provides the buffer capacity with the different pH indices. While forming the neutral environment, pH (6,5–7,4), where a tooth and the surrounding tissues are, there preserves a physiological balance of the mineralization and remineralization of the tooth hard tissues [1, 148–149].

One of the main constituents of the mixed saliva is the protein, mostly glycoprotein which influences the saliva viscosity; besides, secretion of different salivary glands excrete them in different

proportions — thus, the sublingual gland produces secretion with the viscosity index 13,4; the next is the mandibular gland (3,4) and the aural gland (1,5). The saliva proteins on the mucous membrane of the mouth cavity and teeth build the pellicle, which protects tissues from the harmful influence of the external environment and proteolytic enzymes, which are produced by bacteria and the damaged polymorphnucleic lymphocytes.

Ferments as the constituent elements of the mouth liquid also play an important role; most of them are secreted by the salivary glands parenchyma, are produced from the leucocytes and appear in the process of the bacteria functioning. The main are: α -amylase (hydrolyzes the carbonates), the acidic and alkaline phosphatase (take part in the calcium phosphorus exchange), as they remove the inorganic phosphate of the phosphorus acid compounds, they supply the teeth and bones mineralization, hyaluronidase and kallikrein (change the level of the tissue permeability), lysozym, lipase, RNase, etc.

The insufficient care of the mouth cavity causes dental plaque, increase of the ferment activity, rapid growth of microflora, which causes periodontitis.

The objective: to investigate the oral hygiene status of the children on the basis of their diet.

Tools and methods of investigation. 112 children aged from 10 to 16 took part in the scientific experiment: 36 secondary school students who bought food on their own, and 76 students of the boarding school “The multi-profile lyceum for the talented children”, who have school meals according to the everyday menus, as it is illustrated in table 1.

The state of the mouth cavity tissues was evaluated with the help of the hygiene index Fedorov-Volodkina (1971) [3, 68], the RMA index (papillary marginal alveolar index), which allows to evaluate the inflammatory process in the tooth gums [3, 70]. For the evaluation of the teeth caries the indices of caries increase and intensity were used — CFE+cf (cariotic, filled, extracted), besides, children were divided into 2 age groups: group 1 — aged 10–12, group 2–13–16.

The investigation results: After the Fedorov-Volodkina hygiene index analysis we have revealed that the students who study at a secondary school have a good hygiene index that corresponds to 1,1–

1,5 grades — in 66,6% of the students; a satisfactory hygiene index that corresponds to 2,1–2,5 grades was observed in 25% of the students, an unsatisfactory hygiene index that corresponds to 2,1–2,5 grades was observed in 8,3% of the students. Bad and very bad hygiene index that corresponds to 2,6–3,4, 3,5–5,0 wasn't revealed.

As for the Fedorov-Volodkina hygiene indices in the students of “The multi-profile lyceum for the talented children”, they slightly differ: good hygiene indices were revealed in the 71% (54 children), 11,8 (9 children) had a satisfactory index of the mouth cavity hygiene, the unsatisfactory hygiene index was observed in 13,1%, the bad hygiene index was observed in 3,9% of children, a very bad hygiene index wasn't revealed.

As for the RMA index we got the following results: 83, 3% of the secondary school children didn't have any gums inflammation, the rest 16,6 had some insignificant inflammation (up to 20% of the general number of teeth), as due to the evaluation criteria corresponds to the early stage of gingivitis. Another situation was observed in the boarding school students: no inflammation in the gums tissues was observed in 86,8% of the children, 9,2 of them had a light phase of gingivitis, 3,9% had a medium phase of gingivitis.

The indices of the caries increase and intensity were the following: in the children of the 1st group — 42, 8% of the general number under investigation, the caries increase is 47,9% (23 children), which means the medium stage of the disease. The intensity indices: 7 children had a low index of the caries intensity (1.2–2,6), their quotient was 30, 4%, the medium intensity indices were recorded in 52,1% (12 children), caries intensity index 4,5–6,5; high level was observed in 17,3% of children, besides the investigation results of the secondary school students and the boarding school students do not differ much, as described in the table 2.

Having analyzed the results of the 2nd group which consists of the children aged from 13 to 16, there is a tendency of the caries increase and intensity as compare to the 1st group: the general number of the 2nd group children of the all investigated children is 57,1%. The teeth caries increase in this group is 64%. As to the intensity the indices are

the following: low caries intensity was recorded in 19,5%, medium level was recorded in 69,6%, index of the high level intensity was observed in 21,2% of

