

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Estimation of Features of The Nutrition of Students And Their Influence on The Formation Of Health.

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ABSTRACT

The results of hygienic research on the assessment of the actual nutrition of students are presented, on the basis of which the imbalance of consumption of vital chemical elements - macronutrients and essential micronutrients (vitamins, minerals) is established. The problem of the attitude of modern students to nutrition and the special features of students' nutrition is considered. The results of the studies make it possible to conclude that the nutrition of students at the medical university cannot be considered satisfactory. Severe violations in diet and diet were revealed against which a high incidence of general morbidity, including nutritional disorders, was noted. This determines the urgency of the development and implementation of a nutrition optimization program in the higher education system.

Keywords: students, nutrition, health, interrelations.

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INTRODUCTION

Nutrition is one of the most active and important factors of the external environment, which exerts a diverse influence on the human body, ensures its growth, development, preservation of health, work capacity and optimal longevity. All this is provided by a daily, regulated meal with a certain set of foods. Errors in the structure of nutrition become one of the causes of many serious diseases, including the most common cardiovascular diseases and cancer. Hygienic measures for the prevention of alimentary-dependent diseases are based on modern knowledge about the essence of metabolic processes and the maintenance of homeostasis [4].

For students, the problem of nutrition is particularly acute. Most young people with disregard for their health. The reason for this is the lack of time, incompetence in matters of food culture, the pace of modern life. Most often students eat extremely irregularly, snacking on the go, dry-sourced, 1-2 times a day, many do not use the services of dining rooms [2].

Disturbing the growing popularity of students with fast food products containing a large number of different flavors, dyes, modified components. Therefore, malnutrition becomes a serious risk factor for many diseases. Unfortunately, the statistics of recent years shows a sharp increase among young people of obese people, diseases of the cardiovascular system, diabetes mellitus, etc. Prevent such diseases can be if you lead a healthy lifestyle and, first of all, eat right [3, p.23].

Modern science convincingly proves that changing the nature and diet can positively affect all systems and processes in the human body, increase its immunity, vital activity, affect many diseases, slow the aging process, etc. [1]

It is obvious that the implementation of national nutrition projects should be carried out both at the federal and regional levels, taking into account the existing features and shortcomings. In this regard, it seems necessary to monitor and systemize the nutritional status of student youth, its relationship with health, both at the population and individual levels, taking into account the fact that to date no similar studies have been carried out on the territory of the Voronezh region [3].

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MATERIALS AND METHODS

The representative group was formed by random sampling and was of a continuous nature. The object of observation were 225 students of the medical faculty of VSMU, of which 90 were boys and 135 girls. The average age is 20.5 ± 1.5 years. The representativeness of the minimum sample is calculated by the recommendations of NA Plokhinsky. using the formula: $n = t^2 / k^2$, where n is the sample size ($n = 43$), t is the probability indicator that the specified degree of inaccuracy will not really be exceeded ($t = 1.96$; $p = 0.005$); k - coefficient (accuracy index), its value, taking into account the degree of responsibility of the work performed, was taken as 0.3. To solve the tasks set in the work, a complex of medical-sociological (questionnaires), clinical, biochemical and instrumental research methods was used.

All materials are generated in databases. The received information was processed using methods: analysis of the aggregate - descriptive statistics; in order to study dynamics - analysis of dynamic series; To compare the indicators, Fisher's exact method and chi-square are used. The correlation between the variables was estimated using correlation analysis (Pearson and Spearman methods). The research materials were processed with the use of parametric and nonparametric methods of statistical analysis, variance analysis, multiple regression, and the mathematical modeling method. We used the features presented by Microsoft Excel, Statistica 6.0.

RESULTS AND THEIR DISCUSSION

Malnutrition becomes a serious risk factor for many diseases. In connection with the violation of the diet during the study, many students develop a disease of the digestive, cardiovascular and neuro-endocrine systems. Throughout 2010-2016 years. there is a persistent tendency towards the growth of certain alimentary-dependent diseases among students. Thus, hypertension increased 2.6 times, obesity - 26.3%, anemia 59.5%, endocrine system diseases - 6.4%, gastritis and duodenitis - 16.7%.

