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THE NUTRITIONAL EDUCATION OF YOUTH – A BASIC ELEMENT OF AN OPTIMAL HEALTH

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ABSTRACT. The fact that one of the pillars of a good health is optimal nutrition. For this reason, knowing what, how, when and how much to eat becomes a fundamental question. Starting from this reality, we wished to design a study that would highlight the way in which young people feed themselves and their sources of information on this topic. The study included 164 subjects from high-school (79) and university (85), aged between 17 and 27 years old. In the present paper we will show some of the results we have achieved by applying a survey on the subject on nutrition that we had created ourselves. The survey included 15 questions that aimed to take a look at what the nutritional intake of the subjects was made up of, as well as the frequency with which certain food groups were included in each subject's weekly diet. The results pointed out a clear necessity for a better education regarding nutrition among young people, and also the need for the creation of certain programs that would better explain to youth groups which types of foods are better consumed frequently and which ones should be eaten in moderation, or rarely, or never. The survey also pointed out that the current main source of information on this subject for the young subjects is the internet – which is perhaps unsurprising, as we live in a very modern high-tech age, but which raises the further question of the quality of the web sites that young people use in order to extract their information; as we know, the internet is both a place for scientific exchanges, but also for simple opinions expressed on popular blogs by people with no scientific or rigorous education on the subject. The survey also revealed that girls are more interested in receiving or researching information regarding nutrition than boys.

Key words: *optimal nutritional intake, food groups, health, young people*

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REZUMAT. ***Educaţia alimentară a tineretului – element de bază a unei stări de sănătate optime.*** Este binecunoscut faptul că unul dintre pilonii stării de sănătate este alimentaţia optimă. Din acest considerent a şti ce, cum, când şi cât să mănânci devine fundamental. Pornind de la această realitate, am dorit să realizăm un studiu prin care să punem în evidenţă modul în care tinerii se alimentează, precum şi de unde îşi iau ei informaţiile legate de alimentaţie. Studiul a cuprins 164 subiecţi din mediul preuniversitar (79) şi universitar (85), cu vârste între 17 şi 27 de ani. În cadrul materialului de faţă prezentăm o parte din rezultatele obţinute prin aplicarea unui chestionar propriu privind alimentaţia: chestionarul a cuprins 15 întrebări care au vizat modul în care este configurată raţia alimentară a celor intervievaţi. Rezultatele trimit la necesitatea realizării unei educaţii alimentare, şi evident, la elaborarea unor programe prin intermediul cărora să li se explice tinerilor ce alimente este util să consume frecvent, moderat, rar sau să excludă din alimentaţie. Chestionarul a revelat de asemenea faptul că la momentul actual principala sursă de informaţie a tinerilor pe subiectul nutriţiei este internetul – ceea ce poate nu este surprinzător, în condiţiile în care trăim într-o perioadă foarte modernă şi dezvoltată tehnologic, dar aceasta ridică o întrebare suplimentară legată de calitatea site-urilor web de pe care tinerii îşi extrag informaţiile; după cum ştim cu toţii, internetul este atât o platformă pentru un schimb de informaţii ştiinţifice, cât şi un loc pentru păreri exprimate pe bloguri populare de către persoane fără o educaţie riguroasă sau o formare ştiinţifică pe această temă. Chestionarul a mai arătat de asemenea faptul că fetele sunt mai interesate în a primi sau a căuta informaţii pe tema nutriţiei decât băieţii.

Cuvinte cheie: *alimentaţie optimă, clase de alimente, stare de sănătate, tineri*

“Let food be thy medicine and medicine be thy food” (Hippocrates)

Introduction

The World Health Organization defines, ever since 1946, health as being “a state of complete physical, metal and social well-being – and not merely the absence of disease or infirmity”. Later this definition was expanded to include also “the ability to lead a socially- and economically-productive life”. In order to achieve a state of health, several pillars are needed as a base – and one of them is particularly important: nutrition (Bilic, 2005).

The explosion and abundance of different types of food available are heavily putting to test a person's will to resist to temptation. In many cases, the food contains additives that make us give in to the pleasant taste of something that has no nutritional quality or necessity. This explains why many young people become obese at early ages – this is something associated also with a chronic lack of physical activity (Drosescu, 2007, Grigorieff, 2006).

