



# TO ORGANIZE HYGIENIC ANALYSIS OF THE HEALTHY NUTRITION IN PRESCHOOL EDUCATIONAL ORGANIZATIONS

ERMATOV NIZOM<sup>1</sup>, GULI SHAYKHOVA<sup>2\*</sup>, AKHMADKHODJAEVA MUNOJOTKHON<sup>3</sup>, AZIMOVA SEVARA<sup>4</sup>,  
SHERQUZIYEVA GUZAL<sup>5</sup>, SAGDULLAYEVA MAFURA<sup>6</sup>

<sup>1</sup>Professor, <sup>1</sup>Assistant, Department of Hygiene of Children, Adolescents and Nutrition, Tashkent medical academy, Forobiy-3 street, Tashkent, Uzbekistan

<sup>2</sup>Professor, Department of Hygiene of Children, Adolescents and Nutrition, Tashkent medical academy, Forobiy-3 street, Tashkent, Uzbekistan

<sup>3</sup>Assistant, Department of Hygiene of Children, Adolescents and Nutrition, Tashkent medical academy, Forobiy-3 street, Tashkent, Uzbekistan

<sup>4</sup>Assistant professor, Department of normal and pathological physiology, Tashkent medical academy, Forobiy-3 street, Tashkent, Uzbekistan

<sup>5</sup>Assistant professor, Department of Communal and Occupational Hygiene, Tashkent medical academy, Forobiy-3 street, Tashkent, Uzbekistan

\*Corresponding Author: [shaykhova.guli@yahoo.com](mailto:shaykhova.guli@yahoo.com)

Copyright©2021 by authors, all rights reserved. Authors agree that this article remains permanently open access under the terms of the Creative Commons Attribution License 4.0 International License

6402

## Abstract.

A number of studies are being conducted around the world to provide optimal options for assessing the nutritional status and micronutrient status of preschool children. In this regard, it is necessary to substantiate the impact of endogenous and exogenous factors affecting the health of children of preschool age, as well as to improve health measures aimed at preventing the spread of infectious and somatic diseases. A healthy diet aimed at ensuring the hormonal development of the growing organism, the development of a new approach to the prevention of micronutrient deficiencies among children in the daily diet and in preschool institutions. Our article presents scientific research on the creation of optimal hygienic conditions for the prevention of diseases caused by micronutrient deficiencies among children in preschool institutions.

**Keywords:** preschool education, hygiene, healthy eating

**DOI Number:** 10.14704/nq.2022.20.8.NQ44664

**NeuroQuantology 2022;20(8):6402-6410**

## 1. Introduction

The source of micronutrient deficiencies in organizations has been shown to be extremely limited, along with the need to ensure a healthy, harmonious development of children and the rational organization

of the agenda in preschool education, healthy eating, updating the normative documents of the education system [1,2,3,4,5]. According to the analysis of diseases caused by micronutrient deficiencies in the growth and development of children, a number of



complex studies are required in preschool education institutions today [6,7,8,9]. In the research conducted by foreign scientists, the organization of periodic healthy eating in preschool education is one of the most pressing issues today, taking into account the specific features of the body of children in preschool education [10,11,12].

A number of studies aimed at assessing the status of healthy eating and morbidity among different segments of the population in Uzbekistan have not been sufficiently performed [13,12]. Over the past 20 years, no comprehensive research has been conducted on the nutritional status and micronutrient status of children in preschool education.

The scientific research has not been conducted on quantitative and qualitative factors in shaping the health of children, which allows them to make quick decisions in strengthening the health of children from an early age in our country [14]. The system and level of diseases among children in preschool institutions, conditions of upbringing, diseases caused by micronutrient deficiencies in children's diets, their physical development, as well as the correlation between diseases of school age were not identified. No preventive measures have been developed to improve the health of children in preschool institutions, to improve their nutritional conditions and to prevent micronutrient deficiencies in their diet [15,16].