According to the received data violations of diet have been detected. So 82% of boys and 69% of girls eat 3-5 times a day, 9% of boys and 11% of girls - more than 5 times a day, and 7% of boys and 23% of girls eat 1-2 times a day. Thus, most modern students eat 3-5 times a day, which is optimal. With apparent well-being, the survey showed that many students, especially young men, take food randomly. There are long breaks in food followed by a massive food load in the evening. The main meal of 80% of boys and 68% of girls falls on the evening time - the time of return from the university. The main meal at lunch was noted by 11% of boys and 20% of girls, this is the time of stay at the university. At the same time only 8% noted that they use the university canteen. Conditions for students to eat at lunch time: 32.3 + 3.9 boys and 53.7 + 2.8 girls dine at the buffet; in the dining room - 33.8 + 4.0 boys and 19.7 + 2.2 girls; bring dinner with themselves 2.1 + 1.2 boys, 7.8 + 1.5 girls, the other - boys - 31.7 + 3.9, girls - 18.7 + 2.2.

Most young men and girls withstand the norm of the volume of food intake. Thus, 80% of girls take 200-300 grams of food at one meal, 10% more than 300 g. About 65% of young men take more than 350 g of food at one time and 35% of food take 200-350 grams of food. The average caloric value of the daily diet of students corresponded to the energy needs of each age group, indicated in the norms - tab.1.

Table 1: Proportion of basic nutrients in the caloric intake of the daily diet of students with age (%)

Age, years/ norm		Protein	Carbohydrate	Fat
		10-15	55-60	30
men	16-20	13	46	39
	21-29	15	40	45
women	16-20	13	44	42
	21-29	13	41	34

In accordance with physiological recommendations, the energy demand of male students is estimated at 2585 kcal, female students - 2434.5 kcal.

At the same time, the energy value of ration was lower by 11% ($p = 0.038$) higher among students of junior (young) students, compared to senior students, including 14% due to the total fat content ($p = 0.029$), NLC - by 17% ($p = 0.013$) and cholesterol by 28% ($p = 0.023$). The proportion of fat exceeded the norm: 35% - boys and 37% - girls. The contribution of carbohydrates to the energy value of the diet was overestimated and amounted to 46% in men and 44% in women. The proportion of added sugar exceeded the recommended values, both in men and women, especially in the younger years.

Analysis of the nutrition structure of students on the consumption of basic food products containing animal protein showed low egg consumption (26.4-52.3% of recommended intake), meat and meat products (72.5-87.0%), fish and fish products (28.5-36.9%). It has been established that only a third of the respondents used dairy products (milk, cheese, cheese) daily or more often. The importance of milk and dairy products as an integral part of the diet is explained by the fact that they contain practically all substances necessary for normal life, and in ratios that ensure good and easy absorption. Given the age of the examined, the most significant is the ratio of calcium and phosphorus, which ensures the formation of normal bone tissue, is an adequate measure for the prevention of osteoporosis, injuries and fractures of bones. Also, based on the role of calcium in the normal functioning of the cardiovascular system, its inadequate intake with a diet should be assessed as a risk factor for the development of its disorders.

When carrying out the correlation analysis, it was established that students who more often consumed dairy products had higher rates of mental performance ($r = 0.26$, $p < 0.01$), felt more healthy ($p = 0.23$, $p < 0.03$), less irritable ($r = 0.25$, $p < 0.02$) and had a lower incidence of poor mood ($r = 0.30$, $p < 0.01$). Calculation of the coefficients of determination made it possible to conclude that the contribution of alimentary consumption of milk and dairy products in maintaining the working capacity and positive psycho-emotional mood varies between 5-9%.

The food sets have a deficit of vegetables, fruits and berries (up to 54%). Only 34% of 1st-year students and 22% of fifth-year students daily include fruits and vegetables in their diet - the main suppliers of water-soluble vitamins. This leads to a lack of vitamins - "C" and group B. Deficiency of the content of individual vitamins is: A - 63.2-75.3% (from the physiological norm); C - 43.0-89.1%; folic acid - 47.4-80.0%; niacin - 75.3 - 87.9%. It is established that students who eat more fruit have less sugar content ($r = -0.27$, $p < 0.01$), smoking is less common ($r = -0.28$, $p < 0.01$), less frequent use of soothing medicines means ($r = -0.22$, $p < 0.04$). As before, the calculation of the coefficients of determination made it possible to establish a positive contribution of nutrition at the level of 4-8%.