In order for the body's growth and development processes to take place, we need quality protein, fats and carbohydrates, together also with vitamins, minerals, water and fibre. All these are collectively called "fundamental nutritional elements" – meaning the elements based on which the body can build quality structures that can ensure its optimal functioning. If these fundamental nutritional elements are of poor quality or are lacking, the body cannot function in an optimum way, and it becomes ill or it dies. The hygiene of nutrition has stated some very firm rules that define the composition of the correct nutritional intake in terms of both quantity and quality (Mencinicopschi, 2010, Biro, 2005).

Any activity we undertake implies a consumption of energy (Tugui, 1982, McKeith, 2006), for example: reading aloud 1.5 calories / hour, getting dressed or undressed 1.69 calories / hour, light physical work 75-100 calories / hour, moderate work 100-300 calories / hour, hard work 300-500 calories / hour, and very hard physical work over 500 calories / hour. For athletes, the energy expenditure during training has been estimated at:

- light athletic effort, or in the break between competitions: 75-100 calories / hour
- medium-level effort, for regular training: 100-300 calories / hour
- intense effort during competition: 300-500-700 calories / hour
- very intense effort (water polo or Nordic Combined competitions): over 500 calories / hour.

In a correctly composed nutritional intake, the proteins have a ratio of 12-15 (20)%, of which 60% should be of animal origin, and 40% of plant origin. The quantity of protein recommended varies based on age, gender, the type of activity and conditions.

The ratio of carbohydrates is of 300-700 grams / day, which makes up around 55-65% of the day's caloric intake. From this amount, 35% should be monosaccharides or disaccharides, and 65% polysaccharides (the ones that released the stored energy slower and more constantly).

Lipids have a ratio of 20-30% of the caloric intake, of which 70% are of animal origin and 30% of plant origin; in special cases, such as hard physical labour, that takes place in difficult environmental conditions, or in winter sports, the intake of lipids can be calculated at 1.5-2 grams of lipids per kilogram of body weight per day. For the athletes that are active in winter or in low-temperature environments (mountaineering, gliding, etc.), the amount of lipids can be further increased up to 2-2.3 grams per kilogram of body weight per day.

However, these rules are seemingly distorted on their way from the nutrition specialists to the final beneficiaries, and the communication and education don't function very well.

One of the premises that we started from when we created and applied the Nutritional Survey was that "*perhaps the cause of an incorrect nutrition lies more than just in the variety of foods eaten*" (McKeith, 2006, Mincu, 1984).

Materials and method

Our study included 164 subjects, of which 79 were high-school students and 85 were university students, aged between 17 and 27 years old – at this stage of the study we are interested only in finding out whether the information regarding nutrition has reached those it is addressed to.

In the present paper, we will show some of the results we have achieved by applying a survey created by ourselves that concerned nutrition. The survey included 15 questions regarding the way in which the nutritional intake of our subjects is configured and what kind of foods is included – an investigation into the quality of their nutrition. The questions in the survey aimed to identify if the main categories of food nutritional elements are included in their diet: Milk and dairy products, Meat and derived products, Eggs, Animal and Vegetable Fats, Cereals and bakery items, Beans and dry vegetables, Fresh vegetables and fruits, and Sweets.

Apart from the main categories of nutrients, we have observed also the frequency with which these were included in the diet, measured according to the following scale: never, once per week, 2-3 times per week, 4-6 times per week, daily.

Results and discussions

Table 1. The distribution of the subjects that consume products included in the Milk and Dairy category

Food type	Never	Once	2-3 times	4-6 times	Daily
Milk	7,3%	24,4%	29,9%	22,6%	15,9%
Milk derivatives – yogurt, buttermilk	7,3%	18,3%	46,3%	12,8%	15,2%
Cottage cheeses, Feta cheese	6,7%	26,8%	40,2%	17,1%	9,1%
Other types of cheeses – pressed cheese, Cheddar cheese, Swiss Cheese, Emmentaler, etc.	15,9%	35,4%	32,9%	10,4%	5,5%

The milk and dairy category is included in the diet of our subjects differently, based on the type of products they choose to include – the date shown is expressed as percentage from the total number of subjects.