## 2. Purpose of the research

We aimed at hygienic assessment of food products and their content in the daily diet of children aged 3-7 years, brought up in preschool institutions in Andijan, Fergana and Namangan regions of the Fergana Valley.

## 3. Materials and Methods

The object of the study was No.3 and 62 in Andijan city, Andijan district (No. 31, 41, 42), No. 63 in Fergana city, No.17 Fergana district (No. 34, 41); in the city of Namangan (No. 42, 13, 18, 21); in Namangan district (Nos. 6, 18, 51 and 9) children aged

3-7 years and 1332 children (593 boys and 739 girls) were taken.

Research and analytical methods such as analytical, questionnaire, sanitary-hygienic, anthropometric and statistical were used in the study.

Numerous scientific studies conducted in our country and abroad to assess the impact of nutrition on the growth and development of the child proves once again that healthy eating, along with physical activity, adherence to routines, health treatments, provides children with an emotional life, excellent health and well-being.

The rapid growth and development of the body of children differs from that of adults with the active developmental processes of organs and systems. These physiological characteristics are determined by the nutritional and energy needs of preschool children. In turn, the high need for nutrients and energy per unit of body weight necessitates a very careful selection of foods and their proportions, methods of cooking and components of nutrition [17].

We made the selection of controlled children on the basis of generally accepted students.

One of our main tasks was the hygienic analysis of the level of daily consumption of basic food products by preschool children living in Andijan, Namangan and Fergana regions of the Fergana Valley.

## 4. Result and Discussion

The research was conducted in urban and rural residential and pre-school educational institutions of Andijan, Namangan and Fergana regions of the Fergana Valley.

The studies analyzed the composition and structure of 216 (108 of them) diets at the beginning, middle, and end of each month during the winter-spring and summer-autumn seasons of the year.

The work schedule of the controlled preschool organization is approved for 9-10 hours of working conditions.



**Table 1**  
**Distribution of the diet of children in preschool institutions of the Fergana Valley**

Type of food	Meal time, norm	Eating habits, norms	Eating habits, in practice
Breakfast	8.00-8.30	15-25%	20-25%
Second breakfast	10.00-10.30	5-10%	-
Lunch	12.00-13.00	35-40%	40-50%
Dinner	16.00-17.00	15-25%	20-25%

Hygienic analysis of the diet of controlled preschools showed that the diet does not meet the established requirements. Despite the absence of a second breakfast and or a full cup of tea in preschools, the daily meal schedule is hygienic. However, the survey of children and their parents showed that the results of the work showed that the fact that they ate dinner at the orphanage also led to a violation of the established eating habits. This, in turn, indicates that along with the disruption of the daily diet of children, there is a decrease in physical and mental performance among children and the creation of a basis for disruption of mental stress, range, exchange processes.

According to a survey of parents, 15-20% of children, mostly in preschools, do not eat breakfast or eat a snack at home. do not have breakfast in preschools and arrive late to preschools and do not

have breakfast at the institution.

The composition of the main food items in the daily diet of children in preschools is given in Tables 2, 3, 4 and 5.

The results of the study show that the consumption of basic products in the daily diet of preschool children aged 3-7 living in urban and rural areas of Andijan region of the Fergana Valley differs sharply from the physiological norm. However, despite the low level of provision of products in the daily ration of children, the daily energy value of children meets hygienic requirements.

To date, a number of changes have been identified in the daily diet of children in preschool institutions and the composition of the main nutrients and diet in its composition. One of the main ones is the example of cereals of different composition.

