

## NUTRITION OF STUDENTS FROM DIETETICS PROFILE EDUCATION IN THE SIEDLCE UNIVERSITY OF NATURAL SCIENCES AND HUMANITIES COMPARED WITH STUDENTS FROM OTHER ACADEMIC CENTRES

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### ABSTRACT

**Background.** Appropriate nutrition in humans is one of the most important factors affecting normal development, nutritional status and keeping healthy. University students can be overburdened with responsibilities arising from their studies which may result in abnormal diet/nutrition and decrease their levels of physical activity.

**Objective.** To determine and assess nutrition and eating habits for selected female students studying nutrition at the Siedlce University of Natural Sciences & Humanities (UPH), compared with young people from other academic centres also studying nutrition and having a similar education profile.

**Material and methods.** A diagnostic survey was undertaken anonymously on 100 female student subjects using a proprietary questionnaire. Students were undergraduates at the UPH during their 2nd and 3rd year.

**Results.** Dietetics students considered that the practical application of proper nutrition principles is very important. Nevertheless, 44% assessed themselves to follow abnormal diets; 58% declared they ate whole grains frequently whereas 58% and 65% respectively consumed fruit and vegetables daily. Dietary irregularities were identified, particularly in how often fish was eaten, where 46% either never ate fish or did so only occasionally. Subjects preferred lean cuts of poultry meat (65%), and the most common cooking practice was frying (52%).

**Conclusions.** Subjects did not follow dietary recommendations, although responses varied in the different academic centres. Despite learning from their studies about normal nutritional requirements it seems that, to large degree, students follow eating habits acquired during their childhoods in the home.

**Key words:** diet, eating habits, students, nutrition

### STRESZCZENIE

**Wprowadzenie.** Prawidłowe żywienie jest jednym z najważniejszych czynników wpływających na właściwy rozwój człowieka, stan odżywienia i utrzymanie dobrego stanu zdrowia. Młodzież akademicka, jest nadmiernie obciążona obowiązkami wynikającymi z nauki, co może skutkować zmniejszoną aktywnością fizyczną oraz nieprawidłowym żywieniem.

**Cel.** Poznanie i ocena sposobu żywienia oraz wybranych zachowań żywieniowych studentek kierunku dietetyka Uniwersytetu Przyrodniczo - Humanistycznego (UPH) w Siedlcach na tle młodzieży z innych ośrodków akademickich kierunków związanych z dietetyką lub o zbliżonym profilu nauczania.

**Material i metody.** Anonimowe badania, przeprowadzono metodą sondażu diagnostycznego, z wykorzystaniem autorskiego kwestionariusza ankiety. Badania objęły grupę 100 studentek drugiego i trzeciego roku studiów na kierunku dietetyka UPH w Siedlcach.

**Wyniki.** Studentki dietetyki dużą wagę przywiązywały do praktycznego stosowania zasad prawidłowego żywienia. Jednak 44% ankietowanych własny sposób żywienia oceniło jako nieprawidłowy. 56% badanych deklarowała częste spożywanie produktów pełnoziarnistych, 58% spożywanie owoców każdego dnia i 65% spożywanie warzyw każdego dnia. Stwierdzono nieprawidłowości w sposobie żywienia, zwłaszcza w odniesieniu do częstotliwości spożycia ryb; 46% badanych nie

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spożywała ryb lub spożywała je okazjonalnie. Studentki preferowały chude gatunki mięsa, w tym drób (65%), a najczęściej stosowaną obróbkę kulinarną było smażenie (52%).

**Wnioski.** Przeprowadzane badania, dowodzą, że sposób żywienia odbiega od rekomendacji dla badanej grupy wiekowej, choć w różnym zakresie w poszczególnych ośrodkach akademickich. Można przypuszczać, że niezależnie od zdobywanej podczas studiów wiedzy na temat prawidłowego żywienia, wpływ na nie w znaczącym stopniu mogą mieć nawyki i zwyczaje żywieniowe nabyte w domu rodzinnym.

**Słowa kluczowe:** *sposób żywienia, zachowania żywieniowe, studentki dietetyki*

## INTRODUCTION

Appropriate nutrition is one of the most important factors affecting normal human development, nutritional status and keeping healthy [7]. By appropriate/normal nutrition, it is primarily meant that this consists of having correct eating habits, number of daily meals and menu, thus delivering the required energy needs and nutrients for healthy development [9]. Many factors, including gender, affects normal eating habits [20].

