

THE STRUCTURE OF FOOD RATIO IN THE CASE OF AN URBAN BIHOR COUNTY COMMUNITY

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Abstract

Nutrition is one of the most determinant aspects for human health; assessing deviations from sanogenous food behavior one may suggest recommendations to improve public health. This study was conducted on a sample consisting of 76 people from the urban environment, using the method of the individual food survey for 24 hours, monitoring the daily food structure. The subjects' food ratio did not meet the recommended caloric needs, either quantitatively or qualitatively. The food ingested was made up of cereals derivatives, meat products, cheese, meat. A deficient caloric coverage for breakfast was observed (negative deviation of 12%) alongside a caloric surplus by 5.5% for lunch and dinner respectively. 19% of subjects did not serve breakfast or snacks between meals (22.8%), 10% did not serve dinner and 2.28 % did not take lunch, results that reveal the failure to have the necessary meals and respect certain hours for food ingestion.

Key words: investigation, ratio, habits, deficits, excesses, recommendations

INTRODUCTION

Food is one of the most important lifestyle factors (Ionut C, 2004). Eating habits, which ensure peoples' daily food ratio, may preserve their health or, conversely, may favor the presence of numerous diseases, caused by both the quality and the quantity of food they consume (Popescu O, V. Achim, AL Smith, 2004). Learned in childhood and adolescence, eating habits have serious repercussions on peoples' health, with both short-term influence, determining physical and mental growth and development, and long-term effects, maintaining the general habits into adulthood and leading to chronic diseases associated with nutrition : obesity, diabetes, heart disease and some forms of cancer (U.S.Department of Health and Human Services, 1996 U.S. Public Health Service, 1990, WHO, 2004, Colditz GA, Sellers TA, Trapido E, 2006).

Major global changes in society have helped change the way people eat (Westenhoefer J, 2001). Studies to date reveal that many people have adopted unhealthy eating patterns, such as following frequent slimming regimes, omitting meals, consumption of foods with a high content of saturated fat, salt and sugar (Stang J, M Story, 2005). While the standard of living has improved - the availability of food has grown and diversified and the access to services is wider - significant negative phenomena, such as poor diet, decreased physical activity, increased consumption of tobacco, have also appeared (WHO, 2003). Both the pleasure given by certain tastes,

and the form of food presentation, develop throughout life, resulting in a gradual change of personal attitudes towards the act of eating (Graur M, 2003). Changes in the world food economy are reflected in the decline in vegetables consumption, increased consumption of high-calorie foods, especially saturated fat-rich and unrefined carbohydrate and dietary fiber and low consumption of fruits and vegetables (Drewnowski A, BM Popkin, 1997). These habits are combined with a decrease in energy costs that are associated with sedentary lifestyles - motorized transportation facilities that replace physical effort at work and at home, and leisure time mostly spent while doing activities that do not require physical effort (Ferro-Luzzi, Martino L, 1996). With regard to overweight and obesity, not only their prevalence has reached unprecedented levels, but their rate of annual increases in developing countries is substantial (Murray CJL et al, 1996). In some countries, the prevalence of obesity has doubled or tripled in the last decade (WHO, 2002). In Romania, the prevalence of obesity has increased in the last 20 years by 1.2 times (Cordeanu A, 2006). Minorities and groups with low education have the highest risk for obesity and most diseases associated with nutrition (Gordon- Larsen P, Adair L, Popkin BM 2003, Gordon- Larsen P et al, 2006, Mokdad AH et al, 2003).

It is currently considered that chronic diseases are "transmissible" (Choi BCK, R Bonita , DV McQueen , 2001), because modern eating habits and physical activity habits are behaviors that spread throughout the country and are transferable from one population to another, as it happens in the case of infectious diseases. It has been estimated that approximately 80 % of heart diseases, stroke and type II diabetes, and 40 % of cancers can be prevented through interventions that address risk primary factors (WHO, 2008).

MATERIAL AND METHOD

The study was conducted on a sample population consisting of 76 individuals, part of an urban community in Bihor county (Beiuș city), using the method of individual food investigation for 24 hours. The food structure and aspects of feeding behavior were observed. By registering and processing results, information about the composition of the daily individual diet and the average ratio of the sample was obtained, with data referring to the quantitative and the qualitative caloric coverage of subjects' nutritional needs.

RESULTS AND DISCUSSIONS

The 76 people in the study were aged between 20 and 75 years; 44.73 % of the group (34) were male and 55.26 % (42) were women. Sample group distribution by age is presented in table 1.