6404

**Table 2**  
**Daily consumption of basic foodstuffs by preschool children living in urban areas in the Fergana Valley during the winter and spring seasons (between 3 and 7 years old)**

Products	Physiological norm	Andijan city			Fergana city			Namangan city		
		factual	% ratio	g, not enough	factual	% ratio	g, not enough	factual	% ratio	g, not enough
Milk products	565,0	335,0±15,6***	59,3	230	378,0±11,2**	66,9	187	258,0±9,6**	45,7	307
Bread products	160,0	255,7±5,9**	159,8	+95,7	245,0±4,9**	153,1	+85	235,0±8,1**	146,9	-75
Vegetables	200,0	125,0±3,3**	62,5	75	156,5±6,1**	78,3	43,5	124,0±5,2**	62,0	76



Fruits	193,0	90,0±4,1** *	46,6	103	115,0±3,8** *	59,6	78	148,0±5,6** *	76,7	45
Potatoes	120,0	85,0±3,9** *	70,8	35	160,0±3,1** *	133,3	-40	175,0±1,7** *	145,8	-55
Meat products	100,0	65,0±2,2** *	65,0	35	80,0±2,1***	80,0	20	90,0±1,6**	90,0	10
Sugar	40,0	32,0±3,1**	80,0	8	35,0±1,0***	87,5	5	38,6±0,8	96,5	1,4
Confectionery	20,0	15,0±0,9** *	75,0	5	16,0±0,9**	80,0	4	10,0±0,3***	50,0	10
Animal fat	15,0	12,5±0,7** *	83,3	2,5	10,0±0,7***	66,7	5	13,0±0,4***	86,6	-2
Vegetable oil	10,0	7,0±0,06** *	70,0	3	8,0±0,3**	80,0	2	10,0±0,05	100,0	0
Fish products	30,0	0,0	0,0	30	20,0±0,8***	66,7	10	0,0	0,0	30
Eggs	0,5	0,5±0,01	100,0	0	1,0±0,02***	200,0	-0,5	0,5±0,02	100,0	0
Dried fruits	10,0	5,0±0,9***	50,0	5	9,0±0,04	90,0	1	12,0±0,01**	120,0	-2
Salt	5,0	5,0±0,3	100,0	-	5,0±0,2	100,0	-	5,0±0,4	-	-

6405

Note: \* - the differences are significant relative to the physiological norm group indicators (\* - P<0,05, \*\* - P<0,01, \*\*\* - P<0,001)

**Table 3**  
**Daily consumption of basic foodstuffs by preschool children living in village condition of the Fergana Valley in winter and spring**

Products	Physiological norm	Andijan city			Fergana city			Namangan city		
		factual	% ratio	g, not enough	factual	% ratio	g, not enough	factual	% ratio	g, not enough
Milk products	565,0	338,0±12,3***	59,8	227	353,0±9,8***	62,5	212	365,0±17,4***	64,6	200
Bread products	160,0	252,4±6,2***	157,7	+92,4	242,4±8,7***	151,5	+82,4	230,5±11,3***	144,0	+70,5
Vegetables	200,0	140,0±2,1***	70,0	60	175,0±4,6***	87,5	25	149,0±6,8***	74,5	51
Fruits	193,0	95,0±9,1***	49,2	98	118,0±7,2***	61,1	75	145,0±6,1***	75,1	48
Potatoes	120,0	90,0±6,3**	75,0	30	170,0±8,7***	141,7	-50	170,0±7,1***	141,7	-50
Meat products	100,0	67,0±2,9***	67,0	33	80,0±2,8***	80,0	20	98,0±7,8	98,0	2
Sugar	40,0	33,0±1,3***	82,5	7	35,0±1,3**	87,5	5	39,6±2,1	99,0	0,4
Confectionery	20,0	15,0±0,8***	75,0	5	40,0±1,4***	200,0	-20	10,0±0,2***	50,0	10
Animal fat	15,0	12,0±0,9*	80,0	3	9,0±0,7***	60,0	6	12,0±1,4**	80,0	-3
Vegetable oil	10,0	8,0±0,08**	80,0	2	8,0±0,6**	80,0	2	9,0±0,5	90,0	1
Fish products	30,0	0,0	0,0	30	25,0±1,0**	83,3	5	0,0	0,0	30
Eggs	0,5	0,5±0,01	100,0	0	1,0±0,05***	200,0	-0,5	0,5±0,02	100,0	0



