Poor and malnourished student - truth or myth?

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The study was conducted as a part of office work (ST 48) of Department of Clinical Nutrition and Dietetics, Medical University of Gdansk.

Abstract

Due to many economic reasons, students are a social group widely regarded as a high risk category when it comes to the threat of malnutrition. The reason for this is the generally low economic status of this social group which in turn leads to a lack of food security and malnutrition. Moreover, eating habits gained at home, eating monotony and frequent fast food consumption can be a cause of debilitating eating conditions. Encumbering students with high fees associated with studying and maintenance, with concomitant lack of earning capacity due to both the limited time off from school as well as the lack of work market, may also contribute to the increased risk of food insecurity.

The aim of the study was to assess the food security and nutritional status of Polish fulltime and weekend students taking into account such factors as age, sex, place of residence and type of the household.

Assessing questionnaires were used in the study: Food security (according to the „Guide to Measuring Household Food Security”); Nutritional status - MNA (Mini Nutritional Assessment by Nestle Research Center). 764 students between 18 and 58 years old were tested.

The results showed 2% food insecurity - hunger - in the examined population. On the basis of the MNA test 35% of subjects were at risk of malnutrition. The study has allowed for a realistic assessment of the life situation of the students who study at Polish universities, and we must admit that in connection to the whole population it does not present itself as particularly needy.

Food security among students is strongly dependent on age and the type of household run by the student. The nutritional status of students is affected by sex, type of the household and university. Students' BMI depends in particular on age, sex and type of university.

Keywords: students, food security, nutritional status

Introduction

In these times of global crisis, the economic situation of our society has deteriorated and consequently the conditions of students' lives have also fallen. In recent years we have seen many protests and demonstrations against rising tuition fees. However, all the existing problems have not caused a reduction in the number of students. On the contrary, we still observe an increasing interest in higher education [1]. A students' financial situation is influenced by several important factors: the origin and financial situation of the family - whether the family supports the student financially; the residence - whether the student lives with the family or rents a flat; the field of studies; the student's self-reliance and the desire of being self-sufficient.

Students are widely considered as a high risk group at risk of malnutrition due to the lack of sufficient funds. The reason for this is the generally low economic status of this social group which in turn leads to a lack of

food security and malnutrition. Moreover, eating habits gained at home, eating monotony and frequent fast food consumption can be a cause of debilitating eating conditions [2]. Encumbering students with high fees associated with studying and maintenance, with concomitant lack of earning capacity due to both the limited time off from school as well as the lack of work market, may also contribute to the increased risk of food insecurity.

Food security refers to the permanent access of all people to food resources to satisfy their hunger and it should be adequate for leading an active and healthy lifestyle. The implementation of it is dependent on financial resources, knowledge and access to food. The lack of food security leads to hunger, malnutrition and selective nutritional deficiencies. All these factors lead to deterioration of social health [3]. Invalid nutritional status also can be caused by insufficient or excessive assimilation of nutrients resulting from disturbances of appetite, digestion and absorption. Short term anorexia can be tolerated by a healthy body, however its extension leads to lower cognitive

abilities, psychomotor skills and consequently to the destruction of the human organism [4]. The assessment of the rate of occurrence of such factors as food security, nutritional status and body mass index are used to determine the actual risk of malnutrition in the researched population.

The aim of the study was to assess the risk of food insecurity and nutritional status of fulltime and weekend students at Polish universities with regard to age, sex, place of residence and type of household.

Materials and methods

The study was conducted from January 2011 to May 2012. The anonymous survey contained basic data: age, sex, place of residence (village, towns occupied by up to 30 thousand residents, cities occupied by 30 - 100 thousand residents, cities of over 100 thousand residents), the type of household (singular or multi-member), weight and height which were used to calculate body mass index - BMI.

In the study two different questionnaires were used:

1. 11-point (modified) questionnaire for food security according to the „Guide to Measuring Household Food Security” [5]. The questions were closed, single choice and rated in a 0 - 1 system. The survey involved the economic availability of food in the past 12 months. On the basis of the survey evaluation, respondents were classified into four groups, those living with: food security (0-2 pts), a menace to food security (3-4 pts), a lack of food security (5-6 pts), starvation (more than 7 points).

2. 6-point questionnaire assessing nutritional status MNA - Mini Nutritional Assessment by the Nestle Research Center [6]. On the basis of the survey, respondents were classified in the groups: ≥ 12 points - normal nutritional status, ≤ 11 points - at risk of malnutrition.

