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REALIZATION OF THE PRINCIPLES OF RATIONAL NUTRITION BY THE STUDENTS OF THE UNIVERSITIES OF BYDGOSZCZ

REALIZACJE ZASAD RACJONALNEGO ŻYWIENIA PRZEZ STUDENTÓW BYDGOSKICH UCZELNI.

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S u m m a r y

T h e a i m of this thesis was to evaluate if the students of universities of Bydgoszcz know the principles of proper nutrition and whether or not they follow them.

The study was conducted on a group of 100 students of the universities of Bydgoszcz, 77 women and 23 men between the ages of 19 and 25. The study was carried out in the first half of 2014 using a survey method.

C o n c l u s i o n s . Knowledge of rational nutrition and the principles of healthy eating among students of Bydgoszcz universities is quite varied and depends on the field of study. The best eating habits are characterized by technical and art faculties. Students of medical faculties and health sciences are not leaders in this field. More irregularities relating to the quality of diet is observed among students of humanities and social sciences.

S t r e s z c z e n i e

C e l e m p r a c y była ocena czy studenci bydgoskich uczelni znają zasady racjonalnego żywienia, oraz czy ich przestrzegają.

Badaniem objętych zostało 100 osób będących studentami bydgoskich uczelni, a wśród nich 77 kobiet i 23 mężczyzn w wieku od 19 do 25 roku życia. Badanie zostało przeprowadzone w I półroczu 2014 r. metodą ankietową.

W n i o s k i . Wiedza na temat racjonalnego żywienia i przestrzeganie zasad zdrowego żywienia wśród studentów bydgoskich uczelni jest dość zróżnicowane i zależy od kierunku studiów. Najlepszymi nawykami żywieniowymi charakteryzują się kierunki techniczne, oraz kierunki artystyczne. Studenci kierunków medycznych i nauk o zdrowiu nie są liderami w tym zakresie. Więcej nieprawidłowości wiążących się z jakością diety obserwuje się wśród studentów kierunków humanistycznych i związanych z naukami społecznymi.

Key words: rational nutrition, young person

Słowa kluczowe: racjonalne żywienie, młodzież

One of the first significant changes in life of a young person is studying at university, which usually involves changing the place of residence (1). Studies suggest that students lead an irregular lifestyle, use various stimulants and nourish incorrectly (30, 48, 57). Studying at university is the period of great mental and physical activity, which should be supported with a properly balanced diet (44). Nutrition habits are one of the most important factors shaping health (37).

University students do not pay attention to the rules of rational nutrition. Due to the heavy burden of daily activities at university they do not have time to eat properly at the right time. These kind of behaviours may lead to serious health consequences in their future

life. Therefore, the analysis of nutrition habits of students was carried out considering various fields of study. The Pyramid of Healthy Nutrition is the graphical representation of food groups, which are a part of a model daily food intake. At least one of each product from every food group should be a part of a daily food ration (57). At the bottom of the food pyramid there are cereal products which include: rye, barley, wheat, oats, millet, rice, corn and buckwheat (56).It is recommended to consume them five or six times a day (in every meal) (9). They are one of the main energy source because complex carbohydrates are their basic components among other nutrition. In the proper nutrition carbohydrates should supply 40 – 50% of energy (56-57). Due to the high content of fibre, B vitamins and minerals (such as calcium, magnesium, iron, zinc, phosphorus and sulphur) it is recommended to consume whole grains, thick groats and dark bread (9,16,56, 57).

METHODOLOGY

The aim of this thesis was to evaluate if the students of universities of Bydgoszcz know the principles of proper nutrition and whether or not they follow them.

Methods, techniques and research tools

The study was conducted on a group of 100 students of the universities of Bydgoszcz, 77 women and 23 men between the ages of 19 and 25. The study was carried out in the first half of 2014 using a survey method. Author's questionnaire of 31 questions, was posted on the Internet. Access was anonymous and did not require identity verification of the participant. (A model questionnaire is included in Appendix I at the end of this thesis). BMI of the participants was calculated (Body Mass Index) – an index calculated by dividing the body mass in kilograms by the square of height in meters. The Bioethics Committee of the Collegium Medicum in Bydgoszcz gave the consent for conducting the study. Data analysis was supported by the use of Microsoft Excel 2007.

