BRITISH MEDICAL JOURNAL

British Medical Journal
Volume 2, No 1., 2022
Internet address: http://ejournals.id/index.php/bmj
E-mail: info@ejournals.id
Published by British Medical Journal
Issued Bimonthly
3 knoll drive. London. N14 5LU United Kingdom
+44 7542 987055
Chief Editor
Dr. Fiona Egea

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British Medical Journal Volume-2, No 1
10.5281/zenodo.6537593

HYGIENIC ANALYSIS OF SCHOOL STUDENTS 'DAILY-AUTUMN NUTRIENTIVE CONDITION

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Abstract: In this research, in the hygienic assessment of the daily diet of schoolchildren living in rural areas of Fergana region in the summer and autumn, 484 (61.3%) boys and 303 (38.7%) girls were taken from 784 schoolchildren. The composition of the daily diet of schoolchildren was assessed in accordance with the requirements of SanNvaQ 0017-2022, SanNvaQ 0007-2020 and their chemical composition **"Chemical composition of food".** The results show that the diet of students does not meet the hygienic requirements, the diet includes a sharp excess of flour, bread, rice and pasta, confectionery, salt, coffee, margarine, but the consumption of cereals, meat products and rabbit meat, milk and fish products are below the physiological norm. In the daily ration, protein was under-represented by 15.6-20.9%, animal protein by 34.2-37.9%, and plant protein by 18.2-49.6%. In the daily ration, fats provided 60.5-72.0 %%, animal fats 50.0-57.7%, and the proportion of vegetable oils was 84.0-114.0%. Consumption of carbohydrates is 103.7-105.4%, the average daily energy value is 2146.5 (normally 2350 kcal) kcal, the ratio of protein, fat and carbohydrates is 1: 0.77: 5.60 in summer and in autumn, 1:0.87:5.42 ratios. This has a negative impact on the health status and performance of school students.

Keywords: Daily ration, summer-autumn season, diet, food products, nutritional status

The actuality of the problem. Today, in the developed countries of the world, the sharp increase in the number of diseases caused by malnutrition is reversed, while in the developed countries there is a slow increase in the incidence of iodine and iron deficiency [1, 2, 3]. One of the important factors related to nutrition among different segments of the population is related to eating behavior and adherence to it [4, 6, 9, 10].

The order of healthy eating and the order of eating in its organization depends mainly on the knowledge of parents on healthy eating, as well as the media propaganda on healthy eating and eating behavior and their effectiveness [5, 7, 8].

The results of a study conducted by a number of authors in assessing the health status of school students showed that the impact of in-school factors on the variability of health indicators is 20-40%. The growing organism is characterized by high sensitivity to the harmful effects of the external environment [10, 11].

Increased daily loads among schoolchildren increase the need for micro and macronutrients such as neurotropic vitamins, vitamins such as magnesium, iron, zinc, calcium, ō-3 polyunsaturated fatty acids, lecithin, caratin [4, 5, 6,7].

No matter how much research is done, the sharp increase in the number of eating-related diseases among schoolchildren requires preventive work among them, hygienic analysis of the quality and order of nutrition.

The aim of the study. The school, which is taught in a rural setting, consists of a hygienic analysis of the order in which students eat during the summer and autumn seasons.

Research materials and methods. 481 (61.3%) boys and 303 (38.7%) girls from 784 schoolchildren were involved in the hygienic assessment of the daily diet of children and adolescents living in rural areas of the Fergana region of the Fergana Valley in the summer and autumn. The main food products in the daily diet of schoolchildren San NvaQ 0017-2022 "Sanitary rules, norms and hygiene standards for the organization of meals for students in general secondary, secondary special, vocational education institutions", SanMvaQ 0007-2020 "Age of the population of the Republic of Uzbekistan, average daily rational nutrition norms aimed at ensuring healthy nutrition for gender and professional activity groups "[4] assessed compliance with the requirements of sanitary norms and regulations.

The chemical composition of the products in the daily ration of school students was assessed according to the "Chemical composition of food products" [5]. Statistical processing of the results of the study used the application package of the personal computer "Statistica for Windows 7.0".