The questionnaires were completed independently by students who study at the following Polish universities:

- Medical University of Lublin – 47 people (6%)

- University of Life Science in Lublin – 96 people (13%)

- Medical University of Białystok – 240 people (31%)

- University of Technology and Humanities in Radom – 156 people (20%)

- Medical University of Bydgoszcz - 29 people (4%)

- Medical University of Gdańsk – 82 people (11%)

- University of Physical Education in Wrocław – 114 people (15%)

764 students age between 18 and 58 years old (average 25.45 years old ± 7.93) were tested. In the study there were 240 men (31%) and 524 women (69%) included. 151 of the respondents (20%) lived in single member households while 613 respondents (80%) lived in multi-member households. It was also found that the respondents were distributed over the following environments:

- village - 192 people (25%)

- city to 30 thousand people - 133 people (17%)

- city between 30 - 100 thousand people - 133 people (17%)

- city with more than 100 thousand people - 306 people (40%).

Students' BMI was ranged between 16 - 38 kg/m² (average 22.5 kg/m² ± 3.2). It was found that:

- underweight - 127 people (17%)

- standard - 522 people (68%)

- overweight - 99 people (13%)

- obesity - 16 people (2%).

499 people (65%) had the correct nutritional status and the risk of malnutrition was found in 265 respondents (35%).

Statistical results analysis was obtained by means of the χ^2 test to check whether the variables are linked at a significance level of $p < 0.05$ and by confirming the strength of the correlation variables with Cramer's V test. Log-linear analysis was used to identify which variables may impact on food security, nutritional status and BMI. On the basis of testing the table of compound and the partial boundary into the analysis the correlation on the level of $p < 0.05$ was included.

Results

Food security was analyzed due to the influence of such factors as: school, age, sex, household, place of residence, body mass index, nutritional status.

Table I. Food Security in selected universities

School	Food Security		Menace to food security		Lack of food security		Starvation	
	Number of people	%	Number of people	%	Number of people	%	Number of people	%
Medical University of Lublin	42	89.4	4	8.5	1	2.1	0	0.0
University of Life Science in Lublin	71	74.0	13	13.5	7	7.3	5	5.2
Medical University of Białystok	214	89.2	20	8.3	3	1.2	3	1.2
University of Technology and Humanities in Radom	123	78.8	22	14.1	6	3.8	5	3.2
Medical University of Bydgoszcz	25	86.2	3	10.3	1	3.4	0	0.0
Medical University of Gdańsk	68	83.0	11	13.4	3	3.7	0	0.0
University of Physical Education in Wrocław	94	82.5	11	9.6	4	3.5	5	4.4
Total number	637	83.0	84	11.0	25	3.0	18	2.0

The analysis does not indicate a relationship between universities and food security ($\chi^2 = 25.9$, $p = 0.1$).

The analysis does not indicate a relationship between age and food security ($\chi^2 = 23.2$, $p = 0.07$).

Table II. Food security in relation to age of the respondents

Age	Food Security		Menace to food security		Lack of food security		Starvation	
	Number of people	%	Number of people	%	Number of people	%	Number of people	%
under 18	4	100.0	0	0.0	0	0.0	0	0.0
19 – 25 years old	494	85.3	59	10.2	15	2.6	11	1.9
26 – 30 years old	36	87.8	3	7.3	1	2.4	1	2.4
31 – 40 years old	58	79.4	9	12.3	3	4.1	3	4.1
41 – 50 years old	41	68.3	12	20.0	5	8.3	2	3.3
51 – 60 years old	4	57.1	1	14.3	1	14.3	1	14.3

Table III. Food security in relation to sex of the respondents

Sex	Food Security		Menace to food security		Lack of food security		Starvation	
	Number of people	%	Number of people	%	Number of people	%	Number of people	%
Female	442	84.3	53	10.1	17	3.2	12	2.3
Male	195	81.2	31	12.9	8	3.3	6	2.5

The analysis does not indicate a relationship between sex and food security ($\chi^2 = 1.4$, $p = 0.70$).

The analysis shows the relationship and low correlation between the type of household and food security ($\chi^2 = 19.7$, $p < 0.05$, Cramer V test $V = 0.16$).

Table IV. Food security in relation to the household of the respondents

Household	Food Security		Menace to food security		Lack of food security		Starvation	
	Number of people	%	Number of people	%	Number of people	%	Number of people	%
Singular member	108	71.5	30	19.9	8	5.3	5	3.3
Multi-member	529	86.3	54	8.8	17	2.8	13	2.1

Table V. Food security according to respondents' place of residence

Place of residence	Food Security		Menace to food security		Lack of food security		Starvation	
	Number of people	%	Number of people	%	Number of people	%	Number of people	%
village	159	82.8	21	10.9	8	4.2	4	2.1
city to 30 thousand people	102	76.7	19	14.3	6	4.5	6	4.5
city between 30 - 100 thousand people	116	87.2	14	10.5	3	2.3	0	0.0
city with more than 100 thousand people	260	85.0	30	9.8	8	2.6	8	2.6

The analysis shows no relationship and no correlation between the place of residence and food security ($\chi^2 = 10.6$, $p = 0.3$, Cramer V test $V = 0.06$).