University students tend to be over-burdened during their course studies which can result in decreased physical activity and inappropriate nutrition. Because of the irregular nature of their course work, preparing regular meals can also be problematical. Numerous studies have demonstrated the close relationship between nutrition, including eating habits, and the development of diet-related disease [6, 15, 26]. When starting out, students very often, change residence and either need to prepare their own meals by usually adopting eating habits learned from the family home [19] or by using college catering facilities.

The study aim was to determine and assess diets and eating habits of dietetic female students attending the UPH in Siedlce compared with young people from other academic centres studying similar subjects.

## MATERIAL AND METHODS

An anonymous survey was undertaken in November 2013 on 100 undergraduate female subjects in their second and third years studying dietetics at the Siedlce University of Natural Sciences & Humanities (UPH). The study diagnostic tool was an in-house prepared questionnaire that had been verified by a previous study trial, including standard question and answer choices. Questions were on the number and regularity of meals consumed daily as well as rates of eating selected products and dishes; snacking between meals was also covered. The results were statistically analysed using an Excel 2003 spreadsheet.

## RESULTS

A significant proportion of subjects ate 3 - 4 meals daily, that always included breakfast and every third person ate 5 meals daily (Table 1). The most common place for eating meals was the family home. The time spent for preparing meals in nearly half the study subjects was 15 minutes. It should however be noted that 38% subjects did not have sufficient time to properly prepare meals.

Students attempted to apply the principles of appropriate nutrition into practice, which was confirmed by consumption rates of foodstuffs that provide dietary fibre, including whole-grain products (over 50%), raw vegetables (65%) and fruit (58%); Table 2. It is of concern however, that only 60% declared eating groats occasionally or several times a week, whilst 1:10 never did so at all.

A dietary source of complete protein was cottage cheese and rennet cheese (Table 2). However, con-

Table 1. Mealtime rates and places of eating for Dietetics Students

Analysed variable	Percentage surveyed (%)
<i>Number of daily meals</i>	
1-2	3
3-4	67
≥ 5	30
<i>Breakfast eating rates</i>	
Daily	67
Irregularly	33
<i>Last daily mealtime</i>	
2-3 hours before sleep	69
Just before sleep	31
<i>When eating meals</i>	
Because hungry	50
When remembered	17
Regularly	33
<i>The most common place of meals</i>	
Bar restaurant	0
Fast food outlet	0
Student canteen	6
Home	94
<i>Preparation meal time</i>	
Insufficient time	38
Up to 15 minutes	46
Longer	16
	0

Table 2. Chosen dietary lifestyle behaviour of Dietetics Students

Analysed variable	Percentage surveyed (%)
<i>Rates of eating wholemeal bread</i>	
Daily	17
Several times weekly	39
Occasionally	25
Never	19
<i>Rates of eating groats</i>	
Daily	4
Several times weekly	22
Once weekly	26
Occasionally	38
Never	10
<i>Rates of eating cream cheeses</i>	
Daily	8
Several times weekly	34
Occasionally	48
Never	10
<i>Rates of eating rennet cheese</i>	
Daily	10
Several times weekly	40
Occasionally	39
Never	11
<i>Rates of eating eggs (weekly)</i>	
4 or more	24
2-3 weekly	54
Below 2	15
Never	7
<i>Rates of eating fresh fruit</i>	
Daily	58
Several times weekly	29
Never	13
<i>Rates of eating fresh vegetables</i>	
Daily	65
Several times weekly	22
Never	13

<i>Rates of eating pulses</i>	
Daily	3
Several times weekly	19
Occasionally	56
Never	22
<i>Rates of eating potatoes</i>	
Daily	70
2-3 times weekly	13
Occasionally	3
Never	14
<i>Rates of eating fish</i>	
Several times weekly	11
Once weekly	43
Occasionally	41
Never	5
<i>Rates of eating meat</i>	
Daily	10
5-6 weekly	20
2-3 weekly	38
Occasionally	24
Never	8
<i>Preferred meat types</i>	
Poultry	65
Veal/beef/pork	35
<i>Rates of eating cold meats</i>	
Daily	66
Once weekly	13
Occasionally	11
Never	9
<i>Preferred cooking methods</i>	
Frying	52
Boiling	23
Roasting	25
<i>Preferred seasonings</i>	
Salt	45
Pepper	43
Herbs	51
Maggi/vegeta	24

sumption rates of these products was low, as more than 70% subjects only ate them several times weekly or just occasionally. Over 80% subjects did not eat fish as recommended, with over 40% eating fish once weekly and 11% more than once weekly. Another source of complete protein was meat and dairy products. Subjects mostly chose poultry (over 60%) as their lean meat, but it is worth noting that only one in ten ate meat daily and every fourth student consumed them occasionally, whilst 8% did not eat meat or dairy products. However, cold meats featured in the daily diet of 70% of these subjects.

