

ASSESSMENT OF THE FOOD HABITS OF A GROUP OF STUDENTS FROM TWO COUNTIES OF MOLDOVA

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Abstract.

Introduction. eating habits run in the family and sometimes last a lifetime. For this reason, it is important to evaluate the nutrition of adolescents and create coherent nutritional educational programs.

Material and method. the study was carried out on a group of 139 high school students from two counties of Moldova. The young people filled out a questionnaire with questions about their weekly intake of cheese, chicken, eggs, bread, potatoes and sweets. The results were processed using the Pearson test.

Results. the dominant intake of cheeses is once a week (31.65%) or 2-3 times per week (30.93%). Chicken meat is mostly consumed 2-3 times per week (46.76%) and eggs 1 time (38.84%) or 2-3 times (32.37%) per week. The differences calculated by groups and according to the gender of the students are statistically insignificant. Bread appears in the daily menus of only one third of the surveyed students, and potatoes are consumed especially 2-3 times per week (41.00%). Sweets are consumed mostly 2-3 times per week, but the differences between communities are statistically significant ($p < 0.001$).

Conclusions. the statistically insignificant differences obtained for most food products point to the existence of similar eating habits in the families of the students in the study group.

Keywords: eating habits, inappropriate consumption, high school students

Introduction

Nutrition is an external factor that makes a major contribution to maintaining the health of adults and to the proper growth/development of children and young people. The aspects related to the eating habits of the population must be carefully studied because in teenagers, food intake is influenced by a complex of factors represented by the family, the group of friends, the socioeconomic situation, school and the mass media/social platforms (Webster-Gandy, Madden, Holdsworth, 2006).

The family makes a major contribution, in the first years of life, to the formation of certain eating habits. In our country, in the area of Moldova, we witness a strong anchoring in traditions, so that food habits change very little from one generation to another. The studies carried out on teenagers allow the highlighting of statistically insignificant differences in collectives and in various localities, an aspect that must be known (Albu, Moraru, Hodorcă, 2015). There are studies

in which a correlation is made between parents' behavior and the risk of obesity. Special attention should be paid to cultures and families in which there is a strict hierarchy because deviations from family norms are not accepted there (Siah, Koe, Pang, Ng, Tan, 2018).

The group of friends becomes essential during adolescence. Young people go in groups to parties or to cake shops, in which context they focus on certain products agreed by all their friends. Teens in the US admit to turning to unhealthy foods at parties, but also during certain difficult times in their lives such as anger or stress. These are aspects that must be taken into account because the problem can be solved through adequate nutritional education (Abraham, Noriega Brook, Shin, 2018). Unfortunately, sometimes peer pressure becomes so strong that teenage girls turn to extreme weight loss diets that can lead to serious disorders such as anorexia. It's all about achieving a "proper" body image and the appreciation of friends (Al-sheyab, Gharaibeh, Kheirallah, 2018)

Another particular problem arises in the context where the socioeconomic situation of the family is precarious. In families where the educational level of the parents is modest, the concern for achieving a balanced diet is deficient. Also, in poor families, nutrition is mainly oriented towards the element of ensuring a quantitative intake (to satisfy hunger) and less on the qualitative one represented by the provision of all food groups (Luszczki, Sobek, Bartosiewicz, Baran, Weres, Deren, Mazur, 2019). In this context, the school's intervention is important through school canteens where they are present. Unfortunately, in our country there are no canteens in most schools, so school education can only be done theoretically and not practically through the example provided by the school menu.

Mass media/social platforms are preferred by young people to get the "information" they want. Unfortunately, sometimes this information is not adequate, so it is possible to turn to exaggerated weight loss treatments that have a negative impact on the health of adolescents (Arseniev-Koehler, Lee, McCormick, Moreno, 2016; Salam, Hooda, Das, Arshad, Lassi, Middleton, Bhutta, 2016).

Objectives of the study: assessment of adolescent nutrition; appreciation of the extent to which it is adapted to the norms of rational nutrition; knowing the differences that appear/do not appear in the nutrition of students from different counties; studying the nutrition of students starting from their gender, in the conditions where girls are very concerned about their body appearance; evaluating the situations in which a certain food does not appear in the students' menus.

