

Main Problems Of School Nutrition

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Abstract: School nutrition is an important key factor of children's learning activity. This article reviews the principles of balanced nutrition, the main problems that arise in school nutrition. The analysis of school menu shows that it mostly presented with traditional dishes that are not always able to meet the growing needs of the young body. Therefore, the menu of school canteen which includes fortified with vitamins and minerals drinks, nonfat meat food and bakery products is presented. The survey results showed that 90% of schoolchildren were completely satisfied with the proposed menu. This kind of diet was also positively reflected to schoolchildren learning activity and physical well-being.

Index Terms: assortment, canteens, dishes, food products, nutrition, menus, schoolchild.

1. INTRODUCTION

Currently, one of the urgent problems is the problem of organizing school meals. Hot meals for children are one of the important conditions for maintaining their health and ability to learn effectively. Good organization of school meals leads to an improvement in the indicators of the level of public health, especially children, given that they spend most of their time at school. A complete and balanced diet contributes to the prevention of diseases, improvement of efficiency and academic performance, physical and mental development of children and adolescents, creates conditions for their adaptation to modern life [1]. Inadequate nutrient intake in children adversely affects the indicators of physical development, morbidity, academic performance, contributes to the manifestation of metabolic disorders and chronic pathology. The school is a vital environment, using which one can influence the process of proper nutrition and form the right skills and stereotypes of pupils in this issue. At school, there are effective opportunities for carrying out work on health protection and healthy nutrition. It is the school age that is the period when the main development of the child occurs and the way of life is formed, including the type of food. Organized school meals are governed by sanitary rules and regulations, and therefore largely satisfy the principles of rational nutrition. Many pupils have a poor understanding of proper nutrition as part of a healthy lifestyle. The main problems of schoolchildren nutrition are related to eating out of school, abuse of chips, fast foods, crackers, candy, chocolate bars, etc. This is usually due to lack of awareness and / or connivance on the part of the parents [2]. A healthy (rational) diet is one of the main components of a healthy lifestyle, one of the main factors prolonging the period of active life of the organism. At present, there is a significant change in the attitude of people, primarily socially active segments of the population, to their own health: the old ideas that health is worth nothing disappear, the cost of it does not give any return and can be neglected. It becomes more and more clear that it is health that is the most valuable

property of a person, since it determines his working capacity in modern society and, accordingly, the standard of living and well-being. The nutrition of a modern person is becoming a major risk factor for the development of many diseases of the gastrointestinal tract, the endocrine system, the cardiovascular system and oncological processes [3]. In the human body there is no organ or system, on the nature of the nutrition of which its normal functioning and performance would not depend on. Proper nutrition plays a huge role at every stage of development of the body. The physiological sense of nutrition: the greater the choice of nutritious and vitamin dishes, the more complete the body is provided with essential nutrients [4]. Despite the fact that the issue of "nutrition" applies to each person several times a day and has a systematic impact on the state of health, this issue has not yet been given due attention. The school program and the educational standard of secondary education do not mention the principles of healthy eating. The subject of "catering service" is not taught in pedagogical educational institutions. Promoting healthy eating is important not only to attract parental funds for food, but also because the eating habits that a person acquired in childhood are preserved by a person until old age [5]. These habits are formed in the family and the system of organized child-nutrition. It is almost impossible to affect family life directly, so school canteen is the main place where a growing person learns how to eat healthy. Providing schoolchildren with full-fledged hot meals needs constant improvement and should be considered by all concerned services of the city and district as a strategic direction, since the improvement of the school meals system is directly related to maintaining the health of the population and improving the demographic situation in the city, district and in the country as a whole.

By definition of the World Health Organization - "... health is not only the absence of disease and physical defects, but a state of complete physical, spiritual and social well-being." Kazakh and Russian scientists deal with the problems of food production for schoolchildren. For example, the known technology of food production for children of school age, in the form of a dry product. The following processes are envisaged in the production of dry product for school feeding: cutting onions, blanching and cutting carrots, drying and mixing with table salt. Additional prescription ingredients are skinned fish fillets, mussels, zucchini, barley, which, when prepared, are blanched, chopped on the top, butter, which is melted, and CO₂-extract of lemon. Before mixing, carrots and onions are crushed on the top, the crushed components are mixed with butter, CO₂-extract of lemon, water and table salt, homogenized and molded. The molded mixture is dried. Drying is carried out by the sublimation method, and the components are used at a certain rate. This provides the

