

STUDY OF THE DIETARY INTAKE OF CADETS FROM THE NATIONAL MILITARY UNIVERSITY "VASIL LEVSKI" - PART I

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Abstract: *The study was conducted in the period July - September 2017 at the National Military University "Vasil Levski" - Veliko Tarnovo, Republic of Bulgaria.*

The subject of the research is the provision of free food as an integral part of the full state support of the students at the National Military University "Vasil Levski".

The subject of the study is the impact of objective social, biological, economic and other factors in the dietary intake of male and female students at the National Military University "Vasil Levski"

The working hypothesis of the study is that the popularity of the "fast food" concept, the economic difficulties associated with buying high-quality food resulting from the low income levels of the students' families, the marketing strategies of food traders and the biological characteristics of each individual have largely shaped the habits and the perception of nutrition of the students before enrolling at the National Military University "Vasil Levski". This, in turn, implies that the existing nutrition norms should be adapted to the consumers in line with the basic principles of nutrition science.

The study is conducted at the National Military University "Vasil Levski", Veliko Tarnovo. Cadets at the "Land Forces" Faculty - region of Veliko Tarnovo and "Artillery, Air Defense and Communication and Information Systems" Faculty - region of Shoumen are provided with food from the same menu and with uniform food prices.

Peculiarities based on religious grounds and vegetarianism which are not in line with the science of nutrition and the principles of army nutrition are not taken into consideration.

Keywords: dietary intake, health risk, healthy nutrition

1. Introduction

The study was conducted during the summer semester of 2016/2017 academic year. The general population during this period: The total number of cadets, educated in various military specializations, who are entitled to food free of charge, is 309, of which: 251 male cadets and 58 female cadets.

The plan was to collect a sample of 10% of the general population to be distributed among the two sexes.

The respondents in the study are aged between 19 and 24 for men and between 19

and 23 for women - this is the typical age of the students at the Vassil Levski NMU, depending on the course of study.

The selection of the respondents is random, the conditions being that both sexes should be represented (women not less than 14% of the sample), the students should have different academic course loads (including all types of courses at the University), the students should be pursuing different educational courses and belong to different organizational units (divisions, platoons, companies, etc.). The study was conducted with the permission of the head of the

"Vasil Levski" NMU and with the consent of the respondents. An important criterion in the selection of respondents was that they should not suffer from a disease that is associated with prophylactic nutrition. The study was conducted in a customary environment for the students - lecture halls, at a time when they did not attend classes and there were no planned active forms of study, they were not on duty or relieved from duty. The study has preserved the anonymity of the cadets. The results obtained are reflected objectively and in accordance with the answers given by the cadets.

In the course of the study of the dietary intake of the cadets, a survey was conducted among 46 people, including: 31 male cadets and 15 female cadets. The sample represents: for men - 12.4% of the general population and for women - 25.9% of the general population.

The criteria for the selection of respondents in the current study of nutrition were met by students from the "Land Forces" Faculty, studying at the department of "Logistics of security" in the military specialization "Material resources, movement and transportation". All students in their second to fifth year of this military specialization were admitted to the survey. The choice of students in this specialty is motivated by the following objective facts:

- the number of students in this specialization is above the average in the University compared to other military specializations;
- the number of female students in this specialization is the highest in comparison to other military specializations and above the average (14%) for the Armed Forces. This allows for greater representation of the female student's opinion, including a rational opinion in the organizational unit - platoon / company / battalion in which they are together with male students;
- the students in this military specialization study the discipline "Food Logistics" and participation in the study will give them the opportunity to deepen and enhance their

professional training and, for some of them, to participate in scientific research;

- the students at this military specialization belong to different organizational units (divisions, platoons, companies, etc.), and the staff of the different platoons / companies / battalion is comprised of students educated in all the other military specializations. This fact forms the appropriate organizational behavior, the formation of collective opinion and perceptions. This peculiarity gives one more reason for the representativeness of the sample as it faithfully reflects the structure of the general population.

A special questionnaire to be filled in, comprising 47 questions, was provided to the respondents in the survey. Questions relate to their habits, patterns and frequency of intake of food, water, alcohol and other beverages; preferences, frequency and mode of intake of food groups (including by types); favorite dishes (open question); the amount of funds allocated for food outside the canteen; their attitudes with regard to receiving money instead of food considering the quality of food in the canteen; their attitudes regarding one meatless day per week; the views of students about the food of the future, etc.

The interview has a duration of 90 minutes.

