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**Food Security and Analysis of Actual Nutrition
in the Russian Federation and Sakha Republic (Yakutia)**

ABSTRACT

Theoretical aspects of food security of the Russian Federation are considered. The comparative analysis of the actual food according to selective inspection of budgets of house farms during 2001, 2008-2012 and epidemiological research of the actual food in the Republic of Sakha (Yakutia), the Russian Federation and in federal districts is carried out.

Keywords: doctrine of food security of the Russian Federation, demographic indicators, general incidence, actual food, epidemiological research, selective inspection of budgets of house farms, foodstuff, macronutrients, power value of diets.

INTRODUCTION

Food security is one of major components of state economic security, thus a role of food supply for social stability in both social and economic spheres is of great significance. Historical experience shows that solution of food supply problem as a man's survival cause is a basic factor of social stability in any nation [1].

Long discussions on this problem in state authorities of all levels led to adoption of the Doctrine of Food Security RF by the Decree of the President of the Russian Federation №120 of January 30, 2010. According to this document, the term "food security" is defined as: "Food security is a state of national economy that ensures food independence of the Russian Federation, guarantees physical and economic availability of food for each citizen meeting requirements of legislation of the Russian Federation on technical regulation in volumes not less than rational standards of food consumption necessary for active and healthy lifestyle" [2].

Diseases related to malnutrition include alimentary obesity and digestive system pathology. In the modern world higher prevalence of overweight and obesity, gastroenterological pathology, malnutrition is noted. Epidemiologic studies on overweight, obesity, and actual nutrition in particular regions of the world and Russia are considered relevant and a great number of works are devoted to this theme [4].

The Sakha Republic (Yakutia) is the largest region of the country and one of the least populated territories, the population in 2012 was 955.500, including 620.500 urban population and 335.000 rural population. In 2012, the natural population increase on 8.000 people was noted. Improving the demographic situation in the region was significant in rural areas where the natural population growth in 2012 was 10.2 for 1.000. The natural growth of urban population was 7.4 for 1.000. The demographic indices of the republic increased significantly (twice) in comparison to 2000, thus the ratio of the natural growth (for 1.000) made 4.0 in 2000 and 8.5 in 2012 [3].

At the same time, the index of general morbidity increased up to 10664.7 cases for 10.000 in 2012. In the structure of general morbidity infectious and parasitic diseases amounted 2.6%, endocrine system diseases, nutrition disorders, metabolic and immune system imbalance - 1.4%, circulatory system diseases – 3.0%, digestive organ diseases – 8.1% [3].

Thus, the analysis of actual nutrition and food status in the republic is of importance.

The research is aimed at studying actual nutrition and food status of population in the Sakha Republic (Yakutia), the Russian Federation, and federal regions.

The research is based on statistics of per capita food consumption in the Russian Federation including data of the sample survey of household budgets from 2008 to 2012, statistics of demographic indices and general morbidity rates in the Sakha Republic (Yakutia), data from the state report “On the State of Sanitary-Epidemiological Wealth of Population in the Russian Federation in 2013”, findings of epidemiological investigation of actual nutrition of the population in the Sakha Republic (Yakutia).

RESULTS

To estimate food security, the following scorecard consumption is used:

- disposable resources of households in population groups;
- provision of a trade and catering per 1.000;
- food consumption per capita;
- volume of targeted assistance to the population;
- human daily caloric intake;
- human daily intake of protein, fat, carbohydrate, macro- and microelements;
- consumer price index for food [2].

The results of the analysis of per capita food consumption in the Russian Federation according to data of sample survey of household budgets in 2008-2012 showed positive dynamics of consumption of dairy, eggs, fruit, and berries. Comparing with 2012, their volume increased up to 21, 1, 17 and 11 kg, respectively. Consumption of bakery and potatoes decreased by 3 kg in comparison with 2002 (Fig. 1) [5].

