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Nutrition of primary school children: world and Ukrainian realities

M. M. Vatan, V. V. Babienko, V. Y. Levkovska

Odessa National Medical University, Odessa, Ukraine

Abstract

The aim of the study is to assess the actual nutrition of primary school children in Ukraine and other countries. **Material and methods.** An analysis of publications in scientific journals and reports of national agencies on the state of nutrition of primary school children. Search depth 10 years. The following search strategy "primary school", "nutrition", "sentinel surveillance" was used. The 15 most relevant publications were selected for further analysis. In addition, a survey of 450 primary school students was conducted on the quality of nutrition during school. Statistical processing was performed using MedCalc software.

Results. Most countries in the world have some kind of nutrition program for younger students. At the same time, the diets that these programs offer do not always meet the principles of healthy eating. According to our own data, only 96 (21.3%) of the surveyed schoolchildren aged 6-10 had a full meal at school. For the rest, there was either a qualitative or quantitative discrepancy in the composition of breakfast and lunch at school. The children noted the lack of time for meals, low taste of school lunches. Every second child consumed insufficient volume of fluids during school.

Conclusion. The nutritional status of primary school children is affected by lack of time for eating and recreational physical activity, unbalanced diet when using home lunch boxes and low coverage of high school students with organized meals. Unlike other countries, the main problem for Ukraine is not an energy surplus diet, but the popularity of fast food among children of primary school age is undoubtedly unacceptable.

Key words: nutrition; primary school age; prevention; children health

The health of children and adolescents in any socio-economic environment is an urgent problem and a matter of paramount importance, as this factor largely determines the future of any country [1, 2]. However, in the last decade the state of health of the population in our country is characterized by negative trends [3]. Life expectancy in Ukraine is much shorter than in most developed countries [3, 4]. This is facilitated by the increase in the prevalence of various chronic diseases in adults, children and adolescents, and on the other - the deterioration of socio-economic conditions associated with the armed conflict in the east and the loss of industrial potential due to aggressive actions of the Russian Federation [5].

There is reason to believe that the increasing prevalence of cardiovascular and oncological diseases in adults is to some extent related to childhood nutrition [6]. Nutrition is one of the most important factors determining the health of the population [6, 7]. Proper nutrition ensures the normal growth and development of children, helps prevent disease, prolong people's lives, increase efficiency and creates conditions for their adequate adaptation to the environment [7]. Most children and adolescents living in large cities of Ukraine have eating disorders caused by insufficient intake of nutrients, primarily vitamins, macro- and micronutrients (calcium, iodine, iron, fluorine, selenium, etc.), complete proteins , and their irrational ratio [8, 9]. Due to non-compliance with the principles of nutrition, the health and anthropometric characteristics of children are deteriorating.

Violations of proper nutrition are caused both by the crisis in the production of food raw materials and food, and a sharp decline in the purchasing power of most of the population [8-10]. The problem of quality of food and food raw materials is acute. Very low level of education of the population in matters of healthy, balanced nutrition. There is still no unified state policy in the field of healthy nutrition in Ukraine. Nutrition is one of the key factors that determine not only the quality of life, but also the conditions of growth and development of the child. It is well known that any, especially protein and vitamin deficiency, can dramatically inhibit the processes of growth and development. Unfortunately, a significant number of Ukrainian schoolchildren consume insufficient amounts of animal protein, vitamins and trace elements [10, 11]. At the same time, data on the actual nutrition of primary school children are very limited, and in the southern region of Ukraine for the last 20 years such studies have not been conducted at all.

The aim of the study is to assess the actual nutrition of primary school children in Ukraine and other countries

Material and methods

An analysis of publications in scientific journals and reports of national agencies on the state of nutrition of primary school children. Search depth 10 years. The following search strategy "primary school", "nutrition", "sentinel surveillance" was used. The 15 most relevant publications were selected for further analysis.

In addition, a survey of 450 primary school students was conducted on the quality of nutrition during school. Statistical processing was performed using MedCalc software. [12]

Results. Most countries in the world have some kind of nutrition program for younger students. At the same time, the diets that these programs offer do not always meet the principles of healthy eating. Thus, in the United Kingdom, 20% of young schoolchildren show signs of obesity, and this trend will deepen over time [13].

There are several nutrition programs in the United States. However, they mainly have the function of economic support for families, while little attention is paid to the quality of rations. The National School Lunch Program (NSLP) is a federal-supported nutrition program that operates in public and nonprofit private schools and boarding schools. It offers children balanced, inexpensive or free lunches each school day. The program was established under the National School Lunch Act, signed by President Harry Truman in 1946. About 7.1 million children participated in the NSLP in the first year. Since then, the program has reached millions of children across the country, in 2016 it was used by 30.4 million children [14]. By comparison, there are currently 57 million school-age children in the United States.

The School Breakfast Program (SBP) provides reimbursement to states for nonprofit free breakfast programs at boarding schools and boarding schools. Only 10 million children use this program.

The Child and Adult Care Food Program (CACFP) is a federal program that reimburses the cost of nutritious meals and snacks for children and adults eligible for care in child care centers, day care centers and day care centers for adults. The CACFP also reimburses the cost of meals for children and young people participating in out-of-school care programs, children in emergency shelters, and adults over the age of 60 or living with disabilities who are enrolled in day care facilities. CACFP promotes healthy child development in the United States.