Material and method

The study was carried out on a group of 139 9th grade students from high schools in two counties of Moldova. Thus, 60 students from the Laurian High School in Botoșani and 79 from the V. Alecsandri High School in Iași were surveyed. The study group includes 54 male students (38.84%) and 85 female students (61.15%).

A weekly food intake frequency questionnaire was applied to these young people. The assessment was oriented in two directions represented by the consumption of animal and vegetable products. In the category of products of animal origin, the consumption of cheeses, chicken meat and eggs was included. The intake of bread, potatoes and sweets was included in the vegetable products category. The answer options are: never, 1 time a week, 2/3 times a week, 4/6 times a week, daily. The processing of the results was done using the Pearson CHI Square test.

Results

The evaluation is oriented in two directions represented by the intake of products of animal origin (cheeses, chicken and eggs) and vegetables (bread, potatoes, sweets). Cheeses appear in menus mostly once (31.65%) or 2-3 times (30.93%) per week (Table 1).

Table 1

Frequency of cheese intake in students' menus

Frequency of food intake	Never	Once a week	2-3 times a week	4-6 times a week	Once a day	Total
<i>Distribution of results by high school</i>						
Botoșani High School	11	23	19	5	2	60
Iași High School	12	21	24	13	9	79
Total (no.)	23	44	43	18	11	139
%	16.54	31.65	30.93	12.94	7.91	
<i>Distribution of results by gender of students</i>						
Male	11	14	15	9	5	54
Female	12	30	28	9	6	85

The 16.54% students who mark the "never" option, but also the 7.91% students who consume them daily (recommended intake) attract attention. The calculated differences are statistically insignificant both on the collectives ($p > 0.05$, $f = 4$, $\chi^2 = 6.560$), as well as depending on the gender of the students ($p > 0.05$, $f = 4$, $\chi^2 = 3.195$).

Chicken meat is present in menus mostly 2-3 times per week (46.76%), but it is noteworthy that 8.63% of students did not consume this food at all (Table 2).

Table 2*Consumption of chicken meat*

Frequency of food intake	Never	Once a week	2-3 times a week	4-6 times a week	Once a day	Total
<i>Distribution of results by high school</i>						
Botoșani High School	5	10	30	12	3	60
Iași High School	7	11	35	19	7	79
Total (no.)	12	21	65	31	10	139
%	8.63	15.10	46.76	22.30	7.19	
<i>Distribution of results by gender of students</i>						
Male	4	6	29	11	4	54
Female	8	15	36	20	6	85

The calculated differences are statistically insignificant, both for groups ($p > 0.05$, $f = 4$, $\chi^2 = 1.668$), but also for boys and girls ($p > 0.05$, $f = 4$, $\chi^2 = 2.174$) pointing to the existence of similar eating habits.

Eggs are present in the students' diet mostly once (38.84%) or 2-3 times (32.37%) per week. 12.94% negative responses attract attention. At the opposite pole are placed 5.03% responses of daily intake, which corresponds to the norms of rational nutrition (Table 3).

Table 3*Weekly consumption of eggs by the surveyed students*

Frequency of food intake	Never	Once a week	2-3 times a week	4-6 times a week	Once a day	Total
<i>Distribution of results by high school</i>						
Botoșani High School	7	23	19	8	3	60
Iași High School	11	31	26	7	4	79

Total (no.)	18	54	45	15	7	139
%	12.94	38.84	32.37	10.79	5.03	

Distribution of results by gender of students

Male	6	20	19	5	4	54
Female	12	34	26	10	3	85

The calculated differences are statistically insignificant by the collectives ($p > 0.05$, $f = 4$, $\chi^2 = 0.773$) and by gender ($p > 0.05$, $f = 4$, $\chi^2 = 2.443$) which highlights the existence of a strong anchoring in traditions of the students' families in the study group.

Bread is present in the diet of young people especially daily (38.12%) or 4-6 times (24.46%) per week. It is noted that 4.31% of students do not consume bread at all, which is a worrying fact (Table 4). Also, the calculated differences are statistically insignificant, both by collectives ($p > 0.05$, $f = 4$, $\chi^2 = 0.466$) and by gender ($p > 0.05$, $f = 4$, $\chi^2 = 4.295$).