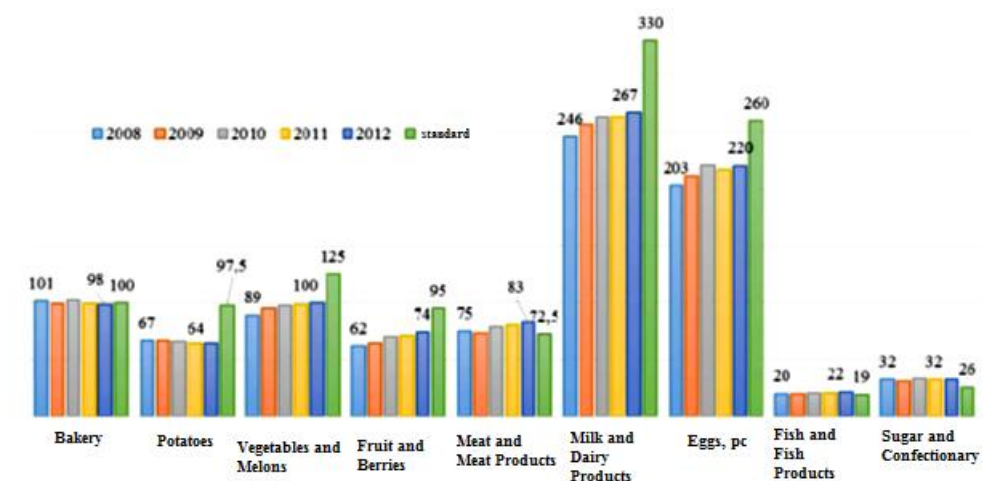


Fig. 1. Dynamics of per capita Consumption of Basic Food Groups in the RF, kg/year

The data of actual food consumption by basic food groups in federal regions and the Russian Federation in general are given in Table 1. The values of necessary food consumption volumes are taken as the standard rate according to “Recommendations on Rational Standards of Food Consumption Meeting Modern Standards of Healthy Eating” approved by the Order of the Health Ministry and Social Development of the Russian Federation No. 593 n on August 2, 2010 [1].

Table 1

Food Consumption by the Russian Federation population,
per capita, per year

Territory	Bread and Bakery, kg	Potatoes, kg	Vegetables, kg	Meat and Meat Products, kg	Milk and Dairy Products, kg	Eggs, piece
Rational consumption rate	95	95	120	70	320	260
2008						
Russian Federation	119	111	99	66	242	252
Central Federal District	116	100	88	70	224	249
North-West FD	105	82	84	67	255	262
Southern FD	123	99	131	67	225	279
North-Caucasus FD	125	98	138	48	211	186
Volga FD	115	130	97	62	287	265
Ural FD	130	11	90	65	208	266
Siberian FD	132	133	98	66	267	248
Far-Eastern FD	119	123	107	70	189	225
2012						
Russian Federation	119	111	109	74	249	276
Central Federal District	118	106	100	81	233	281
North-West FD	103	84	92	74	276	289
Southern FD	122	99	145	76	237	302
North-Caucasus FD	127	109	166	56	237	215
Volga FD	115	123	104	69	286	282
Ural FD	125	109	94	70	211	286
Siberian FD	128	132	101	73	264	263
Far-Eastern FD	116	125	109	78	192	244

The statistical data analysis for the period 2008-2012 shows deviations of the rational nutrition rates in all federal districts in all groups of food. In the Far-Eastern federal district, the rate of dairy consumption is significantly lower than average Russian rates both in 2008 and 2012: population consumes 22 and 23 per cent less dairy products, respectively. Besides, the 5-year-dynamics indicates some increase of rates of per capita consumption of potatoes, vegetables, meat products, and eggs (2, 2, 8 kg and 19 pieces, respectively).

Evaluation results of statistics on food consumption using a method of budget survey of families in the Sakha Republic (Yakutia) in dynamics for the latest 5 years indicate the increase of actual food consumption in all main food groups, excluding bakery products and potatoes: vegetables and (water)melons by 14 kg, fruits and berries by 10 kg, meat and meat products by 10 kg, milk and dairy by 16 l, eggs by 10 pieces, fish and sea products by 4 kg, sugar and confectionery by 4 kg. The results of epidemiological investigation of actual nutrition suggest high consumption of such products, as bakery and sugar, confectionary almost twice as more.