Table 1

Age group/ sex	20 – 40 years	41 – 65 years	Over 65 years	Total
Masculine	12	11	11	34
Feminine	19	14	9	42
Total	31	26	19	76

In order to know whether the nutritional needs of subjects, correlated with the physical activity performed, were met, it was necessary to classify subjects by degrees of effort, knowing that demand increases with the intensity of the work. The assessment took into account the degree of effort and agricultural work performed by subjects, most of them being involved in such actions, outside the workplace.

The sample group distribution by sex, age and type of effort is shown by the data in table 2.

Table 2

Age groups	Sex	Effort			Total
		Little	Average	Lot of	
20 – 40	Men	6	5	1	12
	Women	15	3	1	19
41 – 65	Men	6	4	1	11
	Women	9	5	0	14
Over 65	Men	6	5	0	11
	Women	6	3	0	9

By processing data resulting from the survey, we calculated the average daily calorie intake and the average daily consumption of nutrients, divided into categories: fats, proteins, carbohydrates. The results were compared to the average daily recommendations for the sample group, after which the deviations were calculated.

Table 3 indicates the presence of negative deviations, which represent a deficient caloric and nutritive intake. Thus: a deficit of 33.57% in the number of actual calories consumed, a deficit of 16.76 % in the consumption of protein and a deficit of 32.93 % in the consumption of carbohydrate, as compared to the appropriate percents. As regards lipids, a slight quantitative excess, as compared to the recommended ratio was observed, the deviation being of 2.08%.

Table 3

The average caloric and nutritive value of food consumed

No. of calories (kcal)		Fats (g)		Protein(g)		Carbohydrates(g)	
Recom-mended	Consumed	Recom-mended	Consumed	Recom-mended	Consumed	Recom-mended	Consumed
2537,68	1686,02	61,86	63,15	77,33	64,37	309,32	207,49
deviation	-33,57%	deviation	+2,08%	deviation	-16,76%	deviation	-32,93%

The percentage of vegetable fats, from the total quantity of fats consumed was calculated, as well as the amount of animal protein consumed from the total quantity of lipids ingested. The results show a lack of 41.25 % in the consumption of fats from vegetable sources, valuable for the presence of mono- and polyunsaturated fatty acids, and a corresponding consumption of animal protein, as compared with the recommended minimum for the two indicators (table 4).

Table 4

Average caloric and nutritive value of food consumed

Total fats	Vegetable fats			Total proteins	Animal proteins		
Consumed (g)	Recommended (g)	Consumed (g)	Deviation %	Consumed (g)	Recommended (g)	Consumed (g)	Deviation %
63,15	min. 31,57	18,55	- 41,25	64,37	min. 32,18	40,35	+ 25,38

We calculated the proportion of nutrients in average caloric value of food consumed. The average consumption of lipids and proteins is within recommended norms, as qualitative structure of the daily menu (table 5).

Table 5

The coverage, in percents, of the calculated food ratio, taking into account nutritive principles

	Fats	Proteins	Carbohydrates
Recommended	27 – 34%	11 – 16%	51 –60%
Consumed	34,44%	15,41%	51,01%

A very low intake of milk was observed, the deviation being of -64.16 % , as the declared consumption rate was 3 times per week.

Cheese intake showed a positive deviation of 11.32 % , which also reduces the overall deficit of milk. Meat consumption was 8.37 % higher than the recommended amount, subjects consuming most frequently chicken and pork, rather than beef, and only exceptionally mutton.

Meat products are consumed in amounts to 126.32 % higher than the recommended amount, being more commonly prepared in half-smoked form and fresh (hot dogs , bologna, salami cooked and smoked) and less frequently smoked meats (ribs, marrow bone). Fish was extremely rarely

consumed, with a deficit of 86.85 % , in line with the lower frequency of consumption.

Eggs, basic food in rural areas, were consumed in amounts approximately 12 % higher than recommendations correlated with the frequency declared. The average intake of potatoes in the subject group, the day before the survey, showed a significant negative deviation of 70.65 %, although the rate declared shows that these are commonly consumed with average frequency.

Vegetables with 10% HC were deficient by 28 63 % at the time of the study, although they were declared to be often consumed. 5 % HC vegetables are consumed in amounts that are even smaller than the previously mentioned ones, the minus deviation being of 84.52 %, despite the fact that frequency of consumption is declared to be of 2-3 times per week.

As regards fruit consumption, the results highlighted a deficit of 51.33 % on the day consumption survey, but the declared frequency is of 4-5 times per week. The statements of subjects show that fruits consumed are fresh, seasonal, only in winter imported fruit being eaten.

