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Article

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**NUTRITIONAL IMBALANCE – DOMINANT CONSUMPTION BEHAVIOUR
OF ROMANIAN YOUTH**

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Abstract

The alert lifestyle, the great availability and accessibility of foodstuff and the powerful pressure exercised by the food industry by means of mass-media, in order to encourage overconsumption, have disturbed all the elements of food consumers' behaviour, causing them to miss the nutritional landmarks obtained within family education. Adopting a diet based on quantity instead of quality, due to a bad nutritional education, the modern consumers are both overfed and underfed, two features rarely found in the same body throughout the history. In this context, in order to prevent the nutrition and metabolic disorders, there is the need, more than ever before, of awareness for connecting nutrition and health („you are what you eat”) and the necessity to adopt especially by the new generation of consumers, the basic principles of a balanced diet.

With the main aim to highlight the characteristics of food consumption behaviour for the new generation of Romanian consumers, the authors carried out an exploratory research, based on the technique of *the food diary through estimation*. As for highlighting the potential nutritional imbalances, the authors analysed the medium allowance of energy and macronutrients of the respondents' diet. Also, it would be a fulfilment that the research results to lead to the subsequent elaboration of a guide for redirecting the food behaviour of young consumers, in order to avoid the nutritional imbalances and to prevent serious illnesses.

Keywords: new generation of consumers, eating behaviour, energy intake, guideline daily amounts, nutritional imbalance.

JEL Classification: I12, O13, Z10

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Introduction

The humans' concerns regarding the problems connected to nutrition are as old as our existence. The manner in which they were manifested was very different, depending on the developmental historical periods of the human society. Within the human ecosystem, the foodstuff and nutrition constitute some of the most important components, these developing together with the progress registered in the science and technology areas, as well as the occurrence of some advanced social-economical organization forms for different human communities, which are characterized by a great diversity of cultural models. Regarded in this way, in the decreasing order of their superiority, the informational and industrial civilizations, the agricultural and pastoral, and the hunting ones are being classified, and in the end, the ones which were limited to the picking of food from nature.

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Thus, from the practical point of view, food behaviour can be defined as the ensemble of individual actions and attitudes related to food. Approached from a theoretical perspective, the food behaviour represents the totality of the response reactions against the internal or the external stimuli, which ask for the food intake or for stopping the feeding act. These are inborn reactions (instinctual), as well as attained reactions during life by means of experience. The food behaviour is defined as accomplishing some will acts, having as an aim the intake of nutritive substances, not as such, but as foodstuff, whose significance is more complex than that of the nutritive substances which it contains (Popescu, 2006).

The cultural level of population, as well as of each individual, which is owed to the attained training and to the capacity to analyse, systematize and interpret the detained knowledge, influence the food behaviour decisively. Traditions, beliefs, customs, fashion, as well as the economical or utility reasons have, within this context, a great share in determining the food behaviour. As culture represents the lifestyle of a people, and the appreciation of the cultural behaviour presupposes the analysis not only of the behaviour in society or the manner of dressing for an individual, but also of the feeding manner, the food behaviour must be given a special importance.

The consumption societies of the third millennium are characterized by a great availability of the foodstuff and, at the same time, also by a very powerful pressure from the food industry exercised by means of mass-media, for encouraging overconsumption. The consumer is facing some paradoxical messages: incited, on the one hand, to consume more and more under the advertisements' pressure, on the other hand he is constrained by the fashion standards requirements, to stay slim (Raoult-Wack, 2007).

This paradoxical situation, typical for the contemporary consumption society is going to disturb the consumer and to determine him to lose the nutritional landmarks conveyed

empirically, within family education from generation to generation (Voinea, Popescu and Negrea, 2011).

The adoption of a nutrition based on quantity instead of quality gave birth to a new food consumer type, the individual who is at the same time both overfed and underfed, two characteristics rarely met inside the same body along the history (Pollan, 2008a).

Having as a premise the existence of this deceptive reality, we realized an exploratory research, based on one of the well-known techniques of food consumers' behaviour investigation, *the food diary by means of estimation*, with the aim of highlighting the defining coordinates of the food intake habits and the determining factors of the food consumers' behaviour for the Romanian youth. Moreover, the research also regards the analysis of the medium daily allowance of energy and macronutrients, with the aim of highlighting the potential nutritional imbalances.

The authors would like that the findings of the research could allow the formulation of a set of recommendations in order to avoid the nutritional imbalances in the diet of the Romanian youth. Also, it would be a fulfilment that the research results to lead to the subsequent elaboration of a guide for redirecting the food behaviour of young consumers, in order to avoid the nutritional imbalances and to prevent serious illnesses.

In order to attain the proposed aim, the paper, structured into many sections, starts with a literature review on the subject, in order to identify the most relevant aspects regarding the coordinates of the food consumers' behaviour for the young consumers. The following section is dedicated to the presentation of the objectives and the utilized methodology, and the third part includes results and discussions. In the end, the paper presents in brief the conclusions drew from the realized research, at the same time offering a solution for the correction of food imbalances of young Romanian consumers.