RESULTS

100 participants took the survey, aged between 19 and 25, from different regions: village, cities with population up to 50 thousand, cities with population from 50 to 100 thousand, cities with population from 100 to 500 thousand and cities with population over 500 thousand.

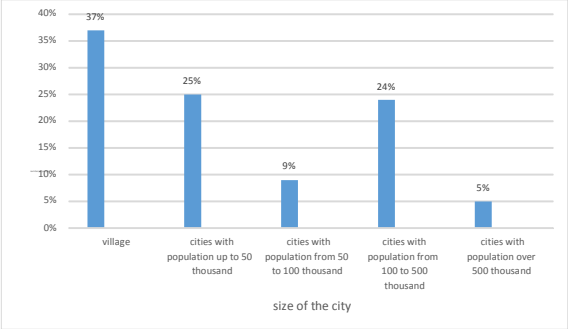

Fig. 1. *Determining the size of the place of residence*

The majority of the participants, 37%, came from the village, 25% came from the cities with population up to 50 thousand, 9% from cities with population from 50 to 100 thousand, 24%from cities with population from 100 to 500 thousand and 5% from cities with population over 500 thousand.

The respondents are students of universities in Bydgoszcz: University of Science and Technology, Kazimierz Wielki University, Academy of Music, BSW University of Bydgoszcz and WSB University.

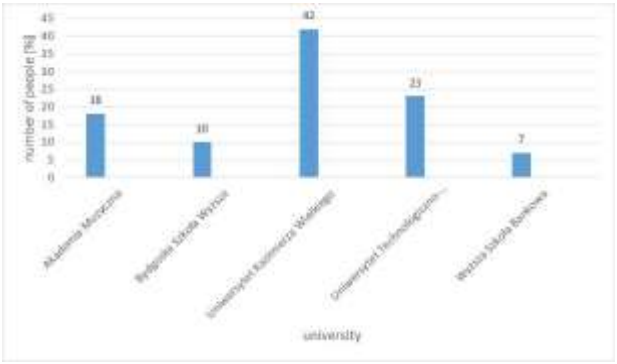

Fig. 2. *Determining the university*

The majority of the participants – 42% studied at Kazimierz Wielki University, 23% at University of Science and Technology, 18% at Academy of Music, 10% at BSW, 7% at WSB.

Respondents were divided due to the field of study: students of technical faculties(Civil Engineering, Mechanics and mechanical engineering, IT, Food technology and human nutrition), students of medical faculties and health studies (Cosmetology, Physiotherapy, Physical Education), students of humanities (Linguistics, English Philology), students of social sciences (Pedagogy, Administration,

Management, Logistics) and students of art (Instrumentation).

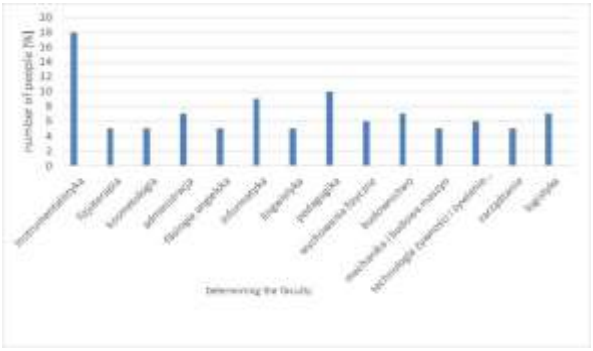

Fig. 3. *Determining the faculty*

Analysing the specific faculties demonstrated that 18% of the respondents studied Instrumentation, 10% Pedagogy, 9% IT, 7% Administration, 7% Logistics, 7% Civil Engineering, 6%Physical Education, 6% Food technology and human nutrition, 5% Cosmetology, 5% Physiotherapy, 5% Linguistics, 5% English Philology, 5% Administration and 5% Mechanics and mechanical engineering. Data is presented in Fig. 3.

Women prevailed in the surveyed group of students – 77%, men accounted for only 23% of the respondents.