Discussion of the results obtained. The analysis of the results shows that in the summer-autumn season of the year, the diet of schoolchildren is fragmented and does not meet the requirements of nutrition criteria. Consumption rates of food consumed by school students during the summer and fall seasons are shown in Tables 1-2.

Table 1

The level of availability of products that students consume during the summer season

№	Name of the prodact	F/m	Degree of consumption	%, provision	%, fewer	How few is it, gr
1	Leguminous plants	15	6±0,19	40,0	60,0	-9
2	Wheat flour	15	19±0,63	126,6	+26,6	+4
3	Rice	15	11±0,37	73,3	26,6	-4
4	Porridge (without rice)	15	5±0,16	33,3	66,6	-10
5	Wheat bread	150	204±6,9	136,0	+36,0	+54
6	Rye bread	80	25±0,84	31,2	68,8	-55
7	Pasta	15	21±0,72	140,0	+40,0	+6
8	Potatoes	250	179±6,1	71,6	-28,4	-71
9	Cabbage	50	31±1,0	62,0	38,0	-19
10	Cucumber	40	17±0,56	42,5	57,5	-23

11	Tomatoes	30	11±0,36	36,6	63,3	-19
12	Beets	25	9±0,29	36,0	64,0	-16
13	Carrots	40	22±0,75	55,0	50,0	-20
14	Onion	30	32±1,1	106,6	13,3	-4
15	Other vegetables	50	34±1,2	68,0	32,0	-16
16	Melon products	50	13±0,43	26,0	74,0	-37
17	Greens	5	5±0,15	100	0,0	0
18	Don't	200	75±2,5	37,5	62,5	-125
19	Dried	15	0±0	0	100,0	-15
20	Grapes	30	15±0,50	50,0	50,0	-15
21	Citrus	10	9±0,28	90	10,0	-1
22	Beef	95	32±1,1	33,7	66,3	-63
23	Mutton	20	17±0,55	85,0	15,0	-3
24	Rabbit meat	20	5,±0,16	25,0	75,0	-15
25	Parranda	40	24±0,78	60	40,0	-16
26	Fish	60	25±0,83	41,66	58,3	-35
27	Sut	300	175±5,8	58,33	41,66	-125
28	Yogurt	150	75±2,4	50	50,0	-75
29	Sour cream, sour cream	10	7±0,23	70	30,0	-3
30	Butter	30	12±0,40	40	60,0	-18
31	Cottage cheese	50	23±0,75	46	74,0	-37
32	Cheese	10	4±0,12	40	60,0	-6
33	Eggs (pieces)	1,0	0,5±0,02	50,0	50,0	0,5
34	Sugar	30	33±1,1	110	+10,0	+3
35	Honey	5	2±0,07	40,0	60,0	-3
36	Margarine	-	18±0,61	0	100,0	+18
37	Vegetable oil	15	12±0,39	80	20,0	-3
38	Iodized salt	5	10±0,33	200	+100	+5
39	Tea	0,4	0,2±0,01	50,0	50,0	-0,2
40	Coffee	1,2	1,5±0,05	125,0	+25	+0,3
41	Tomato paste	3	3±0,10	100	0,0	0
42	Zirovar	2	1±0,03	50	50,0	-1
43	Confectionery	10	25±0,87	250	+150	15

Table 2

Quantitative index of products consumed by school students in the fall

№	Name of the product	f/m	Degree of consumption	%, provision	%, fewer	How few is it, gr
1	Leguminous plants	15	7±0,24	46,7	53,3	-8
2	Wheat flour	15	26±0,86	+173,3	+73,3	+11
3	Rice	15	18±0,59	+120,0	+20,0	+3
4	Porridge (without rice)	15	8±0,27	53,3	46,7	-7
5	Wheat bread	150	252±8,5	168,0	+68,0	+102
6	Rye bread	80	37±1,2	46,2	53,8	-43
7	Pasta	15	23±0,8	153,3	+53,3	+8
8	Potatoes	250	159±5,4	63,6	36,4	-91
9	Cabbage	50	45±1,5	90,0	10,0	-5
10	Cucumber	40	18±0,60	45,0	55,0	-22
11	Tomatoes	30	15±0,47	50,0	50,0	-15
12	Beets	25	15±0,49	60,0	40,0	-10
13	Carrots	40	22±0,72	55,0	45,0	-18
14	Onion	30	28±0,93	93,3	6,6	-2
15	Other vegetables	50	40±1,4	80,0	20,0	-10