In Mexico, the situation with school meals for younger students is much worse. Only 27% of the products sold to children met food standards; 18% of children ate healthy breakfasts. For snacks purchased at school, a 10% increase in school compliance was associated with a 32% increase in the chances of a healthy snack (OR = 1.32; 95% CI 1.09,

1.61). The quality of lunch box products brought by children from home was usually low. In recent years, there has been a trend to improve the quality of school meals, but this is mostly the case in schools in large cities [16].

In developing countries, as a rule, the nutrition of primary school children is in short supply [17-20]. In Nigeria, 9.8% of primary school children were deficient in serum iron, 21% and 32.1% were zinc and copper deficient, respectively, the prevalence of anemia was 38.1%, while iron deficiency anemia was 13.06%, and iron deficiency - 34.6%.

The nutrition system for primary school children in the EU is somewhat better [21-23]. Much attention is paid to the prevention of food-related diseases and food security. Particularly high quality school age programs are typical of Scandinavia, Germany, Austria and Switzerland.

In primary and secondary schools in Japan, children are not allowed to bring lunch from home [24]. All students should eat the same school lunch, following the menu planned by nutritionists. Lunch is considered not only a time to feed students, but also an opportunity to tell them about food and nutrition. The school nutrition system is called "shock", which means "education about nutrition and nutrition".

In Ukraine, baby food is characterized by a number of negative trends: lack of consumption of foods most important for normal development, health and cognitive functions (meat and offal, fish, seafood, dairy products, vegetables, fruits and natural juices, nuts, honey); violation of the diet and lack of proper, conscious attitude to nutrition [25].

Analysis of the dynamics of actual nutrition of children in Ukraine in recent decades shows a deterioration in the structure of the food set, imbalance in children's diets in terms of protein, fat, carbohydrates, vitamins, minerals [25, 26]. This has negatively affected the health of children, as evidenced by the suspension of acceleration and manifestations of "deceleration" and "grace" of physical development in children in Ukraine, the prevalence of asthenia among urban children of preschool and school age. The most difficult situation has been observed in recent years among the children of families of IDPs and those living in areas close in geographical location to the temporarily occupied regions of eastern Ukraine [27].

According to our own data, only 96 (21.3%) of the surveyed schoolchildren aged 6-10 had a full meal at school. For the rest, there was either a qualitative or quantitative discrepancy in the composition of breakfast and lunch at school. The children noted the lack of time for meals, low taste of school lunches. Every second child consumed insufficient volume of fluids during school (Fig. 1).

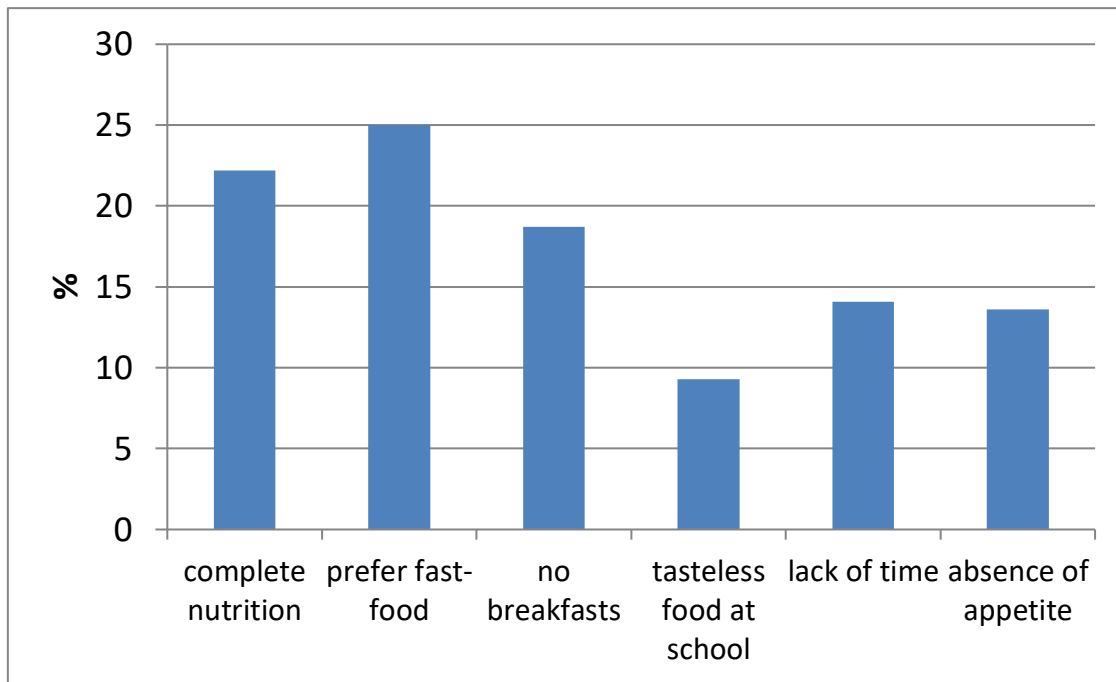


Fig. 1. Survey results of primary school children and their parents

Thus, the nutritional status of primary school children is affected by lack of time for eating and recreational physical activity, unbalanced diet when using home lunch boxes and low coverage of high school students with organized meals. Unlike other countries, the main problem for Ukraine is not an energy surplus diet, but the popularity of fast food among children of primary school age is undoubtedly unacceptable.

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