1. Review of academic literature regarding the emergence of the mutations in the food behaviour of modern consumer

Although the feeding process of the humans on the entire surface of the globe had, over time, mutual tendencies, there should be mentioned that each historical region and each population are individualized by certain peculiarities.

The food intake habits of people have become, over long periods of time, genuine nutritional systems, they being, without doubt, the result of some accumulations and successive changes, influenced by factors depending on the natural conditions, structure and social hierarchy, cultural changes, religious orientation, (The South-Eastern Europe was the place of interfering of three important religions at a global level: Islam, Christianity and Judaism), each of these having their own religious norms which offered their own nutritional identities, special for every group of adherents) etc. These factors produced- in case of some foodstuff- changes, additions or eliminations, either temporary or definitive; each epoch had its own contribution or, at least, meant a minimum of experience for the structure of a nutritional diet.

From this perspective, the changing of nutritional habits was nowhere revolutionary, the rough disruptions being hard to be discovered, because the innovations in nutrition have gradually been adopted before the industrial epoch.

During the modern period, especially after The Second World War, due to the technological progress, the intensive agriculture and zootechnics have allowed the development of a powerful food industry, which produced a number of important changes in the nutritional habits, such as (Teuteberg, 2008):

- the introduction in the daily life of the chilled and frozen foodstuff;
- the creation of foodstuff such as the „convenience food” type („comfort” foodstuff habit which reduces the consumers’ effort as far as washing, peeling, cleaning, slicing, mixing, spicing etc. of the raw material);
- the creation of a lot of categories of foodstuff adjusted to the consumers with special nutritional needs (pregnant women, babies, ill people, sportsmen etc.);
- the emergence of the „fast-food” type;
- the widespread use of artificial additives in order to increase the attractivity and the lifespan of foodstuff.

In Europe, the period 1945-1975 can be named „the years of meat”, as meat consumption reached very high levels. During the post-war period, the increase of productivity generated the decrease of prices, influencing the statute of all foodstuffs, especially the traditional ones (Scholliers, 2008).

At the same time, an increase of the foodstuff consumption took place, as the once considered luxury products became accessible to a greater number of people. Thus, consumers became more and more dependent on the market relations.

Also during this period, the big companies producing foodstuff emerged, and they organized production and distribution in a different manner, using their own brand image and contributing to the spread of food and taste worldwide.

At the beginning of the 1970s, the supermarkets emerged, introducing the most radical changes in food purchasing history: sales outlets and self-service. The trolley full of shopping, as a symbol of mass consumption, spread all over the world. (Scholliers, 2008).

The supermarkets introduced on a large scale the semi or ready prepared food, having as a result the shortening of time dedicated to the preparation and consumption of food. The social consequences of this change was felt in the individualization of the feeding act and the loss for significance of the daily and family meals. The supermarkets also contributed to the accessibility on a large scale and year round to the foodstuff and drinks from all over the world, including exotic vegetables and fruits.

In Romania, the Second World War brought a decline of the economic situation and consequently worsened nutritional deficiencies. Followed by a critical period, including the change of the political regime, the nationalization of the agricultural lands, the drought and the famine from 1948, this conflagration marked a turning point inclusively at the level of Romanians’ feeding. Beginning from the year 1950, the calories, proteins, fats and carbohydrates intake tended to increase gradually until the eighth decade of the last century. In parallel it was noticed the increase of refined carbohydrates share for a daily diet, with all the detrimental effects over the health; simultaneously in that period was recorded an insufficient consumption of animal proteins, vitamin deficiencies (which start from an insufficient intake of fresh vegetables and fruit) and a low intake of minerals (Graur, 2006).

In the last decade of the XXth century, as a consequence of the decrease of the standards of living, the nutritional imbalances increased, especially regarding the caloric excesses, caused by fats and carbohydrates intake (mostly from refined and concentrated sources).

Following the globalization of the food offer and the increasing tendencies of standardization for nutrition and homogenization of tastes, at the beginning of the third millennium (especially along with the European integration), the same mutations could be identified in the offer for industrial foodstuff and in the Romanian consumers' nutritional habits (especially those in the urban area), as in other countries from the European Union.

One can speak, globally, of a degradation of the modern feeding at the nutritional level, degradation emerged as a consequence of the food raw materials over-processing. The products standing at the basis of nutrition are, generally, polluted and they lack essential nutrients.

One of the key features for the modern nutrition is represented by the foodstuff consumption of more and more refined products, especially the ones based on carbohydrates. The result of this refining technique generated a consumption of „empty” calories in a food unit (Chirilă, 2007).