Majority of the respondents (26%) were 21 years old, 20% – 23 years of age, the smallest group was represented by the 19-year-olds (4%).

77% of the respondents had the correct body mass. Overweight was observed in 9%, first degree obesity was found in 6% and underweight in 8% of the respondents.

The knowledge of rational nutrition or the knowledge of the principles of rational nutrition is defined as good by the group of students of technical faculties, medical faculties and health studies, social sciences and art. Students of humanities declared very good knowledge of rational nutrition and its principles. Survey asked about "the healthy food pyramid". Majority of the respondents replied in the affirmative.

Regularity of meals – students of technical faculties, medical faculties and health studies declared regular frequency of their meals in contrast to the students of humanities and social sciences.

Frequency of meals was determined in this thesis. Figures from 4 to 8 present the amount of meals according to the field of study.

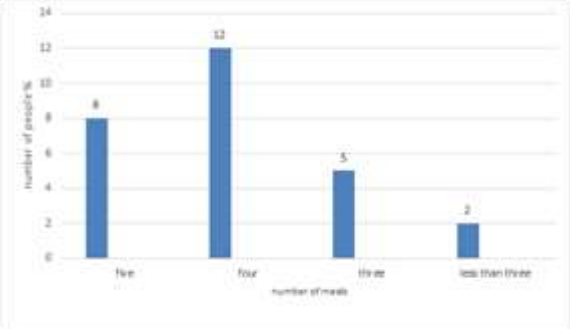

Fig. 4. *Answer to the question: "How many meals a day do you have?" for students of technical faculties*

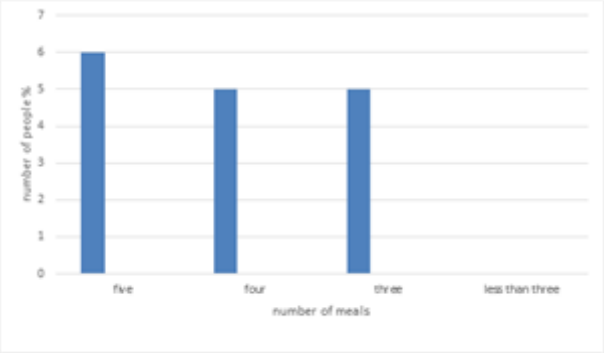

Fig. 5. *Answer to the question: "How many meals a day do you have?" for students of medical faculties and health studies*

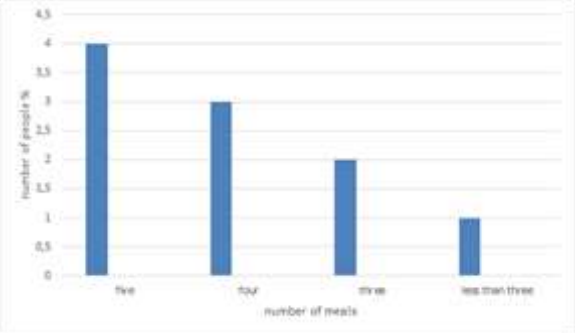

Fig. 6. *Answer to the question: "How many meals a day do you have?" for students of humanities*

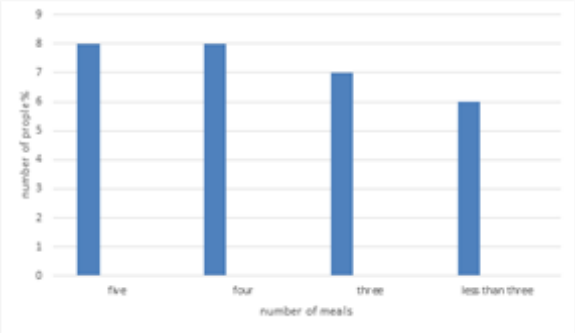

Fig. 7. *Answer to the question: "How many meals a day do you have?" for students of social sciences*

