PROVISION OF CERTAIN VITAMINS TO PRIMARY SCHOOL STUDENTS

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Annotation
This article discusses the level of provision of certain vitamins — A, B group, C, and D — essential for the development of primary school students, the consequences of their deficiencies, and ways to improve vitamin intake. The study examined students' eating habits, the composition and nutritional value of the consumed foods. The results show that balanced nutrition plays a decisive role in the health of school-aged children.

Keywords: vitamins, primary school students, nutrition, health, vitamin deficiency.

Аннотация
В статье рассматривается уровень обеспеченности определёнными витаминами — A, группы B, C и D — необходимыми для развития учащихся начальных классов, последствия их недостатка и способы улучшения поступления витаминов. В исследовании были изучены пищевые привычки школьников, состав и пищевая ценность потребляемых продуктов. Полученные результаты показывают, что сбалансированное питание играет решающую роль для здоровья детей школьного возраста.

Ключевые слова: витамины, учащиеся начальных классов, питание, здоровье, витаминная недостаточность.

The physical and mental development of primary school students is directly related to proper and adequate nutrition. This age corresponds to an active growth phase, so children must regularly receive not only proteins, fats, and carbohydrates but also essential vitamins and minerals.

Vitamins are biologically active substances crucial for the normal functioning of the body. Their deficiency (hypovitaminosis) can lead to reduced immunity, fatigue, unexplained headaches, skin and vision problems, and delayed bone development in students. In Uzbekistan, deficiencies of vitamins A, C, and D are particularly common among children [1-3].

The full development of primary school students is a multifactorial process, in which the level of provision of biologically active substances — especially vitamins — is considered one of the key factors. During the study, students' diets, current meal plans, home-consumed foods, and signs of vitamin deficiency were systematically analyzed. The data revealed deficiencies in vitamins A, C, and D among students [4].

Vitamin A plays a crucial role in the regeneration of epithelial tissues, the synthesis of visual pigments, and the activation of immune responses. According to the study, a significant portion of students consumed less vitamin A than physiologically required. This deficiency is partly due to the low intake of retinol-rich foods such as carrots, pumpkins, and leafy greens, and partly due to the degradation of the vitamin during thermal processing. Observations indicated that 12–15% of students experienced night vision difficulties and frequent colds, functional signs of hypovitaminosis [6].

B-group vitamins are biologically important as factors necessary for enzymatic reactions, energy metabolism, and central nervous system activity. Survey results showed that 38% of students primarily consumed bread, sweets, and processed foods as their main energy sources, leading to a lack of B vitamins in the diet. Clinically, non-specific symptoms such as fatigue, irritability, decreased attention, and sleep disturbances were noted [7].

Vitamin C, as an antioxidant, regulates redox processes, participates in collagen synthesis, immune activation, and iron absorption. The study revealed that more than 30% of students consumed fewer fruits and vegetables than recommended. Vitamin C deficiency manifested in a greater susceptibility to colds, fatigue, and delayed wound healing.

Vitamin D regulates calcium-phosphorus metabolism and ensures the mineralization of bone tissue. About 40% of students had limited sun exposure, spending most of their time indoors at school and home. Low consumption of fish, eggs, and dairy products further restricted sources of vitamin D. Medical examinations revealed students with bone pain, muscle weakness, and uneven spinal development, indicating possible vitamin D deficiency [5,8].

Overall, the analysis showed that vitamin deficiencies among primary school students are largely associated with improper nutrition, low fruit and vegetable intake, and lack of adherence to a healthy lifestyle.

The study concluded that the provision of vitamins A, B group, C, and D among primary school students is insufficient. Low consumption of naturally vitamin-rich foods, insufficient sun exposure, and poor dietary habits are the main factors contributing to vitamin deficiency. Early signs of vitamin deficiency — decreased attention, fatigue, weakened immunity, vision changes, and poor bone mineralization — directly affect students' health and academic performance.

Based on scientific analysis, the following conclusions were drawn:

1. Disruption of microelement and vitamin balance is widespread among primary school students and negatively affects their physical and intellectual development.
2. Enriching school meals, particularly increasing the proportion of foods rich in vitamins A, C, and D, is crucial for improving students' vitamin intake.
3. Systematic educational work among parents and teachers on healthy eating is an effective measure to prevent vitamin deficiencies.
4. Strengthening preventive medical examinations and monitoring systems allows early detection of students at high risk of micronutrient deficiencies and taking necessary actions.

It is important to note that a lack of vitamins in students' daily diet negatively affects their normal growth and development (physical weakness, fatigue, cognitive delays, etc.). Importantly, providing adequate nutrition for a few months may not fully restore the situation. Understanding this and ensuring students' daily diets are appropriately balanced is crucial for the holistic development of the younger generation.

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