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ACTUAL DIET OF CHILDREN WITH PATHOLOGY OF ORGANS OF SIGHT IN THE CONDITIONS OF PRESCHOOL INSTITUTIONS

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Resume. We have carried out a study of actual diet among 240 children with pathology of organs of sight in the conditions of a preschool institution in Yakutsk. The received data on menu-apportionment point out the lack of fish, dairy produce (milk, sour dairy produce, curd, cheese), fresh fruit, low content of calcium, magnesium and vitamin E. The results of the study can substantiate the necessity to correct the nutrition of children with pathology of organs of sights in a preschool institution.

Keywords: children of under school age, pathology of organs of sight, basic nutrients, vitamins and trace elements.

Introduction. A rational diet is of a great importance in a preschool age, when main physiological, metabolic, immunologic mechanisms are being formed, which will determine the health of a human during all his further entire life [2, 3, 8]. Physiological peculiarities of children of under school age is characterized by high rate of growth, intensive movement activity, structural and functional reconstruction of some organs. Due to this fact an organism of a child experiences a great demand in nutrients, minerals and vitamins. Thus, organization of correct nutrition in a preschool institution is a very urgent problem under the modern circumstances [5].

The investigations of scientists-ophthalmologists, pediatricians, hygienists demonstrate an important role of a vitamin insufficiency (vitamins A, B, C, E) and a deficiency of some microelements (zinc, calcium and potassium) in the development of eye diseases and their complicated course among children. Unbalanced diet with high content of carbohydrates weakens connective tissue of organs of sight, bringing on the weakness of sclera, which results in sight disorders (myopia, hypermetropia, astigmatism). The diet of children with a sight pathology must be rich in dairy and vegetable diet, enriched with vitamin and mineral complexes, prevailing with liposoluble vitamins A, E and carotenoids (lutein, zeaxanthine) and flavonoids, which provide an active functioning of a sight system, raises the sharpness of sight, improves the condition of eye vessels [1, 9].

The aim of the study. To study the actual diet of children with a pathology of sight organs

in the conditions of a preschool institution.

Materials and methods of study. We have studied 240 children with different eye pathologies (retinal degeneration, optic atrophy, congenital nystagmus, congenital aphakia, optic nerve hypoplasia, hypermetropia, amblyopia, myopia) at the age of 3-7 years, who constantly attended specialized preschool educational kindergarten № 11 “Snowdrop” in Yakutsk. There were 116 boys and 124 girls among them.

The investigation of the actual diet was carried out by menu-apportions. The calculation of an average daily consumption of energy, nutrients, minerals and microelements was carried out with the use of the data of the reference book “The chemical content of the Russian food products” under edition of I.M. Skurikhin, V.A. Tutelyan and the standard program Microsoft Excel.

In order to compare the actual diet of children with the norms of physiological needs “The requirements of SanPin 2.4.1.2660-10, addendum 6” of 2010, the methodological recommendations MD 2.3.1.2432-08 of Rospotrebnadzor of the RF dated 18.12.2008 “The norms of physiological needs in energy and nutrients for different groups of the population of the RF” were used. The statistical development was carried out with the use of a standard packet Microsoft Excel, as well as the packets of the applied statistical programs SPSS 16.0.

The results of the study. In a specialized kindergarten № 11 “The snowdrop” the menu-apportions for the children with sight pathologies is usually composed in accordance with the SanPiN 2.4.1.2660-10 requirements of 2010 with four meals a day. The norms of the food products are usually prescribed in accordance with Order of the Board of Education of Yakutsk № 01-11/97 dated 22.04.2008, besides 105 roubles a day per child for 10,4 hours of stay is an actual daily expense in a preschool institution.

The analysis of 20-days menu-apportions of the children in the preschool institution showed the lack of the repetition of the same dishes during 10 days. Such products like meat, milk, butter and oil, bread, cereals, sugar, potatoes are all included in a daily menu. Fish, sour dairy products (kefir, bifacil, curds), fresh vegetables are all included once or twice a week, and fresh fruit, cheese – once a week. The average daily set of products in a menu showed the lack of fresh fish (30 g at the norm of 45 g), sour dairy products and curds (40 ml a day at the norm of 150 ml), milk (350 g at the norm of 420 g), fresh vegetables (actual 200-250 g at the norm of 400 g, fruit (20 f at the norm of 60 g), natural juice, berries drinks (155 g at the norm of 200-250 g); and the excess consumption of the preserved products (tomatoes, cucumbers, salads), cacao and oil.