One of the most common nutritional/dietary errors was found to be snacking between meals as well as at night, which occurred at differing rates but applied to half the subjects. The most frequent snacks being; sweets, fruit and nuts. Some however, never snacked between meals (Figure 1). Sweets in fact were found to be the most commonly consumed snack, which were chosen daily by 6% subjects, several times weekly by 18% and a few times monthly by 22% (Figure 2).

Table 3 shows the students' self-esteem. A positive assessment was observed in nearly 40% whilst every fourth subject considered their eating habits as inappropriate. Nearly one in five subjects had a problem with this assessment (17%).

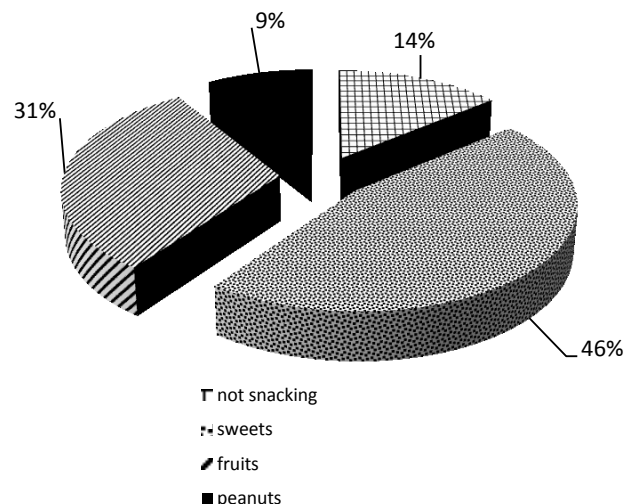


Figure 1. Snacking in-between meals by Dietetics Students

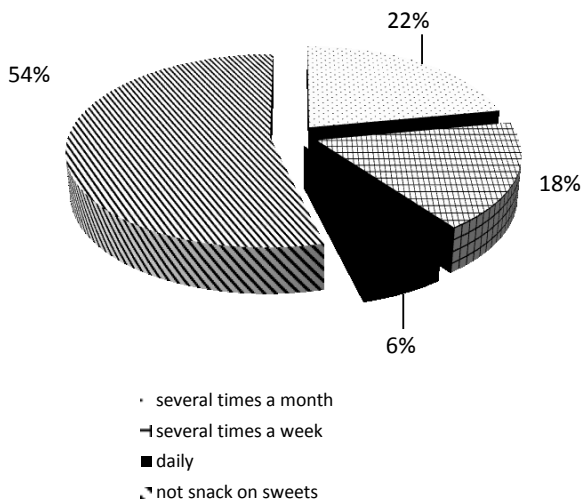


Figure 2. Frequency of snacking by Dietetics Students

Table 3. Dietary and lifestyle self-assessment

Analysed variable	Percentage surveyed (%)
<i>Dietary assessment</i>	
Normal	39
Abnormal	44
Unable to define	17
<i>Health assessment</i>	
Very good	25
Good	73
Bad	2
<i>Declared physical activity</i>	
Very high	4
High	25
Moderate	44
Low	20
Very low	7
<i>Nighttime snacking</i>	
Never	50
Occasionally	20
Sometimes	24
Often	6
<i>Eating instant foods</i>	
Yes	23
No	77
<i>Eating fast foods</i>	
Daily	0
Several times weekly	7
Once weekly	12
Occasionally	74
Never	7
<i>Smoking tobacco</i>	
Smoker	16
Non-smoker	84
<i>Alcohol consumption</i>	
Abstinent	9
Several times weekly	5
Once weekly	24
Occasionally	62
<i>Drinking coffee (cups per day)</i>	
≥ 5	5
2 - 4	19
1	33
0	43