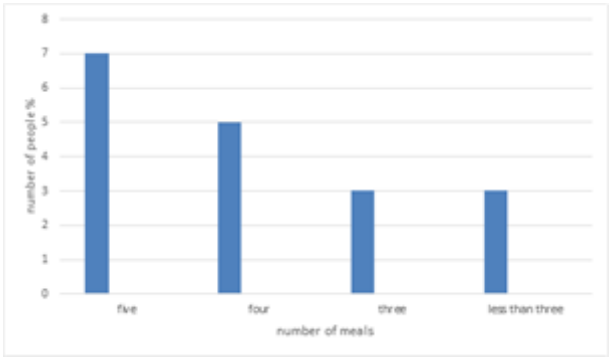

Fig. 8. *Answer to the question: "How many meals a day do you have?" for students of art.*

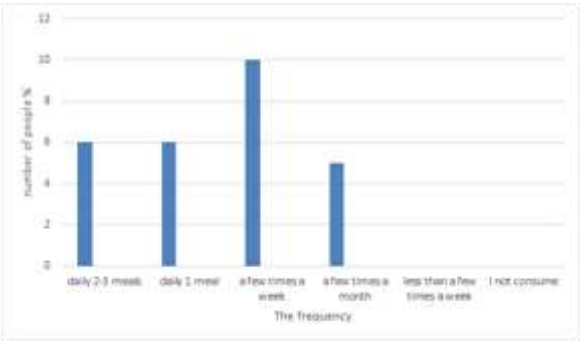

Fig. 9. *Wholegrain bread consumption by all of the students*

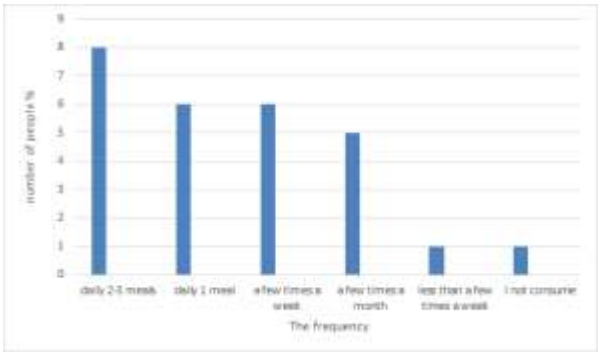

Fig. 10. *The frequency of fruit consumption – technical faculties*

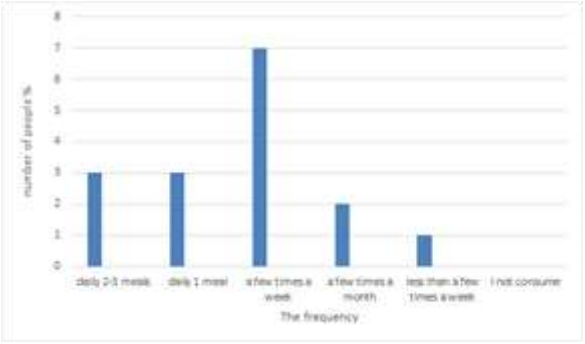

Fig. 11. *The frequency of vegetables consumption – technical faculties*

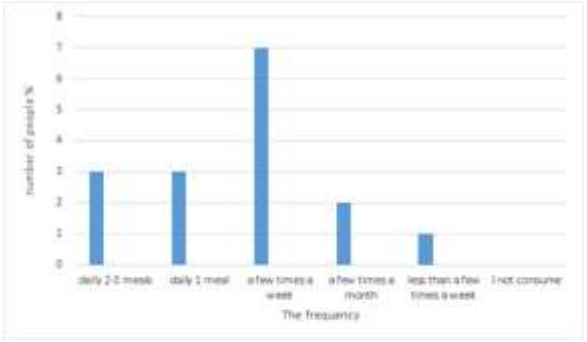

Fig. 12. *The frequency of fruit consumption – medical faculties and health sciences*

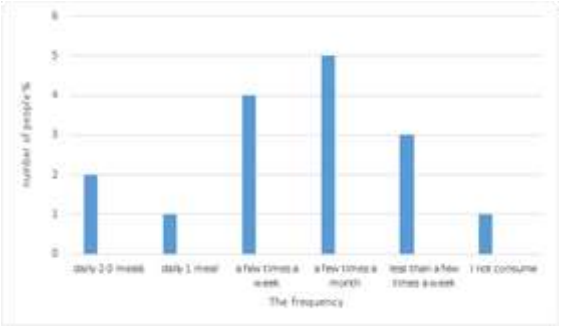

Fig. 13. *The frequency of vegetables consumption – medical faculties and health sciences*