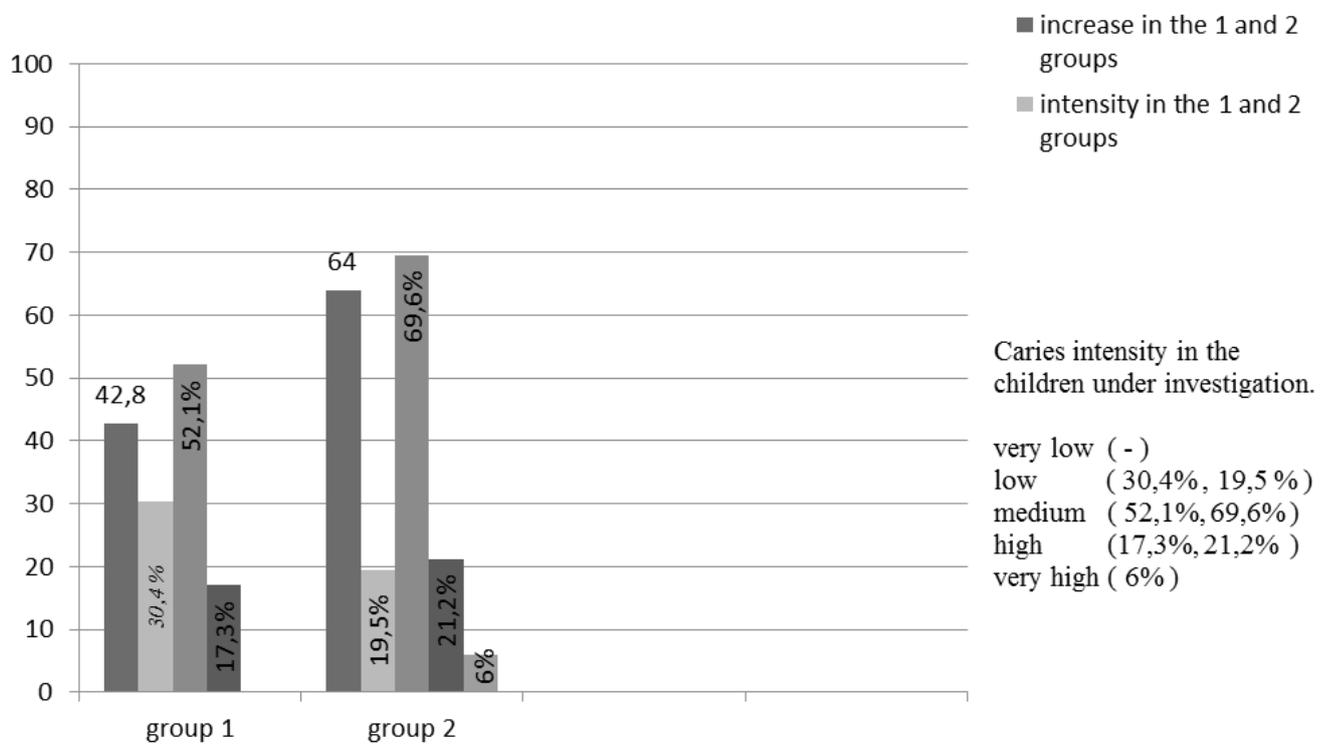
children, 6% of which were the students who had the intensity index 6,6 and more, which corresponds to a very high level.

Table 1.

I breakfast	II breakfast	lunch	snack	dinner
Boiled milk buck-wheat	juice	Noodle soup	yogurt	Stewed fish
sandwich	biscuits	Courgette paste	cake	Mashed beans
Boiled egg		Chicken cutlet		Cabbage salad
coffee		Mashed potatoes		sandwich
		bread		tea
		Stewed fruit		
		apples		

Table 2. The caries increase and intensity among the students of the 1st group

Caries	Secondary school students	Students of the boarding school "The multi-profile lyceum for the talented children"
Increase	45,4%	46,1%
Intensity 2,5 (low)	42,8%	57,1%
Intensity 2,7-4,4 (medium)	58,3%	41,6%
Intensity 4,5-5,2 (high)	50%	50%



Picture 1. Comparative dynamics of the caries increase and intensity among the children of the 1st and the 2nd group

Conclusions. The Fedorov-Volodkina and RMA indices that the state of the tooth gums tissues and the level of the mouth cavity hygiene in the boundary school students is slightly better than in the secondary school students, and diet is one of the influential factors. Five meals a day, including lunch and snack helps to avoid “taking bites” where the secondary school students had unhealthy food like sweet fizzy drinks, sticky sweets, etc.

Due to the investigation results the indices of the caries increase and intensity indicate the increase of the diseases in the children of the 2nd group (aged 13–16) comparing to the 1st group (aged 10–12), beside in elder children caries occur more frequently.

Our investigation shows that there is no tendency of the decrease of the mouth cavity diseases, as the ecological, economical and social conditions which influence the children’s health do not improve. It means that there is a necessity to improve or change the principles of the medical dental care, which should have a prophylactic tendency not only in the individual relation — keeping to well-balanced diet, physical activity, personal hygiene, and mouth cavity hygiene as an important constituent of the public health care. All the principles should be based on the medico-social activity formation and the health life motivation by the means of the active prophylactic measures and improving the sanitary educational level of the children and adults.

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