Modern food industry, relying on various theories from the nutritional area, tried to compensate this loss by means of fortifying the foodstuff, for example the subsequent addition, during the processing of the refined raw materials, of some absent nutrients (vitamins and minerals). Even if some lost micronutrients are subsequently reintroduced, it was proven that food science isn't advanced enough to be able to compensate for all the negative effects of food processing, the complexity of food being impossible to be remade artificially (Pollan, 2008a).

By utilizing both the modern techniques of modification/ refinement and fortification of the raw material, a situation was generated, which can be considered as the nutritional equivalent of the inflation, determining the individuals to consume more in order to obtain the same quantity of essential nutrients (the absence of micronutrients from the food generates the cancellation of the normal sensation of fullness, which emerges after a sufficient calories intake, and the continuous hunger which the body is feeling is, in fact, a subterfuge for getting the absent nutrients) (Pollan, 2008b).

The opinions expressed within the literature, regarding the selection of food, show that young people having surpassed the stage when the control exercised by the parents was dominant, have a very high personal control over their food choices, with regards to the type of consumed foods, of their frequency and quantity (George and McDuffie, 2008).

Some studies aimed to identify the decisive factors in choosing food products by young people underlined the fact that the psychosensorial characteristics held a main role (Beasley, Hackett and Maxwell, 2004; Louis et al., 2007). Thus, young people, genuine slaves of the gustatory papillae, give much importance to the hedonic aspect for consumption, neglecting the objective reality of food quality, represented by the nutritional value.

2. Objectives and research methodology

After investigating the literature, as well as in accordance with the authors' own observations on daily life regarding the food intake, authors noticed the existence of a discrepancy which is continuously increasing under the constant pressure of the food industry, respectively fashion standards requirements. These two factors act in two different directions, which generate contradictory effects over the consumption behaviour for young Romanian consumers.

Thus, after decades of abusive intake of over processed foodstuffs, due to some precarious information with regards to the real nutritional benefits of the industrial processed foods, the result is not at all encouraging: people are increasingly overweight, sicker and worse fed.

Assuming the existence of a nutritional imbalance in the daily diet of young consumers, the hereby work aims the following objectives:

- identify of the main coordinates of the food habits for the new generation of consumers in Romania;
- highlight the determining factors of the food habit for young Romanian consumers;
- analyse the daily allowance of calories and macronutrients of the diet for the studied collectivity;
- detect the possible types of imbalances in the respondents' diet by determining the medium degrees of covering the recommended calories and macronutrients intake;
- develop some recommendations for correcting the possible imbalances from the diet of young Romanian consumers.

The evaluation of the food intake can be realized through nutrition questionnaires, which can offer explanations on food intake and implicitly, on energy and essential nutrients of an individual's diet. It must be specified from the very beginning that there is no method which can allow an accurate assessment of the food intake.

The techniques of nutrition monitoring surveys are diverse, materializing in: the statistical study of the food availability for a population, the study on homogenous social groups or institutions, the family questionnaire, the individual questionnaire (which may comprise: the diary method by means of weighing or estimation, the method of the questionnaire for nutritional frequency, the nutritional history) (Marcu, 2011).

The nutritional questionnaire is indispensable in any step for changing the nutritional behaviour, because, in its absence, any intervention cannot have but a general character, being materialized, in fact, in establishing either a standard regime, or a list of interdictions.

The nutritional questionnaire doesn't aim at the exact determination of the food intake for the individual, its aim being that of obtaining a clearer image of the nutritional habits. In case of necessity, the nutritional questionnaire can be a useful support for some personalized diet advice (Holford, 2008).

One of the well-known methods for gathering the data in a nutritional questionnaire is the one of the nutritional diary, which can be filled in by the investigated individual, by a friend, or by the investigator himself if the reference period is short.

An undeniable advantage of the nutritional diary method resides in the fact that the study developed on several days, will allow the establishment of nutritional habits for the respondents. The method of the nutritional diary is preferred instead of other methods, because it does not appeal to the respondent's memory. Of course, like any research method, the one of the food diary has a number of disadvantages, such as the fact that it implies a high availability for collaboration from the respondents, requiring them to register the foodstuff and the consumed quantities at each meal, for many days (one single day registration is hardly representative for the individuals' nutritional habits). For this reason, the number of respondents isn't very high in such a research. Among the errors which may affect this type of research the authors must include the tendency to underestimate the food intake outside the house and that of selecting/ excluding certain foods (especially the ones being associated with the unhealthy nutrition) (Graur, 2006).

The method of the nutritional diary ensures the obtaining of some correct information from a quantitative point of view, from this reason being often called as "the golden standard" of appreciating the energetic intakes, against which all the other methods are compared. In order to fill in a nutritional diary, the individual must be trained with regards to the level of the required details, description and assessment of food quantities, preparation methods, and portions sizes.

Within the research, the authors have chosen the method of *the nutritional diary through estimation*, which implied the indication of the foodstuff and, approximately, of the ingested quantities.