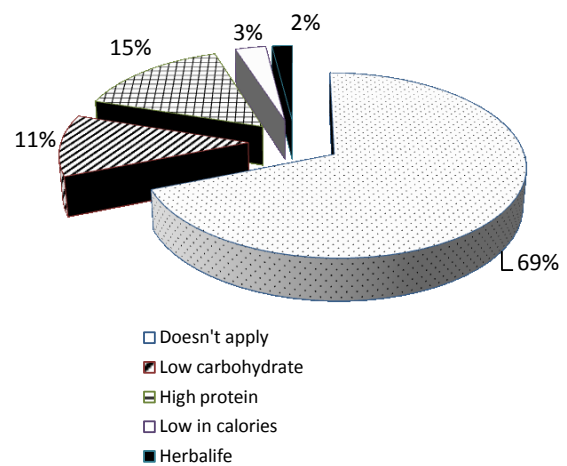


Figure 3. Dietary profiles of Dietetics Students

Over 70% of students occasionally ate fast-food with more than 10% once weekly and only 7% admitting to more. The vast majority (nearly 80%) also had not eaten any instant foodstuffs. Our study showed that 70% of students rated their physical activity as high and moderate, and almost 30% as being poor or very low. Almost 60% of students stated that they never drink sodas (fizzy drinks) and only 6% did so daily (Tab. 4). Five glasses of mineral water was drunk by every fifth subject and more than half drank 4-5 glasses daily whilst every fourth consumed 2-3 glasses per day. Mineral water was in fact drunk by all subjects. Every 1:5 subject drank over 5 glasses of mineral water daily, over half drank 4-5 daily whilst a quarter drank 2-3. Nobody was ever found not to drink mineral water daily. Few subjects ate soup, with only 1:5 doing so daily whilst 1:3 never ate soup.

Table 4. Selected eating habits of Dietetics Students

Amounts of liquids consumed		Percentage surveyed (%)
Water (daily)	More than 5 glasses	22
	4-5 glasses	53
	2-3 glasses	25
Fizzy drinks	Daily	6
	Several times weekly	13
	Several times monthly	24
	Never	57
Milk (daily)	2 glasses	8
	1 glass	26
	Never	66
Fermented dairy drinks	Daily	47
	Several times monthly	25
	Never	28
Soups	Daily	20
	2-3 times weekly	36
	Occasionally	13
	Never	30

A large majority of dietetic students did not smoke cigarettes (over 80%), but occasionally drank alcohol (approximately 60%), with only a small proportion



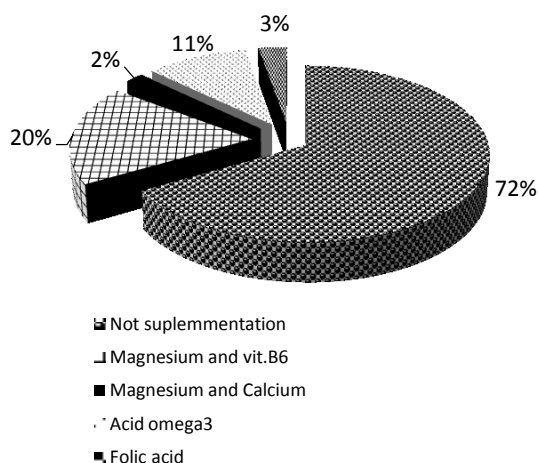


Figure 4. Dietary supplement intake profiles of Dietetics Students

being abstinent (9%). Our findings showed that over 40% of students did not drink coffee, but every third drank one cup daily. Regarding dieting, almost 70% of the dietetic students from UPH did not follow any diets, whilst the remainder said they preferred high-protein or low carbohydrate diets. Over 70% declared that they never use any form of dietary supplements. Those taking supplements, had minerals coming mainly from vitamin and mineral preparations (22%) and slightly more than 10% were using formulations containing omega 3 (Figure 4). We found that every third student studying dietetics always paid attention to the food-stuff's composition (Figure 5) that they wished to buy, having read the label first; only slightly more than half

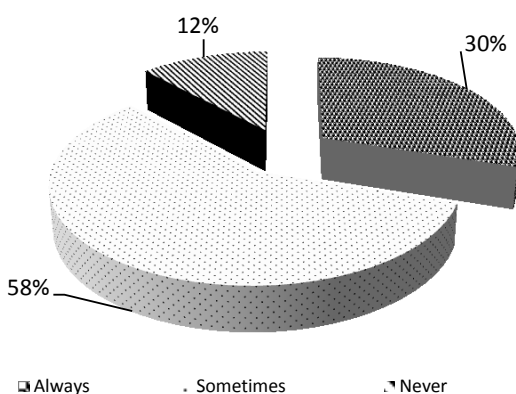


Figure 5. Frequency of reading foodstuff labels by Dietetics Students.

did so occasionally.