Bread is consumed daily, several times a day, but in extremely low quantities, which is reflected in the negative deviation of 64%. At the same time, more people have not eaten at all bread the day before the survey. The consumption of grain derivatives showed a surplus in relation to recommendations, for it recorded a significant positive deviation of 171%. Foods included in this group were the macaroni, flour dumplings, noodle, rice, in combination with meat derivatives or cheese.

Dry beans were present in the diet of the investigation day in amounts that are 67.56 % lower than media recommended for the study group, represented by the peas and beans.

The consumption of sugar and sugar products was exaggerated, the results showing a positive deviation of 9.08 % on the day of the investigation, they being consumed at a declared rate of 2-3 times per week.

The consumption of animal fats marked lower values than the recommended intake of 59.67 %, butter and lard being consumed in fairly equal quantities. In the case of vegetable fats, the declared values of consumption show a negative deviation of 59.53%, these being consumed per se in the form of vegetable oil and vegetable butter (table 6).

Table 6

Average consumption in terms of food groups

Food	Recommended	Consumed	Deviation %	Average declared frequency
Milk	225	80,66	- 64,16	3
Cheese	25	27,83	+ 11,32	3
Meat	92,57	100,32	+ 8,37	1 for beef and sheep 2 for pork 3 for chicken
Meat products	17,7	40,06	+ 126,32	2
Fish	20	2,63	- 86,85	2
Eggs	24,08	21,2	- 11,97	3
Potatoes	286,84	84,21	- 70,65	3
Vegetables with 10% HC	243,95	174,12	- 28,63	4
Vegetables with 5% HC	236,58	36,63	- 84,52	3
Fruit	252,76	123,03	- 51,33	4
Bread	297,63	105,26	- 64,64	5
Grain derivatives	31,58	85,58	+ 171	2
Dry beans	14,21	4,61	- 67,56	1
Sugar and sugar products	41,71	45,5	+ 9,08	3
Animal fats	21,32	8,6	- 59,67	2
Vegetable fats	21,25	8,6	- 59,53	4

Table 7 shows that for all age groups, both women and men, only negative deviations were recorded, the deficit of consumption accounting for about a third of the recommended rations for the respective group. The lowest negative deviation was obtained in the case of women between 41-65 years, of - 23%, followed in ascending order by women of 20-40 years (- 35.16 %), and then by men of 41-65 (-36 %). The largest negative deviation obtained refers to women over 65 (-37.88 %), very close to that of men over 65 years (- 37.77 %).

Table 7

Coverage of daily average energy need by age, sex and level of effort

Calories /age groups/ sex	Recommended	Consumed	Deviation %	
Men	20 – 40	2991,67	1895,02	- 36,66
	41 – 65	2881,82	1845,38	- 36
	Over 65	2300	1431,35	- 37,77
Women	20 – 40	2552,63	1655,38	- 35,16
	41 – 65	2400	1849,17	- 23
	Over 65	2100	1304,64	- 37,88

Table 8 shows the caloric and percentage coverage of average daily ratio from the daily menus consumed at main and supplementary meals. The percentage values obtained were compared with the recommended percentages. We observed a defective percentage caloric coverage as regards breakfast (negative deviation of 12 %) and a caloric surplus of 5.5 % for lunch and dinner, respectively, as compared to the recommended percentages. Regarding the snacks served by the subjects in the group, they contributed on average by 11% to the achievement of the caloric daily intake, values that are close to the recommendations of the experts (10%).

About one fifth of the subjects investigated did not serve any breakfast (19 %), or any snacks between meals (22.8%), 10 % did not serve dinner, the absence of lunch being recorded in the lowest percentage among the meals for the day (2.28%).

Table 8

Percentage distribution of menus per meals					
	Average daily consumption	Breakfast	Lunch	Dinner	Snacks
Calories (Kcal)	1686,02	299,3	766,9	429,9	180,8
Consumed (%)	100	18 %	45,5 %	25,5 %	11%
Recommended (%)	100	30%	40%	20%	10%
Absence of consumption (% subjects)		19	2,28	9,88	22,8

CONCLUSIONS

Foods consumed by subjects did not meet the recommended caloric needs for the study group, neither globally, nor as regards their repartition for the meals of the day.

The appropriate amounts of macronutrients have not been ensured by the consumed menus.

Consumption preferences were oriented towards grain derivatives (other than bread), protein foods such as meat products, cheese, meat, sugar and sugar products. Less potatoes, vegetables and beans, fruits, milk, eggs, fish, bread, vegetable and animal fats were consumed.

It was found that the strong caloric shortfall was due to the absence of breakfast and main snacks, which together should represent 40 % of the intake throughout the day, without being adequately compensated in other meals.

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