The sample was made up of 40 people, with the age between 20 and 26, having a Romanian nationality, 28 women and 12 men, students at the master programs of the Faculty of Business and Tourism, from ASE Bucharest.

The research was realized between April-June 2014. For a period of seven days, using a model of a nutritional diary which was given by the paper's authors, the students wrote the foodstuff they consumed for the main meals of the day and the two appetizers and they indicated, approximately, the ingested quantity of each foodstuff.

Subsequently, for the designated foodstuff in the nutritional diaries of the respondents, the proteins, carbohydrates, lipids contents were identified, using diverse data bases with the chemical compositions of the foodstuffs (United States Department of Agriculture (USDA), n.d.).

The data processing was realized by means of the spreadsheet program Excel and implied, at first, the calculation of the whole quantities of proteins, lipids and carbohydrates corresponding to the afferent foodstuff and quantities, as indicated by the respondents, at each of the five daily meals (breakfast, appetizer 1, lunch, appetizer 2, dinner), for a period of seven days. Starting from these values, the energetic value of each meal was calculated, by summing them up the calories intake for each day, and then, the average of the daily energy intake was calculated for every respondent. The second stage implied the calculation, for every respondent, of the degrees for covering the recommended daily intake for each of the three categories macronutrients, as well as for the recommended daily calories intake.

Within the nutritional norms, the recommended daily energy and nutrients with energetic role are differentiated according to sex, age and the intensity of the physical effort made.

However, as the respondents are included in the same age category and, in general, don't have an intense physical activity (they may be characterized by sedentary due to the socio-professional context, being master students and employees), the only criterion of separation is gender. Thus, the data were presented and processed (the calculation for the degrees of covering the recommended daily energy and energetic nutrients requirements) separately for females and males.

The calculation of the caloric intake and the degrees of covering the recommended daily energy and nutrients with energetic role was based on the following formulae (Dima et al., 2006):

$Q = 4,1 * P + 4,1 * GI + 9,3 * L$ where:
 Q - energy value of the product (kcal); P, GI, L - amounts of proteins, carbohydrates, lipids (g).

$G = Q/N * 100$, unde where:
 G - degree of coverage of recommended daily energy intake (%); Q - energy value (kcal); N - the recommended daily energy intake (kcal).

$G_P = P/N_P * 100$ where:
 $G_{GI} = GI/N_{GI} * 100$ G_P, G_{GI}, G_L - degrees of coverage of the recommended daily intake of proteins, carbohydrates, lipids (%); P, GI, L - amounts of protein, carbohydrates, lipids (g); N_P, N_{GI}, N_L - daily recommended intake of proteins, carbohydrates and lipids (g).
 $G_L = L/N_L * 100$

3. Results and discussions

In Table no. 1, the medium daily calories allowance is rendered and also the one for macronutrients, as well as the average degrees of covering the recommended daily energy and macronutrients intake, in case of the female respondents. The calculation of the covering degrees was based on the recommended necessities within the nutritional norms in Romania for females with the age between 20-45 years old, who undertake a physical activity of weak intensity (2500 kcal, 90 g proteins, 340 g carbohydrates, 80 g lipids).

Table no. 1: The average daily allowance of macronutrients and energy and average degrees of covering the recommended daily intake for females

| No. | The average daily macronutrients and energy allowance in case of females respondents | | | | The average degrees of covering the recommended daily intake for macronutrients and energy for females | | | |
|-----|--|--------|--------|---------------|--|---------------------|--------------------|-------|
| | P (g) | GI (g) | L (g) | Energy (kcal) | G _P (%) | G _{GI} (%) | G _L (%) | G (%) |
| 1 | 57.91 | 70.27 | 28.50 | 790.56 | 64.35 | 20.67 | 35.62 | 31.62 |
| 2 | 101.90 | 150.64 | 102.67 | 1990.21 | 113.23 | 44.31 | 128.33 | 79.61 |
| 3 | 85.95 | 240.68 | 103.70 | 2303.59 | 95.50 | 70.79 | 129.63 | 92.14 |
| 4 | 75.73 | 136.08 | 64.80 | 1471.09 | 84.15 | 40.02 | 81.00 | 58.84 |
| 5 | 41.55 | 134.60 | 28.64 | 988.56 | 46.16 | 39.59 | 35.80 | 39.54 |
| 6 | 59.92 | 179.63 | 58.58 | 1526.88 | 66.57 | 52.83 | 73.22 | 61.08 |
| 7 | 63.26 | 196.52 | 74.26 | 1755.68 | 70.29 | 57.80 | 92.82 | 70.23 |
| 8 | 54.31 | 138.88 | 54.06 | 1294.83 | 60.34 | 40.85 | 67.57 | 51.79 |
| 9 | 64.46 | 273.03 | 65.29 | 1990.89 | 71.63 | 80.30 | 81.61 | 79.64 |