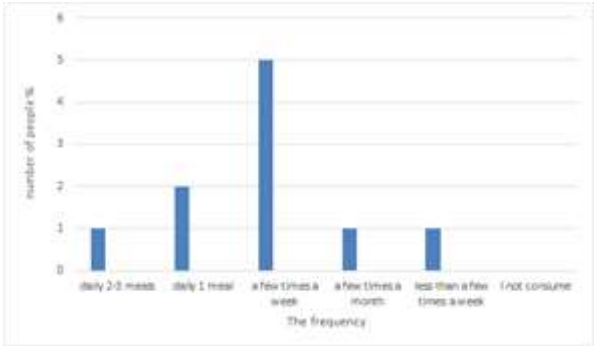

Fig. 14. *The frequency of fruit consumption – humanities*

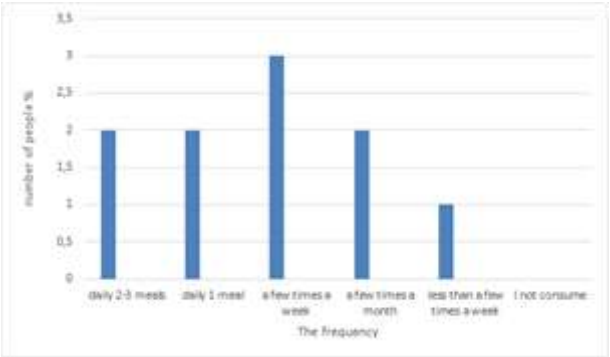

Fig. 15. *The frequency of vegetables consumption – humanities*

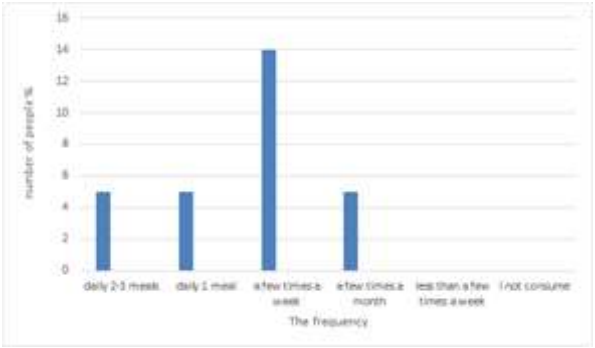

Fig. 16. *The frequency of fruit consumption – social sciences*

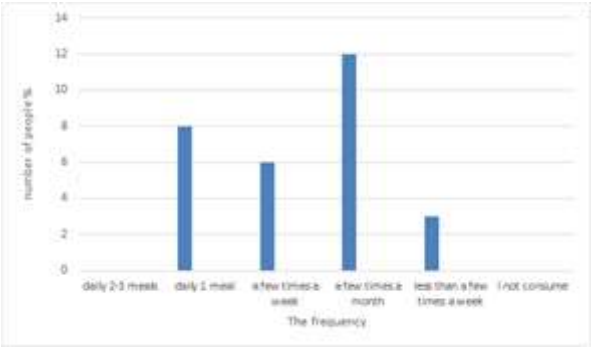

Fig. 17. *The frequency of vegetables consumption – social sciences*

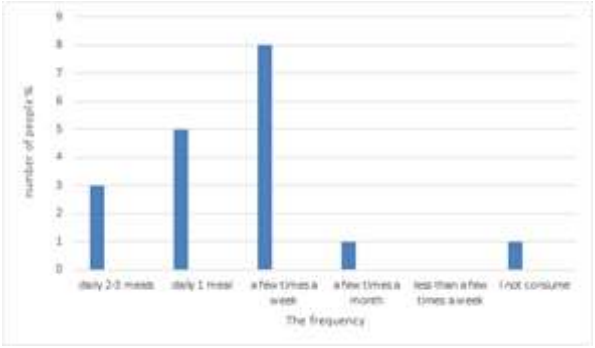

Fig. 18. *The frequency of fruit consumption – art faculties*

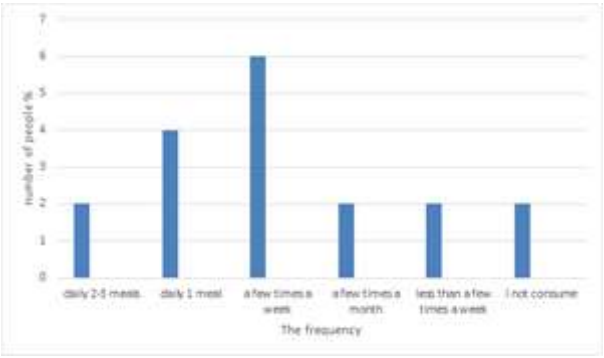

Fig. 19. *The frequency of vegetables consumption – art faculties*

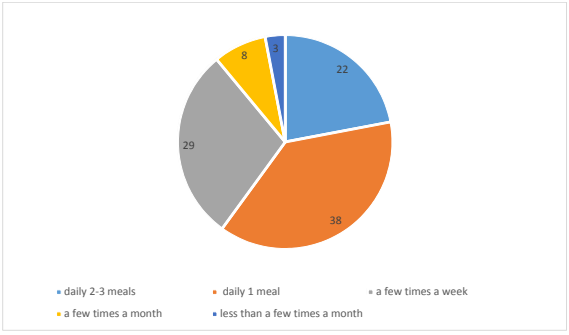

Fig. 20. *The frequency of dairy products consumption by all of the respondents*

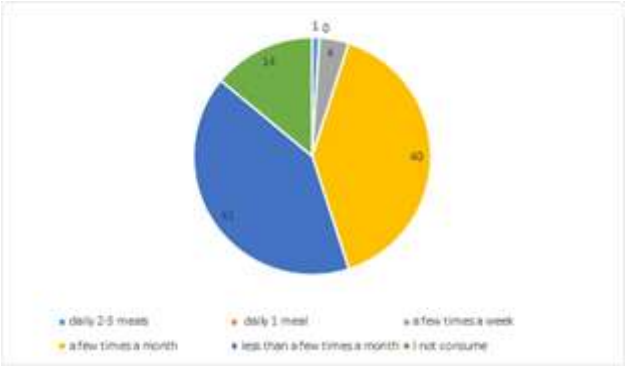

Fig. 21. *The frequency of fast food consumption among all of the students*

The survey included a detailed question on individual nutrients.

The survey asked about the frequency of meat consumption. The students of technical faculties declared daily meat consumption, the students of medical faculties and health sciences, social sciences and art declared that they most frequently consumed meat 3 or 4 times a week, only the students of humanities consumed meat 1 or 2 times a week.

