



Evaluation of the nutrition menu for children with celiac disease in educational institutions of the Republic of Belarus

Submitted by: Sycheuskaya N.¹, Bashun N.¹, Lipnitskaya E.², Mikhalchuk L.¹
1 - Yanka Kupala State University of Grodno; 2 - Harmony without gluten

Introduction

According to the data of the scientific-methodical institution «National Institute of Education» of the Ministry of Education of the Republic of Belarus, 220 children were registered, with the officially confirmed diagnosis of celiac disease, aged from 1 to 18 years among students of pre-school and general secondary schools of the Republic of Belarus. These children receive dietary (therapeutic and preventive) nutrition appropriate to their age and the duration of their stay. Nutrition is provided according to the approximate two-week diets developed on the basis of established norms of physiological needs for nutrients and energy, differentiated by age of students (1-4 years, 4-7 years, 7-14 years, 14-18 years) with taking into account seasonality (summer-autumn, winter-spring), duration of stay in the educational institution (from 2 to 7 hours, 10.5 hours, 12 hours and 24 hours), variety and combination of food products, laboriousness of cooking, established nutritional standards and money spending on food. On the basis of an approximate two-week diet, daily diets are prepared taking into account the commodity, local and other characteristics. Daily requirements for proteins, fats and carbohydrates as well as energy are established by Regulation of the Ministry of Health of the Republic of Belarus No.180 “On approval of the Sanitary Norms and Rules “Requirements for nutrition of the population: norms of physiological needs in energy and food substances for various groups of the population of the Republic of Belarus” dated November 20, 2012. For children with celiac disease, daily needs are also reflected in the Order of the Ministry of Health of the Republic of Belarus dated July 13, 2012 No. 801.

Method

The aim of the study is to analyze the quality of nutrition for children with celiac disease provided in educational institutions. The object of the study is the nutrition of children with celiac disease, namely daily rations provided in educational institutions in the Brest region (Brest) and the Minsk region (Minsk). The provided nutrition includes three meals - breakfast, lunch and afternoon tea, while the caloric content of the diet must be at least 70% of the child's daily physiological needs.

Results

During the study of the nutrition of celiac children provided in the Brest region (Brest), the daily diet for the 6-10 age group was analyzed. When evaluating the two-week diets for children with celiac disease provided in the Brest region, the following values were obtained: proteins - 45.52±0.57 g, fats - 43.67±1.49 g, carbohydrates - 146.35±4.11 g, the energy value of the diet - 1125.05 ± 17.45 kcal, potassium - 1907.85 ± 14.25 mg, calcium - 359.99 ± 9.71 mg, magnesium - 223.635±10.285 mg, phosphorus - 702.0.95±4.255 mg, iron - 8.56±0.97 mg, vitamin A - 0.19±0.05 mg, β-carotene - 3.305±0.245 mg, vitamin B1 - 0.495±0.015 mg, B2 - 0.61±0.05 mg, B3 (PP) - 8.29±0.62 mg, vitamin C - 42.115±7.805 mg, vitamin D - 0.46±0.01 µg, vitamin E - 5.12±0.07 mg , vitamin K - 3.43±0.09 mg. According to the data obtained, the dietary content of fats, carbohydrates and energy values are below the norm in the range from 18 to 30%. There is a significant lack of Ca, and fat-soluble vitamins D and K. Also found insufficient content of vitamins B1, B2, PP. The content of potassium is exceeded by 3 times.

During the study of the nutrition of children with celiac disease provided in the Minsk region (Minsk), the daily diets of three age groups (6-11, 11-14 and 14-17 years old) were analysed. When evaluating two-week diets for children aged 6-11 years, the following values were obtained: proteins - 41.365±0.155 g, fats - 37.355±2.215 g, carbohydrates - 133.485±10.655 g, energy value of the diet - 1028.8±22.9 kcal, potassium - 1513.85±50.45 mg, calcium - 353.925±0.775 mg, magnesium - 195.915±6.155 mg, phosphorus - 549.005±1.815 mg, iron - 9.68±1.67 mg, vitamin A - 0.42±0.19 mg, β-carotene - 1.945±0.175 mg, vitamin B1 - 0.44±0.03 mg, B2 - 0.66±0.03 mg, B3 (PP) - 6.615±0.025 mg, vitamin C - 35.605±4.745 mg, vitamin D - 0.44±0.32 µg, vitamin E - 5.41±0.59 mg, vitamin K - 7.44±0.98 µg. When evaluating the two-week diets of children aged 11-14 years, the following values were obtained: proteins - 48.3±0.8 g, fats - 45.59±1.27 g, carbohydrates - 149.86±10.8 g, energy value diet - 1191.45±35.05 kcal, potassium - 1759.05±61.65 mg, calcium - 383.695±1.085 mg, magnesium - 231.59±2.02 mg, phosphorus - 628.475±8.945 mg, iron - 10.715±1.715 mg, vitamin A - 0.45±0.2 mg, β-carotene - 2.38±0.14 mg, vitamin B1 - 0.525±0.045 mg, B2 - 0.735±0.025 mg, B3 (PP) - 8.335 ± 0.365 mg, vitamin C - 41.625 ± 5.365 mg, vitamin D - 0.475 ± 0.315 µg, vitamin E - 6.605 ±

0.605 mg, vitamin K - 9.855 ± 0.255 µg. In the nutrition of children with celiac disease 6-11 years old and 11-14 years old in the Minsk region, the content of fats, carbohydrates in the diet and the energy value are below the norm in the range from 26 to 41%. There is a significant lack of fat-soluble vitamins D and K. Also found to be insufficient in Ca, vitamins B1 and PP. The content of potassium is exceeded by almost 2 times.

When evaluating the two-week diets in the Minsk region (Minsk) of children aged 14-17 years, the following values were obtained: proteins - 48.88±1.08 g, fats - 47.06±0.7 g, carbohydrates - 151.1±12.54 g, energy value of the diet - 1215.8±48.3 kcal, potassium - 1819.1±97.8 mg, calcium - 390.095±1.445 mg, magnesium - 243.135±11.775 mg, phosphorus - 640.42±2 .66 mg, iron - 10.89±1.82 mg, vitamin A - 0.45±0.2 mg, β-carotene - 2.545±0.065 mg, vitamin B1 - 0.535±0.045 mg, B2 - 0.755±0.015 mg , B3 (PP) - 8.52±0.24 mg, vitamin C - 45.385±6.265 mg, vitamin D - 0.485±0.305 µg, vitamin E - 6.92±0.43 mg, vitamin K - 12.015±0.485 µg. According to the data obtained, the dietary content of fats, carbohydrates and energy values are below the norm in the range from 32 to 49%. There is a significant lack of fat-soluble vitamins D and K. Also found to be insufficient in Ca, vitamins B1 and PP.

Conclusion

Based on an analysis of the diets provided, it can be argued that it is necessary to develop separate diets for all age groups and to use special programs and services to produce more individualized daily menu in educational institutions. It is also important to offer a wider range of different dishes, including flour confectionery products to prevent violations of protein-free and gluten-free diets by children.

