Eating habits of civil workers and soldiers of the Czech Republic army

Zwyczaje żywieniowe pracowników cywilnych i żołnierzy czeskiej armii

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Wprowadzenie. Badania ankietowe nawyków żywieniowych przeprowadzono wśród studentów, oficerów i pracowników cywilnych Wyższej Szkoły Wojsk Lądowych Armii Republiki Czeskiej.

Cel. Określenie prawidłowych nawyków żywieniowych przy wyborze potraw przez żołnierzy i pracowników wojska Armii Republiki Czeskiej.

Materiał i metody. Badaniami objęto ogółem 85 osób, w tym 33 studentów o wojskowej specjalności Ekonomika Obrony Państwa, 32 ich nauczycieli – żołnierzy zawodowych oraz 20 pracowników cywilnych uczelni. Badania przeprowadzono w oparciu, o opracowany w Instytucie Ekonomiki i Higieny Żywienia Wyższej Szkoły Wojsk Lądowych, kwestionariusz ankietowy. W oparciu o pomiary antropometryczne tj. wysokości i masy ciała, które stanowiły podstawę wyliczenia wskaźnika body mass index (BMI) oceniono także stan odżywienia ankietowanych osób.

Wnioski. Wykazano, że większość ankietowanych osób posiadała prawidłową masę ciała, a nawyki żywieniowe były korzystne. Wykazano jedynie nieprawidłowości w spożyciu świeżych owoców i warzyw w ciągu dnia.

Słowa kluczowe: *pracownicy, studenci, oficerowie, nawyki żywieniowe, porcja żywnościowa, owoce, warzywa*

Introduction. A survey of eating habits was carried out among the students, professional soldiers and civilian employees of the Military University of Ground Forces in Vyškov (Czech Republic) .

Aim. To find out whether employees of the Czech Army have proper eating habits and whether they follow the principles of correct nutrition when choosing food.

Material & methods. The data regarding eating habits were obtained by a questionnaire compiled by the Department of Economics and Nutritional Hygiene of the Military University of Ground Forces. The survey included students of the Military University, Economics of Defence of the Republic (33 respondents), their teachers – soldiers (32 respondents) and civilian employees (20 respondents). Basic anthropometric parameters were surveyed in the respondents: body height and mass, and body mass index (BMI) was calculated from these values. The objective of the measurements was to determine the respondents' nutritional status. Furthermore, the subjects completed an anonymous questionnaire regarding eating habits.

Conclusions. It was concluded from the measurements that the majority of respondents had normal body weight and their eating habits, evaluated by the number of servings throughout the day, were good. Deficiencies were found in the number of fruit and vegetable portions consumed during the day.

Key words: *Clerks, students, officers, eating habits, food portion, fruit, vegetables*

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Introduction

Rational nutrition is one of the main factors of external environment affecting human body and keeping it healthy. Nutrition has to fulfil the requirements for energy and nutrients, without which people cannot fully use their physical and mental abilities and maintain health throughout the whole life.

Proper nutrition does not mean only optimal satisfaction of human body needs, concerning energy and nutrients, but also the distribution of meals during the day and choice of food intended to be consumed quickly, so that each meal could contain an adequate amount of energy and all necessary nutritional components, such as proteins, carbohydrates, fats, vitamins and minerals. Furthermore, the diet should contain fibre, which increases the volume of food and facilitates the activity of digestive system [1].

Nutrition of workers has to be differentiated by the character of work, by age and by body type [2]. Significant is also differentiation according to gender.

Nutritional recommendations for soldiers who carry out routine tasks of combat and guard duties are the same as for the nutrition of civilian workers.

Nutrition of members of special combat and detention units has to be adjusted to their needs and it is almost like nutrition of power and endurance athletes. The energy requirement of soldiers and athletes varies according to the type of activity [3]. The energy intake is also determined by this activity, it can range between 10 to 24 MJ per day. If soldiers have great energy requirements, the portion of fats and proteins can be significantly increased. The protein intake should represent 15-20% of total energy intake. Low fat intake is recommended in endurance disciplines (25%) and at least 60% of total energy intake should be covered by carbohydrates. The fat intake in the short-term power load should be increased up to 35-40% of total energy intake [4].

