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# The Structure Of Romanian's Food Consumption and its Implications on Health Condition and Quality Of Life

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## Abstract

The analysis of the food consumption of the Romanian population reveals the fact that a series of foods are consumed in excess, while other nutritional factors register deficient intake, which considerably increases the risk of chronic diseases. Thus, the high saturated fat consumption (foods high in saturated and trans fatty acids), cholesterol, salt, sugar, refined grains and even alcohol increase the incidence of chronic disease risk. Unbalanced consumption of fish and dairy products, fresh fruit and vegetables results into a lower intake of essential amino acids, polyunsaturated fatty acids, vitamins (C, A, B, D, folic acid), calcium and iron, according to recommendations of nutritionists. Therefore, there are required some nutritional recommendations to ensure the optimal nutrient and energy needs of the body, thus reducing the risk of chronic diseases and ensuring the health of the population.

**Keywords:** food consumption, energy intake, nutrient intake, diet quality, population health condition, quality of life.

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## Introduction

Nutrition plays an important role in promoting and maintaining the health condition during the entire life, a non-sanogenous diet playing an important role in determining the incidence of many chronic diseases and alarming prevalence in current civilization such as obesity, type 2 diabetes mellitus, cardiovascular disease, cancer, osteoporosis and dental diseases.

Recent reports of the World Health Organization show that chronic diseases contributed with approximately 60% to the total all deaths reported

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worldwide (almost half of this figure being due to cardiovascular diseases) and with almost 46% to the current global morbidity, 79 % of deaths registered in the world due to chronic diseases occurring in developing countries. It is expected that by 2020, deaths due to chronic diseases to increase to 57% worldwide, and the mortality caused by these could reach about 75% of all deaths (Nutrition Society of Romania, 2006).

A common feature of chronic diseases, however different may be their mechanism of production is that each represents a great potential of prevention, which once achieved could provide significant reduction in medical costs, as well as in all costs socially and economically related. The target of primary prevention of chronic disease is the modifiable risk factors, among which stand out especially the eating habits and sedentary lifestyle. To these there may be added other measures regarding risk factors such as chronic smoking, alcohol consumption, overweight, dyslipidemia, hypertension, etc. (Nutrition Society of Romania, 2006).

Food quality is a concern because it directly affects the health condition of the population. Thus, it is known that certain deficitary food patterns are associated with 4-10 causes of death (coronary heart disease, some cancers, stroke, type 2 diabetes). Moreover, a healthy diet may reduce major risk factors for a number of chronic diseases such as obesity, high blood pressure, high cholesterol content in the blood, etc.. It is estimated that the main means of improving the state of health of the population is improving its food.

#### **Characteristics of food consumption of the population in Romania**

Main determinant of long-term changes in food consumption is the consumer's income. The decline of real income and the increase of the prices of products during 1990-1999 have decreased the purchasing power of the population which was reflected in the changes occurring in food consumption patterns.

Another reason for the substitution effects of structural changes occurring in consumption is that until 1999 the consumer price indices of food products were superior to total consumer price indices (Costin, G.M. and Segal, R., 2001). Thus, this period is characterized by the reduction the consumption of fruit (27.06%), sugar (23.44%) and vegetable fat (14.5%) of the food category of vegetables, respectively, fish (with 56.86%), meat (with 20.82%), eggs (with 16.26%) and animal fats (with 35.29%), of the group of animal products. On the other hand there is a substantial increase in the consumption of potatoes (with 44.95%), vegetables (with 22.83%) and cereals and cereal products (9%), of vegetable origin products category and respectively, milk and milk products (with 38.47%) of the category of animal products.

With regard to the consumption of drinks in the period 1990-1999

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there is an increase in the consumption of soft drinks by 89.42% and the consumption of wine, until 1998, with 74.05% compared to 1990, while the consumption of beer decreases until 1997, with 21.84% compared to 1990, the same trend being registered in the consumption of distilled alcoholic beverages.