The prevalence of bread products in the diet (35.2%), potatoes (41.0%), sugar (78.5%) testifies to the carbohydrate targeting of young people's diets. due to them it is easier to make up for the energy costs.

35% of girls drink less than 1 liter of water per day. 48% of boys and 40% of girls drink up to 2 liters a day. In the survey, the respondents were additionally told that it was pure water. Tea, coffee, juices, other liquids are not included in the concept of water. 48% of girls drink tea, 29% of young men drink juices, and 40% of boys and 35% of girls drink sweet sodas.

A particular problem, also related to nutrition, is the quality of the drinking water used. It is well known that in most regions of the country, even after cleaning, this water has an adverse effect on the gastrointestinal tract, on the body as a whole. Drinking it raw is not recommended, especially for children. Therefore, tap water should be used only after filtering or boiling.

The current change in eating behavior, the introduction of new food habits is characterized, above all, by the increasing popularity of the so-called "fast food". When analyzing the frequency of their occurrence in the diet, the high popularity of such products among respondents was confirmed, which should be evaluated as another risk factor for health. 68% of girls once a week can afford fast food. 55% of boys eat fast food 3-5 times a week, and 40% - every day. 15% of girls eat fast food 3-5 times a week, and 17% - every day.

Analysis of anthropometric data showed that, despite the fact that among the students surveyed, persons with normal body weight predominated (girls 76.9%, boys 66.7%), 13.5% - overweight and obesity, 11% students found a deficiency of body weight, the vast majority of them - students of lower courses - tab. 2.

Table 2: Distribution of students by body mass index, %

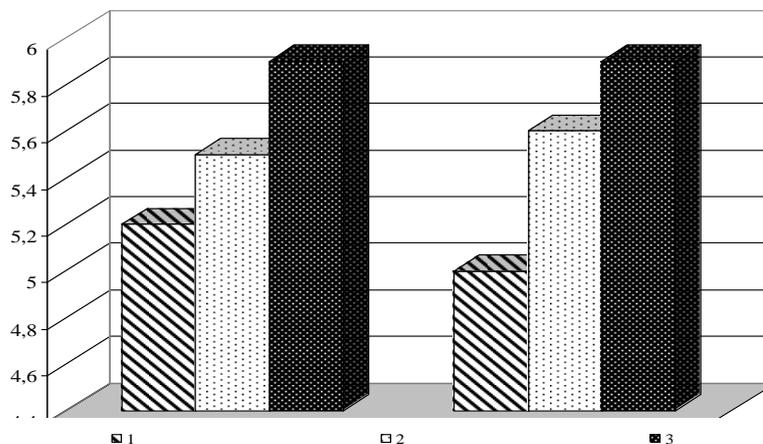
	Age	BMI up to 18.5 kg/m ²	BMI 18.5-24.99 kg/m ²	BMI > 25 kg / m ²
men	16-20	2,3	84,1	27,8
	21-29	0	65,8	13,6
women	16-20	22,7	71,2	9,8
	21-29	11,5	80,8	7,7
generally	16-29	11,0	75,5	13,5

The average body weight in the first year students was significantly higher relative to the average body weight in the group of 6th year students. Overweight was more often detected in young men (27.8%) than in girls (9.8%). In 11.5% of the cases, the female body mass deficit was revealed in 11.5% of cases, while in young men 2.3%, their body weight and BMI were significantly lower in comparison with age and sex standards.

Correlation analysis performed without taking into account age and sex revealed the dependence of the body mass index on the quantity and frequency of consumption of bread products ($r = 0.301$, $p = 0.001$), meat products ($r = 0.288$; $p = 0.001$), potatoes ($r = 0.190$; $p = 0.007$).

The revealed changes in the structure of the diet in people with mental work with low physical activity were combined with violations of carbohydrate and lipid metabolism. Cholesterol level in the blood above 5.6 mmol / l was detected in 26% of young men and 19% of girls.

It should be noted that there was no correlation between the cholesterol content in the blood and the cholesterol content in the diet. Elevated blood glucose was noted in 13% of boys and 20% of girls, the degree of glycemia was proportional to BMI (fig. 1).