Aim

The goal of the survey was to find out whether students and employees of the Military University of Ground Forces in Vyškov have normal body mass and whether they have proper eating habits and follow the principles of correct nutrition when choosing food.

Material and methods

The survey included students of military studies – Economics of Defence of the Republic, who studied at the Military University of Ground Forces in Vyškov in the Czech Republic, their teachers – professional soldiers teaching training and technical support. The students and their teachers (officers) had very physically and mentally demanding jobs and an annual review of physical fitness.

The study also included administration clerks of this school, with sedentary jobs, no physical exercise during the day and no review of physical fitness. First of all, anthropometric indicators of the respondents were collected. The respondents reported their age, they were also measured for body height and mass, and body mass index (BMI) was calculated from these data. Body mass was measured on a scale of the Soenhle medical company, accurate to 0.1 kg. The examined person was weighted in underwear, and no shoes. The weight of the clothing in determining body weight was not taken into account. Body height was measured by anthropometer, which was part of a medical digital scale, accurate to 0.1 mm. While measuring body mass and height the respondents were standing straight, heels together, tips slightly apart, arms at sides, head straight [5].

Classification of obesity according to BMI is shown in table I.

According to the World Health Organization, obesity is defined with a BMI of more than 30, morbid obesity with a BMI of more than 40. For the risk assessment not only fat, but also its distribution in the body is important. The classification of body mass index as well as the classification of other biological characteristics shows a significant degree of natural variability. The terms „overweight" and „obesity" are used to specify BMI [7-8].

Table I. Category BMI, classification of obesity (by WHO) and association with health risks [6]
Tabela I. Wskaźniki BMI, klasyfikacja otyłości (wg WHO) i czynniki narażenia zdrowia

BMI	Category by WHO /Klasyfikacja wg WH	Health risks /Czynniki ryzyka
≤ 18,5	underweight	malnutrition, anorexia
18,5-24,9	normal weigh	minimal
25,0-29,9	overweight	slightly increased
30,0-34,9	1st degree of obesity	moderately high
35,0-39,9	2nd degree of obesity	high
≥ 40	3rd degree of obesity	very high

An anonymous questionnaire containing 21 questions about eating habits, sports activities during leisure and about lifestyle was presented to the respondents to fill in. This paper analysed only the answers to three questions about dietary habits. The questions related to frequency of food intake during the day, number of servings of fruit consumed daily and number of servings of vegetables consumed daily.

The students, professional soldiers and civil servants of the Military University of Ground Forces in Vyškov participated in the survey. Groups of surveyed respondents are shown in table II.

Table II. Description of surveyed respondents
Tabela II. Opis grupy badanej

No.	Surveyed group of people /Badana grupa	Number of respondents /Liczba badanych		
		Men /Mężczyźni	Women /Kobiety	Total /Ogółem
1.	Civilian employees of Military University in Vyškov (VVŠ PV) – light work in the office	10	10	20
2.	Students of military studies studying at Military University in Vyškov (VVŠ PV)	23	10	33
3.	Professional soldiers working at Military University in Vyškov (VVŠ PV)	22	10	32
	Total /Ogółem	55	30	85

It is obvious that there were women in the group of students as well as in the group of officers, in each group there was about 1/3 of women. Only in the group of clerks there was 1/2 of women and 1/2 of men.

Results and discussion

At first the anthropometric parameters of the respondents were measured. Table III presents average body mass, body height and BMI. The age of respondents is known from the questionnaire.

Table III. Age and basic anthropometric parameters in respondents
Tabela III. Wiek i parametry antropometryczne badanych

Group of respondents /Grupy badanych	Anthropometric parameters /Parametry antropometryczne			
	Age [years] /Wiek [lata]	Body mass [kg] /Masa ciała [kg]	Body height [m] /Wysokość ciała [m]	BMI
Clerks – men /Pracownicy	23,00±2,79	78,60±9,42	1,83±0,06	23,53±2,56
Clerks – women /Pracownice	21,30±2,00	61,30±7,61	1,66±0,07	21,31±2,03
Students – men /Studenci	21,96±1,43	76,91±11,12	1,79±0,07	23,90±2,44
Students – women /Studentki	21,70±1,34	60,10±4,85	1,68±0,06	21,38±1,06
Officers – men /Oficerowie	21,54±1,23	77,61±10,14	1,81±0,06	23,69±2,65
Officers – women /Oficerowie – kobiety	20,30±0,90	58,55±5,36	1,69±0,08	20,48±0,92