2. Exposition

It is advisable for the meals to be not only varied but regular as well - 3-5 times a day. Having regular meals, according to the National Center for Public Health Protection [12], prevents the intake of large amounts of food and contributes to better digestion. It is noted that breakfast is an important dietary intake that should not be skipped as it improves the mental and physical capacity in the morning hours. Dinner should not be 2-3 hours before bedtime, as late dinners stress the digestive system at night and pose a risk of weight gain.

In her study, Nestorova [11] states that eating regular meals is one of the conditions for good absorption of food. According to

her, from a physiological point of view, the intervals between the different meals should not exceed 4-4,5 hours. This is the basis of the three-to- four-times-a-day meal pattern used by adult people. The number of meals per day should be age-appropriate, and in consideration of the respective working conditions, lifestyle and health. There is a prevailing view that the most physiologically healthy diet is one including four meals a day - breakfast, a snack (in the morning or afternoon), lunch and dinner. The digestive tract needs an 8-10 hour rest that is provided during sleep.

The meals of the servicemen are provided at a time determined by the commander [14], which is announced in the schedule of the servicemen for the day and the implementation of the main activities.

According to a theory spread in the middle of the last century [13] it is enough for the servicemen in the Ground Forces to have three meals a day at intervals of no more than 6 hours. At present, this is the functional meal pattern in the Ministry of Defense (MoD) and the Bulgarian Army (BA).

The results of the diet survey show that 45% of men eat three meals a day, 7% eat two meals a day, 3% eat one meal a day, and 45% eat more than three meals a day; women who eat three meals a day are 33.4%, 33.3% are those who have two meals a day and 33.3% eat more than three meals a day. Men surveyed describe the following pattern of meals - 43% eat breakfast, lunch and dinner, 57% eat breakfast, lunch and dinner and snacks between them, 3% eat breakfast and dinner, 3% eat lunch and dinner and 3% eat only dinner. The surveyed women describe the following pattern of meals - 33.4% eat breakfast, lunch and dinner and snacks between them, 33.3% eat breakfast, lunch and dinner, and 33.3% eat only lunch and dinner.

The preferences for the greatest food intake in the three-meals-a-day pattern are as follows: 64.5% of men have their greatest food intake at lunch, 29% of them - at

breakfast and 6.5% of them - at dinner; 60% of women have their greatest food intake at lunch, 33.4% of them - at breakfast and 6.6% dinner.

Another question relating to the pattern of food intake is "How many dishes do you eat a day (breakfast, soup, salad, appetizer, main course, dessert)?" Packaged foods are not included. The answers are as follows: 12.9% of men eat more than 8 dishes, 19.3% of them - 6-8 dishes, 41.9% of them - 5-6 dishes, 19.3% of them - 4 dishes, 3.3 % of them - 3 dishes and 3.3% - 2 dishes; in the case of women 6,7% eat 6-8 dishes, 33,3% of them - 5-6, 40% of them - 4, 13,3% of them - 3 and 6,7 % of them - 2 dishes.

Achieving diversity and balance of different types of food in a person's everyday menu plays an essential role in the pursuit of rational nutrition. In the Army and canteen meals, the following practice has been established: to serve at least 5 different items for breakfast (with a mandatory liquid element), for lunch to serve soup or appetizer, a main course and dessert, and for dinner - a main course and dessert. This allows for the use of food products from different groups of foods which in themselves have a different biological value and composition but at the same time contribute to achieving the recommended intake of energy and nutrients. Unbalanced nutrition would lead to deficiencies of some nutrients in the body and health risks.

According to the motives to the Public Health Tax Bill [15], it aims to reduce the consumption of unhealthy foods by limiting consumption and redirecting unhealthy foods and reducing healthcare costs at the same time. The bill proposes taxation of four groups of foods, which are determined on the basis of a study of their health impact as follows: foods containing partially hydrogenated vegetable oil, certain high-salt foods, certain foods and beverages containing caffeine or taurine, certain foods and beverages with a high content of sugars and sweeteners.

Typically, these are mostly some of the packaged foods such as: fried potatoes and cereal products, extruded cereal products with added fat, fried nuts, fried dough, sugar and chocolate products (with the exception of chocolate), confectionery with high fat and sugar content, such as cakes and pâtisserie with cream or butter filling, syrupy deserts, dry soups and broths, carbonated beverages and others.

The results of the study show that 38.7% of men and 33.4% of women rarely use packaged foods. 58.6% of the men and women surveyed use between 2 and 4 packaged foods per day apart from the canteen menu.

