

Received: 20.10.2022  
 Accepted: 29.10.2022  
 Published: 20.11.2022  
 UDK 616:955

**CURRENT STATE OF THE PROBLEM OF RATIONALIZATION OF SCHOOLCHILDREN'S NUTRITION**

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**Resume**

*Currently, the number of nutrition-related diseases is increasing worldwide, especially among children, which calls for more attention to the problem. The article covers nutritional problems of school-aged children, nutrition-related and social risk factors affecting child health.*

*Keywords: nutrition, alimentary diseases, children of school age.*

**СОВРЕМЕННОЕ СОСТОЯНИЕ ПРОБЛЕМЫ РАЦИОНАЛИЗАЦИИ ПИТАНИЯ ШКОЛЬНИКОВ**

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**Резюме**

*В настоящее время во всем мире увеличивается число заболеваний, связанных с питанием, особенно среди детей, что требует повышенного внимания к проблеме. В статье освещены проблемы питания детей школьного возраста, связанные с питанием и социальные факторы риска, влияющие на здоровье ребенка.*

*Ключевые слова: питание, алиментарные заболевания, дети школьного возраста.*

**MAKTAB O'QUVCHILARINING OVQATLANISH JARAYONINI RATSIONALIZATSIYALASH MUAMMOSINING HOZIRGI HOLATI**

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**Rezyume**

*Hozirgi vaqtda butun dunyoda, ayniqsa, bolalar orasida ovqatlanish bilan bog'liq kasalliklar soni ortib bormoqda, bu muammoga ko'proq e'tibor qaratishni talab qiladi. Maqolada maktab yoshidagi bolalarning ovqatlanish muammolari, ovqatlanish bilan bog'liq va bolalar salomatligiga ta'sir qiluvchi ijtimoiy xavf omillari yoritilgan.*

*Kalit so'zlar: ovqatlanish, ovqat hazm qilish kasalliklari, maktab yoshidagi bolalar.*

### Relevance

In the last decade, significant economic and social changes have taken place in the Republic of Uzbekistan, which have affected every inhabitant of the country, especially the health status of school-age children. The somatic health of children cannot be considered in isolation from the state of their actual nutrition, which affects not only the functional state of the child at the moment, but also significantly affects his future existence [1,2,3,6,7,8,11,35].

"Human health, as defined by WHO (1968), is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."

The modern level of science has expanded and deepened the concept of "health", which is currently understood as not only the absence of any functional abnormalities of the body, but also a good level of functioning of various systems, resistance to adverse effects and sufficient ability to adapt to various environmental factors, and also the harmony of physical development [11,13,14,15,17].

Education at school, as the most stressful period of life, requires special attention to the health of children and adolescents.

The data obtained by the authors indicate a close relationship between the unfavorable environmental situation and an increase in the frequency of allergies, pathologies of respiratory system, disorders of neuropsychic and physical development among children and adolescents [2,3,7,8,11,25]. There is evidence in the literature that environmental factors are most often of little intensity, but all in combination are able to create a ground for the development of diseases [12,13,15,7,23,30].

The gathered knowledge testifies to the influence of negative factors on the health of children about the undoubted importance of social and hygienic factors, which include the education and profession of parents, living conditions, material income of the family, the presence of bad habits in parents (alcohol, smoking, family microclimate), sanitary literacy and medical activity of parents and of course directly the nature of the child's lifestyle [14,15,21,22,23].

A scientifically proven fact is that in children from large and single-parent families, or where at least one parent has bad habits (smoking, alcohol abuse), the incidence is higher [14,16,19,21]. A number of researchers noted that a high level of parental education has a positive effect on the

physical development of their children, and the insufficient level of sanitary and hygienic knowledge of parents on the prevention of children's diseases, rational nutrition, physical culture leads to parents' failure to comply with medical recommendations and prescriptions, etc [1, 3,7,10,13].

Low social development leads to a deterioration in nutrition, an imbalance in the diet, a lack of vitamins in food, metabolic disorders, a deterioration in indicators of physical development and puberty, a decrease in working capacity and immunity, and an increase in morbidity [15,17,19,20].

Studies have shown that during schooling, overall physical activity drops many times over. The majority of students are not involved in sports sections and circles, and physical education lessons cannot compensate for the lack of physical exercises [8,10,15,17,19,22,24,25].

