HYGIENIC ANALYSIS OF WATER-SOLUBLE VITAMINS IN THE COMPOSITION OF FOODS CONSUMED BY ELEMENTARY SCHOOL STUDENTS

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Abstract

This article analyzes the level of availability of water-soluble vitamins in the diet consumed by primary school students throughout the year. The compliance of the daily amount of food consumed was assessed for compliance with the requirements of Sanitary rules and regulations № 0017-2021, and the level of availability of water-soluble vitamins was based on an analysis and assessment of the "Chemical composition of food products".

From the analysis of the diet, it can be seen that the daily diet of schoolchildren does not meet hygienic requirements. The amount of thiamine in the daily diet in different seasons of the year was 0,96-1,14 mg, and vitamin riboflavin 0,7-1,2 mg, in the summer period of the year it was 50% less than the physiological norm, the level of pyridoxine in the diet was 0,87-1,14 times less. The content of pantothenic acid in the diet was 66,6-72,0%. The daily content of cyanocobalamin was lower by 30-40% of the norm. The daily intake of niacin in different seasons ranged from 3,3 to 3,57 times lower than the standard values. Also, the content of ascorbic and folic acid in the daily diet was below normal. Thus, it is necessary to adjust the composition of the daily diet of schoolchildren in accordance with physiological norms.

Keywords: Daily diet, schoolchildren, pyridoxine, riboflavin, choline, cyanocobalamin, niacin, ascorbic and folic acid

Today, the number of children and adolescents in our country is increasing every day. Their health is one of the priorities of our state.

In the conditions of new Uzbekistan, it has been proven that macro- and microelements in the daily diet have a high role in ensuring the hormonal status of normal growth and development of a growing organism.

One of the pressing problems is the creation and implementation of a roadmap for promoting a healthy lifestyle and finding its solution in the prevention of nutrition-related diseases among schoolchildren. At the same time, providing the population with high-quality food products and compliance with the criteria for a healthy diet, the prevention of foodborne diseases is one of the urgent tasks today.

In this regard, decisions were made to prevent and reduce non-communicable diseases among the population of our country, including: No. 4063 of December 18, 2018 "On measures to support the prevention of non-communicable diseases, a healthy lifestyle" and increasing the level of physical activity of the population" [1] and № 4887 of November 10, 2020 "On additional measures to ensure healthy nutrition of the population" [2].

Today in our country the Cabinet of Ministers has decided to provide a free second breakfast to students in grades 1-4, and the daily diet of all first-graders has been enriched. Changes in body weight, digestion, various allergic diseases, psoriasis, autoimmune diseases as a result of the lack of healthy nutrition requirements among schoolchildren are considered in the works of a number of authors [5,6,7,8,].

Violation of the daily nutritional status of schoolchildren and a lack of vitamins in the daily diet are associated with frequent colds, changes in the gastrointestinal system, anemia, metabolic disorders, chronic fatigue, decreased performance, brittle nails, and changes in blood composition [5, 6,7,8,9,10].

Water-soluble vitamins mainly include B1, B2, B4, B5, B6, B9, B12 and niacin, ascorbic acid. Their level in the diet is provided by all foods consumed during the day.

Our analysis shows that basic foodstuffs are in excess in the daily diet, while some are in short supply. This is the basis for the emergence of specific deficiencies in ensuring normal levels of vitamins.

The purpose of the study is to analyze the level of provision of water-soluble vitamins in the daily diet of primary school students.

Materials and methods of research: daily diet of schoolchildren living in rural conditions of the Khorezm region, and its level of vitamins during the summer season of the year (June, July, August) at the beginning, middle and end of each month. , for the entire season 81 (out of 9), a nutrition analysis was carried out and the patients' nutrition was assessed as meeting the requirements of Sanitary rules and regulations № 0017-2021 "Sanitary rules, norms and hygienic standards for the organization of student meals in secondary general education, secondary special, vocational educational institutions" [5].

Results. It has been established that the diet of primary school students during the day does not meet hygienic requirements and there are specific changes in its composition. During the winter, spring and autumn periods, schoolchildren eat as follows: breakfast is served at home, most of them at school, the second lunch is organized by the state free of charge by decision of the President of the Republic of Uzbekistan, lunch is served at home after arriving at school, dinner is also served at home, rest in the summer season Since it was the holiday period, breakfast, lunch and dinner were organized, and we divided their diet into non-standard and high-risk foods.