The analysis indicates the relationship between BMI and food security ($\chi^2 = 18.56$, $p < 0.05$) and at the same time no correlation between them (Cramer V test $V = 0.09$).

Table VI. Food security in relation to respondents' BMI

BMI	Food Security		Menace to food security		Lack of food security		Starvation	
	Number of people	%	Number of people	%	Number of people	%	Number of people	%
underweight	117	92.1	7	5.5	1	0.8	2	1.6
standard	432	82.8	61	11.7	16	3.1	13	2.5
overweight	73	73.7	16	16.2	7	7.1	3	3.0
obesity	15	93.7	0	0.0	1	6.2	0	0.0

Table VII. Food security according to the nutritional status of the respondents

Nutritional status	Food Security		Menace to food security		Lack of food security		Starvation	
	Number of people	%	Number of people	%	Number of people	%	Number of people	%
Correct	446	89.4	34	6.8	13	2.6	6	1.2
Risk of malnutrition	191	72.1	50	18.9	12	4.5	12	4.5

The analysis indicates the relationship and correlation between nutritional status and food security of the respondents ($\chi^2 = 39.17$, $p < 0.05$, Cramer V test $V = 0.26$).

Discussion

The study shows that food security among the students is mostly affected by respondents' age and type of household. The age groups under 18 and over 50 should be excluded, considering them as irrelevant because of their small group size. The largest group, those aged between 19 and 25, which mostly consists of full time students, has a low percentage of people with food insecurity or those who starve (table II). With the increasing age of respondents the risk of food insecurity also increases. At the same time people who run sin-

gular-member household are much more vulnerable to hunger than those who live with their families (table IV). However, the greatest impact on the nutritional status concerns sex, type of household and school that the respondents study in. Nutritional status and food security show an inverse correlation (table VII), the insecurity and hunger are the cause of the risk of malnutrition among the respondents. BMI depends on age, sex and school. It does not have a significant impact on food security, although, paradoxically, overweight people indicate hunger more often than those who are underweight (table VI).

In connection with the entire Polish population (figure 1), the population of students has a low percentage of people with food insecurity and hunger (figure 2).

Figure 1. Food security among the Polish population as a whole

Source: Own research and elaboration

Figure 2. Food security among students

Source: Own research and elaboration

A high percentage of students, especially women, characterized by being underweight (17%), were the manifestation of the fashion of being slim, rather than food insecurity or hunger. This group of young people follows the current trends. Low body weight in these people is not connected with the lack of funds for buying necessary food but with an obsession with having a slender figure or even may be the effect of eating disorders like anorexia or bulimia [7, 8]. Low BMI has its direct reflection in nutritional status because the MNA test is highly dependent on body mass index and therefore it is not very reliable in assessing the nutritional status of young people [6]. Therefore, we do not suggest that a large percentage of students exhibit a risk of malnutrition (table VII), but we want to focus on other factors affecting nutritional insecurity.

An important factor is the type of household run by the students (table IV). Multi-member households cope much better in meeting the financial needs of their members due to all financial income and financial liabilities of all household members. Singular member households must meet all the needs alone and if there is no family support it often results in the occurrence of food insecurity and hunger.

Moreover, a students' place of residence has a substantial impact on food security (table V), and it is not only because of the lack of available work in the local job market, but also because of the loss of time while commuting to and from school. However, the students who live with their family definitely have higher food security [9]. As a matter of fact, the villagers do not indicate an increased risk of food insecurity, but the residents of small towns are particularly vulnerable to it.

The study has allowed for a realistic assessment of the life situation of the students who study at Polish universities, and we must admit that in connection to the whole population it does not present itself as particularly needy. The main limitation of the survey is the reluctance to fill in the questionnaires which contribu-

tes to a limited number of respondents as well as the false information given (anonymity does not allow for verification of the data). However, the use of identical methods in the study of the student population and the general population allows for comparison of the results. As opposed to popular opinion, students do very well in combining students' responsibilities and employment. What is more, they have the ability to move in the labour market in times of crisis and find gainful employment for themselves that does not conflict much with their education. It is only to be hoped that in addition to acquiring working skills students also gain the knowledge necessary for further intellectual development. Unfortunately, on the other hand recent years show a lower level of knowledge among university graduates. This is due to students' concentration on work and the pursuit of money at the expense of university knowledge. In the future, it may reflect in the level of senior executives' knowledge as well as the level of education of the next generations in general.

Conclusions:

1. Food security among students is strongly dependent on age and the type of household run by the student.
2. The nutritional status of students is affected by sex, type of the household and university.
3. Students' BMI depends in particular on age, sex and type of university.

License Note:

The software used to perform statistical analysis "StatSoft, Inc.. (2011). STATISTICA (data analysis software system), version 10 " purchased thanks to the project " TeleMedNet - medical and scientific diagnostic platform."

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