Breakfast usually consists of a hot meal (milk porridge and soup, mashed potatoes with sausages, rice and fruit plov), cheese sandwiches, and curd puddings, flat cakes with jam, sweet

coffee, coffee and cacao once or twice a week.

For lunch children usually have vegetable salads (mainly from preserved cucumbers, potatoes, cabbages, carrots, beetroot and fresh vegetables once a week), meat soups, soups from fresh fish once a week; for the second course they usually have meat or fishballs, cutlets, puddings, meatrolls, zrazy, boiled or stewes goulash (meat), once in ten days they have liver pancakes, cereals and pasta for garnish, and once or twice a week they have stewed vegetables. To improve the taste of food they use dry seasonings (parsley, dill, onions). As for the third course they are served with stewed dry fruit, berries juice, kissel, assorti-stewed fruit, juice, frozen fruit and berries drinks.

As for 5 o'clock tea children are fed with rolls, curd-tarts or jam-tarts, sausages in dough, biscuits, wafers, honey-cakes, sweets, milk and sour milk products. As for fruit, like apples, bananas, plums and tangerines, they are introduced in a menu only once a week.

Dinner usually consists of buck-wheat, oatmeal, millet porridges, curd puddings, curd fritters, omelets, semolina tarts, baked pies with meat, potatoes, fish cutlets with mashed potatoes, tea with honey.

Actual consumption of nutrients and energy is shown in Table 1. As it is seen in the table, the content of albumen in a child's ration in average is equal to – 59,8 g (the norm is 54 g), $p=0,002$; fats – 61,2 g (the norm is 60 g), $p=0,460$ g; carbohydrates – 228 g (261 g), $p=0,000$ per day, i.e. the excess quantity of albumen and insufficient quantity of carbohydrates can be noticed in the ration of children's diet, calorie content is within the norms.

The average content of some vitamins, minerals and microelements in the ration of children in a preschool institution is demonstrated in Table (2). As seen from the table, the content of calcium ($p=0,000$) and vitamins C ($p=0,001$) is actually lower than the norm; the content of sodium ($p=0,001$), potassium ($p=0,000$), magnium ($p=0,001$), and vitamin E ($p=0,000$) is surely higher. The level of iron ($p=0,010$), phosphorus ($p=0,008$) and vitamin A ($p=0,773$), B ($p=0,043$) corresponds to the age standards.

Conclusion:

The received data point at the insufficiency of fresh fish; milk and dairy products, curd and cheese, fresh vegetables and fruit in the daily average ration of diet of children. The fact is evident by the low content of calcium (by 34% lower than the norm), vitamin C (by 23% lower than the norm), carbohydrates (by 12% lower than the norm). The excessive content of sodium, potassium, magnesium and vitamin E has been revealed due to the excessive consumption of salty and preserved food, cacao and oil. The results of the investigation can substantiate the necessity to



correct the diet of children with sight pathologies in a preschool educational institution.

Table 1. Actual consumption of main nutrients and energy of children with sight pathologies in a preschool educational institution.

	n	M± m	σ	Norm	p
Albumen (g)	20	59,8±1,62	7,27	54	0,002
Fats (g)	20	61,2±1,27	7,58	60	0,460
Carbohydrates (g)	20	228,5±4,9	22,2	261	0,000
Energy (ccal)	20	1777,7±30,9	138,6	1800	0,481

Table 2. Average content of some vitamins, minerals and microelements in a diet of children with sight pathologies in a preschool educational institution.

	Norms	Actually (average meaning) M± m	σ	p
Sodium, mg	700	881±17,31	121,42	0,001
Potassium, mg	600	806±15,62	98,36	0,000
Calcium, mg	900	594,4±35,07	156,86	0,000
Magnesium, mg	200	248,4±12,41	55,52	0,001
Phosphorus, mg	800	893,0±31,15	139,30	0,008
Iron, mg	10	11±0,18	0,95	0,010
Vitamin A, mcg.	500	568±23,1	104,73	0,773
Vitamin C, mg	50	38,7±1,2	5,43	0,001
Vitamin E, mg	7,0	11,9±0,32	0,14	0,000
Vitamin B, mg	1,0	0,8±5,2	23,26	0,043

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