## DISCUSSION

One of the basic principles of appropriate nutrition is having regular and sufficient meals for delivering

energy and essential nutrients to the body in a systematic way, thus facilitating good health [26]. Recommendations published in Poland on the principles of healthy eating specify eating at least three meals daily and eating fruit between meals [6, 27]. Similar recommendations have been published by the Institute of Food and Nutrition recommending eating five daily meals. Studies however show that only 1:5 adult Poles adopt this [6, 28], whilst at least three daily meals are eaten by 82% adults, and 12% do so several times weekly [28].

Our study showed that the vast majority of UPH students eat an adequate number of meals throughout the day, consistent with the *Charkiewicz et al.* study [5] which had demonstrated 63% of dietetic students from Bialystok doing so. However, a study by *Sen et al.* [22] on dietary behaviour of students at the University of Wroclaw Faculty of Nutrition Sciences showed higher rates of students consuming the recommended number (3 to 5) meals of above 85%.

Dietetics subjects declared high intake rates of dietary fibre rich foodstuffs; whole wheat bread, fresh fruits and vegetables. These food groups are extremely valuable from a nutritional point of view, but other studies have showed smaller consumption rates. In the aforementioned *Sen et al.* [22] study, only 1:3 students at the University of Life Sciences ate whole grains and, unlike our study, they observed vegetables consumption rates of (55%). There was, however a similar consumption of fruit (54%). The Siedlce students were also reluctant to eat groats. This was also observed in a study by *Szczodrowska and Krysiak* [24], where groats were consumed by only 3% of college students surveyed in Lodz, whilst the study by *Biezanowska-Kopeć et al.* [3] demonstrated that 90% of their subjects did not eat groats. In studies by *Szczuko and Seidler* [25], on a group University of Technology students in Szczecin, abnormal eating habits were also observed, amongst which were the insufficient intakes of milk and dairy products, fruit, vegetables and grain products. In addition, female subjects consumed excess sugar and sweets.

When considering the dietary source of animal protein, then low intake rates of cottage cheese, rennet cheese and fish appeared were observed in our subjects. This was confirmed by a survey of Warsaw University of Agriculture [18] students, which found that fish was only eaten twice weekly by 19.6% students in accordance with recommendations. The *Sen et al.* study found that only one in ten subjects surveyed from the Wroclaw UP Faculty of Nutrition ate fish several times a week [22]. Our study demonstrated similar once weekly fish consumption rates to a study by *Myszkowska-Ryciak et al.* [18] which focused on second year students from the Faculty of Human Nutrition and Consumption at the Warsaw University of Life Sciences (SGGW).

Poultry was seen to be the most frequently eaten meat by the UPH subjects which was likewise an observed feature for other university students. Indeed the Wrocław UP study showed that 82% subjects chose poultry in their diets [22]. Despite the fact that lean meat cuts were most frequently chosen in other studies [13, 22], as in ours, it should be noted that adverse ways cooking tended to be preferred; often university students chose frying with added cooking salt and herbs.

Another detrimental and frequently observed eating habit was snacking between meals i.e. eating food for reasons other than just feeling hungry. Almost half of our study subjects snacked on sweets and third on fruit. This has been often remarked upon in other studies. A study by *Misiarz et al.* [17] found that only 35% of students did not declare snacking between meals, and likewise did every tenth UP Wrocław student [22]. In the latter study, of those that snacked, the most frequently mentioned foodstuffs were fruits (40%) and sweets (41%). A study on Lodz University of Technology students from the Faculty of Food Sciences by *Szczodrowska and Krysiak* [24] found that 'healthy snacks' (i.e. fruit and yogurt) were eaten by respectively 60% and 48% respondents. In a study by *Szponar and Krzyszycha* [26] on Medical University of Lublin students, sweets were snacked on a few times a day by every fifth student, whilst more than half snacked on sweets a few times weekly and 17% did so once a daily. It appears that snacking is still a common problem, even among students with a seemingly adequate knowledge of nutrition.