16	Melon products	50	45±1,5	90,0	10,0	-5
17	Greens	30	35±1,2	116,66	+16,6	+5
18	Don't	5	4±0,13	80,0	20,0	-1
19	Dried	200	125±4,2	62,5	37,5	-75
20	Grapes	15	10±0,32	66,6	33,3	-5
21	Citrus	30	40±1,3	133,3	+33,3	+10
22	Beef	10	6±0,20	60,0	40,0	-4
23	Mutton	95	35±1,2	36,8	63,1	-60
24	Rabbit meat	20	5±0,16	75,0	25,0	-15
25	Parranda	20	5,00±0	0,0	100,0	-20
26	Fish	40	23±0,74	57,5	42,5	-17
27	Sut	60	30±0,99	50,0	50,0	-30
28	Yogurt	20	5±0,16	25,0	75,0	-115
29	Sour cream, sour cream	300	185±6,2	61,6	38,3	-45
30	Butter	150	105±3,5	70,0	30,0	-2
31	Cottage cheese	10	8±0,27	80,0	20,0	-15
32	Cheese	30	15±0,50	50,0	50,0	-35
33	Eggs (pieces)	50	15±0,49	30,0	70,0	-4
34	Sugar	10	6±0,19	60,0	40,0	0
35	Honey	1,0	1,0±0,03	100,0	0	0
36	Margarine	30	36±1,2	120,0	+20,0	+6
37	Vegetable oil	5	3±0,11	60,0	-40,0	-2
38	Iodized salt	-	25±0,84	0	0	+25
39	Tea	15	13±0,43	86,7	13,3	-2
40	Coffee	5	13±0,42	260,0	+160,0	+8
41	Tomato paste	0,4	0,2±0,01	50,0	50	+0,2
42	Zirovar	1,2	2,0±0,07	166,6	66,4	+0,8
43	Confectionery	3	4±0,13	133,3	33,3	+1
44	Leguminous plants	2	3±0,10	150,0	+50	+1
45	Wheat flour	10	34±1,2	340,0	+240,0	+24

In the summer of the year, most of the 44 products in which the daily ration composition of schoolchildren was determined were under-eaten, and squash and fish products were not consumed during the summer. Given that the basis of the daily ration consists of confectionery products, we considered it permissible to include these products in the list of basic consumer goods.

The main nutrients in the daily diet are meat, fish and dairy products, their role and importance, high biological value.

Hygienic analysis of the level of consumption of meat products shows that the main level of consumption of beef, mutton, rabbit, poultry was 49.8-50.9%. Unfortunately, the consumption of rabbit meat was very low, ie 25-30%.

Although fish and fish products, along with fast-digesting proteins, are a source of omega 3 and omega 6 fatty acids, vitamins D, E and B, mainly iron, iodine, zinc and selenium, fish consumption was 41.6-50%.

The daily supply of milk was 58.3-61.6%. Butter belongs to the group of dairy products and is actively involved in the synthesis of saturated fatty acids and hormones. It is a major source of vitamins A, E and D. Butter is 50-60% less in the daily ration of students. Of the remaining dairy products, the amount of sour cream, cheese, sour cream and sour cream ranged from 51.5 to 59.6%.

A hygienic analysis of the food consumed by the school students in the summer and autumn shows that the consumption of mosh, beans and peas from legumes was 40-46.7% in the summer and autumn. Despite the high importance of cereals in the daily diet of schoolchildren, there is a lack and uniformity in the summer and autumn seasons of the year. The provided level of cereals was 33.3-53.3%.

Among the controlled students, the consumption of barley, buckwheat and other cereals was very low, and the school students consumed only sorghum at home. The main daily ration of schoolchildren was enriched with high-quality bread and bakery products, the consumption rate was 136.0-168.0%, but the consumption rate of rye bread was 31.2-46.2%. We, besides from this result, found that breads made from corn and rice flour were not used despite being recommended.

The basis of flour products was pasta and confectionery, the average consumption of pasta was 146.6%.

Consumption of confectionery products is 2.5 times higher than normal in summer and 3.4 times higher in autumn, which has led to a sharp increase in the number of dental caries, overweight and other eating disorders among schoolchildren.