In the period 2000-2008, due to an improvement in the economic situation of Romania and as a result of doubling the consumer incomes, as evidenced by increasing real earnings index by 119.2% in 2008 compared to 2000, increased consumer purchasing power which is also emphasized by increased food consumption in all commodity groups except for cereals and cereal products whose consumption decreased by 5.9% in 2007 compared to 2000. The biggest increase in consumption (with 212.09%, in 2008 compared to 2000) had soft drinks, followed by fruit and fruit products derived (with 86.97% in 2006 compared to 2000), fish and fish products (with 76.92% in 2006 compared to 2000), beer (with 67.27% in 2007 compared to 2000), meat and meat products and edible offal (with 50.97% in 2006 compared to 2000).

Decreasing population incomes in 2008-2011 as a result of economic recession caused further changes in food consumption structure, except for fish and fish products all groups of food registered decreases.

Thus, the average annual consumption of fruits and fruit products decreased with 7.5% in 2011 compared to 2008, the consumption of milk and dairy products decreased by 10.6% (in 2011 compared to 2008), the consumption of eggs decreased by 6.8% (in 2011 compared to 2008), meat consumption decreased by 25.9% (in 2011 compared to 2008), the consumption of beverages also followed the same downward trend which was stronger in the case of alcoholic beverages.

With regard to the consumption of vegetables and fruit, leguminous bean plants and watermelons, the largest proportion in the diet have tomatoes, followed by cabbage, melons, dry onions, edible roots and pepper. Tomato consumption showed a fluctuating variation from year to year. The consumption of leguminous bean plants declined until 1994 after which a slight increase was registered until 2009 without large variations from year to year. Nevertheless, the average annual consumption of leguminous bean plants of the year 2010 represents only 71.79% of the average consumption registered at the level of the year 1990. Remaining vegetables consumption recorded average annual growth in the period under review, as follows: cucumbers with 114.29%, melons with 99.19%, cabbage with 85.27%, green beans with 69.23%, edible root vegetables with 62.16%, peppers with 56% and dry onion with 52.46%.

With regard to consumption of fruit and fruit products, the highest rate in the current food of Romanians is registered with the apples, followed

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by southern and exotic fruits, grapes, plums, cherries and sour cherries, peaches and apricots and sour apricots. It should be noted that until 1997 the grape consumption held the second place among Romanians preferences with regard to fruits and fruit products, after apples, and since 1998 the consumption of southern and exotic fruit has greatly increased leaving behind the grape consumption. Actually, southern and exotic fruit represent the only categories whose consumption increased during 1990-2011, most types of fruits registering a decrease in consumption.

In the case of meat, the highest consumption is recorded for pork, followed by chicken, beef, mutton and other types of meat and offal. In the period 1990-2011 the consumption of pork increased with 25.1%, while the consumption of chicken, although some variations were recorded in the year 2011 is similar to that of the year 1990, the consumption of other types of meat increased in the years 2007-2008, and later returned to the values recorded in 1990, beef consumption dropped with 50.46% compared to that corresponding to the year 1990, and edible offal consumption recorded a decrease of 17.07% compared to that corresponding to the year 1990. High consumption of pork is attributed to Romanian traditional preferences.

In terms of vegetable and animal fat consumption during the analyzed period there is a decrease of butter consumption on account of the vegetable oil and margarine. Although the effects of substitution in consumption are usually influenced by changes in relative prices (higher accessibility of margarine), it is possible that these trends represent the onset of health concerns or at least aspects of nutritional food selection.

Other factors contributed as well to these patterns of food consumption in Romania, namely cultural factors (the use of refined sugar, eggs and animal fat in preparing traditional homemade cakes), socio-psychological factors: traditional preferences are sometimes contrasted with medical recommendations: preference to fatty foods (cabbage rolls stuffed with meat) educational factors: poor knowledge about the implications of different food products consumption on individual health.

The analysis of average daily food consumption, per capita, expressed in kcal (Figure 1) compared to average daily caloric needs, per capita, calculated taking into account the structure of the Romanian population and FAO recommendations, indicates a surprising dietary caloric surplus up to 20% in the period 1990-2000, in the context of the decreasing of the average real income, probably maintained by consuming cheap calories, because in 2001-2008 caloric surplus grew to 24-33% compared to the necessary one, and after 2008, as a result of the registration of a further fall in average real wage levels of the population that surplus has fallen to 27.2% compared to the needs.