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obtaining of target product, suitable for use in its natural form [6]. The technology of fish meatballs has been developed. After chopping on the top fish minced meat, Rapana meat, blanched rice, fresh onions and carrots, table salt, black bitter pepper and the preparation obtained according to a given technology from the biomass of microorganisms selected from a given group, they are chopped with the simultaneous introduction of chicken eggs and vegetable oils, and the resulting mass is formed into meatballs. The invention allows obtaining a product with improved organoleptic properties and a more balanced composition of nutrients [7]. Recent studies have shown that, throughout the world, the diets of children and adolescents are characterized by a deficiency in the majority of vitamins, inadequate intake of a number of minerals and micro elements, in particular iodine. There is an acute problem with insufficient intake of protein, an imbalance in its amino acid composition, in particular, a lack of the essential amino acid leucine, and a high content of carbohydrates [8]. In school meals, it is recommended to include bakery products. For the production of flour products the use of herbal supplements is recommended. A technology has been proposed for the production of bakery products, which includes dough kneading from wheat flour of the first grade, pressed yeast, iodized salt, granulated sugar and water, its fermentation, dressing, proofing and baking. Pumpkin flour obtained from dried and chopped pumpkin pulp in the amount of 1% of the total flour, soybean whole-wheat flour obtained from milled soybean grain in the amount of 3-5% of the total flour, bean flour obtained from milled beans in the amount of 3-5% of the total amount of flour are additionally added when kneading dough. Pumpkin, bean and soybean flour are pre-mixed with wheat flour. The new product allows improving the organoleptic and physico-chemical characteristics of the finished product, as well as increasing the fiber content and vitamins B6, B1. Fiber prevents cancer and diabetes, slows down the absorption of carbohydrates and fats. Therefore, the use of foods rich in fiber, eliminates the risk of increasing the sugar content in the body, and also helps to combat the spread of obesity among children. Beans –whole-wheat flour contains 0.9 mg of vitamin B6, which promotes proper protein absorption in 100 g of the product, and 20-22 g of protein in 100 g of the product. Soybean –whole-wheat flour contains 0.94 of vitamin B1 and 30-35 g of protein per 100 g of product. Pumpkin contains fiber (most of it in the pulp) [9]. Vitaminized drinks are often used in schoolchildren nutrition, which can provide a young schoolchild with not only vitamins, but also a complex of minerals. The technology of fortified kissel with the addition of fruit raw materials is proposed. Kissel (gelatinous liquid dish) is a long and widely known traditional national culinary preparation based on starch, simple and affordable in cooking. Vitaminized kissel is characterized by the fact that it contains a natural component in the form of natural dry fruit and berries raw material from apple, or red bilberry, or cranberry, or blueberry, or orange, or lemon, or pineapple, or a mixture of sugar, starch, citric acid, ascorbic acid and a multivitamin mixture of vitamins C, B1, B2, B6, B12, PP, A, E, D and folic acid in the following ratio of ingredients, wt. %: natural component 2.8-3.2, starch 25, 0-27.2, citric acid 0.5-0.8, ascorbic acid 0.05-0.1, a multivitamin mixture of 0.16-0.78, sugar, the rest. A multivitamin mixture may additionally contain pantothenic acid and biotin. This allows increasing the body's resistance to diseases, especially in the autumn-winter period. Due to the content of potassium and dietary plant

fibers contained in dried fruit and / or dried berries, the diet is replenished by those nutrients that are deficient in the diet [10]. The organization of school meals is a problem not only for the school, for the family of each pupil, but also for the state, since the future of the Republic of Kazakhstan is based on young labor resources, the younger generation. Food for schoolchildren of the Republic of Kazakhstan is far from being at a high level, and its condition depends primarily on the catering department, which operates directly in secondary schools [11]. According to the Kazakh Academy of Nutrition, in Kazakhstan, 44.9% of children aged 6-14 years suffer from iron deficiency anemia. In the morbidity pattern of school-age children, diseases of the digestive system and metabolism occupy one of the first places. According to the 5th National Sociological Study of the National Center for the Formation of a Healthy Lifestyle of the Ministry of Health (2012), 25.5% of urban children consume energy drinks, among them more boys - 30.7% than girls — 20.1%; rural children - 22.7% (more boys - 27.3%, than girls 18.3%). The proportion of urban children who consume 400 grams of fruits and vegetables daily is 77.8% (boys and girls are the same), among rural 70.7% (boys 72.2% and 69.3% girls).

2 DATA ANALYSIS

The analysis of the nutrition of schoolchildren of the city of Semey showed that the main range of nutrition for schoolchildren is presented in the form of the following menu Table 1.