| No. | The average daily macronutrients and energy allowance in case of females respondents | | | | The average degrees of covering the recommended daily intake for macronutrients and energy for females | | | |
|------------|--|---------------|--------------|----------------|--|---------------------|--------------------|--------------|
| | P (g) | Gl (g) | L (g) | Energy (kcal) | G _p (%) | G _{Gl} (%) | G _L (%) | G (%) |
| 10 | 91.74 | 188.31 | 105.98 | 2084.86 | 101.94 | 55.39 | 132.47 | 83.39 |
| 11 | 85.47 | 149.78 | 98.99 | 1945.33 | 94.96 | 44.05 | 123.73 | 77.81 |
| 12 | 98.29 | 157.48 | 48.53 | 1462.08 | 109.22 | 46.32 | 60.67 | 58.48 |
| 13 | 62.34 | 80.83 | 31.47 | 879.68 | 69.27 | 23.77 | 39.34 | 35.19 |
| 14 | 55.85 | 321.44 | 54.38 | 2111.50 | 62.05 | 94.54 | 67.98 | 84.46 |
| 15 | 124.51 | 249.32 | 127.32 | 2800.49 | 138.34 | 73.33 | 159.15 | 112.02 |
| 16 | 70.12 | 123.50 | 57.13 | 1260.00 | 77.91 | 36.32 | 71.42 | 50.40 |
| 17 | 78.74 | 176.11 | 97.33 | 1950.10 | 87.49 | 51.80 | 121.67 | 78.00 |
| 18 | 72.84 | 157.61 | 101.83 | 1813.94 | 80.93 | 46.36 | 127.29 | 72.56 |
| 19 | 52.67 | 130.11 | 44.66 | 1164.78 | 58.52 | 38.27 | 55.83 | 46.59 |
| 20 | 72.82 | 127.01 | 91.05 | 1666.03 | 80.91 | 37.36 | 113.81 | 66.64 |
| 21 | 49.03 | 110.39 | 68.14 | 1287.33 | 54.48 | 32.47 | 85.18 | 51.49 |
| 22 | 80.88 | 98.43 | 83.81 | 1532.10 | 89.87 | 28.95 | 104.76 | 61.28 |
| 23 | 90.03 | 201.84 | 80.32 | 1916.49 | 100.03 | 59.37 | 100.41 | 76.66 |
| 24 | 67.81 | 52.10 | 40.94 | 866.02 | 75.34 | 15.32 | 51.18 | 34.64 |
| 25 | 77.20 | 144.75 | 79.62 | 1643.02 | 85.78 | 42.57 | 99.53 | 65.72 |
| 26 | 98.61 | 183.98 | 92.94 | 2022.93 | 109.57 | 54.11 | 116.17 | 80.92 |
| 27 | 94.82 | 192.03 | 89.50 | 2008.42 | 105.35 | 56.48 | 111.88 | 80.34 |
| 28 | 87.46 | 115.84 | 74.33 | 1524.80 | 97.18 | 34.07 | 92.91 | 60.99 |
| AVG | 75.58 | 160.04 | 73.17 | 1644.72 | 83.98 | 47.07 | 91.46 | 65.79 |

Note: G_p, G_{Gl}, G_L - degrees of coverage the recommended daily intake for proteins, carbohydrates, lipids (%); P, Gl, L – amounts of protein, carbohydrates, lipids (g)

As the energetic value is that component of the nutritional value which expresses the quantitative aspect of ingested food, in case of the female respondents the authors can speak of an imbalance, originating, in the majority of cases (27 of 28 respondents) in an insufficient food intake, the average degree of covering the recommended daily intake for energy being of 65,79% (an average of 1644.72 kcal.) In case of one single female respondent the authors noticed an average covering degree of the daily energy intake of 92,14% (2303,59 kcal), being the closest to the optimum value of 100% (that is the recommended necessary of 2500 kcal). Only one respondent had an excessive average energy intake, approximately 2800 kcal, exceeding with 12% the recommended daily necessities. At the opposed side, there are 5 respondents who had a daily medium caloric intake smaller than half of the recommended daily necessary, the average degrees of covering the daily energetic necessities being between 31-47%.

In order to discover the cause of this caloric imbalance, the authors analysed the situation of the average degrees of covering for the three categories of macronutrients (proteins, carbohydrates, lipids) which delineated the energetic value for each foodstuff, in case of female respondents (Figure no. 1).