1- BMI - 18,5-24,99 kg / m²; 2- BMI - 25-29,99 kg / m²; 3- BMI > 30 kg / m²

Fig 1: The maintenance of glucose (mmol/l) in the blood of men and women at a different body mass index

In addition, significantly higher BMI rates were found in persons with elevated diastolic blood pressure (23.3 kg / m²) and high normal blood pressure (22.4 kg / m²), compared to those with normal BP (20.2 kg / m²), $p < 0.001$. Positive correlation was established between the level of SBP and BMI, the percentage of abdominal fat ($r = 0.29$, $p < 0.001$). For DBP, even more close positive correlations were found, of which I would like to emphasize the age, BMI, percentage of abdominal fat, glucose level and pulse rate ($r = 0,23$, $p < 0,01$). The average blood glucose level increased proportionally with the increase in BMI and DBP. In general, this combination of several risk factors greatly increases the risk of developing chronic non-communicable diseases in the years to come.

Dispersion analysis of the results of a survey of healthy students (142 people) and having chronic diseases of the digestive system (92 people) made it possible to identify 16 features that contributed to the formation of chronic forms of diseases of the digestive system (CBOS). It was found that the greatest contribution (46.2%) was made by the sign characterizing the diet of students ($r = 0.8$, $p < 0.001$). Students with CBT are 1.6 times more likely to eat once or twice a day. Average in strength, a reliable effect on the HSB has signs: an assortment of products of a buffet with insufficient biological value; long intervals between meals and hereditary predisposition to CBT, ($r = 0.31$, $p < 0.001$, mean statistically significant relationship between traits, contribution to the overall variance of 7.1-6.4%). A definite contribution to the development of chronic pathology of the digestive organs is made by students: frequent unloading days and lack of breakfast ($r = 0.21-0.19$, $p < 0.001$; contribution to the overall dispersion of 2.8%) and material support for students, the presence of bad habits in the way of life, unfavorable ecology, etc. ($r = 0.13$, $p < 0.001$, contribution to the total dispersion of 1%).

CONCLUSION

Thus, according to the results obtained, against the backdrop of inadequate food supply, a high incidence of general morbidity, including nutritional disorders, was noted. The incidence of digestive organs has increased (by almost 40%), the diseases of the musculoskeletal system (almost 30%), and the disorders of menstrual function in girls have increased by more than 170%. And, I emphasize, the data of official statistics, which, as you know, are quite different from the data of in-depth medical examinations. In the course of the year, some physiometric and anthropometric indicators of our students have changed for the better. For example, the number of students with a body weight deficit has increased, especially among female students, now more than 12%. There are many reasons for this situation, and therefore, in the difficult social and economic conditions that have developed in the country, it is extremely important to determine the priorities - where first of all to direct efforts and invest means to get a real result. The greatest contribution to the deterioration of the health of young people makes a way of life, which accounts for at least 50%. And from all components of a way of life, now, according to hygienists, it is the nutrition factor that takes the leading place. The obtained data made it possible to identify the problem points in the nutrition of young people:

- Caloric content of a daily ration is usually 15-20% lower than the norm;
- Violation of the diet of students is revealed. From 25 to 47% of students do not have breakfast, 17-30% eat 2 times a day, about 40% do not have lunch or dinner regularly;
- Students rarely eat hot food. There is a late supper, just before bedtime;

The results of examining the sets of products used in the nutrition of students both at home and in the walls of an educational institution have revealed the inadequate use of such a compulsory product at that age as milk or dairy products. Only 42% of respondents regularly drink milk. Students who never consume cottage cheese and cheese make up 10 to 15%, oil to the table never has 12-35% of students. Raw vegetables and fruits, most students use 1-3 times a week and in insufficient quantities.

Most students are in a state of hypovitaminosis of varying severity due to their low content in food. On average, the provision of the body of students from the required number is from 30 to 50%. You can continue to bring disappointing data about the nature of nutrition of our students. In general, the nutrition of young people is monotonous, with the predominance of carbohydrate food - pasta, bakery products.

But today it is not enough to determine the problem, where it is more important to try to solve it. However, at present, there are a number of objective circumstances that do not allow the full implementation of the principles of rational nutrition. The fact that the nutrition of students is not rationally played by such organizational factors as lack of time for eating due to the peculiarities of the training schedule, or lack of a food station, etc. And in this sense, the priority of the educational institution in the development of a healthy lifestyle can not be overemphasized. Given that a modern student spends most of the day in the walls of an educational organization, it is the university that must assume the mission of organizing its rational nutrition. With the right organization, it becomes an effective factor in alimentary prevention of diseases in the youth environment.



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