In the daily diet of schoolchildren, low-risk products include meat, dairy and fish products, fruits and vegetables, rye bread, cereals and legumes, while high-risk products include bread

and bakery products, confectionery, sugar, table salt, coffee, margarine, including vegetable oil and colored drinks.

The daily diet of schoolchildren in all seasons of the year includes flour, high-quality bread and pasta, confectionery, margarine, iodized table salt, coffee, sugar, and in case of excessive consumption of vegetable oil - rye bread, cereals, legumes, meat products, dairy products, fish, and the amount of food, fruits and vegetables consumed is less and does not correspond to established physiological standards.

This situation, along with a decrease in the amount of proteins, fats and an increase in the amount of carbohydrates in the daily diet, as well as the emergence of sharp differences between a number of vitamins and minerals, was noted in the works of a number of authors.

In this study, we analyze the amount of water-soluble vitamins consumed in four seasons of the year, which foods contain more of them, and the situations that arise as a result of their deficiency.

Table № 1 shows the level of vitamin consumption in the daily diet of schoolchildren.

Table № 1 Amount of vitamins that schoolchildren consumed during the year

№	Vitamins	Physiological norm	Seasons of the year			
			winter	spring	summer	autumn
1	Thiamine, mg	1,2	1,14±0,04	0,96±0,03*	0,98±0,03*	1,0±0,03**
2	Riboflavin, mg	1,4	1,2±0,04	0,8±0,03***	0,7±0,03***	0,9±1,5**
3	Pyridoxine, mg	1,6	1,4±0,05	1,22±0,05*	1,26±0,04***	1,27±0,05*
4	Folate, mcg	200	127,9±3,9	107,7±3,6***	109,9±3,6***	112,7±3,7***
5	Pantothenic acid, mg	5,0	3,6±0,04	3,3±0,03***	3,4±0,03***	3,5±0,05*
6	Cyanocobalamin, mg	2,0	1,3±0,04	1,2±0,04*	1,3±0,05**	1,4±0,05**
7	Choline, mg	250	202±0,04	195,6±0,03**	193±0,03**	185±1,5***
8	Niacin, mg	15	5,0±0,04	4,2±0,03***	4,3±0,03**	4,5±1,5**
8	Ascorbic acid, mg	60,0	52,6±1,8	43,36±1,6***	49,9±1,9**	54,4±1,5*

Expl: *- the difference between the seasons is reliable (*-P<0,5**-P<0,01; ***-P<0,001)

Thiamine-preserving products are high in grains and porridges and legumes, and pork, liver and chicken, and rye bread. Unfortunately, these products are not enough in the diet of students.

The amount of thiamine in the daily diet of the school children under control was 0,96-1,14 mg in the seasons. The highest rate was achieved in the winter season by 81,4% of the norm.

Vitamin riboflavin is high in milk and meat, fish, egg yolks, mushrooms, cereals and legumes. The level of consumption of riboflavin was 0,7-1,2 mg in the seasons, while in the summer season it was 50% less.

The content of vitamin pyridoxine is high in the daily consumption of cereals, walnuts, grains, greens such as spinach, potatoes, carrots, cauliflower and carrots, tomatoes, blueberries, citrus

fruits and lemons. In the daily diet of schoolchildren, these products are insufficiently supplied, and the level of consumption of these vitamins in the seasons is 0,87-1,14 times less.

Pantothenic acid is mainly found in oats, buckwheat, legumes, liver, fatty fish, meat products, onions, eggs, tomatoes, potatoes, nuts, milk, mushrooms and dried fruits. The daily intake of pantothenic acid by season was 66,6-72,0%.

Foods containing cyanocobalamin include many meat products, liver, liver and heart products, poultry and fish products, eggs, bran and nuts. The daily amount of cyanocobalamin is undersupplied by 30-40%.

There is a lot of niacin in nuts and poultry products, spices, as well as in beef and eggs, fish, and cottage cheese. The daily level of niacin consumption was 3,57-3,3 times less than that consumed in different seasons of the year. There is a lot of ascorbic acid in fruits.

There is a lot of folic acid in green vegetables, legumes, cabbage, spinach, broccoli, sunflower seeds, beets, and citrus fruits.

The daily diet in all seasons of the year is characterized by a lack of all water-soluble vitamins, insufficient consumption of basic foods, high-quality bread, rice, confectionery, coffee, sugar, table salt, low-fat foods and drinks.

In this regard, it is necessary to conduct propaganda among schoolchildren about a healthy lifestyle, healthy eating and its importance.

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