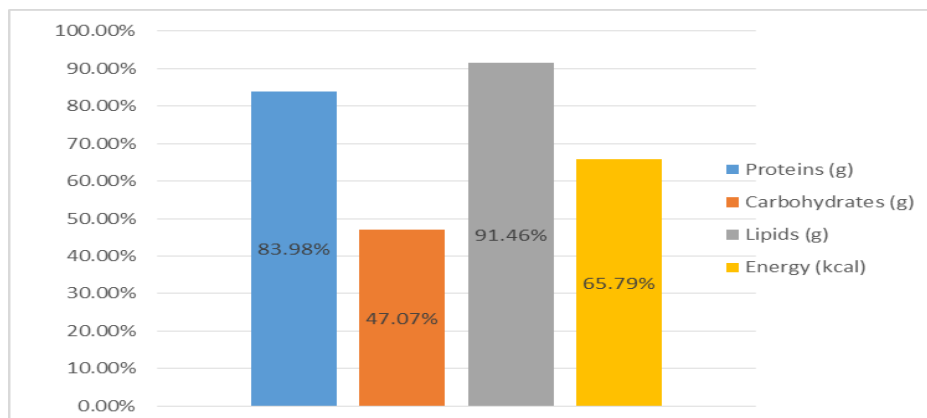


Figure no. 1: The average degrees of covering the recommended daily intake of macronutrients and energy for females

With regards to the degree of covering the recommended daily necessities for proteins, the average is of 83,98%, which corresponds to a daily average intake of 75,58 g. Overall, there is some imbalance, but it's not very serious. From the total of female respondents, 21% (6 people) can be spoke of as intaking optimum proteins within the daily diet, the degrees of covering the proteins necessities being close to the optimum value of 100% (they are between 95-105%). In case of 4 respondents an excessive proteins intake occurs, the degrees of covering for the daily necessities of proteins being 109,22%, 109,57%, 113,23% and 138,34%. The diet of a person only can be characterized by a proteins intake smaller than half of the recommended necessary (a degree of covering of 46,16%, corresponding to a daily medium intake of approximately 41 g).

With regards to carbohydrates, we notice that the imbalance is very pronounced. Media coverage degrees of the recommended daily intake of carbohydrates is 47,07% (which corresponds to a daily average intake of 160,04 g) that is less than a half of the recommended daily necessities. Moreover, levels of carbohydrates coverage requirement for approximately 60% (17 people) of the females respondents are situated under the level of 50% (in case of 4 people, the values for the covering degrees are comprised between 15-30%). This great imbalance in daily carbohydrates intake nutrition can be explained by the false myth present inside the female mentality, the one that the carbohydrates contribute to gaining weight. Taking into consideration that the age of the respondents is between 23-25 years old, the preoccupation for the physical aspect is exacerbated. This results in either adopting restrictive diets, or even permanent exclusion of certain foods from the diet, incriminated for the high caloric value, among them being various sources of carbohydrates. The problem is that, most of the times, they give up healthy foods from a nutritional point of view, such as, for example, the whole cereals and the derived products, only from reasons connected with the high level of carbohydrates. Only one person from the 28 females has a diet with a carbohydrates intake which might be considered optimum (the degree of covering is 94,95%).

In the case of lipids, the average degree of covering the necessities is of 91,46% (which corresponds to a daily average intake of 73,17 g), a value which highlights a relatively great imbalance. In the case of 3 of the respondents, the values for the covering degrees register

smaller figures than 50% of the recommended optimum necessary (35,62%, 35,8% and 39,34%). Only the diet of 5 from the female respondents may be considered balanced from the point of view of the lipids intake, the covering degrees of the recommended daily necessities being comprised between 92-105%. Approximately 36% (10 people) from the female respondents eats lipids excessively, exceeding with 11-59% the recommended optimum necessary. In the case of the individual where the covering degree for the lipids necessary is 159% it could be noticed an excessive proteins intake (the covering degree for the proteins necessary is of 138,34%), this situation leading, implicitly, to a caloric excess (the covering degree for the energetic necessary is of 112%).

Table no. 2 highlights the medium daily calories and macronutrients allowance, respectively the average degrees of covering the recommended daily energy and macronutrients intake, calculated in the case of the male respondents. The calculation of the covering degree was based on the recommended necessities in the nutrition norms from Romania for men having the age between 20-45, who have a physical activity of small intensity (2700 kcal, 90 g proteins, 370 g carbohydrates, 90 g lipids).

Table no. 2.: The average of daily allowance of macronutrients and energy and average degrees of covering the recommended daily intake for male