Dried fruits	10,0	5,0±0,01***	50,0	5	9.0±0,03	90,0	1	10.0±1,5	100,0	0
Salt	5,0	5,0±0,7	100,0	-	5,0±0,01	100,0	0	5±0,7	100,0	-

Note: \* - the differences are significant relative to the physiological norm group indicators (\* - P<0,05, \*\* - P<0,01, \*\*\* - P<0,001)

**Table 4**  
**Daily consumption of basic foodstuffs by preschool children living in urban areas of Fergana Valley in summer and autumn**

Products	Physiological norm	Andijan city			Fergana city			Namangan city		
		factual	% ratio	g, not enough	factual	% ratio	g, not enough	factual	% ratio	g, not enough
Milk products	565,0	330,0±16,2** *	58,4	235	405.0±19,7** *	71,7	160	295,0±14,3** *	52,2	270
Bread products	160,0	244,0±12,1** *	152,5	+84	235,0±11,5** *	146,9	+75	215,0±8,1***	134,4	+55
Vegetables	200,0	145,0±5,8***	72,5	55	169.0±3,8***	84,5	31	178,0±4,2	89,0	-22
Fruits	193,0	105,6±5,9***	54,7	87,4	125.0±4,6***	64,8	68	160,0±5,3***	82,9	-33
Potatoes	120,0	96,0±3,6	80,0	24	135.0±3,9	112,5	-15	196,0±4,1***	163,3	-76
Meat products	100,0	66,6±2,8***	66,6	33,4	70.0±1,9***	70,0	30	85,0±1,7***	85,0	-15
Sugar	40,0	28,0±1,0***	70,0	12	20.0±1,1***	50,0	20	40,0±1,8	100,0	0
Confectionery	20,0	10,0±0,7***	50,0	10	17.0±1,7	85,0	3	6.2±0,9***	30,0	-14
Animal fat	15,0	10,0±0,08***	66,7	5	10,0±0,8***	66,7	5	12,5±2,1	83,3	-2,5
Vegetable oil	10,0	8,0±0,05**	80,0	2	8.0±0,5**	80,0	2	10.0±0,7	100,0	0
Fish products	30,0	0,0	0,0	30	15.0±0,9***	50,0	15	0.0	0,0	-30
Eggs	0,5	0,5±0,03	100,0	0	0.5±0,03	100,0	0	0.5±0,02	100,0	0
Dried fruits	10,0	-	0,0	10	8.0±0,3**	80,0	2	12.0±0,5*	120,0	-2
Salt	5,0	3,0±0,1**	60,0	2	5.0±0,1	100,0	0	0	0,0	-5

Note: \* - the differences are significant relative to the physiological norm group indicators (\* - P<0,05, \*\* - P<0,01, \*\*\* - P<0,001)

6406



**Table 5**  
**Daily consumption of basic foodstuffs by preschool children living in rural areas of Fergana Valley in summer and autumn**