Table 4

The presence of bread in the diet of adolescents

Frequency of food intake	Never	Once a week	2-3 times a week	4-6 times a week	Once a day	Total
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Distribution of results by high school

Botoșani High School	2	8	13	15	22	60
Iași High School	4	9	16	19	31	79
Total (no.)	6	17	29	34	53	139
%	4.31	12.23	20.86	24.46	38.12	

Distribution of results by gender of students

Male	1	5	9	14	25	54
Female	5	12	20	20	28	85

Potatoes are consumed mostly 2-3 times (41.00%) or 1 time (31.65%) per week. Attention is drawn to 7.19% negative responses, but also 2.87% families in which the potato is present daily in the diet (Table 5). The calculated differences are statistically insignificant by collectives ($p > 0.05$, $f = 4$, $\chi^2 = 9.396$) and by the gender of the students ($p > 0.05$, $f = 4$, $\chi^2 = 3.866$).

Table 5*Intake of potatoes in the study group*

Frequency of food intake	Never	Once a week	2-3 times a week	4-6 times a week	Once a day	Total
<i>Distribution of results by high school</i>						
Botoșani High School	2	15	31	12	0	60
Iași High School	8	29	26	12	4	79
Total (no.)	10	44	57	24	4	139
%	7.19	31.65	41.00	17.26	2.87	
<i>Distribution of results by gender of students</i>						
Male	5	12	25	10	2	54
Female	5	32	32	14	2	85

Sweets are preferred by most young people, but their dominant intake is mostly 2-3 times (30.93%) per week or daily (25.89%). However, there are 7.91% "never" intake responses which are worrying because the nervous system and red blood cells work only on the basis of the energy provided by carbohydrates (Table 6).

Table 6*Frequency of sweets consumption*

Frequency of food intake	Never	Once a week	2-3 times a week	4-6 times a week	Once a day	Total
<i>Distribution of results by high school</i>						
Botoșani High School	2	23	18	12	5	60
Iași High School	9	4	25	10	31	79
Total (no.)	11	27	43	22	36	139
%	7.91	19.42	30.93	15.82	25.89	100

Distribution of results by gender of students

Male	5	10	15	9	15	54
Female	6	17	28	13	21	85

On collectives, the calculated differences are statistically significant at a $p < 0.001$ ($f = 4$, $\chi^2 = 35.998$) and point to an increased preference for sweets among students from the high school in Iași. The results obtained according to the gender of the students are similar, the calculated differences being statistically insignificant ($p > 0.05$, $f = 4$, $\chi^2 = 0.685$).

Discussions

The assessment of adolescents' nutrition is carried out with the help of the weekly food intake frequency questionnaire. It is a method that allows knowing the food habits of the population, a particularly important aspect in population studies (Choudhury, Omar, Arora, Rifai, Chagoury, Taheri, 2018).

A first element that attracts attention is the one related to the total lack of some foods in the teenagers' menu: cheeses (16.54% of students), chicken (8.63%), eggs (12.94%), bread (4.31%), potatoes (7.19%) and sweets (7.91 %). This aspect must be carefully studied because removing a category of food from the diet has negative effects on the health of young people. Some specialists launch the idea of "he doesn't like it" but it is a concept that needs to be carefully studied (Demirici, Toptaş Demirici, 2018). Maybe he doesn't like a certain type of cheese, but he doesn't exclude the category from the menus. He may not like certain sweets, but he does not completely eliminate them from his diet.

In the study group, the total elimination of a certain category of products from the menus appears which can be related to the eating habits of the family or the socioeconomic situation that does not allow their purchase. There are aspects that must be carefully studied in order to be able to intervene where needed.

In addressing the issues related to the absence of certain foods from the menus, another element represented by the mother's concern for ensuring a balanced diet must be addressed. There are situations in which the mother is concerned with the body appearance and the slimming treatment, so that she is not interested in the purchase of certain "fattening" foods, which explains their absence from the adolescent's diet. It is a very important element because numerous studies highlight the existence of a correlation between the value of the body mass index in the mother and in the girl, which points to slimming belts made in the family (Garcia Meraz, Guzmán Saldana, López-Rodriguez, Galván, 2019). Practically, it is necessary to create coherent educational programs that guide young people towards a balanced diet and that contribute to maintaining health (Baciu, 2013).