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Reducing food quality in Romania in the period 1990-2000 can be evidenced by the reducing of protein intake by 3.16% in 2000 compared to the corresponding 1990.

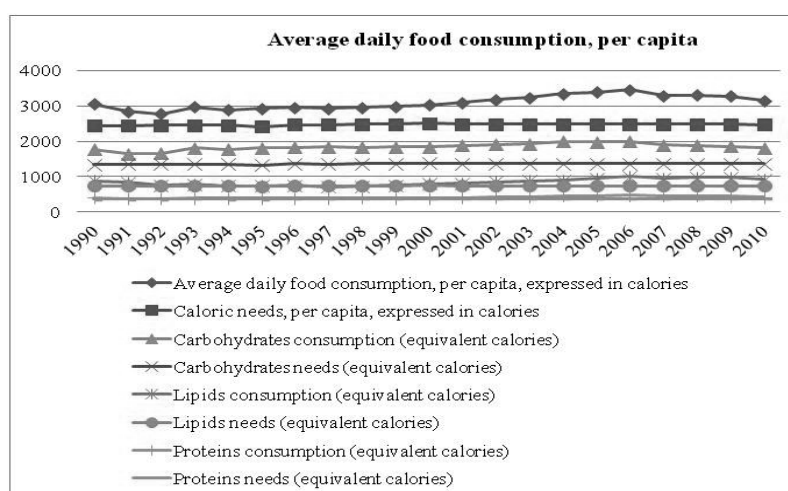
Moreover, the proportion of animal protein with high biological value is below the proportion of vegetable protein and the recommended value of 50%. During the period 2000-2011 food quality improves slightly, fact often remarked upon by increasing protein intake with 1.51% compared to the corresponding year 1990 as well as by increasing animal protein with high biological value. Thus, in 2004, the share of animal protein with high biological value equals the percentage of vegetable origin protein and dietary recommendations, and as a result since 2005 the proportion of proteins with high biological value has exceeded 50%.

Regarding the balance between fat intake and requirements, we can say that in the period 1990-2000 it is quite balanced, but starting with the year 2001, based on the increase of real incomes of consumers, the fat intake also increased to a maximum of 32.7% compared to necessary intake, in 2006, and later declined slightly to 24% from necessary (corresponding to 2011).

Analyzing the structure of the intake of lipids we can see an imbalance compared to the recommendations of nutritionists determined by the share of more than 10% of saturated fatty acids at the expense of intake of polyunsaturated fatty acids which is significantly below the recommendations of FAO, namely 10%. Since 2003, it has been noticed a fat intake of over 35% of the average daily energy intake, which may be associated with increased saturated fat intake and daily caloric intake, favoring obesity.

## Evolution of the average daily food consumption, per capita, compared to the recommended one

Figure 1



Data processing by the National Statistical Institute

The greatest imbalance is registered between intake and need for carbohydrates, based on high food intake of cereals and cereal products, which in the context of low income level in Romania, contributes in a high proportion to provide the necessary calories (above 40% compared to 30% in developed economies). Thus, the imbalance between glucides intake and needs is noticed throughout the analyzed period, constantly increasing from 21.78% in 1991 to 46.16% in 2003, when, due to higher incomes of population, the imbalance begins to decrease, reaching 32.7% in 2010.

Disaggregating the caloric consumption on types of families suggests potential nutritional deficits among poor families. Thus, the average caloric intake of unemployed families was below the minimum amount recommended for adults by nutritionists in Romania (2450 cal), calculated on the basis of the consumption basket needed for a healthy life. Thus, in the year 1999, families from the first decile of income had an average daily intake of 2036 calories below the recommended by nutritionists for a healthy life.

There are signs of nutritional deficiencies of the level of numerous poor families, given that poverty was systematically associated with an increased size of the family. Most commonly, these casualties are children of poor families. Food quality is poor in low-income families, remarking lower proportion of animal protein, due to the reduction of purchasing power for

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meat and dairy products. For these families the dominant share of caloric and especially protein consumption is represented by vegetal products, animal calories representing on average only 25%, which is considered an indicator of poor quality of food.