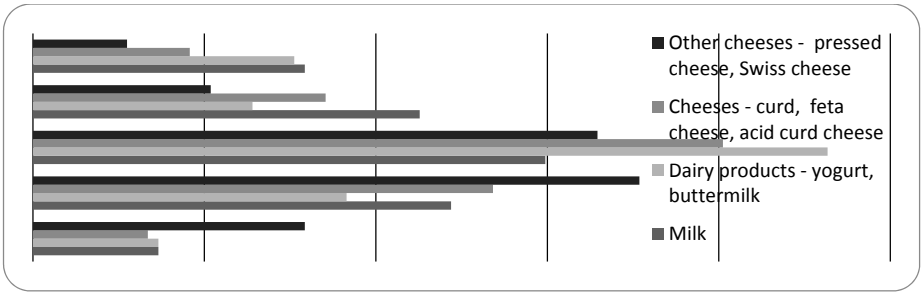

Figure 1. The distribution of the subjects that consume products included in the Milk and Dairy category (the percentages are shown on the horizontal axis)

14.6% of the participants do not consume milk, yogurt or derivatives, while 42.7% include these products in their diet only once per week – which means that overall 56.3% of the subject do not eat these kinds of products.

31.1% of the subjects eat milk or yogurts daily, while only 14.6% have ensured their cheese intake in their nutritional intake.

The data is a subject of concern from the perspective of the 56.3% who consume no such products. The percentage of 31.1% who consume them daily is also hardly an encouragement, because the percentage of calcium contained in such products is very low, and very far from the amounts needed by the processes f growth and development in our body.

The situation recorded for the Meat and derived products category is as follows:

Table 2. The distribution of the subjects that consume products included in the Meat and Derived Products category

Food type	Never	Once	2-3 times	4-6 times	Daily
Chicken or turkey meat	3.7%	18.9%	45.7%	20.7%	11%
Meat products – salami, sausage, ham, etc.	6.1%	16.5%	30.5%	22.0%	25%
Pork meat	14%	55.5%	17.7%	7.3%	5.5%
Fish – fresh, smoked, salted	22%	56.7%	13.4%	5.5%	2.4%
Beef or veal meat	26.8%	45.7%	22.6%	3.7%	1.2%
Canned meat or fish	41.5%	44.5%	11%	3%	0%

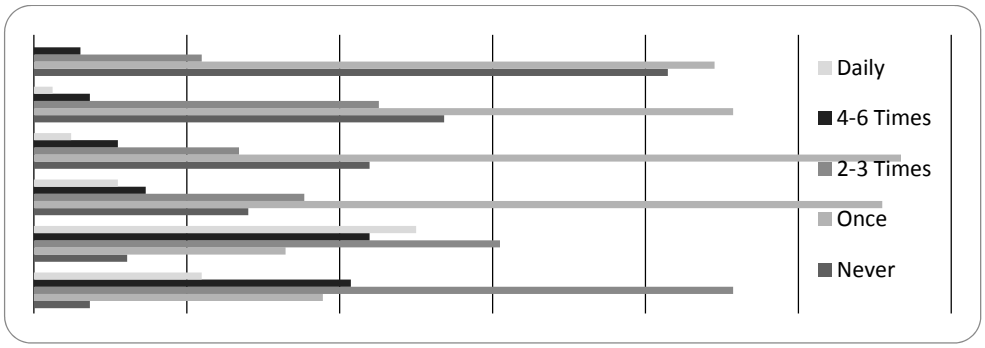

Figure 2. The distribution of the subjects that consume products included in the Meat and Derived Products category (the percentages are shown on the horizontal axis)

One of the first aspects I would like to point out is the high number of subjects that eat chicken, turkey or meat-derived products daily 36% (11% + 25%), once per week 35.4% (18.9% + 16.5%), 2-3 times per week 76.2% (45.7% + 30.5%). The fact that the nutritional intake is appropriately provided with meat is a good thing, but we have to point out also the fact that in the case o those who consume such products 4-6 times per week or daily the emphasis is placed on the sub-category of meat-derived products (salamis, sausages, hams). It is well-known that this category does not provide the quality proteins that the body needs, that it contains a high percentage of associated fat as well as significant amounts of salt.