Schoolchildren spend their free time monotonously, 81.8% of schoolchildren spend on computer games, watching television,

In conditions of defective, inadequate to age and health nutrition, schoolchildren are more likely to develop cods and alimentary diseases and have a higher risk for relapses and the chronic course of the disease. This is due to the fact that the body of children during their school years reacts rather sharply to any deficiency and / or imbalance of essential nutrients. In cases of untimely correction of malnutrition, the probability of delaying physical and mental development, weakening of the immune system and disruption of the activity of organs that provide homeostasis in the body increases [17,18,19,20,32,33]. The regularities of the energy balance are well studied. As is known, the basal metabolic rate (BMR) and the daily energy requirement depend on age, sex and body weight. All types of energy costs, including total energy expenditure are expressed as a multiple of basal metabolic rate. The global picture of changes in the energy value of daily food rations in the world indicates that the number of kilocalories consumed per capita per day has decreased. The reduction in the per capita calorie content of diets also affected the decrease in the energy value of the diets of children and adolescents [9,10,12,13,27].

Increased basal metabolism and energy expenditure in children and adolescents dictate the need for a special approach to organizing their nutrition. It is impossible to allow the

consumption of foods that provide the body with energy to be below a certain limit, which provides basal energy metabolism, energy costs for digestion of food, physical and mental activity. The energy expended by the child's body must be constantly compensated with food, otherwise the body is forced to replenish the expended energy at the expense of its internal reserves [1,2,6,10,33,34]. Therefore, it is undeniable that insufficient or excessive caloric content of the diet has an extremely negative impact on the health of school-age children.

Proteins are of particular importance in the nutrition of a growing organism. This is the main plastic material necessary for the formation of tissue and organ cells, the formation of enzyme systems, hormones, and immune bodies. As you know, 10-15% of the energy value of the daily diet should be provided by proteins in children and adolescents. Protein deficiency causes malnutrition, lag in physical development, and contributes to the development of beriberi and iron deficiency anemia. There are currently no upper limits for protein intake, but evidence from animal and human studies suggests that excessive protein intake negatively affects kidney function [8,9,13,14,18,29,36].

Fats are essential in nutrition as an energy and structural material. None of the fats, taken separately, can fully meet the needs of the body of children and adolescents in fatty substances. Animal fats, including milk fat, contain significant amounts of saturated fatty acids, one of the risk factors for non-communicable diseases (NCDs). Vegetable fats contain a lot of polyunsaturated fatty acids (PUFAs) and tocopherols, but do not contain vitamins A and D. However, the diets of children and adolescents should provide no more than 28-30% of energy from fat, with a ratio of 70% animal and 30% vegetable fats. Over the past three decades, per capita consumption of animal fats has increased in developing and developed countries and the prevalence of NCDs has increased accordingly [16,17,18,19,23,30,32,35].

Carbohydrates are the main sources of energy. These include sugars, oligosaccharides and dietary fiber, which come mainly from plant foods. There is evidence that total sugar intake is generally inversely related to total dietary fat, and moderate sugar content in meals consumed is compatible with the concept of a "diverse and nutritious diet" [3,8,9,10,13,29,34]. Frequent consumption of sugars and other digestible carbohydrates throughout the day increases the

risk of tooth decay, especially in the absence of proper oral care. On the other hand, reducing the use of sugars in the diet appears to do little to prevent tooth decay if there is enough fluoride in the diet and dental hygiene is maintained [9,16,18,28]. At the same time, attention is drawn to the fact that unrefined grains, dairy products, especially cheese, stimulate the outflow of saliva and thus protect teeth from caries [3,4,26,28]. Black tea extract, by increasing the concentration of fluoride in dental plaque, reduces the cariostatic properties of diets high in sugars [19,23,28,30].

The group of dietary fibers includes polysaccharides such as cellulose, hemicellulose, pectins and mucilage, which have different solubility and viscosity characteristics. Fiber favorably affects the metabolism of glucose and cholesterol, as well as intestinal function. The optimal content of dietary fibers (coarse and soft) in the daily diet of children and adolescents should be 15-20 g/day [13,14,16,18].

Vitamins and microelements are among those indispensable biologically active substances, the deficiency of which in the body can be accompanied by a violation of the functions of many physiological systems.

It is now recognized that insufficient intake of micronutrients in the body of children is the leading nutritional factor contributing to the aggravation of infectious pathologies and the increase in non-communicable diseases [3,4,6]. Even very small amounts of these nutrients are essential to ensure the normal growth and development of children and maintain health. According to WHO, one third of humanity is at risk of developing various conditions associated with their deficiency [8,9,10].