The respondents were asked about the frequency of the wholegrain bread consumption. Majority of the respondents (22%) consumed wholegrain bread 3-4 times a week, daily consumption was declared only by 16% of the respondents and 8% do not eat wholegrain bread at all [Fig. 9].

Wholegrain bread consumption was declared more frequently by the students of humanities, 5-6 times a week by the students of art, medical faculties and health sciences. 3-4 times a week by the students of social sciences and 1-2 times a week –the students of technical faculties.

Fruit and vegetables consumption by the students of individual faculties is presented in: Fig. 10, 11 technical faculties, Fig. 12,13 medical faculties and health sciences, Fig. 14,15 humanities, Fig. 16,17 social sciences and Fig. 18, 19 art faculties

The frequency of dairy products consumption by all of the respondents is presented in Fig. 20. Daily intake in one meal is declared by 38% of the respondents.

Students were asked whether they consume fish and if so how often. Fish intake was low and the most frequent answer was “several times a month”.

Data concerning frequency of sweets consumption was also analysed. Daily intake of sweets was declared by the students of humanities, medical faculties and health sciences, and art faculties. Whereas fast food consumption is presented in Fig. 21. Majority of the students eat fast food more than several times a month. Additionally, the frequency and types of snacks were analysed. In every group of students sweets and fruit were used as snacks.