Pork meat is not significantly present in our subjects' intake, at least not according to their statements: never 14%, once per week 55.5%, 2-3 times per week 17.7%, 4-6 times per week 7.3%. If this is true, there can be two explanations for this fact: either the fat contents of pork meat is well known and is a sufficient reason for it to be avoided, or the price of pork meat is higher than that of chicken meat and therefore the latter becomes the main option.

In a similar situation with the Pork sub-category is also the Fish (fresh / smoked / salted) sub-category: never 22%, once per week 56.7%, 2-3 times per week 13.4%, 4-6 times per week 5.5%. The data is realistic if we take into consideration the fact that the city of Iasi is not an area where fishing is a main hobby, and the price of fish is relatively high compared to the purchasing power of the local population.

Although beef and veal are considered among the highest-quality meats in regards to the intake of animal proteins, its proportion in the subjects' diet is very small (1.2%) for daily intake, small (3.7%) for an intake 4-6 times per week, moderate (22.6%) for the intake 2-3 times per week. Moreover, over a

quarter of the subjects (26.8%) do not include beef or veal in their weekly food ratio. The explanation can be both financial (high price), as well as difficulty to procure (since this meat does not sell well in stores, it is also higher to find).

What our survey has pointed out is that 41.5% of our subjects do not eat canned meats or fish, and a further 44.5% eat these products only once per week. Here we could mention that perhaps they are unfamiliar with the fact that it is preferable to consume a serving of canned fish (especially if it is in tomato sauce or in its own sauce) than to consume meat-derived products (hams, etc.) - whose disadvantages we mentioned above. The best option should always be fresh meat that can be cooked for food, but when this is lacking or in order to diversify the menu then canned fish is a good substitute.

Data regarding the Eggs sub-category

Table 3. The distribution of the subjects that consume products included in the Eggs category

Food type	Never	Once	2-3 times	4-6 times	Daily
Eggs	3%	15.2%	56.7%	14.0%	11%

As far as the intake of eggs is concerned, the situation is closer to a healthy nutrition: 56.7% eat them 2-3 times per week, 14% 4-6 times per week. The percentage of 11% daily consumers is relatively high and can lead us to the idea of compensating for other protein sources: the egg consumption can substitute for that of meat. This situation can be explained both financially, and also by the ease of preparing the food.

Data regarding the Animal and Vegetable Fats category

Table 4. The distribution of the subjects that consume products included in the Animal and Vegetable Fats category

Food type	Never	Once	2-3 times	4-6 times	Daily
Animal fats – butter, cream	22.6%	36.6%	28.7%	5.5%	6.7%
Vegetable fats – oils, margarine	18.9%	28%	24.4%	13.0%	17.1%

Regarding the above data, we find an argument in favor of this study's idea: the importance of knowing what the correct nutrition is made up of and of the way in which food can be prepared in a hygienic way. Values of 18% (never), 28% (once per week) and 24.4% (2-3 times per week) are not realistic for the consumption of vegetable fats, as most processed or cooked foods contain oil.

The responses regarding animal fats are also out of the optimal range of the parameters: 22.6% do not consume these fats, while 36.6% consume them only once per week – for a total of 59.2%. Butter and cream are an important source of energy. Some fats contain or help transport fat-soluble vitamins A, D, E, K as well as the linolenic and linoleic essential fatty acids. These essential fatty acids are part of the composition of triglycerides, and are necessary for the synthesis of prostaglandins, which regulate many of the body's functions (blood pressure, blood coagulation through the aggregation of blood platelets, the secretion of gastric acid). The resistance of cell membranes also depends on the essential fatty acids. The human brain, the central nervous system and membranes from the entire body require the omega-3 fatty acids (especially EPA – eicosapentaenoic acid and DHA – docosahexaenoic acid) in order to function normally. These are only some o the benefits of fats. It is very true that mass-media always talks about "for your health, avoid the consumption of fats, salts and alcohol". But not all kinds of fats should be avoided – and the quantity in which they are consumed is also important.

The answers regarding the Cereals and Dry Vegetables sub-category

Table 5. The distribution of the subjects that consume products included in the Cereals and Dry

Food type	Never	Once	2-3 times	4-6 times	Daily
Bread	1.8%	4.9%	12.2%	7.3%	73.8%
Cereal-derived products: rice, semolina, pasta, polenta	4.9%	30.5%	42.7%	15.2%	6.7%
Potatoes	0%	15.9%	45.7%	28%	10.4%
Dry vegetables - beans, peas, soy	16.5%	47%	23.8%	9.8%	3%

Vegetables category

What we can notice straightaway is that 73.8% of the subjects declare they eat read daily – this is not necessarily a negative aspect in itself, but it largely depends on the quality of the bread that is consumed: in a future study we will ask our questions a lot more precisely.