By self-evaluating their diet and nutrition, the dietetic students have enabled to establish that only just over a third consider their nutrition to be normal, whilst a large proportion view their nutrition very critically. A study on Poznan students showed that 53.4% considered their nutrition to be abnormal, whilst 46.6% regarded theirs as being appropriate [20]. For surveyed students from the Lodz Faculty of Health Sciences, almost 24% declared their diet as being inappropriate, whilst 26% were unable to make any assessment [24]. Almost all students considered their health to be good or very good in research by *Górska-Klęk et al.* [8].

Eating fast/junk food rarely can be regarded as a favourable trend in most of our student subjects. Similarly, for students of the Medical University of Lublin, more than 80% declared eating junk food only few times a month and less frequently instant foodstuffs [26]. Wrocław Medical Academy students also did not prefer fast-foods and only ate them occasionally (41%) or not at all (33%), whilst 41% of University of Life Sciences students ate them less often than a few times monthly [22].

In updating the 2012 Nutrition Pyramid, experts from the Warsaw Food and Nutrition Institute recommend regular daily physical activity of at least 30

minutes, or preferably 60 minutes. In the present study we demonstrated that a significant group of students do physical activity. A similar finding was observed by *Szczodrowska et al.* [24], who investigated young people studying food and human nutrition trends in Lodz, where moderate and high physical activity levels was declared by more than 50% subjects.

Given the amounts and variety of beverages drunk in our study, intakes of carbonated/fizzy drinks were at healthy low levels, where 80% subjects drank them only a few times a month or not at all. In studies by *Myszkowska-Ryciak et al.* [18] however, 65% subjects declared avoiding carbonated beverages in their diets. In terms of milk consumption, our student subjects came out less favourably than those from other universities; 1/3 of the former drinking milk every day whilst other studies [18, 22] demonstrated significantly higher rates for students at the University of Wrocław and Warsaw University of Life Sciences; respectively 70% and 54%.

An important part of a healthy lifestyle is to avoid drinking alcohol and smoking cigarettes. According to the World Health Organization, smoking is currently the most serious risk factor for health and is a major cause of premature mortality in developed countries. Bearing this in mind, the UPH students thus carry a low risk because most do not smoke and drink alcohol occasionally, with more than three-quarters not drinking or only occasionally drinking coffee. As a result, they compare favourably to other study subjects. *Górska-Klęk et al.* [8] assessed the lifestyles of students from Wrocław and showed that 40% were addicted to smoking cigarettes and nearly 50% drank alcohol several times a month, whilst more than 30% of students do not drink coffee but half did so at 1 cup daily. A significant majority of our UPH subjects did not use any alternative diets to adopting a normal diet. Also diets for improving body shape were not popular in students from the Poznan university, where only 1:4 students undertook such diets [20]. In contrast a study by *Semeniuk* [21], showed that alternative diets, mainly reduction ones, were adopted by more than half of Lublin college students.

It should be remembered that unjustified supplementation may interfere with the physiological balance in the body, causing even poisoning, but as shown by some studies, it is common in students in more than 38% students of the Warsaw University of Life Sciences [23]. These findings are similar to the CBOS report, which showed that such supplementation were undertaken by over a third of adult Poles (36%) [28]. A study on Warsaw University of Life Sciences students, showed that more than 30% use dietary supplements, and that most do so at least once daily. *Bujko et al.* [4] reported that as many as 60% of Warsaw University of Life Sciences students use dietary supplements and more than half (61%) students of dietetics at the University

of Life Sciences in Poznan also admitted their use [1]. Nearly half of all women (46%) take tablets of dietary vitamin supplements [16]. In a study by *Bieżanowska-Kopeć* et al. [2], regular nutrient supplementation of dietary intake was declared by 11 to 26% of students at the Agricultural University of Krakow.

One way of supplying nutrition education is on the labels of foodstuff products. Our research has shown that every third student always reads the label and half do so sometimes. According to *Misiarz* et al. [14], 70% medical students read food labels whilst 50% do so who study non-medical subjects. The presented study has demonstrated that most Siedlce subjects ate the recommended number of meals and considered that eating breakfast daily to be very important; the most common dietary errors were low intake rates of milk and dairy products and legumes/pulses. Another mistake was an excessive intake of fried foods, despite the students being aware of the principles of appropriate nutrition but always not putting it into practice.

## CONCLUSIONS

1. Our study, as well as others on diet/nutrition in dietetics students, shows that their diet differs, in varying degrees to dietary recommendations for this age group.
2. Despite the knowledge acquired during their studies on appropriate nutrition, students as expected, showed that eating habits learned from the family home had the greatest effect on their diet.

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