Cheeses are rich in quality proteins, lipids, minerals and vitamins. If there is a concern for the weight loss cure, there is the possibility of targeting an assortment with a reduced lipid content (Martin, Tarcea, 2015). Unfortunately, in our study group, the dominant intake is insufficient (1 time per week - 31.65% or 2-3 times - 30.93%). Studies carried out in other countries also draw attention to aspects related to poor consumption. Among young people in Sudan, the dominant intake is once (31.9%) or twice (38.6%) per week (Misaa, Somya, Siham, 2018).

Chicken meat offers a low caloric intake due to its low lipid content, but it contains an appreciable amount of animal protein (Martin, Tarcea, 2015). However, the consumption is quite low, being dominant 2-3 times a week (46.76%). The result is not worrying because other types of meat can be eaten. The same problem occurs with young people in Sudan because the intake is in most cases once a week (42.9%) (Misaa et al., 2018).

The norms of rational nutrition recommend for teenagers an intake of 6-7 eggs per week, but this response is present only in 5.03% of teenagers. Medical students from the Aga Khan University in Karachi, admit an intake of eggs 6 times a week and more in only 22.3% situations, with 19.9% negative answers. In practice, we also face problems regarding the nutrition of future doctors who will have to organize nutritional education programs (Fatima, Akhtar, Khan, Fatima, 2019).

Excessive consumption of bread will lead to obesity due to the high content of carbohydrates, which provides a high caloric intake. However, removing bread from the diet is not recommended because cereals are also rich in protein, so there is a risk of triggering protein imbalances (Martin, Tarcea, 2015). Unfortunately, the balanced intake is present only in 60% of the surveyed students. They admit a daily intake in 38.12% of cases or 4-6 times a week (24.46%).

Similar results are also obtained among young people in Austria where the average intake of bread is on average 3.3 days per week for girls and 3.1 days per week for boys (Drenowatz, Greier, Klein, 2018). Surprising results are also obtained for young people from Germany doing physical exercises of different intensities. In total, the high intake of bread is present in 38.1% of young people with variations from 39.5% in those who exert little physical effort, to 36.8% in those with an average level of physical effort, to reach 37.3% in those who practice intensive physical exercises. Practically, there is no adaptation of nutrition to the demands imposed by physical activity, which is a worrying aspect (Manz, Mensink, Finger, Haftenberger, Brettschneider, Barbosa, Krug, Schienkiewitz, 2019).

Potatoes are present in menus mostly 2-3 times (41.00%) per week, a result that does not raise particular problems because other types of vegetables are also consumed.

Special attention should be paid to sweets because they are rich in carbohydrates and provide a high caloric intake (Martin, Tarcea, 2015). The result obtained in our study is an interesting one because among the students from Botoșani there are few daily consumption responses, while among those from Iași they are dominant. There is no question of giving up sweets, even consumed daily, but one must insist on the quantities consumed that do not exceed the norms of rational nutrition. For young people in Austria, the intake is moderate, being on average 2.5 days per week for girls and 2.7 days per week for boys, a result similar to the one obtained for high school students from Botoșani (Drenowatz et al., 2018).

The results obtained are not the expected ones, and it is necessary to develop coherent educational programs that lead to the modification of the eating habits of young people and their adaptation to the real needs of the growing body.

Conclusions

The study was carried out on teenagers from two counties of Moldova by applying a weekly frequency of food intake questionnaire. The obtained results are worrying because for each food category zero intake responses were obtained, which indicates the absence of the product from the students' menus. Accurate assessment of the reasons why young people do not consume certain foods is essential. Also, the dominant intake of cheeses, chicken and eggs was far below the age-

specific nutritional recommendations. Bread is adequately present in the menus and sweets are present in the menus in varying amounts. It is necessary to create coherent nutritional educational programs that allow teenagers to be oriented towards the adaptation of consumption to the norms of rational nutrition.

Conflict of interests

The authors declare no conflict of interest.

Ethical approval

Not the case.