The analysis of nutritional factors consumption depending on the income deciles suggests that as income increases there is a reduction in the share of plant products in caloric intake, especially in the protein.

With the increase of the level of education and of income and with the decrease of the average size of the family, there is an increase of the contribution of animal products in caloric intake and especially the protein. However, the level of education is accompanied by a decrease in the share of animal fats, which indicates a possible positive association between this variable and the level of knowledge of healthy eating.

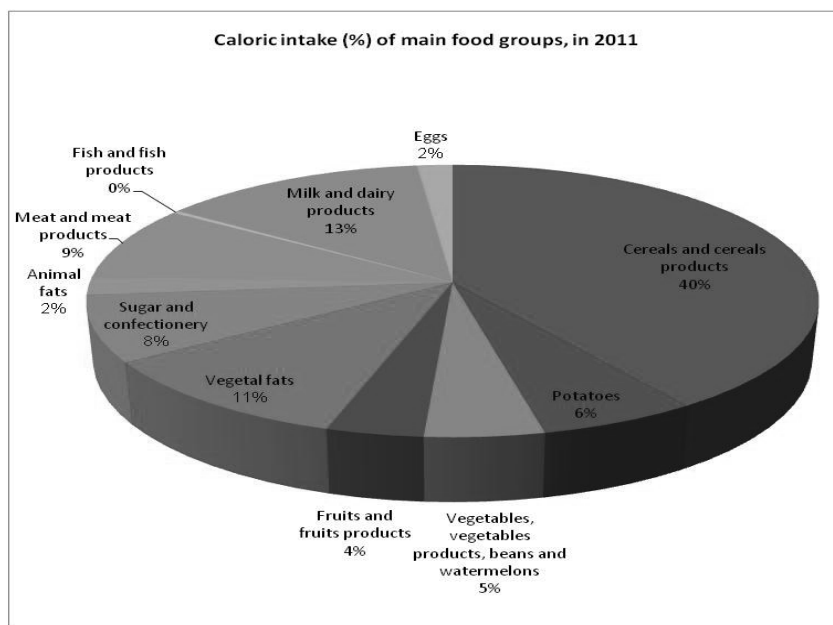
Figure 2 shows what can be called a typical Romanian diet, which is based on grains and grain products (breads, corn, etc), milk and milk products and vegetable fats and to a lesser extent meat and products meat, potatoes, vegetables, fruits and fruit products, animal fats, fish and fish products. It can be appreciated that the Romanian diet is close to that of Mediterranean countries (high share of cereals and less meat).

Compliance with religious customs, especially in rural families, creates opportunities for protein and calcium deficiencies due to abstinence from animal products, on relatively long periods of the year. Families with low income among the unemployed and pensioners constitute a special risk group.

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## Caloric intake (%) of main food groups, in 2011

Figure 2



Data processing by the National Institute of Statistics

In Romania the consumption of fruit, vegetables, fish and milk and dairy products are even lower than nutritional recommendations, what determines a lower contribution for a number of necessary nutrients such as potassium, calcium, vitamin D, polyunsaturated fatty acids, leading thus to reasons of concern for ensuring the health of the population.

In order to avoid these potential drawbacks which may maintain long-term adverse implications on the health of the population the following recommendations can be made:

- increase the consumption of fruits and vegetables;
- reduce the consumption of potatoes and increase the consumption of vegetables and legumes;
- replace refined grains with whole grains;
- increase consumption of partially or completely skimmed milk, of soy-fortified foods and beverages;
- diversify the sources of protein in the diet: fish and seafood, lean meat, poultry, eggs, legumes, soy products, unsalted oleaginous fruits;



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- decrease the share of pork in the diet and increase the share of fish and seafood;
  - replace foods high in solid fats with the others of a lower-caloric value or rich in non-hydrogenated vegetable oils;
  - replace solid fats consumption with oils whenever possible.