Table IV. BMI values of surveyed groups of respondents
Tabela IV. Wartości BMI badanych grup

Group of respondents /Grupy badanych	Category according to BMI /Kryteria oceny wg BMI					
	Under-weight /Niedowaga	Normal weight /Masa ciała w normie	Over-weight /Nadwaga	1st degree of obesity /Otyłość I stopnia	2nd degree of obesity /Otyłość II stopnia	3rd degree of obesity /Otyłość III stopnia
Clerks – men /Pracownicy	0	7	3	0	0	0
Clerks – women /Pracownice	0	8	2	0	0	0
Students – men /Studenci	0	17	6	0	0	0
Students – women /Studentki	1	9	0	0	0	0
Officers – men /Oficerowie	1	15	6	0	0	0
Officers – women /Oficerowie – kobiety	0	10	0	0	0	0

The distribution of observed groups of respondents according to BMI categories is shown in the following table IV.

As could be seen in the table, the majority of respondents from all groups had normal body mass. Only one female student and one female officer were underweight. 6 male students, 6 male officers and 3 male clerks and 2 women were overweight. There was no obese respondent. These results show that women care about their weight more than men.

The questionnaire covered the eating habits of the groups of respondents. The first question surveyed the frequency of eating meals during the day. The results are shown in the following figure 1.

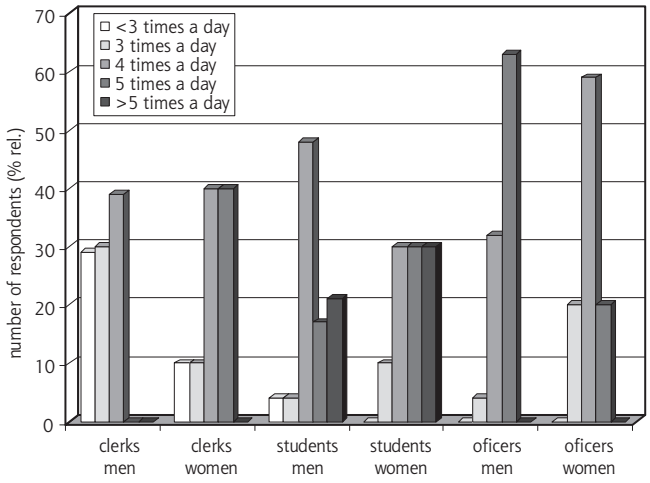

Fig. 1. Frequency of food intake during the day in surveyed groups of respondents (% rel.)

Ryc. 1. Częstość spożywania posiłków w ciągu dnia przez badane grupy (%)

As seen in the graph, besides male clerks, all of the groups of respondents ate properly, because there were some respondents in each group who said that they ate 5 times a day or more, which corresponds with nutritional recommendations. The majority of male officers (63.6%) said that they ate 5 times a day. 40% of female clerks said that they ate 4 times a day and the same number (40%) ate 5 times a day. Surprisingly, 30% of male clerks and 10% of female clerks responded that they consumed fewer than 3 meals a day. The majority of male students (47.8%) ate 4 times a day and 30% of female students ate 4 times, 5 times and more than 5 times a day. It is recommended to eat 5 times a day [3].

Next questions concerned the consumption of fruit and vegetables. The answers to the question how many servings of fresh fruit the respondents consumed a day are shown in the figure 2.

As seen in the graph, female students consumed the highest amounts of fresh fruit– 10% said that they ate 4 and more servings of fruit a day. The majority of female clerks consumed 2 servings of fresh fruit a day. The majority of students of both genders and female officers consumed 1 serving of fresh fruit a day. The same number (45.5%) of male officers said they consumed fruit once or twice a day. Male clerks had the worst eating habits concerning fresh fruit, half of them answered that they consumed fruit fewer than once a day. It is recommended to eat fruit 5 and more times a day, but few people do it [9].

Consumption of fresh vegetables is equally important. The answers to the questions how many servings

of fresh vegetables the respondents consumed a day are shown in the figure 3.