The question: "How often do you eat sweets (chocolate, chocolate bars, pâtisserie, biscuits, etc.) in the week?", gave the following results: 25.8% of men - every day, 12.9% of them - 5-6 times a week, 32.2% of them - 3-4 times a week, 25.8% of them - 1-2 times a week and 3.3% do not eat sweets. With women the results were: 20% of women - every day, 20% of them - 5-6 times a week, 26.6% of them - 3-4 times a week and 33.4% 1-2 times a week.

The relative share of added sugar according to the national physiological norms for population nutrition should be <10% of the total energy value of the food. Recommendations are to avoid frequent intake of sugar-containing foods and beverages between meals, considering the fact that refined sugar is only a source of "empty calories", and most of the sugar intake is obtained through the confectionery products mentioned in the question. In this context, the intake of sweets 1-2 times a week in the form of confectionery products reduces the health risk.

Medical research [9] has established that people suffering from hypertension have a high salt consumption (52.1% of men and 42.0% of hypertensive women were in the habit of adding salt to the food before tasting it, or finding it to need extra salt), increased fat consumption, low consumption of fish.

Surveys [8] in our country in recent decades have found that the population's food pattern is not healthy: consumption of plant and animal fat is high (35-40% of the total energy intake).

The survey among the respondents shows the following: 6.4% of men eat salty and fatty foods on an almost daily basis (chips, bacon, pig fat, black pudding, etc.), 6.4% of them eat 3-5 times a week, 9.7% less than 3 times a week, and 77.5% say "seldom" or "never"; 6.7% of women consume such foods 3-5 times a week, 53.3% of them eat less than 3 times, and 40% of them - "seldom" or "never".

The study of water intake by servicemen is particularly important, as various sources indicate that a man can survive without water between 4-8 days. It is believed that an adult with low-to-moderate physical activity in moderate climates should take 1.5-2.0 liters of water per day, including beverages.

The survey respondents yielded the following results as regards their total daily intake of liquids (water, juices, soft drinks, tea, coffee) during the spring / summer season: 51.6% of men intake 3-5 liters, 41.9% intake 1.5-3 liters, 3.25% intake 1-1.5 liters and 3.25% intake up to 1 liter; 46.7% of women intake 1.5-3 liters, 33.3% intake 1-1.5 liters and 20% intake up to 1 liter. The total intake of fluids per day in the autumn-winter season is as follows: 19.3% of men intake 3-5 liters, 51.6% intake 1.5-3 liters, 22.6% intake 1-1.5 liters and 6.5% - up to 1 liter; 66.7% of women intake 1.5-3 liters, 33.3% intake up to 1 liter.

3. Conclusion

From a physiological point of view, it can be determined that the diet (eating habits and patterns) of 43.5% of men and 33.3% of women, representing 40.2% of all respondents, is the best, which means that it creates the least prerequisites for a negative impact on their body.

The majority of survey respondents - 63% prefer to comply with the established

proportions in food distribution at the Ministry of Defense [10] (breakfast - 25%, lunch - 45% and dinner - 30%).

Based on the answers to the questionnaire questions, it can be concluded that in 54.3% of all respondents who eat 5-6 and 6-8 dishes per day, the risk of unbalanced diet is smaller. But for the remaining 45.7% of respondents this risk is very high.

A great number of the men and women surveyed - 58.6%, who use between 2 and 4 packaged foods apart from what is included in the weekly menu, are at a health risk.

A significant proportion of all respondents - 69.6% - who say they consume sweets more than 1-2 times a week, are at risk of taking "empty calories" and this can lead to overweight and health issues.

The negative trend established at a national level for high fat and salt intake was observed in 13% of respondents.

The results obtained from among all the respondents show that the intake of fluids is

below the recommended values set by the National Center of Public Health Protection for 21.7% of the respondents in the spring-summer season and for 52.2% of the respondents in the autumn-winter season. All of the surveyed women have an intake of fluids below the recommended values in the autumn-winter season.

The results of the survey show that undesirable abnormalities, which may have negative consequences on the health of the students, have been observed in the different indicators used in the assessment of the food intake. In this context, a way should be found to overcome the discrepancies between the factual situation and the science-based recommendations. Research along these lines has been carried out by a number of scientists [1,2,3,4,5,6,7] who offer solutions in balancing and organizing nutrition with an emphasis on efficiency and healthy nutrition of servicemen.

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