DISCOURSE

The basis for proper nutrition are appropriate customs and habits and the appropriate composition of meals which ensures covering a total daily intake of nutrients and energy, important for proper physical and mental development, and the proper functioning of the body (7, 43). Age, gender, physical activity, physiological condition and appropriate weight should be considered to ensure the coverage of the requirements for all essential nutrients.

Rational nutrition should be understood as regular supply of the essential nutrients for the body within proportions and amounts that correspond to the needs which ensure proper growth, development and health condition (36).Results acquired in the study were compared with the studies of other authors with similar subjects also carried out on a group of students. Overweight and obesity are more common phenomenon in the population. BMI was calculated based on the weight and height of the respondents. Majority of them (77%) had a normal body weight. Overweight was observed in 9% of the respondents, 6% of the respondents suffer from obesity. 8% were diagnosed with underweight. In the study by Zarzeczna and et al. indicated that 92% of women and 85% of men had the correct BMI and 3.5% of women and 11.5% of men were overweight (56). To the question "How do you specify your knowledge of the principles of rational nutrition" students most frequently declared positive assessment. 54% of students declared their knowledge as good, 14% as very good – majority of them were students of technical faculties including Food technology and human nutrition faculty. 29% of the respondents assessed their knowledge as average. Proper energy value and the amount of meals is essential in proper nutrition. The main principle of rational nutrition is regularity and appropriate frequency of the consumption. Each person should consume four to five meals a day with equal intervals (44, 50). Study results indicate that too few meals a day may have an effect on increasing the risk of developing cardiovascular diseases and obesity. Ma Y, Bertone ER, Stanek III have shown that people who consumed 3 or less meals a day had much greater risk of obesity than those who consumed 4 or more meals (35). Students of the universities of Bydgoszcz were asked about the regularity of their meals. Students of humanities, social sciences and art faculties declared that they do not nourish themselves regularly. Students of technical and medical faculties describe their diet as regular. Studying youngsters is not always able to eat at convenient times. Classes schedule and the lack of parents control influences it. Ilow indicated in his studies that in the group of students of Wroclaw Medical University, 14.4% of women and 13.1% of men consumed less than 3 meals a day. 3 meals a day were consumed by 59.7% of women and 62.9% of men (22). In the own studies, students of the majority of universities in Bydgoszcz, when asked about the number of meals a day, declared consuming 4-5 meals a day. Only the students of social sciences have 3 or less meals a day. Meat and eggs are the source of wholesome protein, iron, zinc and B vitamins. Pulses are also a source of wholesome protein, valuable minerals and vitamins. Own study have shown that daily meat intake is declared by 20% of the students, most of which are the students of technical faculties. According to the recommendations of the Institute of Food and Nutrition meat should be consumed 2-3 times a week. 34% of the respondents consume meat 3-4 times a week, whereas 1-2 portions is declared by 22% of the students. In the proper human diet the primary source of energy should be cereal products. They are the source of fibre, vegetable protein and complex carbohydrates. They contain B vitamins and minerals such as: magnesium, iron, copper, potassium, zinc and phosphorus. The nutritional value of products depends on the degree of milling of grain. Products that have a higher degree of milling, i.e. white bread and fine groats, are characterized by the lower content of vitamins. Wholegrain bread and thick groats contain more fibre, vitamins and minerals, therefore, it is recommended to consume 5-6 portions of them a day (57). Proper eating habit, such as the daily