For 2012, the increase of average Russian rates in bakery products, meat and meat products, milk and dairy products by 10, 5, 12 kg, respectively (Fig. 2) [6].

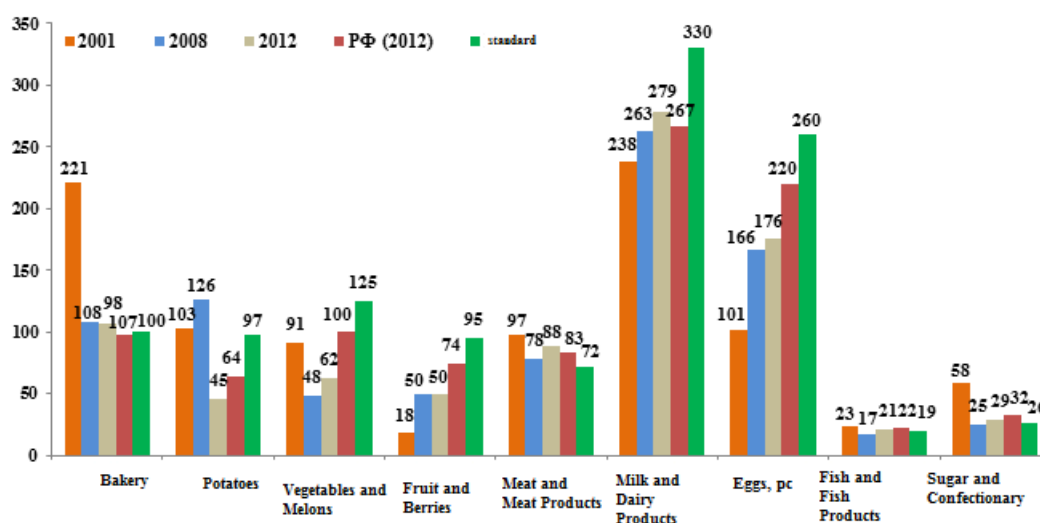


Fig. 2. Dynamics of Average Consumption
of Basic Food Groups by the Sakha Republic (Yakutia) population, kg/year

In Yakutia, the aberration of rational nutrition (underconsumption) is noted according to actual consumption of potatoes by 2 times, vegetables and melons by 38 per cent, fruit and berries by 19 per cent, milk and dairy products by 15 per cent, eggs by 20 per cent less in 2012.

According to the analysis of macronutrient provision of food rations at the Russian Federation population in comparison with the average recommended standards there was excess in fat by 15.7 per cent, carbohydrates by 15.2 per cent, insignificant deficiency of protein by 0.5 per cent (Table 2) [5].

Table 2

Average Consumption of Nutrients and Calorie Diets of the Russian Federation population

Indices	Average recommended standards of consumption*, g/day, kcal	Average Consumption in Russian Federation, g/day, kcal			Specific Density of Population with Under-consumption, %		
		2010	2011	2012	2010	2011	2012
Protein	87.5	76.6	76.7	77.5	86.8	99.1	56.4
Fat	91	104.5	104.7	105.3	18.4	12.7	4.9
Carbohydrates	402.3	348.4	340.6	341.0	95.6	96.2	92.3
Calorie Content	2 751.0	2 652.4	2 323.6	2 633.3	91.6	74.5	70.6
*The recommended nutrient consumption standards by the Russian Federation population is recalculated (taking into account specific density of different population groups / MP 2.3.1.2432—08 The Standards of physiological need in energy and nutrients for different population groups of the Russian Federation/)							

54.4 per cent of the population of the Russian Federation are subjected to protein deficiency. The problem of population nutrition is excessive consumption of fat observed by 95.1 per cent of the population. Specific density of the population consuming products containing fat increased by 13.8 per cent in comparison with 2010. The rate of carbohydrates consumption in most regions of the Russian Federation (92.3 per cent) is lower than the average recommended values. Carbohydrates deficiency in diets is determined, first of all by low consumption of vegetables and fruit. Low calorie content of diets of 70.6 per cent of population is observed, this rate decreased by 0.7 per cent in comparison with 2010 [5].