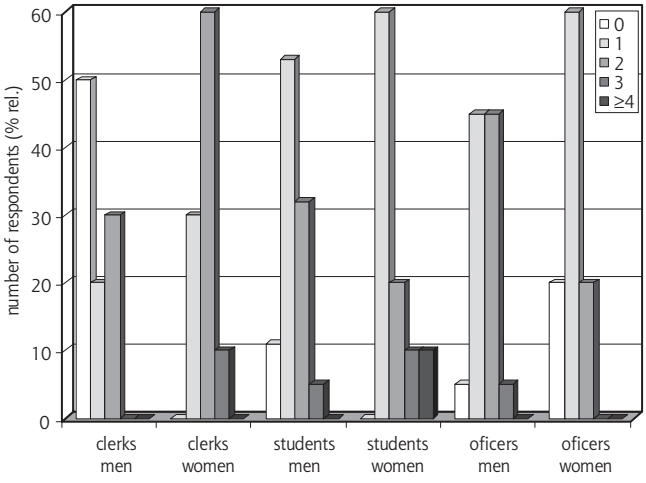

Fig. 2. Number of servings of fruit consumed daily by respondents (% rel.)

Ryc. 2. Dzienne spożycie owoców przez badanych (%)

The consumption of fresh vegetables was completely insufficient [10]. As seen in the graph, most male officers and female clerks consumed 2 servings of fresh vegetables a day. 1 portion of fresh vegetable was consumed by male clerks, female students and female officers. There was a large number (69.50%) of students who did not eat fresh vegetables daily. There was an option to fill in the answer 3 or 4 and more servings of fresh vegetables a day – but nobody used this option. It is recommended to eat vegetables 5 and more times a day. People should eat a variety of fruit and vegetables each day (including fresh, frozen, canned, or dried) and to go easy on fruit juices. Fruit and vegetables are good sources of many of the same nutrients, including carbohydrate, fibre, vitamins A and C, folate, potassium, and magnesium. Eating a variety of both fruit and vegetables is important. One cup of vegetable is equal to two cups of raw leafy vegetables such as spinach or equal to one cup of chopped raw or cooked vegetables such as broccoli [11].

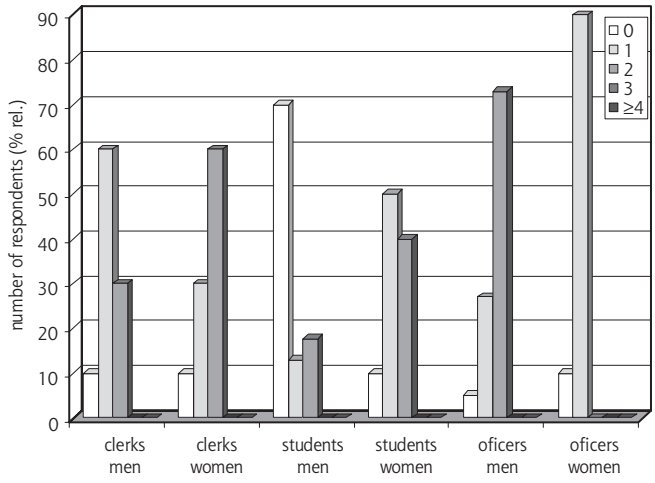

Fig. 3. Number of servings of vegetables consumed daily by respondents (% rel.)

Ryc. 3. Ilość spożywanych warzyw przez badanych (%)

Conclusions

1. The survey showed that according to the BMI categories the majority of the respondents have normal body weight. Good eating habits should correspond to this finding. Only some of the students (21.7% of the men and 30% of the women) consumed the recommended 5 and more meals a day. Male officers consumed most often 4 meals a day, female officers consumed 3 meals a day and clerks of both of genders most often consumed 4 meals a day.
2. With regard to the frequency of fruit and vegetable consumption, the survey showed that the students and employees of the Military University of Ground Forces in Vyškov (Czech Republic) consumed an inadequate amount of fruit and vegetables. In the dining room there was a vegetable bar and a possibility to choose a suitable salad to the main meal. It is recommended to enlarge the range of the vegetable bar using fresh fruit and to consume 5 doses of fruits and vegetables a day.

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