Table 1. Menu of school canteen

Name of the meal	Weight, g
Salad	
Fresh cucumber salad	100
Salad from beet and cheese	100
Soup	
Fresh cabbage soup	250
Main Course	
Zrazy (onion, egg)	80/100
Goulash soup	50/75
Pilaff with beef	200
Stuffed peppers	100
Wheat milk porridge	250
Spaghetti	150/200
Buckwheat porridge	150/200
Beverages	
Tea with sugar	200
Tea with milk	200
Apple juice	200
Kefir	200
Bakery food	
Baked roll with poppy	100/50
Bridge roll	100/50
Baked patty with potato	100
Sausage roll	100

As it can be seen, the assortment of dishes is given mainly from the compilation of public nutrition and presents traditional dishes that are not always able to meet the growing needs of the young body. Schoolchildren need more balanced meals that would be enriched with minerals, vitamins, amino acids, polyunsaturated fatty acids. Problems of school nutrition are not ignored by the scientific community. Russian and foreign scientists conducted research, developed technologies for the production of school food products that can compensate for the lack of essential elements in the child's body [6, 7, 12, 13].

One of the tasks of the research work was to compile a menu and test it at school No. 6 of Semey city. When performing scientific work on the organization of rational nutrition, a menu was drawn up on November 22, 2014, this menu was tested at school No. 6 among pupils of grade 6 "B", grade 6 "G" - respectively, 1, 2 shifts. The menu on November 22, 2014, is given in Table 2.

Table 2. Menu of school canteen

Name of the meal	Weight
Breakfast	
Black tea with sugar and rose	250 ml
Rice milk porridge with pumpkin and raisins	250 g
Baked roll with raisins	100 g
Lunch	
Salad from carrot and walnut "Vitaminous"	100 g
Rice soup with minced meat balls	250 ml
Zrazy from poultry meat with carrot and eggs	200 g
Compote from dried fruits with Vitamin C	250 ml
Snacks	
Pear	1 piece
Banana	1 piece
Apple	1 piece
Fruit iodine kefir	250 ml
Cocktail on rose, everlasting and origanum flowers	250 ml
Bakery food	
Biscuit	50 g
Oat crackers	50 g
Carrot rolls	100 g
Custard-filled pie	100 g
Custard-filled pie with dried apricots	100 g

After testing the menu, a survey of schoolchildren was conducted. The survey results showed that 90% of schoolchildren were completely satisfied with the proposed menu. Five percent found it difficult to answer the question. Five percent answered that they did not use pumpkin and rejected rice porridge with pumpkin. Almost all pupils, which accounted for 100% of the respondents, liked the oxygen cocktail. The composition of the cocktail (decoction of medicinal herbs such as immortelle, dog rose, chamomile, honey, which were further carbonated) was chosen so that the composition of the herbs would contribute to the normalization of the pancreas, liver, strengthened the immune system and had antibacterial properties. The schoolchildren liked the introduction fruit to the menu, as it greatly enriched the diet. It should be noted that when introducing this menu, chocolate bars and chocolate cookies were excluded from the school buffet. The proposed menu was tested by tasters (with the maximum score is 5), the results of the tasting are shown in Table 3.

Table 3. Taste assessment of meals

Breakfast	Taste	Odour	Color	Consistency
Black tea with sugar and rose	5.0	5.0	5.0	5.0
Rice milk porridge with pumpkin and raisins	5.0	5.0	5.0	4.8
Baked roll with raisins	5.0	5.0	5.0	5.0
Lunch				
Salad from carrot and walnut "Vitaminous"	5.0	5.0	5.0	5.0
Rice soup with minced meat balls	4.8	5.0	5.0	4.7

Zrazy from poultry meat with carrot and eggs	5.0	5.0	5.0	5.0
Compote from dried fruits with Vitamin C	5.0	5.0	5.0	5.0
Snacks				
Fruit iodine kefir	5.0	5.0	5.0	5.0
Cocktail on rose, everlasting and origanum flowers	5.0	5.0	5.0	5.0
Biscuit	5.0	5.0	5.0	4.8
Oat crackers	5.0	5.0	5.0	5.0
Carrot rolls	5.0	4.8	5.0	5.0
Custard-filled pie	5.0	5.0	5.0	5.0
Custard-filled pie with dried apricots	5.0	5.0	5.0	5.0

3 CONCLUSIONS

The results of the research showed that according to a sociological survey, the majority of schoolchildren liked the proposed menu; the school's teachers noted that it significantly improves the mood of the schoolchildren, and contributes to their working capacity in the classroom. It can also be noted that the quality of food of schoolchildren depends on factors such as the sanitary and technical condition of school kitchens, the availability of modern electro-technological and refrigeration equipment, sufficient space, ventilation, sufficient kitchen and tableware, equipment, and aesthetic design of dining rooms. Equally important is the organization of the drinking regime at school, the range of dishes designed to meet the needs of pupils in essential nutrients and the control of school management and medical workers over the organization of school meals.

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