Micronutrient deficiency is especially dangerous for a growing organism. Nutrition inadequate in terms of micronutrient content is qualified by the term "hidden hunger" [1,3,4,26,28].

Minerals and trace elements of public health importance include calcium, iron, iodine, zinc, sodium and fluorine. However, depending on the geographical location, environmental factors and national characteristics, copper, selenium and possibly other substances can also be added to them.

Calcium is an important component of the mineral matrix of bones, a regulator of the functioning of the nervous system and muscle cell membranes, and the formation of blood clots. Virtually all calcium (99%) in the human body is

in the bones. Its deficiency causes a violation of bone formation - rickets develop in young children, and increased bone fragility and an increase in the risk of dental caries in adolescents. So, from 5 to 16 years old, bone mineral density increases 3 times, therefore, the greatest peak of bone mass growth occurs in adolescence and, accordingly, calcium intake should be higher [15,17,23,28,31]. To level calcium deficiency in nutrition, it is necessary to constantly monitor its content in the diet of schoolchildren.

It should be emphasized that the positive effect of eating calcium-rich foods on bone mineralization depends on the content of vitamin C, the inclusion of fruits and vegetables in the diet, the intake of potassium and fibers [3,4,22,31,33]. Since the synergism in metabolism, including calcium, potassium and magnesium, affects the functional and physiological effectiveness of all three elements in ensuring the functions of the nervous tissue and the integrity of the skeleton, a balance between them must always be maintained even if their content in the main products varies greatly [4,30,31].

Iron is a component of hema- and cytochromes and is a cofactor in redox and other key enzymatic reactions. A relatively small decrease in iron stores in the body, for example, corresponding to a blood hemoglobin level of 100 to 120 g/l, can cause cognitive impairment and mental development in children [10,12,16,19].

Nutritional anemia is a major nutritional problem not only for young children and women of childbearing age, but also from a review of 32 studies performed in developing countries, it follows that anemia occurs in 27% of adolescents. Unlike boys, girls are prone to anemia much more often, which is explained by the peculiarities of the physiology of adolescent girls [1,3,5,8].

The main cause of anemia in children and adolescents is inadequate replenishment of the increased needs of the growing body in iron, mainly due to the low bioavailability of iron from poor diets that include few fruits, vegetables, meat and fish [12,14,15,17]. Vitamins occupy a special place in the development of iron deficiency states, since the presence of ascorbic acid and vitamin B1 affects the absorption and transport of iron, vitamin B6 is involved in heme synthesis, and folic acid and vitamin B12 are involved in erythropoiesis [19,21,22,25,27].

Children and adolescents of school age who suffer from anemia have lower academic performance. A clear illustration of the fact that iron deficiency contributes to a decrease in intellectual abilities can be provided by data indicating an improvement in academic achievement in children and adolescents who received additional iron-containing preparations [2,4,8,29,32].

According to the results of scientific studies of nutrition in our republic, among children aged 12-14 years, 49.4% suffer from iron deficiency anemia. This significantly worsens their health indicators, increases morbidity, reduces working capacity and cognitive activity [25,26,34,35]

Zinc is part of erythrocytes, many enzymes, hormones (including the pancreatic hormone insulin), is involved in the regulation of protein and carbohydrate metabolism, plays an important role in cell reproduction and growth, in the processes of immunogenesis [15,17,23,29]. During puberty, the need for zinc in adolescents is high; if it is insufficient, the processes of growth and puberty are disrupted. At the same time, the activity of the most important digestive enzymes, the function of the visual analyzer are disrupted, immunity is weakened, sensitivity to infections and colds increases, wounds and scratches heal poorly. With a lack of zinc, taste perceptions will be disturbed, the taste of food is poorly felt, and appetite decreases [4,5,19,25,36].

Iodine is a trace element necessary for the synthesis of thyroid hormones, thyroid-stimulating hormones - thyroxine and triiodothyronine, which control the development and functioning of the brain and nervous system, regulate body temperature and energy. According to foreign experts of the International Council for Combating Iodine Deficiency Disorders, the low academic performance of about 20% of children in Central Asian countries is directly related to iodine deficiency. In children with iodine deficiency, there are underestimated motivations for achievements, the implementation of school programs, and general cognitive abilities are reduced [4,19,23,26].

### Conclusion

Thus, the above material allows us to consider it very promising to study the close relationship between the nature of actual nutrition, nutritional status and alimentary-dependent diseases of children and adolescents.

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Entered 20.10.2022