| No. | The average daily macronutrients and energy allowance in case of male respondents | | | | The average degrees of covering the recommended daily intake for macronutrients and energy for male | | | |
|------------|---|---------------|---------------|----------------|---|--------------|---------------|--------------|
| | P (g) | GI (g) | L (g) | Energy (kcal) | Gp (%) | GGI (%) | GL (%) | G (%) |
| 1 | 79.12 | 234.05 | 96.33 | 2179.88 | 87.91 | 63.26 | 107.04 | 80.74 |
| 2 | 59.19 | 221.12 | 49.00 | 1604.94 | 65.76 | 59.76 | 54.44 | 59.44 |
| 3 | 126.36 | 295.85 | 159.47 | 3214.09 | 140.40 | 79.96 | 177.19 | 119.04 |
| 4 | 89.97 | 381.55 | 120.73 | 3056.07 | 99.97 | 103.12 | 134.15 | 113.19 |
| 5 | 122.05 | 248.53 | 107.38 | 2518.06 | 135.61 | 67.17 | 119.31 | 93.26 |
| 6 | 87.82 | 228.33 | 97.72 | 2204.98 | 97.57 | 61.71 | 108.57 | 81.67 |
| 7 | 171.94 | 359.18 | 129.41 | 3359.93 | 191.04 | 97.08 | 143.79 | 124.44 |
| 8 | 70.58 | 125.25 | 76.42 | 1533.01 | 78.43 | 33.85 | 84.91 | 56.78 |
| 9 | 103.24 | 196.41 | 124.26 | 2394.42 | 114.71 | 53.08 | 138.07 | 88.68 |
| 10 | 132.52 | 146.16 | 100.69 | 2079.01 | 147.25 | 39.50 | 111.88 | 77.00 |
| 11 | 73.84 | 226.62 | 52.74 | 1847.47 | 82.05 | 61.25 | 58.60 | 68.42 |
| 12 | 103.2 | 204.33 | 124.41 | 2417.89 | 114.67 | 55.22 | 138.23 | 89.55 |
| AVG | 101.65 | 238.95 | 103.21 | 2367.48 | 112.95 | 64.58 | 114.68 | 87.68 |

Note: Gp, GGI, GL - degrees of coverage the recommended daily intake for proteins, carbohydrates, lipids (%); P, GI, L – amounts of protein, carbohydrates, lipids (g)

In the case of the male respondents too, there is the same imbalanced situation, which means an insufficient calories intake, the average degree of covering the recommended daily energy intake being of 87,68% (an average of 2367.48 kcal). It can be noticed that 25% of the respondents (3 individuals) have an excessive calories allowance, exceeding by 13%, 19%, 24% the daily recommended intake, while the majority, that is 75% of the respondents (9 individuals) have an insufficient calories allowance. The smallest covering degrees were 59%, which is a medium calories allowance of 1604.94 kcal, and 57%, respectively, representing a medium calories allowance of 1533.01 kcal. (figure no. 2)

Next, the authors analyzed the situation of the medium covering degrees for the three categories of macronutrients (proteins, carbohydrates, lipids), in the case of the male respondents, with the aim of discovering the cause of caloric imbalance.

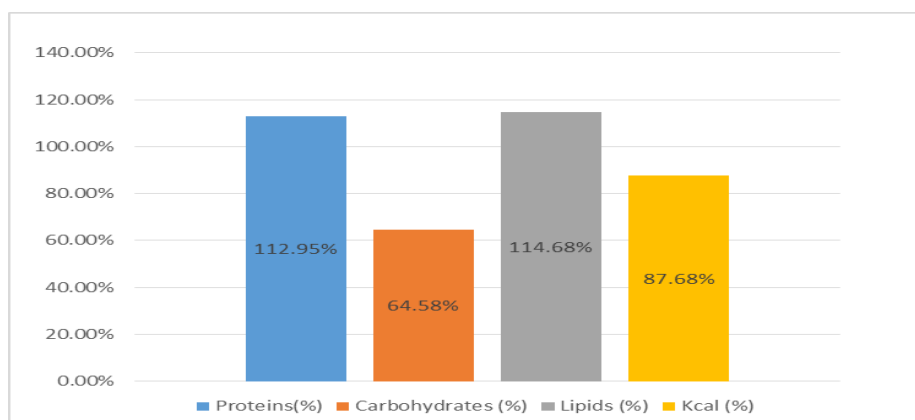


Figure no. 2: The average degrees of covering the recommended daily intake of macronutrients and energy for male

In the case of proteins, the medium covering degree of the recommended necessities is 112,95%, corresponding to a daily average intake of 101,65 g, that is highlighting a hyper-protein diet. The diet of 50% of the male respondents (6 from 12 individuals) is characterized by a hyper-consumption of proteins, the proteins intake in their case being with 15-91 higher than the optimum necessary. At the individual with the covering degree for proteins of 191% it can be noticed an excess of lipids too (the covering degree for the lipids necessary is of 143,79%), the carbohydrates intake being proper. This is the respondent who has the biggest covering degree for the energetic necessities (124,4%). Only in the case of 2 respondents there is an optimum protein intake, the covering degree for the necessary being of 97,57% and of 99,97% respectively. The smallest covering degree for proteins is of 65,76%.

Although, on average, the covering degree for the carbohydrates necessary registered a bigger value for the male respondents than for the female ones (64,58% against 47,07%), we also have an imbalanced situation, generated by the insufficient carbohydrates intake in the diet (a daily average of 238,95 g). From the total of respondents, just at 2 individuals is noticed a proper carbohydrates intake during daily diet, the covering degrees having values of 97,08 and 103,12 respectively. In the case of 2 individuals too, there is the smallest carbohydrates intake, the covering degrees of the recommended daily necessities having smaller values than 50% (33,85% and 39,5%). For a percent of 58% (7 individuals from 12) from the total of male respondents, the covering degrees for the recommended necessary are between 53-80%.