There are three reasons behind the recommendation to increase the consumption of fruit and vegetables. The first is that most fruits and vegetables are the main sources of certain nutrients whose daily food intake cannot match the needs of the body, namely magnesium, potassium, calcium, dietary fiber, vitamin A, C, folic acid, becoming thus a concern to ensure health of the population. Second, consumption of fruit and vegetables is associated with reduced risk for many chronic diseases.

Although Romanian diet contains sufficient amounts of cereal products, a problem that can have serious repercussions on the health of the public draws attention, namely the share of increasingly highly refined grain products rich in solid fats and sugar, at the expense of whole grains.

Whole grains are an important source of iron, magnesium, selenium, vitamin B complex and dietary fiber. Thus, in order to maintain within the limits of recommended daily energy intake and a better control of body weight, at least half of the grain intake should be represented by the whole grains, the rest of the cereal products being necessary to be fortified with the a number of vitamins and minerals. Many nutritionists believe that wholegrain cereals should be the second main constituent of food, after water.

Regarding protein intake in the diet of Romanians may be considered adequate in terms of quantity but not quality. Therefore varied and balanced consumption of foods rich in protein intake can improve and bring a number of health benefits. Some studies have shown that a number of oleaginous fruits (walnuts, almonds, pistachios) reduce the risk of cardiovascular diseases if consumed in adequate amounts within your daily caloric needs. Due to their high energy intake they should be consumed in small portions, substituting other foods high in protein and should not supplement a daily diet.

With regard to consumption of milk and dairy products, it is slightly below the nutritional recommendations, which is why it is recommended increasing of food intake of milk and milk products, apart from those totally or partially skimmed to ensure increased intake of potassium, vitamins A and D and decreased sodium intake, cholesterol and saturated fatty acids.

More and more evidence are coming to support the health benefits of consuming fish and seafood. This is why experts recommend a minimum

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of weekly consumption of 225 g fish or seafood, respectively, accounting for 20% protein derived from this source.

Fish consumption among the population in Romania is very low and it is recommended to increase it in the future because, among other nutrients, it represents an important source of fatty acids,  $\omega$ -3 and eicosapentaenoic acid (EPA) as well as of docosahexaenoic acid (DHA).

Correcting all these deficiencies of food consumption of the population of Romania is absolutely necessary to achieve and maintain the health condition of the population, in order to avoid nutritional imbalances that could lead to an increased risk of chronic diseases.

### **Conclusions**

The structure of caloric consumption at the level of the year 2011 does not reflect major signs of concern in the proportion of protein (14.13%), carbohydrates (57.39%) and lipid (29.23%) being close to OMS recommendations.

However, regarding the structure of consumption in depth, although fat intake is within the limits of the nutritional recommendations, the high percentage of saturated fat (because of the high consumption of pork and animal fats) increases the risk of cardiovascular diseases, which is supported by the high rate of cardiovascular diseases in Romania, one of the highest in the European Union.

The examination of the incidence of mortality on categories of diseases of the circulatory system outlines a very high incidence especially for cerebrovascular diseases, women being more vulnerable, a situation different from the distribution of ischemic heart disease. The analysis of population food consumption showed that some nutrients are below the recommended level for vitamins (especially A, B, D), calcium, as a result of low fish consumption and consumption of dairy products which are inferior to the nutritionists' recommendations, vitamin C, folic acid, iron (following the low consumption of fresh fruit and vegetables).

Deficiencies of vitamins and mineral salts, especially in children, can have dramatic effects on the long term: visual impairments due to vitamin A deficiency, anemia due to the reduction rate of absorption of iron from food, especially for children with deficits of vitamin C, increased risk of diarrhea and respiratory diseases caused by lack of iron.

The biggest challenge for consumers is the compliance with nutritional recommendations which carefully control the body weight. Therefore, it is recommended to use so-called "dense foods" that provide vitamins, minerals

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and other substances with favorable effects on health but have low caloric intake.

These foods are rich in dietary fibers and contain no or very low content of solid fats, sugar, starch, sodium or high sodium containing compounds. Vegetables (except for potatoes), fruit, whole grains, milk and partially or completely skimmed milk, fish and seafood, lean meat and poultry, eggs, legumes, oleaginous fruit, which are prepared without added solid fats, sugars starch and salt are considered dense foods.

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