Products	Physiological norm	Andijan city			Fergana city			Namangan city		
		factual	% ratio	g, not enough	factual	% ratio	g, not enough	factual	% ratio	g, not enough
Milk products	565,0	335,2±15,2** *	59,3	229,8	408.0±13,2** *	72,2	157	375.0±10,3** *	66,4	190
Bread products	160,0	242,2±6,7***	151,3	+82,2	233,3±8,2***	145,8	+73,3	225,0±5,1***	140,6	+65
Vegetables	200,0	155±3,1***	77,5	45	189.5±3,3***	94,8	10,5	160.0±2,8***	80,0	40
Fruits	193,0	110,6±9,1***	57,3	82,4	129.0±6,2***	66,8	64	155.0±7,6**	80,3	38
Potatoes	120,0	95±6,2**	79,2	25	145.0±5,5**	120,8	-25	190.0±4,8***	158,3	-70
Meat products	100,0	63,6±2,3***	63,6	36,4	70.0±3,4***	70,0	30	100.0±3,4	100,0	0
Sugar	40,0	31,7±1,6***	79,3	8,3	25.0±1,6***	62,5	15	40.0±0,9	100,0	0
Confectionery	20,0	10±0,9***	50,0	10	30.0±2,0***	150,0	-10	8.0±0,05***	40,0	12
Animal fat	15,0	10,5±0,7***	70,0	4,5	8,0±0,2***	53,3	7	12,0±0,7***	80,0	-5
Vegetable oil	10,0	8±0,6***	80,0	2	8.0±0,3***	80,0	2	10.0±0,4	100,0	0
Fish products	30,0	0	0,0	30	20.0±1,1***	66,7	10	0	0,0	30
Eggs	0,5	0,5±0,03	100,0	0	0.5±0,02	100,0	0	0.5±0,02	100,0	0
Dried fruits	10,0	0	0,0	10	8.0±0,4***	80,0	2	10.0 ±0,5	100,0	0
Salt	5,0	3±0,2	60,0	2	5.0±0,7	100,0	0	0	0,0	5

6407

Note: \* - the differences are significant relative to the physiological norm group indicators (\* - P<0,05, \*\* - P<0,01, \*\*\* - P<0,001)

The analysis of the daily staple food of children in preschool institutions in the controlled regions of the Fergana Valley shows that the level of consumption of staple foods in Andijan region is partially lower than in other regions. It was found that in Namangan region, in comparison with Fergana

region, the amount of products in the daily ration did not meet the established physiological requirements, despite the fact that it was relatively excessive. The results of the study show that the daily ration in preschools of the Fergana Valley for 2015-2018 does not meet the hygienic requirements.



The saddest thing is that in Andijan region, fish and fish products are not included in the daily diet of children, due to the low content of meat products in the daily ration of preschool education institutions. It leads to a decrease in omega-3 and omega-6 fatty acids in the body of children and a sharp decrease in vitamin D types.

The role of milk and dairy products in the normal growth and development of children and the provision of calcium and phosphorus micronutrients is high. It was found that the daily ration of preschool education organizations is low in cheese, butter and other dairy products. In our study, the level of daily ration of dairy products in urban areas of Andijan region increased from 45.7 to 66.9% in winter and spring, from 52.2 to 71.7% in summer and autumn, and from 59.8% in rural areas. from 64.6%, and in the summer-autumn season from 59.3 to 72.2%. This condition requires not only the growth and development of children, the musculoskeletal system, specific changes in the immune system.

Animal fats play an important role in the daily diet. In our analysis, we refer only to butter from animal fats. In the urban environment of the Fergana Valley in the winter-spring season is provided by 66.7-86.7%, and in the summer-autumn season from 10.0 to 33.3%. The analysis showed that the consumption rate of children in Namangan region is higher than in other regions. In rural areas, in a similar study, the winter-spring season provided 66.7-86.7% in the summer-autumn season.

It should be noted that in all preschools of all regions, eggs were found to meet physiological standards. This is partly due to the supply of micronutrients that fall through the egg to the body. The chemical composition of eggs is mainly a source of trace elements potassium and phosphorus, along with proteins. From the analysis of the chemical composition of eggs we know that in eggs the content of calcium and magnesium is 2 times higher than that of potassium, and the amount of phosphorus is up to 3 times higher.

The analysis of a number of scientific studies conducted by foreign and domestic scientists shows that in the daily diet of children and adolescents meat products are consumed 30-40% less in winter, spring and summer-autumn [18]. The daily rations of the preschools we examined were also found to be 33-35% and 33.4-36.4%, respectively, in a similar order. This leads to a decrease in the amount of trace elements iron, selenium and zinc among children.