With regards to the lipids intake for the male respondents' diet, as the average of 114,68% for the covering degree of the recommended necessary indicates, the imbalance is maintained, being generated this time by the excessive intake (a daily average of 103,21 g). It can be noticed that for 75% of the respondents (9 individuals from 12) there is a lipids

excess, which exceeds by 7-44% the optimum value. The smallest lipids intake (54,44% from the recommended necessary) is registered in the case of one respondent, this being the individual in whose diet it can be noticed the smallest proteins intake (65,76%).

Analysing the diet diaries filled in by the respondents, the authors formulated as main coordinates of food consumption behavior of the new generation of consumers the following:

- in the greatest part, the macronutrients allowance comes from the foodstuff consumed at lunch or dinner, breakfast or appetizers being usually poor in proteins; breakfast should be found in the diet programme of every individual, no matter the age or the activity and, along with the first appetizer of the day, this must cover for the 30% of the daily energetic and nutrients intake, in case the foodstuffs are properly chosen.

- within the young people's diet who took part in the research we identified the presence of a number of nutritionally imbalanced foods, such as meat and cheese products industrially processed, pastry industrial products with a high glycemic index (biscuits, wafers, cookies, pretzels etc.), pizza and carbonated refreshing drinks etc., which provide considerable quantities of saturated and hydrogenated fats, simple carbohydrates and insufficient quantities of superior quality proteins, which are at the basis of imbalances from the diet of the participants at the research; this issue support the above statement concerning the failure to correct nutritional laws.

Conclusions

The results of the hereby research highlight an imbalanced food behaviour for young consumers.

The diet of the female respondents is imbalanced, generically reflected by a medium covering degree of the daily recommended calories intake of 65,79% (that is an insufficient energetic allowance, on average of 1644.72 kcal./day, compared with the recommended intake of 2500 kcal.). This caloric imbalance is a consequence of the insufficient food allowance and, at the same time, of macronutrients (because the medium covering degree for the daily recommended proteins intake is of 83,98%, the medium covering degree for the daily recommended carbohydrates intake is of 47,07% and the medium covering degree for the daily recommended lipids intake is of 91,46%).

The same imbalanced situation occurs within the male respondents' diet, with the medium covering degree of the daily recommended calories intake of 87,68% (corresponding to an insufficient calories allowance, on average of 2367.48 kcal./ day, compared with the recommended intake of 2700 kcal.). This caloric imbalance, a consequence of an insufficient food allowance, the same as for the female respondents, is generated, this time, by an excessive lipids and proteins intake (because the medium covering degree for the daily recommended proteins intake is of 112,95%, the medium covering degree for the daily recommended carbohydrates intake is of 64,58%, while the medium covering degree for the daily recommended lipids intake is of 114,68%).

In conclusion, the diet of both female and male respondents is imbalanced, more or less pronounced, highlighted by the values of the covering degrees for the recommended daily calories and macronutrients intake. If in the case of the female respondents the nutritional

imbalance is generated by the insufficient allowance of macronutrients (especially carbohydrates and proteins), in the case of the male respondents, the imbalance reflects an excessive nutrients allowance (especially proteins and lipids).

The results of the present research, correlated with the previous obtained results (Pamfilie et al., 2011), highlights the necessity to elaborate a set of recommendations, under the shape of a healthy nutrition guide, which will allow the reorientation of the food behaviour for the young Romanian consumers, because sustaining a healthy diet, by means of variety and moderation, with the aim of reconciliation of the sensorial satisfaction with dietary restrictions, isn't an easy project.

The authors suggest, as a possible approach for elaborating this guide, the American experience, based on the most recent scientific evidence obtained by USDA (United States Department of Agriculture) and HHS (United States Department for Health and Human Services), which provide solutions for adopting a model of healthy diet, based on foodstuff with high nutritional value, able to contribute to maintaining health and body weight.

The newest American model of healthy eating, illustrated by the symbol „*MyPlate*”, includes five food groups, able to provide for the young consumers' diet all the necessary nutrients, without having a higher caloric intake (Figure no. 3).



Figure no. 3: “MyPlate” Symbol

Source: United States Department of Agriculture (USDA), 2010. *My Plate*

For an optimum diet, the model offers recommendations for the consumers with regards to the foods and/ or some of their components whose intake must be increased, as well as the ones whose intake must be decreased (USDA Food Patterns, 2011):

- *The fruit and vegetables consumed at a meal must cover half of the plate;*
- *The consumed milk and dairy products should have 1% fat or should be degreased;*
- *At least half of the quantity of consumed grain should be whole;*
- *The consumed proteins should come from varied sources (fish, seafood, beans, low-fat meat).*

The American recommendations could be adapted to the Romanians and, subsequently, utilized for elaborating educational materials, as well as for designing and realizing some nutritional programs by national decision makers.

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