The summer-autumn season of the year also shows a low level of consumption of all vegetables.

The analysis shows that the daily ration of school students consists of different colored drinks and ice creams and their daily consumption rate is high. The summer-autumn season of the year also shows a low level of consumption of all vegetables.

Consumption of margarine is quite excessive; however, the daily amount of salt in the soup is 1.6-2.0 times higher than the established physiological indicators. It should be noted that the diet of schoolchildren in the summer and autumn does not meet the established hygienic requirements, which in turn leads to a number of changes in the mental and physical development of schoolchildren.

It should be noted that the diet of schoolchildren in the summer and autumn does not meet the established hygienic requirements, which in turn leads to a number of changes in the mental and physical development of schoolchildren.

In the next task of our study, we performed a hygienic analysis of the basic nutrient intake levels of the controlled school students, and the results are presented in Table 3.

Table 3

The value of nutrients consumed by school students during the summer and fall seasons

№	Nutrients	F/m, gr	Seasonal consumption rate, in gr		Supply rate,%	
			Summer	Autumn	Summer	Autumn
1	Proteins	77	61,3±2,0	65,1±2,2	79,6	84,5
1.1.	animal proteins	51,2	31,8±1,1	33,7±1,1	62,1	65,8
1.2.	Plant proteins	25,8	30,5±1,0	38,6±1,3	+118,2	+149,6
2	Oils	79,0	47,8±1,6	56,9±2,0	60,5	72,02
2.1	Animal fats	59,0	29,5±0,95	34,1±1,1	50,0	57,7
2.2	Vegetable oils	20,0	16,8±0,56	22,8±0,77	84,0	+114,0
3	Carbohydrates	335,0	347,2±9,83	353,3±10,4	+103,6	+105,4

4	Energy value	2350,0	2084,6±56,5	2209,2±68,5	88,7	94,0
5	P.F.C ratio	1:1:4	1:0,77:5,60	1:0,87:5,42		

From the data presented in Table 3, it can be seen that the level of protein intake of schoolchildren in the summer and autumn was 79.1-84.4%, of which the amount of animal protein was 62.1-65.82%, and the amount of plant protein was 118.2%. -149.6%.

The level of fat intake in the daily diet was 60.5-72.0%, the consumption of animal fats was 50.0-57.7%, and the ratio of vegetable oils was 84.0-114.0%.

The level of consumption of carbohydrates in the summer-autumn season was 103.7-105.4%, the average daily energy value was 2146.5 (normally 2350 kcal) kcal.

The ratio of protein, fat and carbohydrates in the daily diet was 1: 0.77: 5.60 in summer and 1: 0.87: 5.42 in autumn.

It should be noted that the diet of students in the controlled school in the summer and autumn does not correspond to the established physiological norms.

The fact that the main part of the daily energy value is enriched at the expense of carbohydrates, the energy value does not meet the hygienic requirements, the lack of animal proteins and fats in basic nutrients, the nutrient status of students during the day and healthy eating. This condition contributes to the development of eating disorders.

Conclusions

1. The daily diet of schoolchildren in the summer and autumn seasons does not meet the hygienic requirements and physiological norms, and the nutritional status is disturbed.

2. In the daily ration, meat, fish and dairy products were consumed less than the established physiological parameters, meat products were 50.2-49.1% less, but the amount of rabbit meat was sharply reduced.

3. Flour, bread, rice and macro products, confectionery, as well as salt, coffee, margarine, which are included in the group of bread and products in the daily ration, are sharply in excess. The amount of cereals is sharply reduced and does not meet physiological norms. Cereals were consumed 53.3% less in summer and 33.3% less in autumn.

4. The daily ration was low in protein by 15.6-20.9%, animal protein was low in 34.2-37.9%, and plant protein was 118.2-149.6%. In the daily ration, fats provided 60.5-72.0%, animal fats 50.0-57.7%, and the proportion of vegetable oils was 84.0-114.0%.

5. The level of consumption of carbohydrates is 103.7-105.4%, the average daily energy value is 2146.5 (normally 2350 kcal) kcal, and the ratio of protein, fat and carbohydrates is 1: 0.77: 5.60 in summer while in autumn it is 1: 0.87: 5.42.

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