We can also underline the consumption of potatoes at a ratio of 10.4%, which is actually below the numbers we were expecting to see.

As we have previously mentioned, we have applied our surveys in the month of September, which explains the low percentage of dry vegetables in the nutritional intake: 3% daily, 9.8% 4-6 times per week.

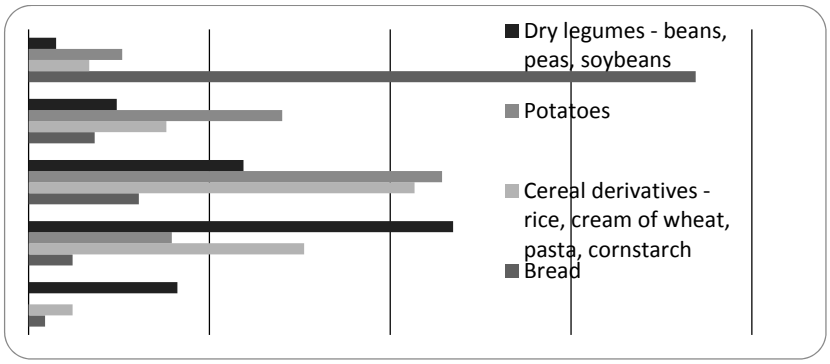

Figure 3. The distribution of the subjects that consume products included in the Cereals and Dry Vegetables category (the percentages are shown on the horizontal axis)

The situation of the answers regarding the Fresh vegetables and fruits category

Table 6. The distribution of the subjects that consume products included in the Fresh Vegetables and Fruits category

Food type	Never	Once	2-3 times	4-6 times	Daily
Fresh vegetables and salads	1.2%	9.8%	32.9%	28.7%	27.4%
Fresh fruits	0%	7.3%	19.5%	22.6%	50.6%

Regarding this sub-category, we notice that at least half of the subjects eat fresh fruits daily. The percentage of 7.3% subjects who declared that they eat fruits once per week, together with the 19.5% who eat them 2-3 times per week, brings the total to 26.8% for whom the intake of vitamins and mineral salts is extremely low.

The results recorded for the Sweets (other than fruits) sub-category

Table 7. The distribution of the subjects that consume products included in the Sweets category

Food type	Never	Once	2-3 times	4-6 times	Daily
Sugar, honey	7.9%	20.1%	29.3%	18.9%	23.8%
Sweets	1.2%	9.1%	17.1%	25.6%	47%

The ratio of those who consume sugar and honey is under a quarter (23.8%), while most of the subjects prefer a daily intake of sweets (other than fruits and/ or sugar / honey). The percentages of 47% who eat sweets are simply very serious through its consequences for the short-term (cavities), but also medium / long term (obesity, risk of cardiovascular disease, diabetes).

Most likely the messages in the mass-media are starting to have a certain effect, but it is still unknown among the large population that the combination of carbohydrates with proteins and fats (such as in chocolate, cakes) are as unhealthy as the consumption of raw sugar.

One question in the survey was related to the source on which the subject relies for information regarding nutrition: 73.2% said the internet (47.3%) or friends (25.9%), 17.7% get their data from the family and the rest 9.1% from school. And while it is true that the internet can also be a source of scientific data, do young people access those sites or the popular media sites?

Girls declared they were more interested in information regarding diet, potentially due to the motivation of maintaining a desired weight (the study included 67 boys and 94 girls).

Conclusions

If we wish to have a healthy population, it is important to educate them regarding nutrition.

Programs must be created in order to explain to young people which food types should be consumed frequently, moderately, rarely and which should be completely excluded from their intake.

Presenting the fundamental nutritional elements (proteins, carbohydrates, fats, mineral salts, vitamins, water, fibers) as factors based on which we can build our health, and not as some rigid rules that are hard to be observed.

Organizing Nutrition classes could probably increase the interest and preoccupation for appropriate diets.

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