consumption of wholemeal bread is declared only by 16% of the respondents, mostly students of social sciences. 5-6 portions a week is consumed by 20% of respondents, 22% of the students chose these products 3-4 times a week. 8% of the respondents does not consume wholemeal bread at all. The studies carried out by Seń and et al. have shown that wholemeal products are consumed too seldom with respect to the WHO recommendations. Only every forth student at the Technical University and every third student at the University of Life Sciences consumes wholemeal products every day, whereas at Medical Academy it is 40% (43). According to the principles of healthy nutrition and the Healthy Food Pyramid it must be remembered that fruit and vegetables should be a part of a daily diet. They should be an addition to every meal. They provide fibre, vitamin C,E, beta carotene, folic acid and minerals (57). In the studies of Szponar and Krzyszycha diet of the students at Medical University of Lublin was assessed (48). It was shown that 28.4% of women and 16.4% of men consumes fruit daily, whereas only 39.8% of women and 41.5% of men declared consuming vegetables every day. Another studies were conducted among the students in three-city by Czaja et al. (10). They show that 50% of the female students and 20% of the male students of the Gdansk University of Technology consumed only one portion of vegetables a day. About 30% of the female students and 15% of the male students of the Medical University of Gdansk consumed fruit once a day, whereas about 30% of female and male students at European School of Hotel Management Tourism and Entrepreneurship consumed vegetables once a day. In the WOBASZ study concerning dieting of young adult Poles only 29% on women and 21% of men declared regular consumption of fruit and vegetables (52). Own studies have shown that 99% of the students consume fruit with different frequency. Daily consumption is declared by 25% of the respondents. Most of the students (37%) select these products several times a week. Regardless of the faculty, when it comes to vegetables, 96% of respondents consume them with different frequency. Most of them several times a week (25%) and several times a month (24%). Only 14% of the respondents consume them daily and these are the students of technical faculties. The students of art faculties, humanities, medical faculties and health studies consume vegetables several times a week, whereas the students of social sciences mostly several times a month. According to the recommendations of the Institute of Food and Nutrition, milk and dairy products should be consumed every day. They are the best source of calcium, protein of high biological value and B, A and D vitamins. They also provide minerals such as potassium, zinc and magnesium. Kolarczyk et al. have shown that female students from Krakow and Grodno consume sufficient quantities of milk and curd cheese (29). In the studies conducted by Seń et al. it has been shown that daily consumption of dairy products is declared by 70% of students at Medical Academy and 63% of students at University of Life Sciences (43). Own studies show that the majority of students surveyed in Bydgoszcz consume those type of products every day in one meal (38%). 29% select them several times a week. 22% of the respondents consume them every day, mostly students of technical and art faculties. Similar observations were made by Szczerbiński (46). Fish are the irreplaceable component of a proper human diet. They are easily digestible and low in calories, rich in protein, unsaturated fatty acids, vitamins and mineral salts. According to recommendation, fish should be consumed three times a week (49). Among the students of the Medical University of Warsaw too low consumption of fish was observed: 19.6% of the respondents consumed them 2 times a week, whereas 48% of female students of Warsaw University of Life Sciences (SGGW) and 57% of female students of the Academy of Physical Education consumed fish once a week (39, 43).Studies conducted by K. Szymandera-Buszka et al. indicate that the average monthly consumption of fish and fish products is low (49). Similar results were obtained in studies conducted by the Czech et al. (11). Own studies also show a small amount of fish consumption among the students in Bydgoszcz. 90% of the respondents use these products. Only 12% of the respondents, mainly the students of technical faculties, consume fish once a week, 52% of the students consume them once a month. Avoiding fast food products is one of the main recommendations of healthy nutrition. Studies conducted by Kardjalik et al. have shown that in the group of surveyed students no one consumed fast food products every day or almost every day. About 45% of the respondents ate them quite often for as much as several times a month. Almost 43% of them consumed less than a few times a month. Every tenth respondent declared that they never ate them (26). Studies conducted by Seń et al. indicate that 21% of the students of the Technical University of Wrocław consume fast food products once a day or

several times a week, whereas the rest of the students consume them several times a month or less (43). Own studies show that this type of meal is consumed by 86% of students. Majority of them consumed fast food several times a month (40%) or less. Among the respondents, students of art faculties consumed them the least frequently. Nibbling snacks between meals is a bad habit. 85% of the surveyed students admit to it. These results are similar to the results obtained by Seń et al. (43). In own studies, as in the studies conducted by Szczerbiński and Seń et al. it was demonstrated that the respondents mainly nibble sweets and fruit between meals (43, 46).

CONCLUSIONS

1. Knowledge of rational nutrition and the principles of healthy eating among students of Bydgoszcz universities is quite varied and depends on the field of study.
2. The best eating habits are characterized by technical and art faculties. Students of medical faculties and health sciences are not leaders in this field.
3. More irregularities relating to the quality of diet is observed among students of humanities and social sciences.

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