In preschool education, the combined physiological norm of sugar and confectionery in the daily diet of children was 60 grams per day. However, we aimed to analyze this separately. In all foreign countries, our standards exceed the amount of sugar and confectionery. In addition, most of our children make breakfast at home with sugar and confectionery. Our foreign experts, on the other hand, provide analyzes only through results comparable to the physiological norm.

The level of sugar consumption in the winter and spring is 87.5% in Fergana region, 80% in Andijan region, 96.5% in Namangan region, 50.0% in Fergana region, 70% in Andijan region, Namangan in summer and autumn. 100% in the province.

The level of consumption of confectionery in urban areas is 50.0 to 25.0% in winter and spring, 15-50% in summer and autumn, and 25-50% and 40-50% in rural areas, respectively, 100% provided in the winter-spring season in the region.

As a result of these analyzes and scientific studies, we have been recommended to reduce the daily intake of sugar by 20 grams, 100%.

Despite the fact that we live in the best continental region of the world, it was found that the amount of fruits and vegetables in the daily diet of children in all preschool institutions is not enough.

In Namangan and Fergana regions, the amount of karotoshka in the daily diet of children exceeded physiological norms compared to other products. This product was consumed in excess of 12.5 62%. In Andijan region, the amount of potatoes in all seasons is partially lower than in all control





organizations.

The content of vegetable oils in the daily diet of preschool children was found to be 10-30% lower during the year.

The amount of salt in the daily ration is set at 5.0 grams. Our analysis showed that only the daily consumption of table salt and tea meets the established physiological norms.

Children's daily energy value is enriched mainly through bread and bakery products. The amount of bread and bakery products in the daily ration exceeded the established norm by 46.9-59.8% in urban conditions in winter and spring, by 34.4-52.5% in summer and autumn, and by 44.0-57.7% in rural areas. %, and in the summer-autumn season it was estimated at 40.6-51.3%. Although the amount of bread, rice and pasta from bread products was sufficiently 1.5-2 times higher than the general physiological norm, however, it was found that the daily ration did not include enough of the specified types of cereals and legumes. This leads to the subsequent development of overweight and varying degrees of obesity among children.

In all preschool organizations of the Fergana Valley, the structure of the daily ration of children does not meet the hygienic requirements.

It should be noted that the composition and structure of the daily ration for preschool children do not meet physiological norms and hygienic requirements, and this composition should be radically changed from a hygienic point of view, otherwise nutritional conditions and functional changes among children, the formation of sufficient changes in their mental and emotional well-being can lead to a violation of the functional unity of the child's body.

## 5. Conclusion

1. The quantity and quality of products in the daily ration of preschool children do not meet the hygienic requirements set in urban and rural areas. There are also significant shifts in the amount of

staple foods consumed during the week, the amount of fish products in the diet is significantly lower. Pure fish products are not included in the diet.

2. The composition of the daily ration of basic nutrients, ie proteins, was found to be 12.3 to 14.1% lower in winter and spring, 17.3 to 20.0% lower in summer and autumn, and 16.5-13.9% lower in plant proteins. to 12.7 to 9.8%. The amount of fats was found to be 8.5 to 11.4% and 13.7 to 15.2%, respectively. It was found that the ration was low in animal protein and fat, and that vegetable oils were consumed in excess of the norm.

3. It was found that in the daily diet of preschool children, the amount of carbohydrates in bakery products (bread, rice, pasta, flour products) was 6.9-10.6% in urban areas and 18.8 to 12.0% in rural areas.

4. The variety of products in the daily diet of children, fish, chicken and rabbit meat, cheese, dark cream, yogurt, various pure fruits and juices made from them, salads made from pure vegetables are not provided in the prescribed manner.

## Acknowledgements

We are very grateful from Mr.Elyorbek Rakhmatullaev who is working as an assistant in Tashkent medical academy for his aid and paper work.