References

1. Abraham, S., Noriega Brooke, R., Shin, J.Y. (2018). College students eating habit and knowledge of nutritional requirement, *J. Nutr. Hum. Health*, 2(1):13-17. doi: 10.35841/nutrition-human-health.2.1.13-17
2. Albu, A., Moraru, C.E., Hodorcă, R.M. (2015). The evaluation of some eating habits at a group of teenagers studying at Dimitri Catemir highschool in Iasi. *Procedia Social and Behavioral Sciences*, 197, 1947-1951.
3. Al-sheyab, N.A., Gharaibeh, T., Kheirallah, K. (2018). Relation between peer pressure and risk of eating disorders among adolescents in Jordan, *Hindawi, Journal of Obesity*. vol. 2018, 1-8. <https://doi.org/10.1155/2018/7309878>
4. Arseniev-Koehler, A., Lee, H., McCormick, T., Moreno M. A. (2016). #Proana: pro-eating disorder socialization on Twitter, *Journal of Adolescent Health*, 58, 659-664. doi: <https://doi.org/10.1016/j.jadohealth.2016.02.012>.
5. Baciú, A. (2013). Antropological and medical aspects of the campaigns for a healthy dietary among young people and teenagers. *Biom. Hum.et Anthropol.*, 31, 3-4.
6. Choudhury, S., Omar, O., Arora, T., Rifai, N.A., Chagoury, O., Taheri, S. (2018). Qatar obesity study (QORS): report on a pilot school-based nutrition education Campaign in Qatar, *Journal of Childhood Obesity*, vol. no.3: S2:007. doi: 10.21767/2572-5394.65.
7. Demirici, N., Toptaş Demirici, P. (2018). The determination of physical activity, nutrition and self-sufficiency levels of sedanter individuals of fitness club member. *Pedagogics Psychology, Medical-Biological Problems of Physical Training and Sport*, 05, 237-245. doi: <https://doi.org/10.15561/18189172.2018.0503>.
8. Drenowatz, C., Greier, K., Klein, P. (2018). Association between eating habits and food intake in Austrian adolescents, *Annals of Clinical Nutrition*, 2:1010, 1-8.
9. Fatima, S. K., Akhtar, A., Khan, A. R., Fatima, S. S. (2019). Distribution and determinants of sedentary lifestyle among health care professionals. *Pakistan Journal of Medicine and Dentistry*, 8(2), 80-86.
10. Garcia Meraz, M., Guzmán Saldana, R.M.E., López-Rodriguez, G., Galván, M. (2019). Relationship between maternal and children body mass index in four educational systems in Hidalgo Mexico. *Rev Esp Nutr Hum Diet*. 23(4), 252-260. doi: 10.14306/renhyd.23.4.753.
11. Luszczki, E., Sobek, G., Bartosiewicz, A., Baran, J., Were, S. A., Deren, K., Mazur, A. (2019). Analysis of fruit and vegetable consumption by children in school canteens depending on selected sociodemographic factors, *Medicina*, 55:397, 1-16. doi: 10.3390/medicina55070397.

12. Manz, K., Mensink, G.B.M., Finger, J.D., Haftenberger, M., Brettschneider, A.-K., Lage Barbosa, C., Krug, S., Schienkiewitz, A. (2019). Associations between physical activity and food intake among children and adolescents: results of KiGGS Wave 2, *Nutrients, MDPI*, 11(5), 1060. doi:10.3390/nu11051060.
13. Martin, S.A., Tarcea, M. (2015). *Nutriția sportivului*, Târgu Mureș: University Press.
14. Misaa, M.A.A., Somya, G.S.M., Siham, M.O.G. (2018). Assessment of nutritional status of the adolescents (15-18 yrs) studying in secondary schools in Elhafeir Area-Dangle locality-northern state 2018. *Indian Journal of Applied Research, Epidemiology*, 8(5), 1-5.
15. Salam, R.A., Hooda, M., Das, J.K., Arshad, A., Lassi, Z.S., Middleton, P., Bhutta, Z.A. (2016). Interventions to improve adolescent nutrition: a systematic review and meta-analysis, *Journal of Adolescent Health*. 59: S29-S39. doi: <https://doi.org/10.1016/j.jadohealth.2016.06.022>.
16. Siah, P.C., Koe, A.B.K., Pang, M.W., Ng, S.M., Tan, J.T.A. (2018). Parenting styles, food addiction and obesity: a case study of Malaysian Chinese adolescents. *Asia Pacific Journal of Multidisciplinary Research*, 6(4), 9-14.
17. Webster-Gandy, J., Madden, A., Holdsworth, M. (2006). *Oxford handbook of Nutrition and dietetics*. New York: Oxford University Press.