In the Sakha Republic (Yakutia) the evaluation analysis of statistics on food consumption by the method of budget survey indicated excess of fat by 13.2 per cent, carbohydrates deficiency by 16.2 per cent, as well as protein deficiency by 12 per cent as compare with the average recommended standards of consumption in diets. The calorie content of diets decreased by 5.7 per cent (Table 3) [6].

Table 3

Consumption, Nutrient and Energy Content of Food in Households
(the average per capita in household) in the Sakha Republic (Yakutia)

Indices	Average recommended standards of consumption*, g/day, kcal	Average Consumption in Sakha Republic, g/day, kcal		
		2008	2010	2012
Protein	87.5	71	77	77
Fat	91	92	105	103
Carbohydrates	402.3	319	341	337
Calorie content	2 751.0	2 399	2 626	2 594
* The recommended nutrient consumption standards by population of the Russian Federation is recalculated (taking into account specific density of different population groups / MP 2.3.1.2432—08 The Standards of physiological need in energy and nutrients for different population groups of the Russian Federation/)				

The rate of consumption of macronutrients by the population of the Sakha Republic (Yakutia) as well as in the Russian Federation as a whole evidences imbalanced nutrition patterns with the tendency towards increased consumption of products with saturated fat and decreased consumption of complex carbohydrates which results in risk of development of metabolic disorders, increase of cardiovascular diseases, neoplasms, endocrine disorders, including diabetes.

Excessive consumption of fat and simple carbohydrates contribute to an increased risk of pancreatic diabetes. The sickness rate of insulin-independent pancreatic diabetes diagnosed for the first time was 223.14 on 100, 000 people (in 2011 – 219.97; in 2010 – 207.90). The increase of the sickness rate of insulin-independent pancreatic diabetes of the whole population in 1.1 times since 2010 was observed. The insulin-independent pancreatic diabetes incidence of the whole population above the average Russian was registered in 42 regions of the Russian Federation, with the highest levels being observed in the Sakha Republic as well (1.4 times higher) [5].

CONCLUSION

The analysis of per capita food consumption by the population of the Russian Federation for 2008-2012 showed positive dynamics in consumption of dairy products, eggs, vegetables, and meat products.

In the Far-Eastern federal district, the indices of dairy consumption are substantially lower than those of Russia in average both in 2008, and 2012.

In the Sakha Republic, the increase in actual food consumption was found in dynamics for the last 5 years in all main food groups, excluding bakery, meat and meat products, milk and dairy products by 10. 5, and 12 kg, respectively. In 2012, Yakutia featured under-consumption of potatoes 2 times, vegetables and melons by 38 per cent, fruits and berries by 19 per cent, milk and dairy products by 15 per cent, eggs by 20 per cent.

The analysis results of macronutrient rations provision of the Russian Federation population in comparison with the average recommended standards of consumption in rations showed the excess in fat by 15.7 per cent, carbohydrates by 15.2 per cent, insignificant deficiency of proteins by 0.5 per cent. Protein deficiency is experienced by 56.4 per cent of the Russian Federation population, specific density of the population consuming products containing fat increased by 13.8 per cent in comparison with 2010.

In the Sakha Republic (Yakutia), the evaluation results of statistics on food consumption by the method of budget survey indicated the excess of fat by 13.2 per cent, carbohydrates deficiency by 16.2 per cent, as well as protein deficiency by 12 per cent in comparison with the average recommended standards of consumption in diets. The calorie content of diets decreased by 5.7 per cent.

Sickness rates of insulin-independent pancreatic diabetes of the whole population of the Russian Federation increased 1.1 times in dynamics since 2010. In the Sakha Republic, this rate is 1.4 times higher than the average Russian.

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