## REFERENCES

- [1] Baranov A.A., Scheplyagina L.A., Ilyin A.G., Kuchma V.R. Children's health status as a factor of national security // Ros. pediatrician. journ. 2005. No. 2. pp.4-8.
- [2] Basharova L.M. Hygienic substantiation of measures to optimize the conditions for the upbringing of children in preschool educational institutions: Author's abstract. diss. ... Cand. honey. Sciences: - T., 2018.-pp.48.
- [3] Borisova T.S. Ways of correcting the nutritional status of preschool children // BSMU: 90 years at the forefront of medical science and practice: Mater. rep. scientific-practical conf. - Minsk, 2011. - pp.4-5.
- [4] Vazhenina A.A., Petrov V.A., Ivanova I.L. Features of home rations of the day off for preschoolers -

6409





- pupils of preschool educational organizations // Pacific Ocean med.journ. 2016.Vol. 61, No. 3. pp.45-48.
- [5] Valakhanovich T.N. Correction of insufficient nutritional status of preschoolers due to dysbiotic changes: Mater. rep. scientific-practical conf. - M, 2014.- pp.228-230.
- [6] Vrzhesinskaya O.A., Kodentsova V.M., Safronova A.I. Evaluation of the provision of vitamins in preschool children by non-invasive methods // Pediatrics. 2016. No. 3. pp.119-124.
- [7] Gorelova Zh.Yu., Kopytko M.V. Features of the organization of nutrition for preschool children // Russian Pediatric Journal. - 2009. - No. 2. - pp.54-57.
- [8] Doschanov B.A. Hygienic analysis of current nutrition of children. // Actual problems of healthy and dietary nutrition.- Tashkent, 2017. -pp.43-45.
- [9] Khusanova N.F. Hygienic substantiation of functional maturity of children to systematic education in preparatory groups of preschool educational institutions. // Abstract of the dissertation of the doctor of philosophical sciences, Tashkent, 2019. pp.49.
- [10] Khusanova N.F. The state of health of children of preparatory groups of children's preschool institutions in Tashkent // Bulletin of the Tashkent Medical Academy. - Tashkent, 2012, No. 2. - pp.116-121.
- [11] Shaikhova G.I., Asomiddinova A.I. Health indicators of children of preparatory groups of children's preschool institutions of the Republic of Karakalpakstan // Bulletin of the Tashkent Medical Academy. Tashkent, 2016. - No. 4. - pp.133-137.
- [12] Shaikhova G.I., Khusanova N.F. Hygienic assessment of the functional readiness of preschoolers for systematic training // Medical News. - Belarus, 2019. - No. 6. - pp.71-74.
- [13] Shaikhova G.I., Saidaliev S.S., Khusanova N.F. The state of health of children of preparatory groups of preschool institutions in Tashkent // Ecology and development of society. Materials of the XIV international conference. - St. Petersburg, 2012.pp.97-101.
- [14] Shaikhova G.I., Ermatov N.J. The value of essential trace elements in nutrition. // Bulletin of the Tashkent Medical Academy. - 2014.-№2. -pp.21-25.
- [15] UNICEF; Global iodine network. Recommendations for monitoring salt iodization programs and assessing the status of iodine supply in the population (Russian version) // Clinical and Expertise. thyroidology. 2018.Vol. 14, No. 2.pp.100-112.
- [16] Yurko G.P., Lashneva I.P., Berezina N.O. and others. The state of health of children and the development of recreational activities in preschool educational institutions // Hygiene and sanitation. - 2000. - No. 4. - pp.39-42.
- [17] Pate R.R., McIver K., Dowda M., Brown W.H., Addy C. Directly observed physical activity levels in preschool children.// J Sch Health, 2008. N. 78(8). pp.38-44.
- [18] Shaykhova G.I., Husanova N.F. Hygienic justification of studying the educational process of preschool children of preparatory groups //European Science Review. – 2019. Austria. Vienna.pp.145-148.

